

7<sup>th</sup> WORLD CONGRESS  
OF PEDIATRIC SURGERY

**WOFAPS**

OCTOBER 12 – 15, 2022  
PRAGUE, CZECH REPUBLIC  
CUBEX CENTRE PRAGUE

**BOOK OF  
ABSTRACTS**

[www.wofaps2022.org](http://www.wofaps2022.org)

ČESKÁ  
PEDIATRICKO-CHIRURGICKÁ  
SPOLEČNOST



**WOFAPS**

World Federation of Associations of Pediatric Surgeons



**7<sup>th</sup> World Congress of the World Federation of Associations  
of Pediatric Surgeons (WOFAPS)**

**October 12–15, 2022  
Prague, Czech Republic**

**Book of Abstracts**



## CONTENTS

<b>ORAL PRESENTATIONS</b> .....	<b>7</b>
ORAL PRESENTATION SESSION I – Urology & Genital/DSD 1 .....	7
ORAL PRESENTATION SESSION II – Congenital diaphragmatic hernia.....	18
ORAL PRESENTATION SESSION III – Urology & Genital/DSD 2 .....	31
ORAL PRESENTATION SESSION IV – Thoracic surgery.....	43
ORAL PRESENTATION SESSION V – Lower GIT 1 (colorectal & IBD) .....	61
ORAL PRESENTATION SESSION VI – Oncology .....	82
ORAL PRESENTATION SESSION VII – Urology & Genital/DSD 3 .....	102
ORAL PRESENTATION SESSION VIII – Lower GIT 2 (colorectal & IBD) .....	112
ORAL PRESENTATION SESSION IX – Trauma & Musculoskeletal trauma .....	125
ORAL PRESENTATION SESSION X – Mininvasive & robotic surgery .....	143
ORAL PRESENTATION SESSION XI – Hepatobiliary surgery.....	160
ORAL PRESENTATION SESSION XII – Upper GIT .....	177
ORAL PRESENTATION SESSION XIII – Global pediatric surgery.....	197
ORAL PRESENTATION SESSION XIV – Pediatric surgical training .....	205
ORAL PRESENTATION SESSION XV – Miscellaneous / general pediatric surgery I .....	214
ORAL PRESENTATION SESSION XVI – Miscellaneous / general pediatric surgery II .....	225
ORAL PRESENTATION SESSION XVII – Innovations (techniques/concepts/instruments).....	242
<b>POSTERS</b> .....	<b>259</b>
POSTER WALK 1 – Lower Gastrointestinal 1 .....	259
POSTER WALK 2 – Urology 1 .....	274
POSTER WALK 3 – Urology 2 .....	293
POSTER WALK 4 – Urology 3 .....	303
POSTER WALK 5 – Urology 4 .....	313
POSTER WALK 6 – Thoracic Surgery 1.....	326
POSTER WALK 7 – Thoracic Surgery 2.....	338
POSTER WALK 8 – Oncology 1.....	350
POSTER WALK 9 – Oncology 2.....	360
POSTER WALK 10G – Various 1 .....	371
POSTER WALK 11 – Lower Gastrointestinal 2 .....	377
POSTER WALK 12 – Urology 5 .....	393
POSTER WALK 13 – Lower Gastrointestinal 3 .....	407
POSTER WALK 14 – Urology 6 .....	419
POSTER WALK 15 – Urology 7 .....	433

POSTER WALK 16 – Upper Gastrointestinal 1 .....	444
POSTER WALK 17 – Upper Gastrointestinal 2 & Hepatobiliary .....	454
POSTER WALK 18 – Global Surgery 1 .....	464
POSTER WALK 19 – Miniinvasive surgery and Global Surgery 2.....	478
POSTER WALK 20G – Various 2 .....	490
POSTER WALK 21 – Upper Gastrointestinal 3.....	496
POSTER WALK 22 – Miscellaneous 1.....	512
POSTER WALK 23 – Hepatobiliary surgery.....	531
POSTER WALK 24 – Trauma 1 .....	544
POSTER WALK 25 – Trauma 2 .....	555
POSTER WALK 26 – Pediatric Surgical Training and Global Pediatric Surgery 3.....	567
POSTER WALK 27 – Innovations.....	582
POSTER WALK 28 – Miscellaneous 2.....	596
POSTER WALK 29 – Miscellaneous 3.....	611
POSTER WALK 30G – Various 3 .....	626

## ORAL PRESENTATIONS

### ORAL PRESENTATION SESSION I

#### Urology & Genital/DSD 1

##### Long-term assessment in disorders of sex development following male genitoplasty

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Vivek K Singh** (Pediatric Surgery, CH (SC), Pune, India), **Devendra K Gupta** (All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Minu Bajpai** (All India Institute of Medical Sciences, New Delhi, New Delhi, India)

**Introduction:** The long-term outcome of DSD patients following male genitoplasty is a curiosity as the children pass through an uncertain puberty to play their roles as adults. Here we evaluated the long-term physical, functional and psychosexual outcomes in males with disorders of sex development.

**Methods:** Patients who had undergone male genitoplasty and attained 18 years of age were called for evaluation of outcome.

**Results:** 10:1:1 patients had 46 XY DSD (83.33%): 46, XX Testicular DSD: Ovotesticular DSD. All the patients were comfortable with their sexuality. Most of the patients were satisfied with their voiding. All these patients had expressed heterosexual inclination. 4 out of 12 (33.33%) are sexually active, with 3 of them married and one of them has fathered a child. 7 out of 12 (58.33%) were able to ejaculate sufficient quantity of semen sample to be analysed. All those patients with sperms had asthenozoospermia. Majority of them had normal hormonal level. Two had a short phallus though 10 of them (83.33%) were apprehensive about their phallus size. 2 were still voiding from a penoscrotal meatus in sitting position. Three were worried as they had poor beard growth. On personal interview all the 12 patients (100%) were comfortable with the male gender role and have adjusted in the society well. Three were on Hormonal supplementation. 4 of them were doing private job and earning satisfactorily. 4 were in their own business jobs. 4 were students.

**Conclusion:** Most DSD patients have male sexual potential and male sex identity without need of any hormonal therapy, if testicular tissues are preserved. Multidisciplinary team approach involving pediatric surgeons, endocrinologists and psychologist are required for appropriate assistance and better management.

## Disorders of Sex Development and existing Third gender of Bangladesh: In relation with phenotypic, genotypic and hormonal status

**Nazrul Islam** (Paediatric Surgery, BSMMU-Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh)

**Aim:** Children who are born with Disorders of Sex Development (DSD) and are not brought under health coverage, suffer from gender crisis and are deprived from most of the basic rights and privileges of society. So, they establish themselves socially as a different community for their livelihood which is known as third gender. Disorder of Sex Development is a form of birth defect in which sex of the new born cannot be readily distinguished because of atypical appearance of the external genitalia and atypical development of chromosomal, gonadal or hormonal sex. The incidence of DSD is one in 5,500. The patients with DSD who are not brought under health coverage are brought up as third gender. To identify the phenotype, genotype and hormonal status of DSD and existing third gender population of Bangladesh.

**Methods:** This study was being carried out in the Department of Paediatric Surgery of BSMMU and different private hospitals of Dhaka city from January 2018 to January 2022 and patients had come from different parts of the country. The total number of patients was 60. Out of 60, 30 were DSD and 30 were third gender. They both are classified according to Chicago Consensus by preset data sheet as per their phenotype, genotype and hormonal status.

**Results:** It was found that both come under the classification of DSD and their sex was assigned for their management.

**Conclusion:** The third gender is also a DSD. As DSD have a definite sex, third gender also have a definite sex. If we can bring all the patients of DSD under an umbrella health coverage by social awareness, spread knowledge regarding DSD and third gender and also make a separate avenue for their management, we can hope that the third gender population will be decreased in the near future.

## Pelvic Osteotomy in Cloacal Exstrophy: A Changing Perspective

**Nora M Haney** (Department of Pediatric Urology, Johns Hopkins Hospital, Baltimore, USA), **Chad B Crigger** (Department of Pediatric Urology, Johns Hopkins Hospital, Baltimore, USA), **Tamir Sholklipper** (Department of Pediatric Urology, Johns Hopkins Hospital, Baltimore, USA), **Shwetha Mudalegundi** (Department of Pediatric Urology, Johns Hopkins Hospital, Baltimore, USA), **Angelica Griggs-Demmin** (Department of Pediatric Urology, Johns Hopkins Hospital, Baltimore, USA), **Isam W Nasr** (Department of General Pediatric Surgery, Johns Hopkins Hospital, Baltimore, USA), **Paul D Sponseller** (Department of Pediatric Orthopedic Surgery, Johns Hopkins Hospital, Baltimore, USA), **John P Gearhart** (Department of Pediatric Urology, Johns Hopkins Hospital, Baltimore, USA)

**Aim:** The type of osteotomy and pelvic fixation in the management of primary cloacal exstrophy (CE) closure is variable. The purpose of this study was to evaluate primary CE closure outcomes with osteotomy, immobilization, and multi-staging procedure trends over time.

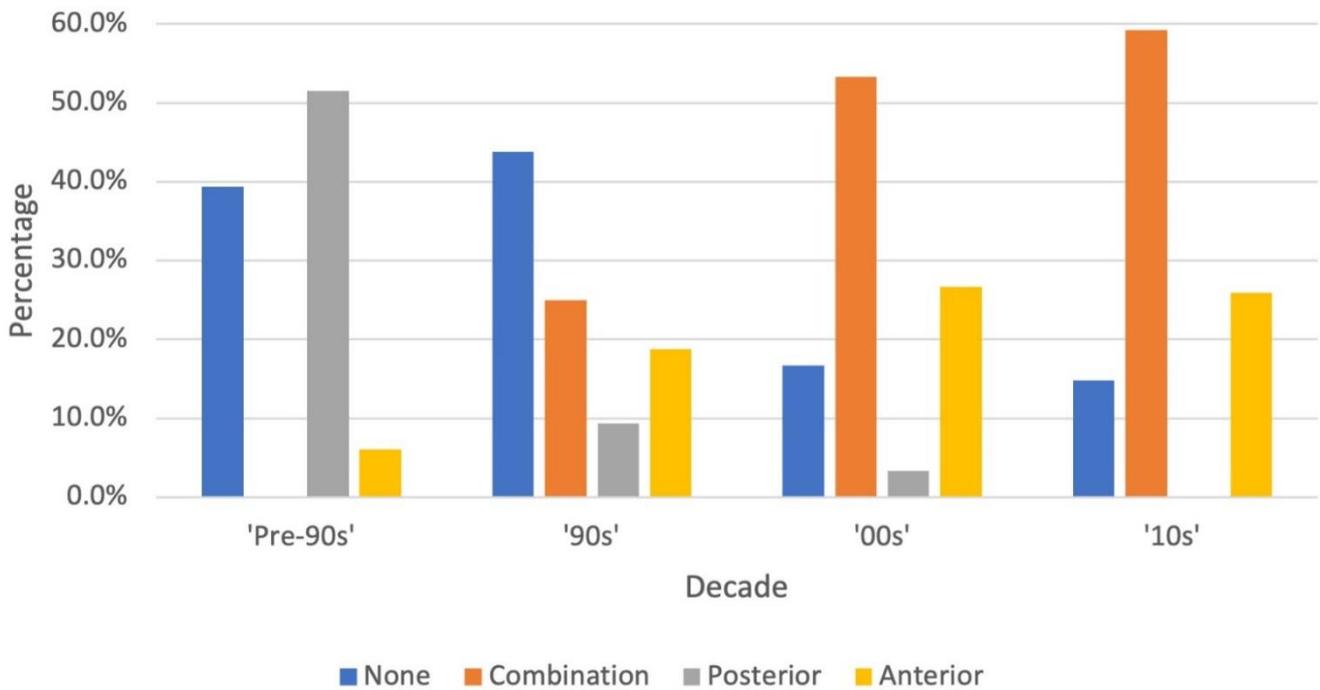
**Methods:** An institutional database was reviewed for patients who underwent primary CE closure from 1960-2020. Demographics, osteotomy, fixation, and outcomes were noted. Subanalyses by location of primary closure (AH=author's hospital; OH=outside hospital).

**Results:** Out of 122 patients, multi-stage became more common than single-stage procedures ( $p=0.019$ ), with multi-stage associated with higher success rates (77.4% v 45.7%;  $p=0.001$ ). The use of any osteotomy increased over time ( $p=0.007$ ), with a posterior approach falling out of favor and increasing prevalence of a combined osteotomy ( $p<0.001$ ) (Figure 1). Trends were similar for AH. OH was more likely to perform anterior osteotomy over time ( $p<0.001$ ) and the use of no osteotomy stayed the same over time ( $p=0.820$ ). The use of any osteotomy compared to no osteotomy was associated with successful closure (77.6% v 41.7%;  $p=0.007$ ). The combined, posterior, and anterior approaches were associated with 90%, 76.2%, and 60.9% successful primary closure rates, respectively ( $p<0.001$ ).

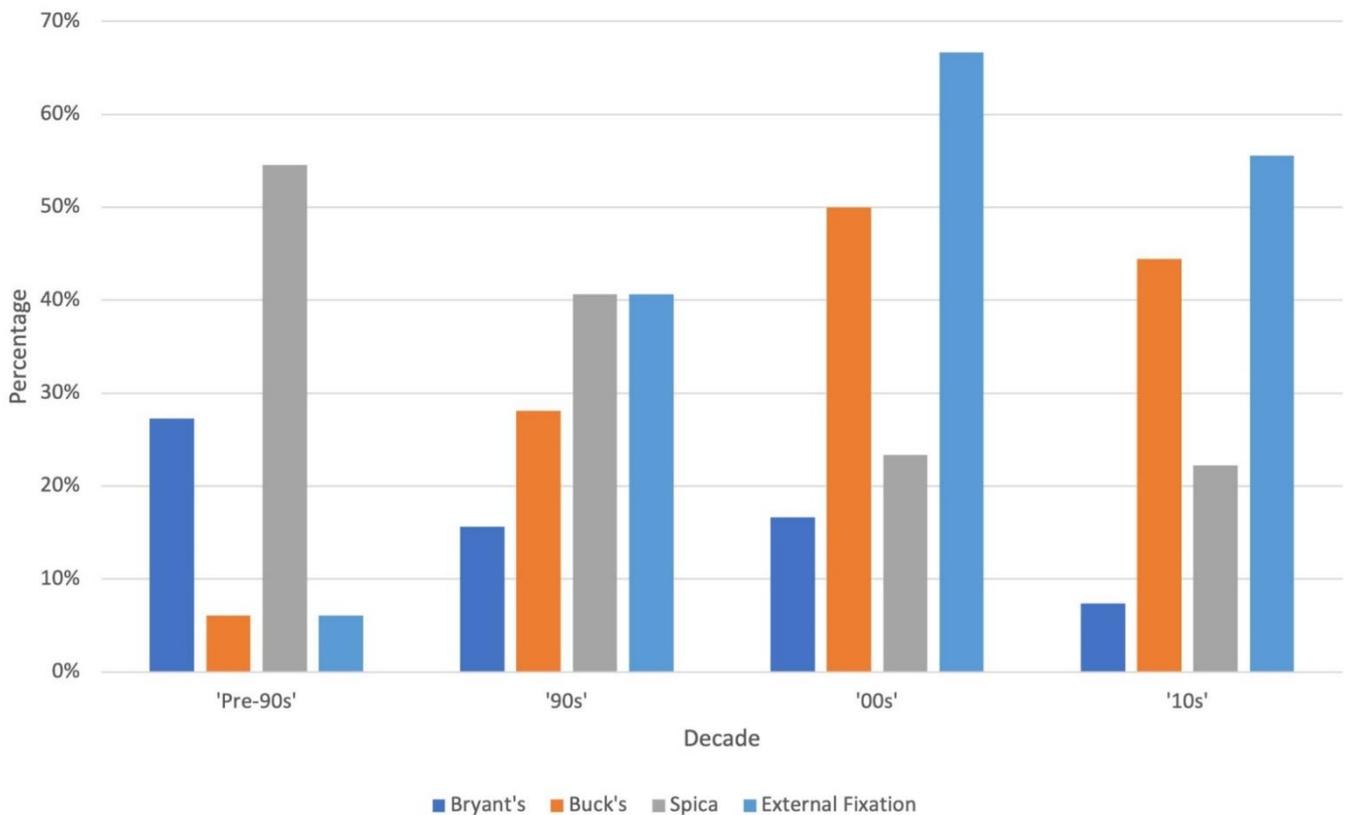
Fixation modalities changed over time as Buck's traction ( $p<0.001$ ) and external fixation ( $p<0.001$ ) became more prevalent (Figure 2). Spica casting fell out of fashion ( $p=0.0002$ ). Trends were similar for AH hospital. There were no significant trends for OH regarding immobilization technique ( $p=0.500$ ) or use of external fixation ( $p=0.064$ ). Immobilization type was associated with success rates with Buck's (92.1%;  $p<0.001$ ) and external fixation (86.0%;  $p<0.001$ ) performing best.

**Conclusions:** The use of osteotomy and fixation in the CE spectrum has changed markedly. In this cohort, a staged approach with combined osteotomy was associated with better outcomes.

### Cloacal Exstrophy: Osteotomy Type by Decade



### Cloacal Exstrophy: Immobilization Type by Decade



## Reducing The Risk of Bladder Dehiscence, 13 Years' Experience of Bladder Exstrophy Management, do we get better?

**Kurniawan Oki Pamungkas** (Department of Surgery, Pediatric Surgery Division, Urogenital sub-division, Hasan Sadikin Hospital / Faculty of Medicine Padjadjaran University, Bandung, Indonesia), **Bustanul Arifin Nawas** (Department of Surgery, Pediatric Surgery Division, Urogenital sub-division, Hasan Sadikin Hospital / Faculty of Medicine Padjadjaran University, Bandung, Indonesia), **Vita Indriasari** (Department of Surgery, Pediatric Surgery Division, Urogenital sub-division, Hasan Sadikin Hospital / Faculty of Medicine Padjadjaran University, Bandung, Indonesia)

**Aim:** Surgical management of bladder exstrophy remains a challenge, especially how to avoid a complication such as bladder dehiscence. We evaluate our experience to find the best surgical management to reduce the risk of bladder dehiscence in our institution

**Methods:** A retrospective review was conducted at our institution between January 2009 and March 2022. Thirty patients (23 females dan 7 males) with classic bladder exstrophy were included. Age, type of surgery, how we placed stent or drain and surgical outcome (failed bladder closure or dehiscence) were evaluated.

**Results:** Twenty-nine patients with a mean age of 2 years (range 4 days to 13 years) underwent functional closure (MSRE stage 1), 15 underwent osteotomy at the same time and 15 had a bladder dehiscence. Only 1 patient had a complete primary repair of exstrophy with a modified Kelly procedure and also had a dehiscence. In the last 5 years, we have a successful rate 71% (10 from 14 patients) compared to previous period only 2 from 16 patients (12%) who have no bladder dehiscence. The different between group with higher successful rate (year 2018-2022) and the previous years were all patients had a surgery with age older than 5 months old and performed osteotomy at the same time with or without external fixation, we placed the cystostomy catheter above the wound through the normal rectus muscle and ureteric catheters are brought out through separate puncture lateral to the wound for 2 weeks. Urethral catheter was removed after 2-4 weeks. Wound dressing changed every 3-5 days with waterproof transparent plaster. Before year 2018, most patients used a drain in a lateral wound and put the stent or cystostomy through the wound.

**Conclusion:** There were an improvement in number of bladder dehiscence in our institutions.

## The effect of age at anorectoplasty on the long-term postoperative bowel function in patients with persistent cloaca: Results of a nationwide survey in Japan

**Toshio Harumatsu** (Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, JAPAN, Kagoshima, Japan), **Mitsuru Muto** (Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, JAPAN, Kagoshima, Japan), **Takafumi Kawano** (Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, JAPAN, Kagoshima, Japan), **Koshiro Sugita** (Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, JAPAN, Kagoshima, Japan), **Keisuke Yano** (Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, JAPAN, Kagoshima, Japan), **Satoshi Ieiri** (Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, JAPAN, Kagoshima, Japan), **Masayuki Kubota** (Pediatric Surgery, Representative of Research Team for the Establishment of Treatment Guidelines for Persistent Cloaca, Cloacal Exstrophy and Mayer-Rokitansky-Küster-Häuser Syndrome for the Proper Transitional Care of the Patients, The Research Project for Rare and Intractable Diseases of the Ministry of Health, Labour and Welfare (MHLW), Tokyo, Japan, Niigata, Japan)

**Aim:** We conducted a nationwide survey of persistent cloaca (PC) in 2014 to determine the current status in our country. In this study, we assessed whether or not the timing of definitive anorectoplasty affects the long-term bowel function of patients with PC.

**Methods:** The patients' data were obtained by sending a questionnaire to 244 university hospitals and children's hospitals in our country. A total of 466 PC patients were enrolled in this study to determine the optimal timing of anorectoplasty for patients with PC. The patients were classified into 4 groups based on the operative period: group A underwent anorectoplasty at  $\leq 5$  months old ( $n=13$ ); group B underwent anorectoplasty from  $>5$  to  $\leq 10$  months old ( $n=70$ ); group C underwent anorectoplasty from  $>10$  to  $\leq 15$  months old ( $n=66$ ); and group D underwent anorectoplasty at  $>15$  months old ( $n=116$ ). The bowel function was evaluated using the evacuation score of the Japan Society of Anorectal Malformation Study Group. The maximum score is 8 points, which indicates an excellent bowel function.

**Results:** The background characteristics of the patients are shown in Table 1. The total score in group A ( $6.00 \pm 1.23$ ) was significantly higher than that in groups B ( $4.87 \pm 1.80$ ) and D ( $4.92 \pm 1.78$ ) ( $p < 0.05$ ). The total score and constipation score in group C ( $5.70 \pm 1.68$ ,  $2.76 \pm 0.99$ ) were significantly higher than those in group B ( $4.87 \pm 1.80$ ,  $2.29 \pm 0.96$ ) ( $p < 0.05$ ) (Table 2).

**Conclusions:** The total evacuation score in group A was the highest of all groups, likely because those cases in which anorectoplasty could be performed at  $< 5$  months old had a short common channel and low-type PC. The PC type and length of the common channel as well as the timing of anorectoplasty are important factors influencing the postoperative bowel function in PC patients.

**Table 1 Background characteristics of the patients**

	Group A n = 13	Group B n = 70	Group C n = 66	Group D n = 116	<i>p</i> value
The age at anorectoplasty (months)	1.85 ± 2.11	8.08 ± 1.42	13.12 ± 1.46	32.34 ± 21.09	< 0.05
Operative procedure of anorectoplasty (PSARP : SA-SAP : others)	8 : 3 : 2	42 : 15 : 13	47 : 9 : 10	82 : 9 : 25	N.S.
The age at evaluation of bowel function (years)	12.26 ± 9.97	11.32 ± 7.64	13.35 ± 9.26	11.83 ± 8.04	N.S.
The clinical stratification of total evacuation scores (poor : good : excellent)	1 : 8 : 4	28 : 26 : 16	18 : 23 : 25	48 : 44 : 24	-

PSARP, posterior sagittal anorectoplasty; SA-SAP, sacroperineal or sacroabdominoperineal anorectoplasty, N.S., not significant.

The clinical stratification was evaluated according to the total ES: 0–4, poor; 5–6, good; 7–8, excellent.

**Table 2 The total evacuation scores and the detailed 4 scores depending on age at anorectoplasty**

	Group A n = 13	Group B n = 70	Group C n = 66	Group D n = 116
The age at anorectoplasty (months)	≤ 5	> 5, ≤ 10	> 10, ≤ 15	> 15
Frequency of bowel movement score (0, 1, 2)	1.59 ± 0.51	1.33 ± 0.68	1.52 ± 0.69	1.29 ± 0.72
Constipation score (0, 1, 2, 3, 4)	2.65 ± 0.93	2.29 ± 0.96‡	2.76 ± 0.99‡	2.49 ± 1.05
Incontinence score (0, 1, 2, 3, 4)	3.24 ± 1.35	3.04 ± 1.25	3.24 ± 1.00	2.97 ± 1.13
Soiling score (0, 1, 2)	1.53 ± 0.72	1.35 ± 0.66	1.57 ± 0.55	1.38 ± 0.63
Total evacuation score (0 - 8)	6.00 ± 1.23*†	4.87 ± 1.80*‡	5.70 ± 1.68†‡	4.92 ± 1.78

\*, †, ‡; *p* < 0.05

## How the first year of COVID-19 affected elective pediatric urology patients: A longitudinal study based on waiting lists and surveys from 10 European centers

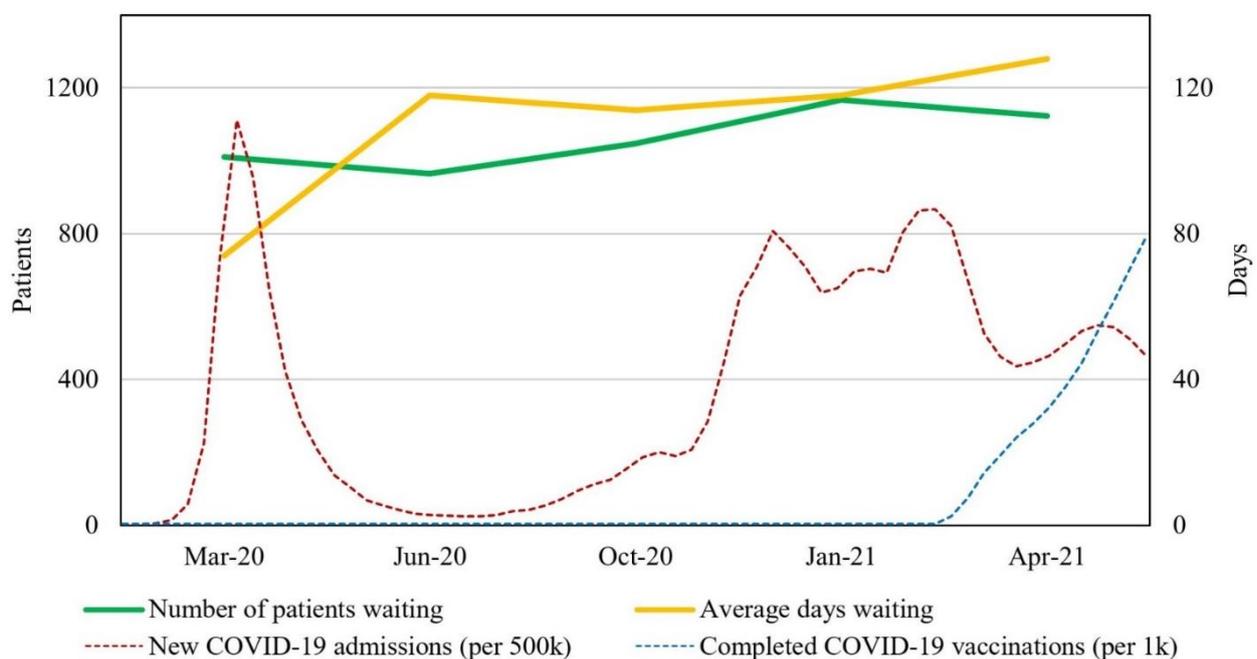
**Nikolai Juul** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark), **Nicolas Kalfa** (Service de Chirurgie Viscérale et Urologique Pédiatrique, Hôpital Lapeyronie, CHU de Montpellier, Montpellier, France), **Magdalena Fossum** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark)

**Introduction:** COVID-19 impacted healthcare systems worldwide, and elective surgical activity was brought to a minimum. Although children were not primarily affected by the disease, pediatric urology was halted by clinical closedown and staff allocation. We aimed to document how these prioritizations affected waiting lists, and to investigate how European centers dealt with the challenge of these logistical and financial prioritizations.

**Materials and methods:** Prospective multicenter 1-year study including ten European tertiary referral centers in ten different countries, starting March 2020. Participants were surveyed at three-month intervals about waiting lists for several common procedures as well as OR capacity and funding. Further, centers retrospectively reported on surgical and outpatient activity rates during 2019–2021. Waiting list tendencies were evaluated in relation to study baseline.

**Results:** A marked decrease in surgical and outpatient activity was seen in the spring of 2020. Some included pediatric urology centers were able to increase their budget (15%) and staff working hours (20%) during part of the study period. Still, at the end of the study, the centers had increased the total number of patients on waiting lists with 11%, whereas the average days on waiting lists had accumulated with 73%, yielding a total of 6102 accumulated waiting days in the study population. Centers with decreased resources had markedly negative effects on waiting lists.

**Conclusions:** Correlations between COVID-19 derived burdening of healthcare systems and the availability of pediatric urology greatly depended on the prioritizations made at individual centers. Ongoing monitoring of these correlations is warranted to safely avoid unnecessary negative impact on the pediatric population.



## Laparoscopic Mitrofanoff procedure: a minimally invasive option for urinary continence

**Catarina Carvalho** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Mário Rui Correia** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Ana Barros** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Armando Reis** (Urology, Centro Hospitalar Universitário do Porto, Porto, Portugal), **João Ribeiro-Castro** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Ana Coelho** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal)

**Aim:** The appendicovesicostomy, or Mitrofanoff procedure, consists of a continent catheterizable stoma allowing intermittent bladder catheterization without urethral manipulation, hereby improving patient compliance. Laparoscopic appendicovesicostomy is a recent technical evolution, associated with improved short-term outcomes, namely less post-operative pain and shorter hospital stay.

**Case description:** We present a case of an 8-year-old male with Ochoa syndrome, single right kidney, following left nephroureterectomy for severe reflux nephropathy with functional renal exclusion and neurogenic bladder needing intermittent bladder catheterization. Appendicovesicostomy was proposed and performed laparoscopically. Stoma location was discussed before surgery. Three 5mm ports were used. Appendiceal harvesting with mesoappendix preservation was followed by a 3cm detrusor myotomy and appendicovesical anastomosis. Stoma opening was conducted on the right iliac fossa, after spatulation of the proximal appendix. Total operative time was 130 minutes. No operative or anesthesia-related incidents were registered. A partial mucocutaneous dehiscence was noted, resolved with conservative treatment. No other complications were registered and the patient was discharged after 22 days. After 12 months, the patient performs autonomous daily self-catheterizations.

**Conclusions:** Laparoscopic appendicovesicostomy is a feasible and safe procedure and ensures autonomy in urinary self-care.

## Percutaneous tibial nerve stimulation effects on overactive bladder syndrome – a single tertiary centre experience

***Naeem Iqbal*** (Paediatric Surgery, Oxford Children's Hospital, Oxford, UK), ***Madhavan Hennessey*** (Paediatric Surgery, Oxford Children's Hospital, Oxford, UK), ***Louiza Dale*** (Paediatric Urology, Oxford Children's Hospital, Oxford, UK), ***Angela Downer*** (Paediatric Urology, Oxford Children's Hospital, Oxford, UK), ***Anas Fagelnor*** (Paediatric Surgery, Oxford Children's Hospital, Oxford, UK), ***Mohammad Bader*** (Paediatric Surgery, Oxford Children's Hospital, Oxford, UK)

**Aim:** To understand the impact of percutaneous tibial nerve stimulation (PTNS) on overactive bladder syndrome (OAB) symptoms in children who have failed medical therapy.

**Methods:** All children (n=28), aged 18 and under, were identified from a prospectively collected database at a single institute between 2010 and 2021. Children, who failed basic urotherapy and medical management for OAB were offered 12 sessions of PTNS treatment. This was provided by two experienced urology nurse specialists. The data was retrospectively analyzed to ascertain effectiveness of the therapy. Improvement was defined as symptom control to the extent that no further medical intervention was needed for management of the OAB.

**Results:** Mean age of our cohort was 8.1 years and median duration of symptoms at presentation was 36 months. Following primary course of PTNS 79% (n=22) children experienced symptom improvement (table 1). Of these children, 73% had no recurrence (table 2). Of the children who did not improve after first course of PTNS, 50% improved after a subsequent course of PTNS. Of the children who did not improve after the primary course of PTNS (n=6, 21%), 2 children had mild improvement but no resolution, 2 children had mental health issues and did not comply with treatment. Bladder capacity pre and post PTNS was insufficient to draw a reliable conclusion. Median follow up duration was 12.5 months after PTNS therapy.

**Conclusion:** In our cohort, 79% of children improved after a primary course of PTNS. 73% of these children did not experience symptom recurrence. Of those who did experience symptom recurrence, 50% improved following a second course of PTNS.

	Pre-PTNS	Improvement post PTNS	
<b>Overactive Bladder Sx</b>	<b>28</b>	<b>22</b>	<b>79%</b>
Frequency	24	18	72%
Urgency	23	16	67%
Urge incontinence	22	15	65%
Nocturia	14	9	60%
Nocturnal Enuresis	23	15	63%

Table 1 – Improvement in symptoms post primary course of PTNS

		Percentage
No symptom recurrence post PTNS (No of pts)	16	73%
Symptom recurrence post PTNS (No of pts)	6	27%
Median recurrence post PTNS (months)	3	

Table 2 – Number of patients showing recurrence of symptoms post primary course of PTNS

## ORAL PRESENTATION SESSION II

### Congenital diaphragmatic hernia

#### Defining outcomes for congenital diaphragmatic hernia – a UK paediatric surgical centre experience over three decades

**Chun-Sui Kwok** (Department of Paediatric Surgery, Alder Hey Children's Hospital, Liverpool, UK), **Wan Teng Lee** (Institute of Life Course and Medical Sciences, University of Liverpool, Liverpool, UK), **Varun Hathiramani** (Department of Paediatric Surgery, Alder Hey Children's Hospital, Liverpool, UK), **Wajid B Jawaid** (Cambridge University, Cambridge, UK), **Paul D Losty** (Institute of Life Course and Medical Sciences, University of Liverpool, Liverpool, UK)

**Aims:** Congenital diaphragmatic hernia (CDH) is a developmental defect of the diaphragm associated with lung hypoplasia and pulmonary hypertension. Medical and surgical management of this challenging birth defect has evolved over multiple decades. We herein report some three decades of experience with CDH detailing management from a UK paediatric surgical centre with ECMO facilities.

**Methods:** Medical records of all newborns undergoing surgery for CDH between 1 February 1990 – 1 November 2021 and attending a specialist multidisciplinary follow-up clinic were examined. Operative details and patch utilization are reported. Exclusion criteria included Morgagni-type defects and 'late' CDH presentation outside of the neonatal period.

**Results:** Of 220 index CDH newborns – 96 (43%) had been antenatally diagnosed. Left-sided defects accounted for 177 (80%) cases. Diaphragmatic patch was required in 91 (41%) patients of whom 42 (19%) additionally required abdominal wall prosthesis. Patch materials deployed were non-absorbable synthetics notably Gore-Tex® whilst biological Surgisis® patches in two patients in the early cohort failed resulting in early recurrences. Need for diaphragmatic patch was significantly associated with subsequent fundoplication operation (13% vs 1.6%,  $P=0.005$ ). Mortality was significantly higher in babies requiring an abdominal wall patch (31% vs 11%,  $P=0.003$ ). Comparing time era(s) notably pre- and post-2010, there were no significant difference(s) observed in overall mortality or CDH recurrence. However, the post-2010 cohort was a much sicker group comprising more index cases with cardiac malformations (69% vs 28%,  $P<0.001$ ), those requiring greater cardiovascular inotrope support (61% vs 25%,  $P<0.001$ ) and increased utilisation of ECMO (15% vs 5%,  $P=0.023$ ).

**Conclusion:** Over the course of three decades, CDH management at this specialist centre has witnessed a growing complexity of patients with mixed severity phenotype(s). Future challenges remain to be solved to improve outcomes further for the most complex vulnerable patients.

## Long-term outcomes in congenital diaphragmatic hernia patients: pulmonary function test and thoracic magnetic resonance

**Francesca Maestri** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy), **Martina Ichino** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy), **Giulia del Re** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy), **Francesca Galbiati** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy), **Anna Morandi** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy), **Ernesto Leva** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy)

**Aim:** to evaluate pulmonary and diaphragmatic long-term outcomes in congenital diaphragmatic hernia (CDH).

**Methods:** retrospective study on CDH patients operated at our Centre between 2005-2015. Patients on regular follow-up with  $\geq 1$  spirometry were included, data of the latest recorded. Haller Index (HI), diaphragmatic costophrenic (CE) and apical (AE) excursion in basal (B) and maximal (M) breathing were measured with magnetic resonance (MRI). Results were analysed with Fisher's and t-test, considering defect side and size, liver position, patch use.

**Results:** thirty-two (53% female, mean age at spirometry  $6.8 \pm 1.8$  years) patients were included. Spirometry pattern was pathologic in 13 (41%): 8 (25%) obstructive, 3 (10%) restrictive, 2 (6%) mixed. Pathologic patterns were prevalent in liver up (73%,  $p=0.02$ ) and right CDH (100%,  $p=0.02$ ). Static MRI performed in 14 patients (mean age  $7.8 \pm 2$  years) revealed pectus excavatum in all: 8 (57%) with mild HI, 4 (29%) moderate, 2 (14%) severe. Twelve patients underwent dynamic MRI (mean age  $8.2 \pm 1.9$  years). AE-B and CE-B were significantly reduced on affected side (healthy VS affected:  $10.9 \pm 3.3$  mm VS  $7.4 \pm 2.7$ ,  $p < 0.01$ ;  $12.5 \pm 4.6$  VS  $4.5 \pm 3.4$ ,  $p < 0.01$ ), but difference disappeared in maximal breathing (healthy VS affected:  $18.0 \pm 9.9$  VS  $13.8 \pm 9$ ,  $p = 0.17$ ). No difference in excursion between sides was found for patch repair (healthy VS affected: AE-B  $9.8 \pm 2.4$  VS  $5.7 \pm 2.7$ ,  $p = 0.15$ ; AE-M  $16.3 \pm 14.4$  VS  $7.8 \pm 4.8$ ,  $p = 0.25$ ) and liver-up (healthy VS affected: AE-B  $9.5 \pm 2.2$  VS  $7.2 \pm 2.5$ ,  $p = 0.25$ ; AE-M  $17.5 \pm 10.3$  VS  $8.7 \pm 4.9$ ,  $p = 0.12$ ); difference is present in non-patch group only in basal breathing (healthy VS affected: AE-B  $11.5 \pm 3.7$  VS  $8.1 \pm 2.5$ ,  $p = 0.01$ ; AE-M  $18.9 \pm 7.9$  VS  $16.7 \pm 9.3$ ,  $p = 0.53$ ), similarly to liver-down (healthy VS affected: AE-B  $11.9 \pm 3.8$  VS  $7.5 \pm 3$ ,  $p < 0.01$ ; AE-M  $18.4 \pm 10.4$  VS  $17.3 \pm 9.7$ ,  $p = 0.78$ ).

**Conclusions:** prevalence of altered spirometry and diaphragmatic movement in CDH patients is substantial. Implementing CDH follow-up with routinary spirometry and MRI augments CDH knowledge and might guide future treatments.

## Congenital diaphragmatic hernia induces increases of sensibility to nitric oxide pathway in pulmonary arteries

**Laurenço S Sbragia** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Alecsander Fabricio Bressan** (Pharmacology, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Victoria Araujo Oliveira Maia** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Beatriz de Souza Rodrigues** (Pharmacology, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Rita Tostes** (Pharmacology, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Fernando Silva Carneiro** (Pharmacology, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Laurenço S Neto** (University of Sao Paulo, Ribeirão Preto medical school, Ribeirão Preto- SP, Brazil)

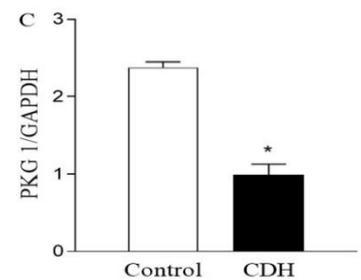
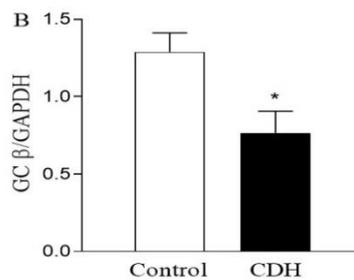
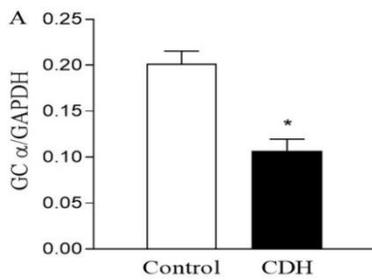
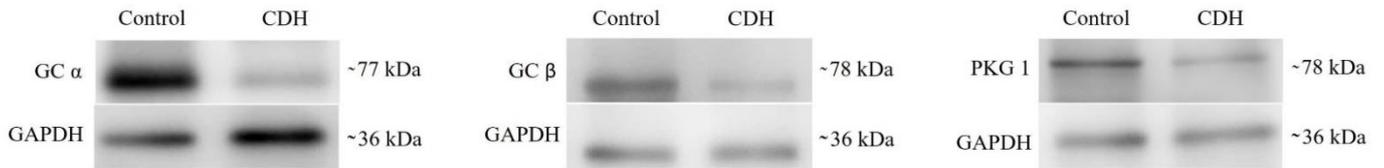
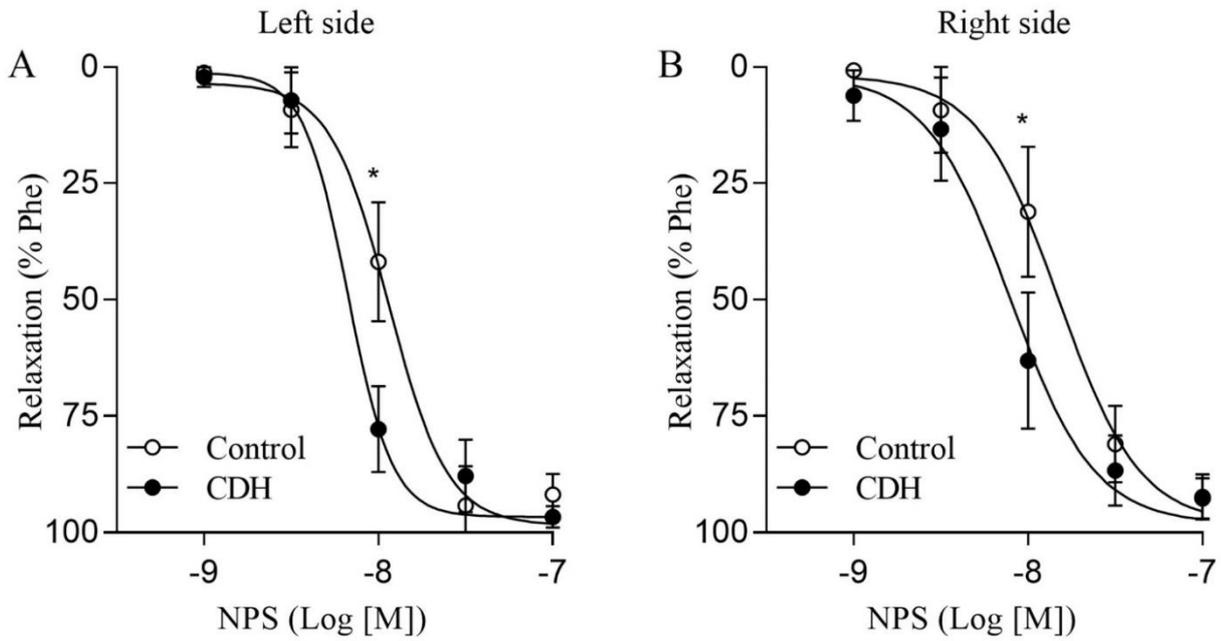
The congenital diaphragmatic hernia (CDH) is a fetal abnormality. Pulmonary hypoplasia and Pulmonary hypertension (PH) are the main secondary conditions. The conventional treatment for secondary PH is nitric oxide inhaled (iNO); nonetheless, the routine use of iNO in some cases was not recommended because of the risk of death. We hypothesized that the left and right pulmonary arteries (PA) do not respond similarly to NO during CDH.

**Aim:** To compare the vasorelaxant response of the Left and Right PA to NO in CDH model.

**Methods:** Pregnant NZ rabbits underwent the surgical procedure at 25 days of gestation. CDH was created in two fetuses per horn (n=10); the remaining fetuses were used as controls (n=10). At term (30 days), fetuses were removed, and the Left and Right PA were dissected, isolated, and mounted in 5 mL myograph chambers. Responses to vasodilation were evaluated by curves of cumulative concentration-response for SNP. The PA were submitted to analysis of protein expression to Guanylate Cyclase  $\alpha$  and  $\beta$  (GC $\alpha$ , GC $\beta$ ) and cGMP-dependent protein kinase 1  $\alpha$  (PKG1 $\alpha$ ) (IACUC: 191/2018).

**Results:** Left and Right PA with CDH increase the sensibility to NPS compared to the control group [pD<sub>2</sub> (control vs. CDH) Left: 7.94 ( $\pm$  0.047) vs. 8.17 ( $\pm$  0.062); Right: 7.82 ( $\pm$  0.069) vs. 8.10 ( $\pm$  0.087), ( $p$ <0.05)]. Pulmonary arteries of CDH decrease NO pathway compared to the control [densitometric analysis (control vs. CDH) GC $\alpha$ : 0.20 ( $\pm$  0.013) vs. 0,10 ( $\pm$  0.012); GC $\beta$ : 1.28 ( $\pm$  0.123) vs. 0.76 ( $\pm$  0.139); PKG1 $\alpha$ : 2.37 ( $\pm$  0.073) vs. 0.99 ( $\pm$  0.135), ( $p$ <0.005).

**Conclusion:** PA has a different standard of contractility between the Left and Right sides; CDH induces an increase of sensibility to NO in the PA and decreases expression of the NO pathway. This information may be helpful for future therapeutical strategies for pulmonary hypertension in CDH.



## Ventilation with hyperoxia is associated with cochlear injury in rabbit model of congenital diaphragmatic hernia

**Lourenço Sbragia** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Eduardo Tanaka Massuda** (Division of Otolaryngology, Department of Ophthalmology, Otolaryngology and Head and Neck Surgery, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Solange Natalia Seibert** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Ana Maria Bicudo Diniz** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Luiza Almeida Lima** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Maria Rossato** (Division of Otolaryngology, Department of Ophthalmology, Otolaryngology and Head and Neck Surgery, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Vanessa Maciel Bráulio da Fonseca** (Division of Pneumology, Department of Internal Medicine, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Marcos de Carvalho Borges** (Division of Pneumology, Department of Internal Medicine, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Amaury Leis Dal Fabbro** (Social Medicine, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil), **Alexsander F Sbragia** (Division of Pediatric Surgery -Department of Surgery and Anatomy, Ribeirao Preto Medical School – University of Sao Paulo, Ribeirão Preto – SP, Brazil)

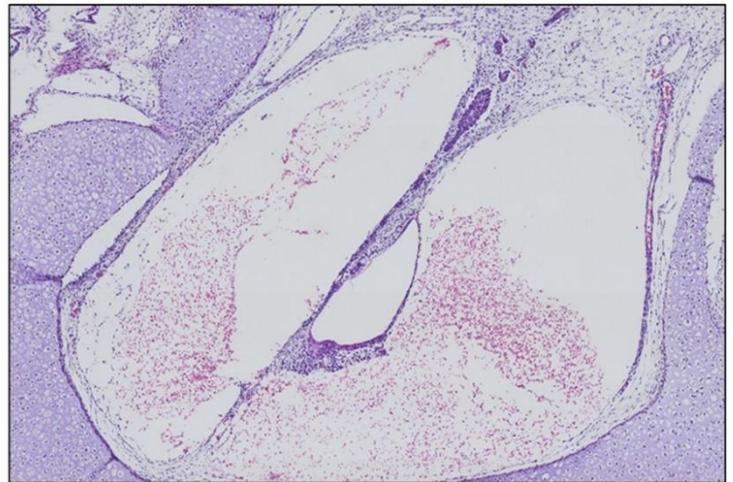
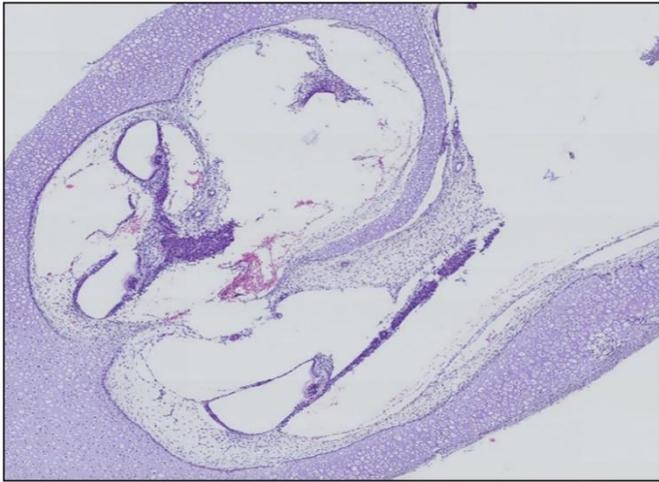
Congenital diaphragmatic hernia (CDH) survival is directly proportional to the severity of pulmonary hypertension. Sensorineural hearing loss (SNHL) in survivors is important morbidity that can present from 10 to 100%.

**Aim:** To investigate the impact of ventilation and hyperoxia upon the cochlea in CDH rabbits.

**Methods:** Pregnant New Zealand rabbits underwent the surgical procedure at 25 days of gestation (term=30 days). CDH was created in fetuses (n=15) and compared with Controls (n=15). At term, fetuses were removed and subdivided into 6 groups: Control, Control Ventilated 21%, Control Ventilated 100%, CDH, CDH Ventilated 21%, and CDH Ventilated 100%. The neonates were ventilated with FlexiVent (Scireq, Montreal, QC, Canada) with the following parameters: respiratory rate 150 breaths/min, PEEP 4 cmH<sub>2</sub>O, inspiratory time 0.1s, and expiratory time 0.3s. Dynamic compliance (CRS), dynamic elastance (ERS), and dynamic resistance (RRS) were measured every 4 min for 24 min with 21% and 100% of oxygen. After that, the cochleas were removed, fixed, cut, stained with H&E, and studied according to bleeding. The Middle, apical, and basal slope of the cochlea and the Corti organ were evaluated. A score of bleeding was created 0 (minimal or absent), 1 (present or medium), and 2 (intense or maximum) (IACUC: 191/2018). Statistical analysis was performed by contingency and OR with Person test

**Results:** There was no difference in the cochlea between Controls and CDH. Control Ventilated 21% and 100% had average scores 2,4 and 1,6. CDH Ventilated 21% and 100% had average score 0,4 and 3,7; RR [Control V100% / CDH V100%] (95% CI) = 6,71 ( $p<0.005$ ).

**Conclusion:** Ventilation had an impact on cochlear bleeding. CDH had a risk 6,7 higher of bleeding with 100% oxygenation. This information may be helpful for future therapeutic strategies applying drugs with the protection of oxidation-reduction reaction (redox) for decreasing the possible SNHL.



## Early surgical repair of CDH after elective C-section delivery in pediatric hospital

**Anastasia Almog** (Pediatric surgery, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Avner Nevo** (pediatric surgery, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Elena Dlugy** (Pediatric surgery, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Ruben Bromiker** (neonatal intensive care unit, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Nir Sokolover** (neonatal intensive care unit, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Tina Herschkovic** (neonatal intensive care unit, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Elena Zeitlin** (Anesthesiology department, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Gil Klinger** (neonatal intensive care unit, Schneider Children's Medical Center of Israel, Petach Tikva, Israel), **Dragan Kravarusic** (pediatric surgery, Schneider Children's Medical Center of Israel, Petach Tikva, Israel)

**Aim:** The aim of our study is to analyze the results of early (<24 h) surgical CDH repair.

**Method:** Retrospective observational review of all CDH cases in tertial center. Since 2019 early surgical repair (<24 hours) of CDH after elective C-section delivery in pediatric hospital (in-house) with Immediate lung HFO mode ventilation started in delivery room. Prenatal history, fetal intervention, clinical pre-and postoperative characteristic, associated anomalies, type of the surgery, duration of ventilation and length of stay and mortality were recorded.

**Results:** 100 neonates with CDH were treated between 2010 and 2022; 20 infants that underwent early surgical repair (in 24 hours) were included into the study. 17 of them were after C-section delivery, 3 babies born urgently by vaginal delivery. All patients underwent prenatal follow up. Prenatal LHR was ranged from 0.7 to 2.7. FETO procedure was performed in 8 babies (40%). Left CDH diagnosed in 15 (75%), RT CDH – in 5 (25%) children. Liver herniation was found in 2 Left CDH and was presented in all RT CDH. Gestation age at birth was 39 weeks (33-40w). Average weigh of birth was 2862gr (2300–4370). Mean preductule saturation on admission was 84.9 (72-100). Half of the children had cardiac anomaly. Abdominal approach for CDH repair was performed in 19 (95%) children; 7 (35%) of them had Goretex patch; thoracoscopic repair was done in one case (5%). The median ventilation duration was 14.7 days (2-28). The median length of hospitalization was 40 days (12-170). Two infants (10%) did not survive due to hemodynamic and respiratory failure, both had FETO procedure.

**Conclusions:** Early surgical approach of CDH treatment in terms of elective C-section and immediate intubation with lung preservation HFO mode in delivery room provides a good physiological and anatomical condition for a repair with a good surviving rate.

## Thoracoscopic assisted extracorporeal repair of congenital left posterolateral diaphragmatic hernia

**Sertturk Firat** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** Congenital posterolateral diaphragmatic hernia is a rare and life-threatening condition in newborns. Thoracoscopic approach is the routine procedure in practice. One of the pitfalls of thoracoscopic repair is to difficulty of closing the lateral edge of the defect due to the angle of working trocars. In our practice we use a needle in which it is possible to insert the suture material and then take it back and tie at the subcuticular level.

**Case Description:** A 23 days old male patient administered to hospital respiratory distress after feeding. In his X-ray examination, intestines were seen in left hemithorax. He was prepared for the operation with the diagnosis of diaphragmatic hernia. In this particular case the child has not have any diaphragmatic rim on the posterior side from lateral to medial corners of left hemithorax and we performed the whole operation with the method described above. The child has discharged on postoperative sixth day and did not have any problems in six months of follow up.

**Conclusions:** Thoracoscopic assisted extracorporeal repair is feasible in case of total absence of diaphragmatic muscle of one side. Instead of using intracorporeal sutures from the diaphragma to costal cartilages which is very technically challenging; extracorporeal sutures may provide more solid knots within shorter operative times.

## Combination of intracorporeal suturing and PIRS technique in congenital diaphragmatic hernia

**Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ufuk Ates** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Firat Sertturk** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ege Evin** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ege Ekiyor** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Meltem Bingol-Kologlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Aydin Yagmurlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Murat Cakmak** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** Congenital diaphragmatic hernia is a rare and life-threatening condition in newborns.

Thoracoscopic repair is a standard approach in our institution. But it is rarely difficult to close the lateral corner of the hernia due to the angle of working trocars. Extracorporeal knot by a needle passed through the thoracic cavity can be used for closing the corner of the defect. In the present study, it was aimed to present our experience in closing the corner of hernia with extracorporeal sutures.

**Methods:** The charts of children who underwent diaphragmatic hernia repair between 2017 and 2022 were retrospectively reviewed. All patients' demographic data, side of diaphragmatic hernia, suture material, recurrence and complications were evaluated.

**Results:** Diaphragmatic hernia repair was performed with the extracorporeal suture method in 8 patients in total. Of these patients, 62.5% were boy and 37.5% were girl. %25 of them were right sided, %75 of them were left sided hernia. Mean age of the patients at the date of operation were 138 days (1-750 days) and mean weight was 2683 grams. (1865-2860 grams) While 42% of the patients were diagnosed antenatally, 58% were diagnosed at birth. Hernia sac was present in 87.5% of the patients. Prolene sutures were used in half and ethibond sutures were used in the other half of the patients. Postoperative recurrence was detected in 37.5% (n:3) of the patients. All of the recurrences observed in patients whose extracorporeal sutures were prolene.

**Conclusion:** In this study, it was seen that the suture material of extracorporeal sutures may be associated with recurrence even though the sample is small. The fact that all recurrences were with prolene indicates that the use of ethibond may be more advantageous in repair.

## Assessment of Antenatal and Postnatal Prognostic Indicators in the outcome of Neonatal Congenital Diaphragmatic Hernia: A Prospective Observational Study

**Bikash kumar Naredi** (Pediatric surgery, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India), **Anirudhan Deivasigamani** (Pediatric surgery, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India), **Bibekanand Jindal** (Pediatric Surgery, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India), **Kumaravel Sambandan** (Pediatric surgery, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India), **Krishana Kumar Govindarajan** (Pediatric Surgery, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India), **Nishad Palakad** (Neonatology, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India), **Mamata Gowrda** (obstetrics and Genecology, Jawaharlal Institute Postgraduate Medical Education and Research, Puducherry, India)

**Aims:** To evaluate the antenatal and postnatal prognostic factors in neonatal CDH that can be used to predict the outcome.

**Methods and Material:** Neonates presented with CDH from August 2019 to Aug 2021 within 28 days of life were included in the study. Bilateral disease, recurrent diseases, and babies operated outside were excluded. Data was collected prospectively, and babies were followed till discharge or death.

Data that follow normal distribution were expressed in Mean with SD, and Data that does not follow normal distribution were expressed in Median with Range. Mann Whitney-U test was performed for data that does not follow the normal distribution, and the Independent Student t-test was performed for data that follows the normal distribution. Statistical analysis was performed using SPSS software version 25

**Results:** Thirty babies with neonatal CDH were studied. There were three right-sided cases. The male to female ratio was 2.3: 1. Most of the babies had an antenatal diagnosis (93%). Seventeen out of the 30 babies underwent surgery. Nine (52.9%) underwent laparotomy, and eight (47%) underwent thoracoscopic repair. Overall mortality was 53.3%. Operative mortality was 17.6%. Demographic characteristics were comparable between expired vs survived babies. The significant predictors of outcome identified were – Persistent Pulmonary Hypertension (PPHN), Mesh repair, High-Frequency Oscillatory Ventilation (HFOV), Use of Inotropes, Five minute APGAR, Ventilator index, and HCO<sub>3</sub> levels.

**Conclusions:** We conclude that the prognostic indicators of poor prognosis are low 5-minute APGAR, high ventilator index, low HCO<sub>3</sub> levels in venous blood gas analysis, mesh repair, HFOV, Inotropes usage, and PPHN. Further prospective studies with a larger sample size are required to substantiate the findings.

Table 2: Continuous variables studied and their significance in predicting mortality

Continuous variables	Overall, median (Q1, Q3)	Survived, median (Q1, Q3)	Expired, median (Q1, Q3)	P-value
Gestational age (wks)	38.0 (37.0, 39.0)	39.0 (37.75, 40.0)	38.0 (37.0, 39.0)	0.108
LHR	1.27 (1.02, 1.79)	1.445 (1.01, 2.13)	1.240 (1.02, 1.65)	0.831
Size of defect in cm	4.0 (1.0, 5.0)	4.00 (3.50, 4.25)	4.00 (4.00, 4.00)	0.371
5 minute APGAR	9.0 (8.0, 9.0)	9.00 (9.0, -)	8.00 (7.0, 9.0)	<b>0.001</b>
Ventilator index	29.61 (19.1, 54.1)	22.93 (15.9, 36.1)	43.13 (26.9, 56.4)	<b>0.05</b>
Difference in SPO2 between pre ductal and post ductal	1.0 (1.0, 2.0)	1.00 (0.75, 1.25)	1.50 (1.00, 2.00)	0.159
	Overall, mean ± SD	Survived, mean ± SD	Expired, mean ± SD	P-value
Birth weight (mean)	2.63 ± 0.34	2.60 ± 0.34	2.66 ± 0.35	0.673
Mean HCO3 level	20.24 ± 3.58	21.9 ± 3.98	18.78 ± 2.5	<b>0.015</b>
Venous blood pH	7.247 ± 0.10	7.282 ± 0.898	7.217 ± 0.108	0.086
Venous PaCO2	57.38 ± 12.37	58.68 ± 12.34	56.24 ± 12.70	0.599

Table 1: Categorical values studied and their significance as predictors of mortality

Categorical variables	Overall n (%)	Survived n (%)	Expired n (%)	P-value
Sac present	5 (29.4%)	3 (60%)	2 (40%)	0.19
Laparotomy	9	8 (88.9%)	1 (11.1%)	0.576
Thoracoscopy	8	6 (75%)	2 (25%)	
Mesh repair	2	0 (0%)	2 (100%)	<b>0.02</b>
PPHN	18 (60%)	3 (16.7%)	15 (83.3%)	<b>0.00</b>
Inotrope use	26 (86.6%)	10 (38.5%)	16 (61.5%)	<b>0.03</b>
HFOV	23 (76.6%)	7 (30.4%)	16 (69.6%)	<b>0.02</b>
Pulmonary hypoplasia	9	7 (77.8%)	2 (22.2%)	1.00

## Long-term outcome regarding gastroesophageal reflux in neonates with and without preventive antireflux surgery at the time of congenital diaphragmatic hernia repair

**Christoph von Schrottenberg** (Department of Pediatric surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, Mannheim, Germany), **Susanne Deeg** (Department of Pediatric surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, Mannheim, Germany), **Lucas Wessel** (Department of Pediatric surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, Mannheim, Germany), **Michael Boettcher** (Department of Pediatric surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, Mannheim, Germany), **Katrin Zahn** (Department of Pediatric Surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, Mannheim, Germany)

**Aim:** With improving pre- and perinatal management of patients with congenital diaphragmatic hernia (CDH), also survival rates of patients with severe defects are increasing in specialized centers. This provides a group of patients with increased morbidity which makes long-term follow-up mandatory. One of many comorbidities can be gastroesophageal reflux (GER), which can have a substantial effect on patients' quality of life and thriving. Efforts have been made to identify neonates that would benefit from a prophylactic antireflux procedure at the time of CDH-repair. Yet, long-term results have not been reported so far.

**Methods:** In this follow-up study of neonates, who were enrolled in a primary study on preventive antireflux surgery, symptoms of GER were assessed longitudinally.

**Results:** Long-term data with a median follow-up time of 10 years was available in 66 of 79 formerly enrolled patients (83.5%). The main reason for missing data was mortality in 9 patients (11.4%). 31 neonates (47%) received a fundopexy during initial CDH-repair. Patients with large defects presented with significantly more GER symptoms ( $p=.013$ ). Symptoms did not differ significantly between patients with and without preventive antireflux surgery (32% vs. 20%,  $p=.276$ ), also in the subgroup of patients with large defects (43% vs. 26%,  $p=.353$ ). Secondary antireflux surgery was required significantly more often in patients with large defects ( $p=.013$ , OR 3.8), intrathoracic liver herniation ( $p=.024$ , OR 4.7) and patch repair ( $p=.014$ , OR=3.9) at a median age of 9.5 months. In neonates with large defects with and without preventive fundopexy it was performed in 39% and 15%, respectively ( $p=.091$ ).

**Conclusions:** CDH-patients require a thorough long-term follow-up. Symptoms of GER must be assessed carefully especially in children with large defects as these are prone to require secondary antireflux surgery in the long-term. Preventive fundopexy had no benefit neither for patients with small nor with large defects.

## Outcome of antenatally diagnosed congenital diaphragmatic hernia

**Subhasis Roy Choudhury** (Pediatric surgery, Lady Hardinge Medical College, New Delhi, India), **Abhey Joglekar** (Pediatric surgery, Lady Hardinge Medical College, New Delhi, India), **Charu Yadav** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Manisha Kumar** (Obstetrics and Gynecology, Lady Hardinge Medical College, New Delhi, India)

**Aim:** To determine the outcome of antenatally diagnosed congenital diaphragmatic hernia (CDH) from a tertiary care children's hospital in India.

**Methods:** In this prospective observational study, all antenatally detected CDH over a period of three years were registered in the fetal clinic. Timing of antenatal diagnosis, maternal history and details of the malformation were recorded. Mothers were followed till termination or delivery and live born till death or discharge. Primary outcome was post-natal survival. Secondary outcomes were probable factors affecting survival.

**Results:** Forty-one fetuses with antenatally detected CDH were included; 30 were live born and 11 still-born. No medical termination was done. Mean gestational age at diagnosis was 23 weeks. Diagnostic accuracy of antenatal ultrasonography was 40/41 (97.5%). Lung-to-Head ratio (LHR) was  $<1$  in  $n=20$ , survived-2;  $LHR > 1$  in  $n=10$ , survived-8 and LHR not recorded in  $n=11$ , survived-4. Overall survival was 14/41 (34.1%). Survival in live born was 14/30 (46.6%). Survival in operated cases was 14/19 (73.6%). Out of live born, survival in patients with polyhydramnios was 0% ( $n=3$ ; survived-0), associated anomalies was 33.3% ( $n=3$ ; survived-1) and liver herniation was 22.2% ( $n=9$ ; survived-2).

**Conclusions:** Antenatal ultrasound had a high accuracy rate in detecting CDH although late. The low rate of overall survival (34.1%) of antenatally diagnosed CDH was attributed to low LHR indicating poor lung reserve and lack of facility for fetal intervention. Postnatal risk factors affecting survival were maternal polyhydramnios, liver herniation and associated malformations. Survival rate improved in live born (46.6%) and was encouraging in those underwent surgery (73.6%) indicating better lung development. This information will be invaluable for future counseling and prognostication of antenatally diagnosed CDH.

## ORAL PRESENTATION SESSION III

### Urology & Genital/DSD 2

#### Outcome of redo orchidopexy following failed laparoscopic orchidopexy

**Mohamed Mostafa** (Paediatric Surgery, Bristol Royal hospital for children, Bristol, UK), **Mohamed Shalaby** (Paediatric Surgery, Bristol Royal hospital for children, Bristol, UK), **Mark Woodward** (Paediatric Surgery, Bristol Royal hospital for children, Bristol, UK)

**Aim:** A laparoscopic approach is adopted by surgeons for intra-abdominal undescended testes. Both single-stage vessel sparing and two-stage Fowler-Stephens orchidopexies may be performed according to the location of the intra-abdominal testes and the length of the vessels. Testicular reascent is a recognised complication following laparoscopic orchidopexy, but there are no data on the outcome of redo surgery in this situation

**Methods:** Data for patients who had undergone redo orchidopexy between 2005 and 2019 following an initial laparoscopic orchidopexy was retrospectively reviewed from our prospectively maintained database

**Results:** 22 patients were identified of whom 4 had bilateral UDT and reascent on one side only and 18 unilateral UDT. **The mean age was 3.5 years (range 8 months- 6 yrs) and the mean age at redo orchidopexy was 4 years (range 1.5–7 yrs).**

The majority of patients had undergone previous Lap-VS (15/22 cases). In all cases, the testicles were noted to be high in the inguinal region/superficial inguinal pouch after laparoscopic surgery

Surgery was undertaken through a groin incision centred over the external ring. At the time of redo surgery all testicles were noted to be small by comparison to the contralateral testicle: 90% were 50-75% of the size and 10% were less than 25% of the size

After redo surgery, all 22 testicles were in a good tension-free scrotal position. There were no intra-operative complications, and no patient required orchidectomy for a failure to gain adequate cord length. There was no obvious change in testicular size following redo surgery

**Conclusions:** A scrotal testes was achieved after redo surgery in all cases. Complete testicular atrophy did not occur, even when two-stage surgery involving vessel division had previously been performed. The risk of partial atrophy could not be accurately determined as these testicles were already small at the time of surgery. Redo orchidopexy is an effective treatment following failed laparoscopic orchidopexy

## Clinical characteristics and treatment of undescended testis in cerebral palsy

**Hasan Deliağa** (Pediatric Urology, University of Health Sciences Erzurum City Hospital, Erzurum, Turkey), **Halil Tosun** (Pediatric Urology, University of Health Sciences Van City Hospital, Van, Turkey), **Bilge Karabulut** (Pediatric Urology, University of Health Sciences Ankara City Hospital, Ankara, Turkey), **H. Tugrul Tiryaki** (Pediatric Urology, University of Health Sciences Ankara City Hospital, Ankara, Turkey)

**Introduction:** Undescended testis in cerebral palsy (CP) patients has a remarkably high incidence than normal population. Its etiology is not clear, clinical characteristics are specific, surgical necessity is disputable and complications are more frequent.

**Patients and Methods:** There were 507 male CP patients evaluated for undescended testis. The necessity of surgical intervention and its type, time of surgery are discussed and complications are evaluated. Final assessment is established for proper treatment and follow up.

**Results:** 111 cases were detected with an incidence of 21,9%. 63% of the cases were bilateral while 23,5% were left sided and 13,5 were right sided. Mean age of the patients were 6,71 and orchiopexy were performed via inguinal approach after the diagnosis was established. There were two recurrences whom were re-operated successfully. Orchiectomy due to inguinal testicular torsion were performed in two cases.

**Conclusion:** The treatment of undescended testis in CP patients is a challenging entity. Regardless of the cause and type of CP, orchiopexy should be performed in these patients as soon as the diagnosis is made to preserve testicular function, reduce the possibility of testicular malignancy and prevent complications such as torsion. Access to the elements of good quality health care is vital for the well-being and development of children with disabilities to even determine whether they survive beyond childhood and into adulthood. It must be also remembered that due to advanced health care, the life expectancy is elongated in these patients which would be a factor for complications to arise.

## Time of the year, temperature, hours – do they matter in testicular torsion?

**Aneta Piotrowska-Gall** (Collegium Medicum, Jan Kochanowski University of Kielce; Department of Pediatric Surgery, Kielce, Poland), **Ilona Piotrowska** (Regional Hospital in Kielce, Kielce, Poland), **Łukasz Władyszewski** (Collegium Medicum, Jan Kochanowski University of Kielce; Department of Pediatric Surgery, Kielce, Poland), **Joanna Wróbel** (Collegium Medicum, Jan Kochanowski University of Kielce, Kielce, Poland), **Przemysław Karol Wolak** (Collegium Medicum, Jan Kochanowski University of Kielce; Department of Pediatric Surgery, Kielce, Poland)

**Aim:** Our study aims to evaluate the relations between time measurements, the incidence, and the salvage rate of testicles after testicular torsion (TT).

**Methods:** We conducted a retrospective study in our clinic on patients admitted with TT between 01.2014 and 03.2022. There were 193 boys treated for TT, with a median age of 14 years old. Testicular necrosis appeared in 62 boys.

**Results:** We observed a significantly higher incidence of TT during the first year quarters (n=62, p<0.05). However, there was no significant difference in testicular amputations. The highest TT rate occurred during January and December (n=25 and n=21), while the lowest incidence was in October (n=8). Almost half of the patients (n=94) were admitted to the hospital while the outside temperatures were below 5 degrees Celsius. Unfortunately, that did not correlate with higher testicular salvage (30% rate of amputations). There was no difference observed depending on the day of the week. The majority of patients (n=137) arrived at the hospital between 8 am and 6 pm. Out of all 31 boys admitted to the hospital between midnight and 8 am had their testicles salvaged.

**Conclusions:** There is a measurable correlation between colder weather trends and TT. Boys admitted after midnight and before 8 am have high chances of testicular salvage. Those findings might sensitize guardians and first medical responders to provide immediate proper treatment.

## New Parameter predicting failure of pelviureteric junction obstruction treatment

**Fatma Thamri** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Yosra Kerkeni** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Senda Houdi** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Arije Zouaoui** (Department of pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Riadh Jouini** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia)

**Aim:** Recurrent ureteropelvic junction obstruction after pyeloplasty is a serious complication for which treatment remains challenging. To prevent it, several authors have attempted to determine predictive factors of failure.

We present a new ultrasound parameter predicting recurrence, never before described in the literature.

**Methods:** A retrospective, descriptive and analytic study of all patients operated on for hydronephrosis during a 16-year period (January 2003- 31 December 2018) was conducted. For patients with recurrent pelviureteric junction obstruction, we analyzed ultrasound predictors of pyeloplasty failure.

We also reviewed the literature on this subject.

The data were analyzed using IBM SPSS 20.0 and the statistical significance was set at 0.05.

**Results:** Seventy-three children (78 kidney units) were operated for pelviureteric junction obstruction, among whom, eight (12,5%) had recurrence. The sex-ratio was 3 and the mean age at surgery was 4.7 years.

Among Ultrasound parameters, only renal hypertrophy (renal axis of 11.17 cm versus 7.97 cm,  $p=0.001$ ) was significantly related to recurrence. Pyelic dilation (34mm versus 34.45mm,  $p=0.7$ ), renal parenchyma thickness (4.5mm versus 5.8 mm,  $p=0.23$ ), cortico-medullary differentiation ( $p=0.39$ ) and presence of a crossing vessel ( $p= 0.38$ ) did not have an impact on pyeloplasty outcome.

**Conclusion:** The literature suggests that the only predictor of surgical treatment failure after pyeloplasty in preoperative ultrasound is the pelvis/cortex ratio. Our study has revealed a risk factor never described in the literature that is renal hypertrophy in preoperative ultrasound.

## Clinical importance of grade-I vesicoureteral reflux

**Hasan Deliağa** (Pediatric Urology, University of Health Sciences Erzurum City Hospital, Erzurum, Turkey), **Halil Tosun** (Pediatric Urology, University of Health Sciences Van City Hospital, Van, Turkey), **Bilge Karabulut** (Pediatric Urology, University of Health Sciences Ankara City Hospital, Ankara, Turkey), **H. Tugrul Tiryaki** (Pediatric Urology, University of Health Sciences Ankara City Hospital, Ankara, Turkey)

**Introduction:** Among well designed trials for vesicoureteral reflux (VUR), grade-I is ignored. We evaluated the clinical presentation, coexisting diseases, urinary tract infection (UTI) and recurrence (r-UTI), scar formation and treatment options are discussed.

**Patients and Methods:** 982 patients are treated due to VUR. 130 patients with unilateral or bilateral grade-I VUR are included in the study with an incidence of 13,2%. Grade-I VUR with contralateral higher grade VUR were excluded.

**Results:** The mean age was 6,81 with 42 male and 88 female patients. Twenty-two patients were bilateral, 64 were left and 44 were right sided. Main complaint was r-UTI in 61 patients followed by UTI and incontinence. Coexisting pathologies were voiding dysfunction in 35 patients, renal pathologies in 16, urinary tract stone in 8, CP in 5 and FMF in 4. Scar formation due to DMSA was detected in 26 kidneys. Underlying pathologies were treated as required. Patients presented with r-UTI were first treated by prophylactic antibiotics and the choice was switched when UTI recurred under prophylaxis. Subureteric injection was performed in 15 patients in whom r-UTI couldn't be eradicated and ureteral reimplantation was performed to a duplex system. Other patients are on observational follow-up.

**Conclusion:** Among VUR patients grade-I is the most frequent one associated with coexisting pathologies. Although repositories don't recommend prophylactic antibiotic utilization, it does cause r-UTI and scar formation so we suggest prophylaxis in case of r-UTI. When UTI could not be prohibited endoscopic treatment should be performed. Underlying pathologies should also be treated as required.

## Cystoscopic grading of refluxing ureteric orifice – Is it required before endoscopic management?

**Santosh Karmarkar** (Pediatric Surgery, Lilavati Hospital & Research Centre, Mumbai, India), **Vinod Raj** (Pediatric Surgery, Mahatma Gandhi Memorial Medical College and Superspeciality Hospital, Indore, India), **Vinod Raj** (Lilavati Hospital & Research Centre, Panjim, India)

**Introduction:** Vesicoureteric reflux is the most common abnormality encountered in paediatric urological practice. The management of VUR has always been dictated by grade of reflux and higher the grade of reflux lesser is the inclination towards endoscopic management. The results published from world-wide have shown that large number of high-grade refluxes are amenable to endoscopic management while the results with all lower grades of reflux is not uniformly successful. So, there are more factors at play rather than just grade of reflux which contributes to the resolution of reflux by endoscopic management. With this in mind, we formulated two hypotheses.

1. The radiological grade of VUR does not always correlate to the cystoscopic configuration of the orifice.
2. The configuration of the orifice is a better predictor of success than grade of reflux in endoscopic management of VUR.

**Aim:** This is a pilot study to confirm our hypotheses.

**Materials and methods:** This is a retrospective observational study. All the cases with primary VUR with breakthrough UTI on antibiotic prophylaxis were subjected to endoscopic management. All these cases were treated by single surgeon at the same institute. The data regarding the age, gender, pre-operative MCU, intraoperative cystoscopic video, post-operative MCU were analysed.

**Observations:** Total 48 RRU were included in this study which ranged between grade 2 to grade 4. Among these, 40 were treated successfully by endoscopic injection of Dextronomer hyaluronic acid copolymer. Among the 48 orifices, 33 were termed as suitable and 15 as unsuitable configuration. The success of endoscopic management was statistically more significant when compared with configuration of orifice rather than grade of reflux.

**Conclusion:** This pilot study proves both our hypotheses beyond doubt. This directs future research with larger numbers, standardization of definitions for categorizing the ureteric orifice configuration.

Outcome Vs. Cystoscopic Configuration of ureteric orifice			
Outcome	Suitable	Unsuitable	Total
Resolved	31	9	40
Persistent	2	6	8
Total	33	15	48

Chi-Square Tests – Outcome Vs. Cystoscopic configuration of orifice					
	Value	df	Asymp. Sig	Exact Sig (2-sided)	Exact Sig (1-sided)
Pearson Chi-Square	8.553	1	0.003		
Continuity correlation	6.284	1	0.12		
Likelihood ratio	7.974	1	0.005		
Fisher`s Exact test				0.008	0.008
Valid cases	48				

Outcome Vs. Radiological grade of reflux				
Outcome	Grade 2	Grade 3	Grade 4	Total
Resolved	8	16	16	40
Persistent	0	3	5	8
Total	8	19	21	48

Chi-Square Tests – Outcome Vs. Radiological grade of reflux			
	Value	df	Asymp. Sig
Pearson Chi-Square	2.382	2	0.304
Continuity correlation	3.627	2	0.163
Likelihood ratio	2.221	1	0.138
Valid cases	48		

## Predictors of vesicoureteral reflux endoscopic correction success

**Sergei Zorkin** (Pediatric urology, National Medical Research Center for Children's Health, Moscow, Russian Federation), **Dmitry Shakhnovskiy** (Pediatric urology, National Medical Research Center for Children's Health, Moscow, Russian Federation), **Alexandra Gurskaya** (Neonatal surgery, National Medical Research Center for Children's Health, Moscow, Russian Federation), **Rimir Bayazitov** (Neonatal surgery, National Medical Research Center for Children's Health, Moscow, Russian Federation)

**Aim:** Vesicoureteral reflux (VUR) endoscopic correction is the first line procedure for all grade reflux due to its advantages. To date lots of possible success predictive factors were analyzed. The aim of this study was to identify and assess predictors of success for this treatment option in children.

**Methods:** From 2018 to 2021 a total of 70 children (110 renal refluxing units) with a median age of 15 months were treated by endoscopic correction. As possible success predictors were evaluated reflux grade, ureteral diameter ratio (UDR), ureteral dilatation and onset of reflux at cystourethrography. UDR was obtained by dividing of the largest ureteral diameter within the pelvis by the distance between L1 and L3 vertebral bodies. Positive outcome we considered to be elimination of reflux after a single injection.

**Main results:** ROC analysis of treatment success predictors showed reflux grade, UDR and onset of reflux to be statistically significant for endoscopic correction outcome (AUC 0,902; 0,980 and 0,921,  $p < 0.001$  respectively). For increasing of predictive power we developed a prognostic model based on composition of three statistically significant predictors. It had 89,7% sensitivity and 78,8% specificity. AUC was 0,983 (CI: 0,966 – 1,000),  $p < 0,001$ .

**Conclusions:** Results of this study proved reflux grade, UDR and onset of reflux to be predictive for positive endoscopic treatment outcome. We also compiled a sensitive predictive model for treatment success. Further studies are needed to establish more success predictors and incorporate them in predictive model.

## Endoscopic balloon dilatation for treatment of primary obstructive megaureter in children: predictors of success

**Sergei Zorkin** (Pediatric urology, National Medical Research Center for Children's Health, Moscow, Russian Federation), **Dmitry Shakhnovskiy** (Pediatric urology, National Medical Research Center for Children's Health, Moscow, Russian Federation), **Alexandra Galuzinskaya** (Pediatric urology, National Medical Research Center for Children's Health, Moscow, Russian Federation), **Nadezhda Komarova** (Nuclear medicine, National Medical Research Center for Children's Health, Moscow, Russian Federation)

**Aim:** Currently most of primary obstructive megaureter cases are treated conservatively. Endoscopic high-pressure balloon dilatation (EBD) has been shown to be an effective alternative for ureteral reimplantation. The aim of this study was to identify and assess predictors of success for this treatment option in children.

**Methods:** From 2018 to 2021 a total of 47 children with a median age of 12 months were treated by EBD. Results were evaluated using ultrasonography (US) and MAG-3 renogram at 6 and 12 months following the procedure. EBD was performed using semicompliant balloon catheters, followed by stent placement. Positive outcome we considered a decrease of pelvic anteroposterior and distal ureteral diameters and an improvement of drainage according to renogram.

**Results:** US pelvic and ureteral diameters were significantly decreased after EBD (delta, -46.6%,  $p < 0.0001$  and -54.7%,  $p < 0.0001$  respectively). Washout halftime also showed a decrease (delta, -70.1%,  $p < 0.0001$ ). In this patient cohort EBD had a 85.1% success rate. EBD was unsuccessful in 7 cases (14.9%). Secondary vesicoureteral reflux was found in 8 cases (17%). We identified three features of stenotic part of ureter being predictors of treatment outcome. Among them length of stenotic tract under 7 mm. was the most predictive for good outcome ( $p < 0.0001$ ). Area of stenosis lower than 96.8% also predicts good outcome with lower predictive value ( $p < 0.0025$ ). We found stenosis diameter under 1.1 mm. to have the least predictive value of good treatment outcome ( $p < 0.0059$ ).

**Conclusions:** Results of this study confirm that EBD proved its effectiveness for vast majority of primary obstructive megaureter cases with relatively minimal complications. We also identified predictors of success for EBD, with length of stenotic tract being the most important of them. Further studies are needed to establish long term results.

## Pelviureteric junction obstruction: Predictive factors of surgical treatment failure

**Fatma Thamri** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Yosra Kerkeni** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Senda Houdi** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Arije Zouaoui** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia), **Riadh Jouini** (Department of Pediatric Surgery "A", Children's Hospital of Tunisia, Tunis, Tunisia)

**Aim:** Pelvi-ureteric junction (PUJ) obstruction is a common cause of hydronephrosis. Although surgical management is codified, the failure rate remains significant and depends on several factors that are still poorly studied.

The aims of our study were to determine predictors of surgical treatment failure and to establish a treatment regimen to preserve the functional prognosis of the operated kidneys.

**Methods:** A retrospective, descriptive and analytic study of all patients operated on for hydronephrosis during the period from 01 January 2003 to 31 December 2018, was carried. For patients who had recurrence, factors that may be related to this failure were analyzed.

The data were analyzed using SPSS 20.0 software and the p meaning threshold was set at 0.05.

**Results:** The study involved 73 patients (78 renal units). The sex ratio was 3. The average age at the time of surgery was 18 months for antenatal diagnosis (52.2%) 4.6 years in the case of a post-natal diagnosis. Sixty-four patients (87.7%) have had conservative treatment, in whom, 8 patients (12.5%) have had a therapeutic failure.

Predictors of surgical treatment failure were renal hypertrophy ( $p=0.001$ ), low thickness of renal parenchyma ( $p<0,001$ ), lack of resection or pyelic resection  $< 2$  cm ( $p=0,045$ ), the occurrence of early ( $p=0.01$ ) or late post-operative complications ( $p=0.006$ ) and the persistence of pyelic dilation  $> 20$  mm at renal ultrasound at 6 months post-operative.

**Conclusion:** There is scant literature on risk factors of recurrent ureteropelvic junction obstruction. The parameters described in our study may help surgeons take steps to avoid the progression to therapeutic failure.

## Endoplasmic reticulum stress in ipsilateral and contralateral kidneys in a rat model of ureteral obstruction

**Mustafa Bilen** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Esma Kırımlioğlu** (Histology and Embryology, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Alexandra Cernomor-cenco** (Histology and Embryology, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Selin Ural** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Gungor Karaguzel** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey)

**Aim:** The role endoplasmic reticulum stress (ERS) in ureteral obstruction-related kidney damage is unknown. Furthermore, there is no study comparing the effects of partial ureteral obstruction (PUO) and complete ureteral obstruction (CUO) on ERS in the same experimental study. We aimed to evaluate the ERS-related kidney damage in rats that unilaterally underwent either PUO or CUO.

**Methods:** Twenty-four Wistar albino rats were randomly divided into four groups as control (C), sham (S), PUO and CUO. Two weeks after sham operation or ureteral obstruction, all rats were performed bilateral nephrectomy. To determine ERS-related kidney injury, the specimens were examined using immunohistochemical staining (GRP78, CHOP, and cleaved caspase-3) and real-time polymerase chain reaction (RT-PCR; GRP78 and CHOP mRNA expressions).

**Results:** Immunohistochemical examinations showed significantly increased expression of GRP78 in both the medullas and the cortices of ipsilateral kidneys in both PUO and CUO groups ( $p < 0.0001$ ,  $p < 0.0002$  respectively). In both groups, CHOP expressions increased significantly in ipsilateral kidney cortices compared to contralateral kidneys ( $p < 0.05$ ), and to ipsilateral kidney cortices in C and S groups. There was no significant difference in the medullas in any group. Expression of cleaved caspase-3 remained relatively stable in the cortices of the PUO group while it significantly increased in both kidneys of CUO group ( $p < 0.005$ ). RT-PCR examinations showed that GRP78 mRNA expressions increased significantly only in ipsilateral kidneys of PUO group ( $p < 0.003$ ). CHOP mRNA expressions of ipsilateral and contralateral kidneys showed no significant difference between PUO and CUO groups.

**Conclusion:** Our data showed that ERS played an important and complex role in the pathogenesis of renal parenchymal damage seen after unilateral PUO and CUO. Herein, both medullas and cortices of ipsilateral and contralateral kidneys have been affected through either GRP78, a protein showing cell adaptive response, or CHOP and caspase-3 as proteins indicating apoptotic process.

## Urolithiasis in children in a sub-Saharan African country, a real burden

***Tapsoba Wendlamita Toussaint Toussaint*** (Pediatric surgery, Centre Hospitalier Univeritaire Pédiatrique Charles de Gaulle de Ouagadougou, Ouagadougou, Burkina Faso), ***Neya Belibi Belibi*** (pediatric surgery, Centre Hospitalier Universitaire Pédiatrique Charles de Gaulle (CHUP-CDG), Ouagadougou, Burkina Faso), ***Ouédraogo Isso Isso*** (pediatric surgery, Centre Hospitalier Universitaire Pédiatrique Charles de Gaulle (CHUP-CDG), Ouagadougou, Burkina Faso), ***Ouédraogo Somkièta Modeste Francis Francis*** (pediatric surgery, Centre Hospitalier Universitaire Pédiatrique Charles de Gaulle (CHUP-CDG), Ouagadougou, Burkina Faso), ***Wandaogo Albert Albert*** (pediatric surgery, Centre Hospitalier Universitaire Pédiatrique Charles de Gaulle (CHUP-CDG), Ouagadougou, Burkina Faso)

**Aim:** This study aims to assess the extent of urolithiasis in children in a country in sub-Saharan Africa and identify potential etiological factors.

**Method:** This was a descriptive and analytical study with prospective collection which concerned all children under the age of 15 treated for urolithiasis at the pediatric hospital of Ouagadougou between January 1, 2019 and December 31, 2020.

**Results:** We collected 191 patients admitted for urolithiasis over the 2-year period, i.e. a hospital incidence of 95.5 cases/year or 2 cases per week. The average age was 5.5 years +/-3.3 years [2 years – 15 years]. The sex ratio was 6.3. The main area of origin was the central region with 84 cases, or 44%. Fifty-three patients (27.7%) consumed borehole water and 8 (4.2%) well water. Stones were located in the lower urinary tract in 134 cases (70.2%). Twenty-three patients (12%) had renal failure. No crystallographic analysis could be performed. The treatment was an open extraction surgery in 183 cases (95.8%).

**Conclusion:** Urolithiasis is a real public health problem in our context. One of the main etiological factors is the climate, more precisely the heat. Etiological studies must be carried out in the areas of origin most at risk to better understand this pathology and to plead an improvement of the technical platform.

## ORAL PRESENTATION SESSION IV

### Thoracic surgery

#### Endoscopic treatment of vascular rings in children

**Ventsislav Sheytanov** (Sana Herzchirurgie Stuttgart, Stuttgart, Germany), **Ioannis Tzanavaros** (University of Nicosia, Nicosia, Cyprus), **A Narr** (Sana Herzchirurgie Stuttgart, Stuttgart, Germany), **Frank Uhlemann** (Pädiatrie (Intensivmedizin), Klinikum Stuttgart, Stuttgart, Germany), **Steffan Loff** (Paediatric Surgery, Klinikum Stuttgart, Stuttgart, Germany), **Joerg Seeburger** (Sana Herzchirurgie Stuttgart, Stuttgart, Germany), **Martin Sidler** (Paediatric Surgery, Klinikum Stuttgart, Stuttgart, Germany)

**Aim:** While left postero-lateral thoracotomy is the standard approach for correction of vascular rings (VR), we evaluated feasibility, efficacy and safety of endoscopic treatment of symptomatic vascular rings in a preliminary series of patients.

**Methods:** We collected pre- intra- and postoperative details of children undergoing endoscopic treatment for VR at our institution from 3/2021 to 3/2022. For the procedure, we placed them in a right lateral decubitus position, inserted two 5 mm and one 3 mm trocar, and used a 5 mm 30-degree endoscope with CO<sub>2</sub>-insufflation at 4-6 mmHg. We visualized the descending aorta, the aortic isthmus, the left subclavian artery (LSA), the aortic arch (right/left or both), and the left ligament. We lifted the ligament with a vessel loop, then ligated it with hemoclips and/or suture ligature before transection. In the patients with a double aortic arch (right dominant), the left arch was suture-ligated between the LSA and descending aorta and then transected. We endoscopically confirmed release of extrinsic compression. We routinely inserted a chest drain. In the one teenage patient, we also performed balloon dilatation of the trachea.

**Results:** Two infants of 6 or 9 months (Figure 1 and 2), and two boys of 4 or 15 years, respectively, were operated to release a VR causing symptomatic tracheal or esophageal compression. The leading symptoms were stridor, dyspnea, recurrent pneumonia or food-bolus obstruction, respectively. There were no intraoperative complications, median operative time was 115 Minutes. Patients were extubated on the day of surgery. The median ICU-stay or hospital stay was 3 days or 7 days, respectively. Two patients required conservative management of chylothorax. Patients experienced complete resolution of their symptoms at their last follow-up (median 4 months).

**Conclusion:** Endoscopy appears to be a safe and effective treatment modality for VR, which avoids the well-known downsides of a thoracotomy.

Figure 1

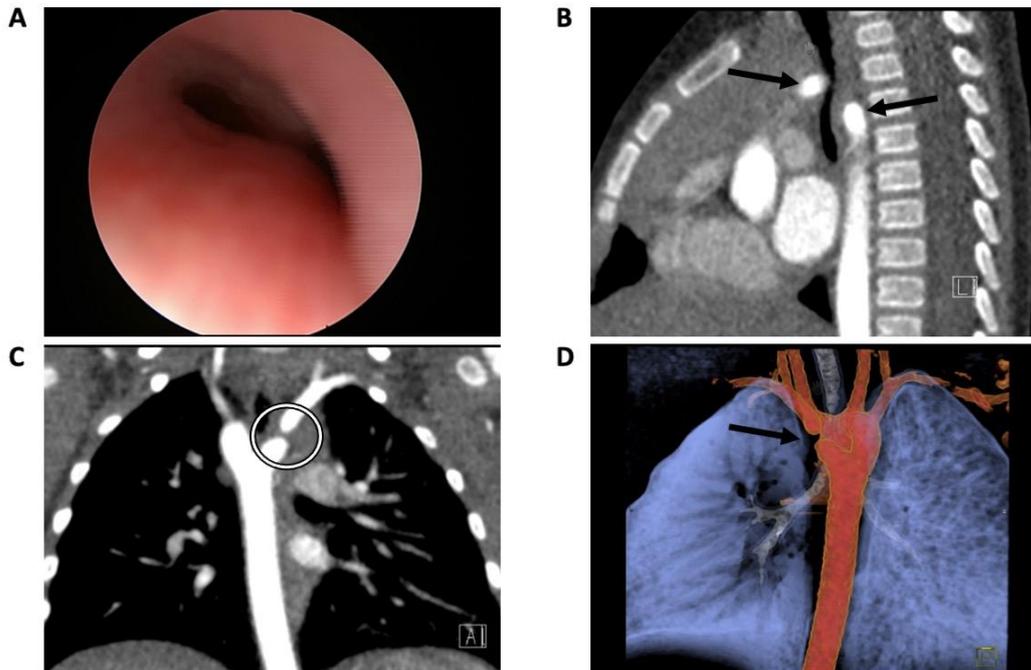


Figure 1. Nine month-old girl with double aortic arch. The left arch is incomplete and compressing the trachea as well as the esophagus. A) Preoperative tracheoscopy shows significant compression of the tracheal lumen. B) Saggital view on contrast-enhanced chest CT reveals external vascular compression of the trachea (arrows). C) Coronal view depicting the incomplete left aortic arch (circle). D) 3D-rendering in PA-view, confirming tracheal compression by the incomplete left aortic arch (arrow).

Figure 2

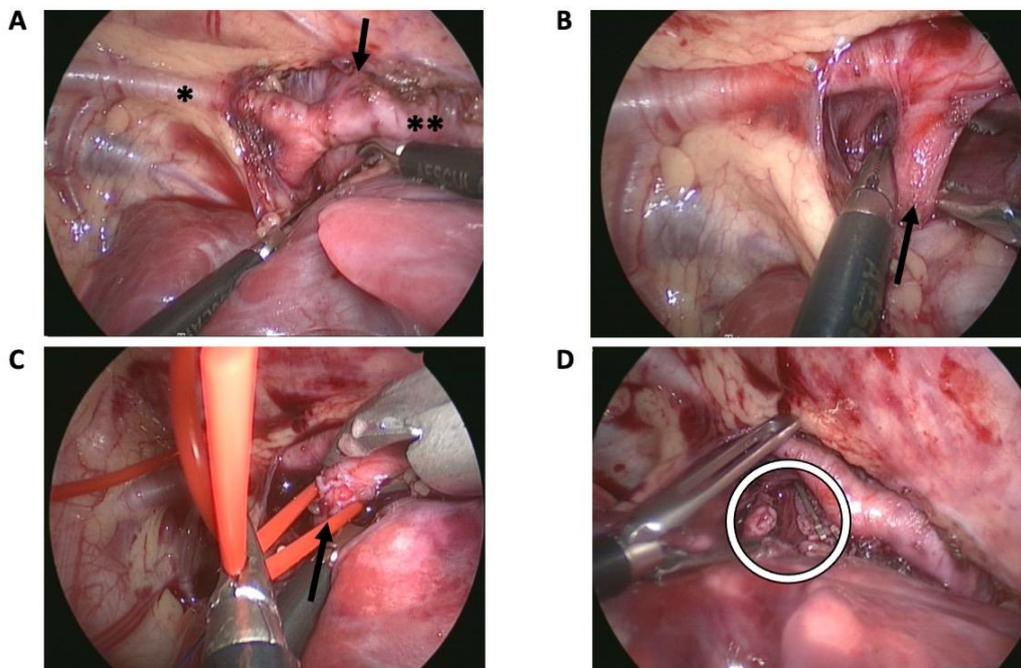


Figure 2. Six month-old boy with tracheal compression due to the right-sided aortic arch and the ligamentum arteriosum encircling the airway. Thoracoscopic view. A) Aortic arch crossing to the left side behind esophagus and trachea (arrow). Left subclavian artery (\*), descending aorta (\*\*). B +C) The ligamentum arteriosum (arrow) is freed circumferentially and encircled with a vessel loop before distal double clipping and proximal suture ligature (latter not shown here). D) Transected ligamentum arteriosum (circle), releasing the tracheal compression.

## Tracheo bronchoplasty parenchyma sparing in pediatric patients: series of cases

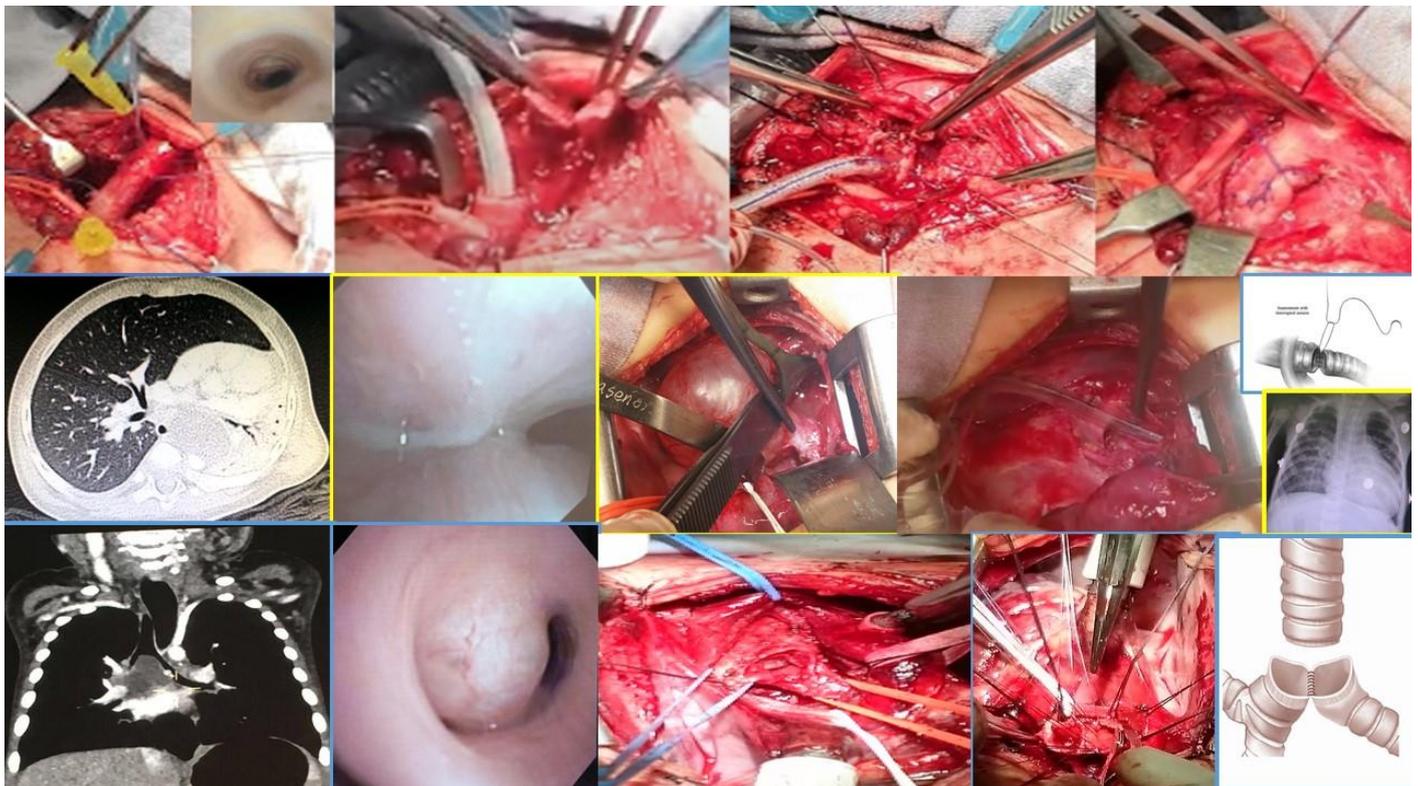
**Rogelio Sancho Hernández** (Pediatric Surgery Department, Instituto Nacional de Pediatría, Mexico City, Mexico)

**Objective:** To determine the usefulness, safety, and prognosis of lung parenchyma-sparing tracheobronchoplasty procedures for the treatment of low-grade neoplasms and other benign strictures in pediatric patients.

**Methods:** Retrospective 6 patients, 3 groups: A. Congenital B. Low-grade neoplasms C. Non-neoplastic: post-traumatic, inflammatory and foreign bodies.

**Results: Group A:** 3 children under 6 months with respiratory distress, in bronchoscopy one with congenital tracheal and left bronchial stenosis of complete rings, tracheobronchoplasty *slide* was performed, in another with a mass effect and bronchoscopic compression on the carina and both bronchi and in another with stenosis and total extrinsic compression of the left bronchus with total atelectasis, the following are performed, respectively: carinal reconstruction with bilateral bronchial anastomosis in the midline and posterior barrel anastomosis to the trachea and in another main left bronchoplasty, confirmed by pathology Cyst Bronchogenic in both. **Group B:** 2 endobronchial tumors during bronchoscopy and tomography, one with total obstruction of the right bronchus that required total resection of the myofibroblastic tumor by bilobectomy with upper bronchus-sparing bronchoplasty, and the other with mucoepidermoid carcinoma with total resection by bilobectomy and wedge bronchoplasty intermediate bronchus to upper bronchus, both without relapses and favorable evolution. **Group C.** School age 10 years, aspiration of more than 6 months, evolution of punctiform foreign body complicated with total inflammatory stenosis of the left bronchus, main bronchoplasty with end-to-end anastomosis is performed, total atelectasis is reversed, post-stenotic bronchial dilation is required, all favorable evolution.

**Conclusion:** Lung-conserving tracheobronchoplasty procedures are the tools of choice for resection of low-grade malignant tumors and other benign bronchial stenosis, with a favorable prognosis, avoiding pneumonectomies in correctly selected patients.



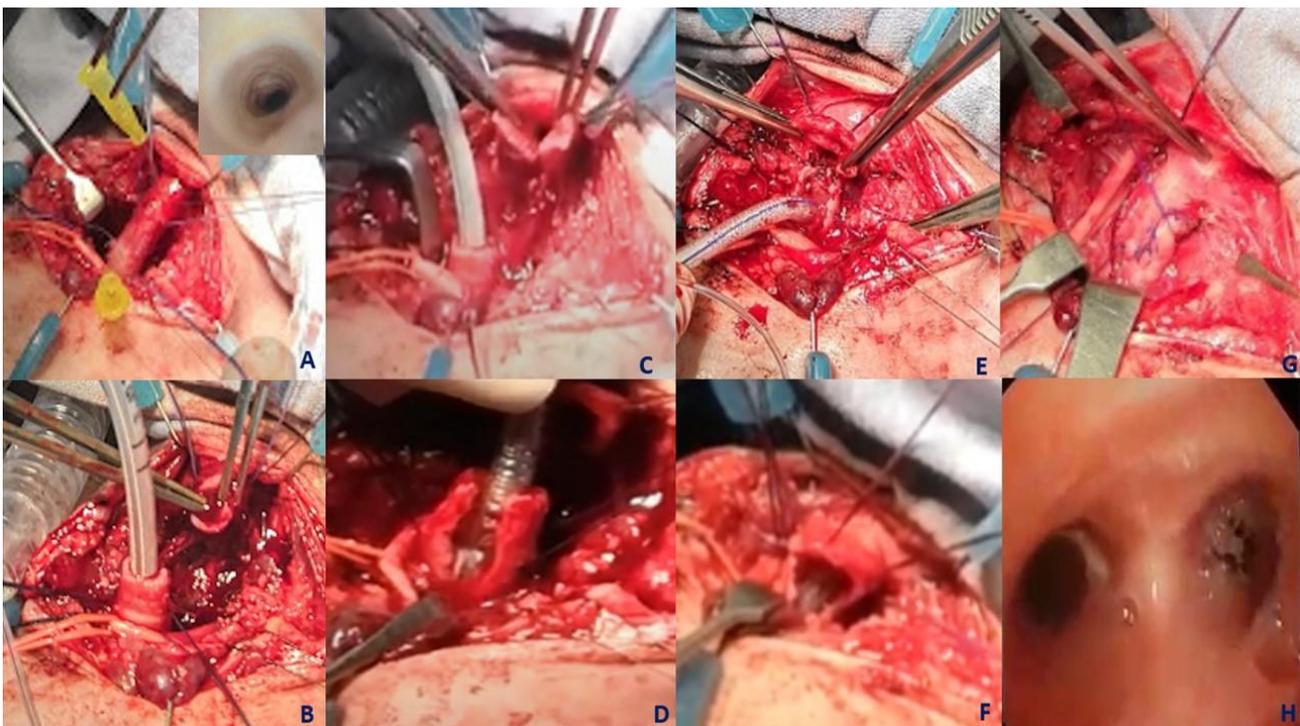
## Slide tracheoplasty without cardiopulmonary bypass for the treatment of long complex congenital tracheal stenosis

**Rogelio Sancho Hernández** (Pediatric Surgery Department, Instituto Nacional de Pediatría, Mexico City, Mexico), **Ruben Ernesto Carlos Corona** (Cardiovascular Pediatric Surgery, Instituto Nacional de Pediatría, Mexico City, Mexico), **Lizbeth Solorio Rodríguez** (Pediatría Integral y Terapia Respiratoria, Metepec, Mexico)

**Objective:** To describe the clinical and endoscopic spectrum and the technique of *Slide* tracheoplasty as the method of choice for the treatment of congenital tracheal stenosis.

**Case description:** Male 3 months old with cyanosis, stridor and respiratory distress at birth, intubation is achieved with a 3.5 mm endotracheal cannula that stops at the neck without achieving distal advancement to the carina. Diagnostic evaluation with echocardiography with atrial septal defect 3 mm, pulmonary hypertension 50 mmHg gradient with bidirectional shunt and VEF 65%, without structural heart disease, in the initial flexible bronchoscopy 2.8 mm: fixed tracheal stenosis in the second tracheal ring, extensive and infundibular rings complete that does not allow equipment to pass, rigid tracheal dilatation is decided and to ensure airway with 3 mm endotracheal tube up to the carina, improvement of hemodynamic conditions, tomography is performed with airway reconstruction that warns of long tracheal stenosis, surgery is performed for slide tracheoplasty at 4 months. **Intervention:** **A.** Median sternotomy to expose the entire trachea, **B.** The trachea is transected at the midpoint of the longitudinal stenosis, **C and D.** Medial and anterior longitudinal cut in the distal tracheal slide that allows ventilation (this modification to the original technique allowed reconstruction without cardiopulmonary bypass), **E, F and G.** The proximal end is prepared as a posterior slide and the anastomosis is completed by sliding both slides, a 3.5 mm cannula is advanced for its age and corroborated with bronchoscopy trans operative the integrity of the slide tracheoplasty. **H.** A successful extubation is performed 7 days after surgery, discharged 40 days post-surgery, respiratory asymptomatic evolves

**Discussion:** With a modification to the original technique, slide tracheoplasty can be performed in patients without complex heart disease and correctly selected without the risk factors and comorbidities of traditional cardiopulmonary bypass.



## Comparison of complications and long term outcomes of percutaneous tracheostomy in children under and over 12 months

**Sumeyye Sozduyar** (Department of Pediatric Surgery, Elazığ City Hospital, Elazığ, Turkey), **Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ufuk Ates** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ozlem Selvi Can** (Department of Anesthesiology and Reanimation, Ankara University School of Medicine, Ankara, Turkey), **Tanil Kendirli** (Department of Pediatric Intensive Care Unit, Ankara University School of Medicine, Ankara, Turkey), **Meltem Bingol-Kologlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** Percutaneous tracheostomy is rarely performed in children, especially in infants. In this study we aimed to compare the children under and over 12 months in terms of complications and long term outcomes of percutaneous tracheostomy by Griggs technique under rigid bronchoscopy.

**Methods:** This study included 110 patients who underwent percutaneous tracheostomy by Griggs technique with rigid bronchoscopy guidance between 2012 and 2020. Demographic data, intubation time before percutaneous tracheostomy, complications and death related to tracheostomy procedure were reviewed. The ages of the patients were grouped as  $\leq 12$  months (Group 1) and  $> 12$  months (Group 2) and intubation time and complications were compared between groups.

**Results:** 110 children were included in the study (Group 1=51, Group 2=59). Mean intubation time before procedure were 64.6 days and 38.6 days in Group 1 and Group 2, respectively ( $p < 0.001$ ). There were not any intraoperative and postoperative early complications. Tracheostomy stricture was observed in 14 (12.7%) children and it was significantly higher in Group 1 comparing to Group 2. There was no difference in terms of granuloma and peristomal dermatitis between groups. Accidental decannulation and tube obstruction which lead tracheostomy-related death did not occur in any child.

**Conclusions:** Percutaneous tracheostomy is a safe and feasible procedure even in small infants. It is essential to make the intervention with the guidance of rigid bronchoscopy to perform a safer procedure. Tracheostomy stricture seems more common in children who were under 12 months. Fatal intraoperative or postoperative complications were not seen.

## Demographic and clinical characteristics of newborn pneumothorax, its effect on respiratory function tests during childhood

**Sıla İspir Karalar** (Pediatric Surgery, Dr. Sami Ulus Maternity Child Health and Disease Training and Research Hospital, University of Health Sciences, Ankara, Turkey), **Derya Erdoğan** (Pediatric Surgery, Dr. Sami Ulus Maternity Child Health and Disease Training and Research Hospital, University of Health Sciences, Ankara, Turkey), **İlknur Birol Bostancı** (Pediatric Immunology and Allergy, Dr. Sami Ulus Maternity Child Health and Disease Training and Research Hospital, University of Health Sciences, Ankara, Turkey), **Ayşegül Zenciroğlu** (Neonatology Unit, Dr. Sami Ulus Maternity Child Health and Disease Training and Research Hospital, University of Health Sciences, Ankara, Turkey)

**Aim:** The aim of our study is to determine the epidemiological features and predisposing factors in newborns with pneumothorax, to investigate the effects of these factors on mortality and morbidity and to reveal whether respiratory functions in these patients cause permanent respiratory pathology in the lungs in the evaluation of advanced ages.

**Methods:** The files of 229 patients who were hospitalized between January 2005 and December 2018, who were consulted with the diagnosis of pneumothorax and underwent tube thoracostomy, were retrospectively reviewed. The demographic characteristics of the patients were studied and mortality and morbidity were compared. Then, spirometry was performed on a group of patients prospectively and their respiratory functions were evaluated. The values obtained were compared with the spirometer values of the people in the control group.

**Results:** As a result of the data of our working group pneumothorax rates were higher in males, term infants and after cesarean delivery. Pneumothorax was unilateral and right sided in most cases. A significant correlation was found between mortality and the presence congenital heart disease, respiratory distress syndrome, vaginal delivery, prematurity, referral to our hospital due to pneumothorax, being under a mechanical ventilator, low birth weight patient ( $p<0.05$ ). Underwater drain time was associated with the presence of comorbid illnesses, lung pathology and the need for bilateral tube thoracostomy ( $p<0.05$ ). Among patients who underwent spirometry, patients with a history of pneumothorax had lower FEV1, FVC, FEV1/FVC, PEF and MEF25-75. However only FEV1/FVC ratio was significantly lower ( $p<0.05$ ).

**Conclusions:** Patients treated for pneumothorax in the neonatal period should also be evaluated in terms of obstructive pulmonary diseases at advanced ages. Those patients should be screened for obstructive lung diseases during childhood by respiratory function tests. It is possible to make early diagnosis and treatment for respiratory illnesses by screening the patients

## Conservative Management for Congenital Chylothorax

**Akshara Sharma** (Aston Medical School, Birmingham, UK), **Ivana Sabolic** (Department of Paediatric Surgery, Birmingham Children's Hospital, Birmingham, UK), **Adam Gittins** (Department of Paediatric Surgery, Birmingham Children's Hospital, Birmingham, UK), **Ian Jones** (Department of Paediatric Surgery, Birmingham Children's Hospital, Birmingham, UK), **Michael Singh** (Department of Paediatric Surgery, Birmingham Children's Hospital, Birmingham, UK), **Giampiero Soccorso** (Department of Paediatric Surgery, Birmingham Children's Hospital, Birmingham, UK)

**Aim:** The management of congenital chylothorax (CC) is initially conservative, with surgical management resulting in significant morbidity. We aim to outline the successful treatment without the requirement for open surgery regardless of CC severity.

**Methods:** This was a retrospective single centre analysis of patients with CC conducted between 2010 and 2021. Diagnosis of CC was achieved by antenatal USS, postnatal chest X-Ray, and pleural fluid characteristics. Only patients with antenatal diagnosed pleural effusion which postnatally became chylous were included, and patients with iatrogenic and post congenital diaphragmatic hernia repair chylothoraces were excluded.

Data are given as number, median (range), and were analysed by Mann-Whitney test ( $P < 0.05$  significant).

**Results:** Fourteen patients were diagnosed with CC (bilateral in 11). Antenatal interventions (thoracocentesis and/or thoraco-amniotic shunting) were performed in 9/13 patients due to hydrops fetalis and/or severe hydrothorax. Postnatally, chest drains were inserted in 8/14 patients of which 5/9 previously had antenatal intervention. Median duration of postnatal chest drainage was 14 days (range 5-108 days). 11/14 received ventilatory support (median 10 days, range 3-39 days). Initially, 9/14 patients received Total Parenteral Nutrition (TPN) (median 30 days, range 4-190 days) and were gradually switched to medium chained triglyceride formula (MCT) feeds (5/9) or breast/formula milk (3/9). Four patients never required TPN. None required surgery. Thirteen patients survived. One neonate died at 25 days from cardiac disease.

Antenatal interventions were not associated with lower number of ventilation days (median 6 vs. 17 days,  $P = 0.780$ ), shorter duration of TPN (median 0 vs. 10.5,  $P = 0.978$ ) or shorter duration of hospital stay (median 26 vs. 36.5 days,  $P = 0.459$ ).

**Conclusions:** Postnatal conservative management comprising of initial management with chest drainage and TPN with gradual introduction of MCT feeds or breast/formula milk is sufficient to allow successful resolution of CC without the requirement for open surgery.

## Thoracoscopic approach for patients with esophageal atresia with birthweight below 2000 g

**Dominika Borselle** (Department of Pediatric Surgery and Urology, Wroclaw Medical University, Poland, Wroclaw, Poland), **Monika Bukowska** (Department of Pediatric Surgery and Urology, Wroclaw Medical University, Poland, Wroclaw, Poland), **Sylwester Gerus** (Department of Pediatric Surgery and Urology, Wroclaw Medical University, Poland, Wroclaw, Poland), **Dariusz Patkowski** (Department of Pediatric Surgery and Urology, Wroclaw Medical University, Poland, Wroclaw, Poland)

**Aim:** The aim of the study is to analyze the thoracoscopic approach for patients with esophageal atresia EA in two groups of patients—one with VLWB and second with birthweight between  $\geq 1500$  and  $< 2000$ g.

**Methods:** The clinical data of each patient eligible for the study were retrospectively reviewed from medical documentation. Patients have been followed during a control visit at an outpatient office and they have fulfilled the relevant information questionnaire.

**Results:** A total number of patients with EA and birthweight lower than 2 kg treated thoracoscopically at the Department of Pediatric Surgery and Urology in Wroclaw was 37. They were divided into two groups—group A (n=14 with birthweight  $< 1500$ g) and group B (n=23 with birthweight  $\geq 1500$ g and  $< 2000$ g). Among analyzed parameters were type of EA, primary/multi-staged repair, complications including early mortality, anastomosis leakage, esophageal stricture, chylothorax, TEF recurrence and GERD with need for surgical treatment. Primary repair was performed in 85,71% from group A and in 78,26% from group B. Multi-staged repair involved either patients with LGEA type A or patients with EA/TEF and instability at procedure. Complication rate for anastomotic leakage treated conservatively was 2/14 (14%) in group A and 3/23 (13%) in group B, for early mortality 3/14 (21%)—group A and 3/23 (13%)—group B not directly related to the performed surgery, for TEF recurrence 0/14—group A and 1/23 (4%)—group B, for GERD—2/14 (14%)—group A and 3/23 (13%)—group B. Esophageal stricture occurred in 3/14 (21%) patients from group A and 9/23 (39%) from group B. Chylothorax affected 1/14 patients—group A and 1/23—group B.

**Conclusion:** Complication rate in both groups was similar. In experienced surgeon's hands even in patients with VLBW the thoracoscopic approach is worthy to be considered

## Primary Esophageal Anastomotic using Mattress Suturing Technique in Cases of Esophageal Atresia with Fistula

**Leecarlo Millano Lumban Gaol** (Department of Pediatric Surgery, Tarakan General Hospital, Jakarta Pusat, Indonesia), **Indira Fadhila** (Department of Pediatric Surgery, Tarakan General Hospital, Jakarta Pusat, Indonesia)

**Aim.** The survival rate of newborns with esophageal atresia is about 90% in developed countries, whereas much lower in developing countries. We report the suturing technique in EA on the mortality outcomes from newborns with EA in Tarakan General Hospital, Jakarta, Indonesia.

**Method.** In this cross-sectional study, we ascertained 25 newborns with esophageal atresia in Tarakan General Hospital from 2016 to 2022. Descriptive and analytical statistics were used to analyse the study.

**Result.** A total of 25 cases of EA were included and all underwent primary esophageal anastomosis. The mean age of patients with esophageal atresia in Tarakan General Hospital was  $18.28 \pm 5.77$  days. The newborns with EA consisted of 14 females (56%) and 11 males (44%). EA with distal tracheoesophageal fistula (TEF) or EA type C was the commonest type with 23 cases (92%) with Waterston B 16 cases (64%). Mattress suture was done for the anastomosis in 11 patients (44%) and the rest was done with simple suture. The incidence of sepsis and leakage was detected in 14 (56%) and 5 (20%) patients, respectively. The bivariate analysis found that sepsis is associated significantly with mortality ( $p < .05$ ), while the incidence of anastomotic leakage was significantly lower in mattress sutures than in simple sutures ( $p < .05$ ). Sepsis incidence was significantly lower in mattress suture (27.3%, 3/11 patients) than simple suture (78.6%, 11/14 patients) (OR: 9.78, 95% CI: 1.55-61.64,  $p < .05$ ). In a multivariate analysis to mortality outcome, no prognostic factors were associated with the mortality of newborns with EA.

**Conclusion.** Mattress suture is significantly associated with lower anastomotic leakage and sepsis incidence. Neonatal mortality with esophageal atresia was high, and sepsis was the leading cause of death at Tarakan General Hospital. Other causes of death include an esophageal anastomosis leak and type of suture.

## Stricturoplasty For Refractory Esophageal Stricture Secondary To Tracheo-Esophageal Fistula Repair: A Novel Surgical Treatment

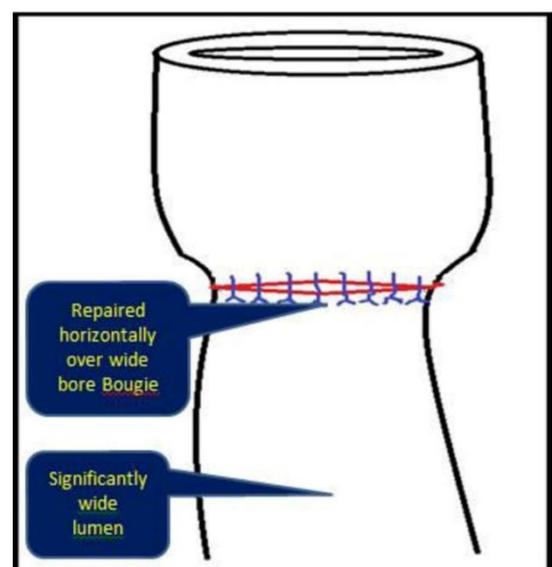
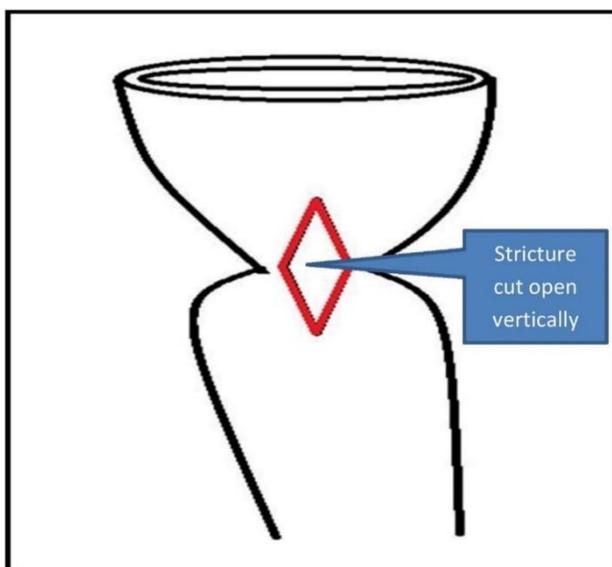
**Advait Prakash** (Pediatric Surgery, Sri Aurobindo medical college and post graduate institute, Indore (Madhya Pradesh), India), **Sangram Singh** (Pediatric Surgery, Sri Aurobindo medical college and post graduate institute, Indore (Madhya Pradesh), India), **Bhavesh Doshi** (Pediatric Surgery, Sri Aurobindo medical college and post graduate institute, Indore (Madhya Pradesh), India), **Vinod Bhandari** (Pediatric Surgery, Sri Aurobindo medical college and post graduate institute, Indore (Madhya Pradesh), India)

**Introduction:** Tracheo-esophageal fistula (TEF) is one of the most challenging neonatal surgical problems. This common surgery for TEF is fistula ligation and esophago-esophageal anastomosis. Anastomotic strictures complicate the postoperative course of nearly one-third of patients with TEF repair. Multiple modalities like esophageal dilatation, steroid injection, topical mitomycin C and stenting have been tried but many of these strictures are refractory to all the modalities. We are presenting stricturoplasty as a novel surgical technique to deal with this complicated problem. Our aim is to find a suitable treatment and assess the feasibility of stricturoplasty in these refractory strictures.

**Material & methods:** Operated patients of trachea esophageal fistula develop stricture at anastomotic site which can be a result of post-operative leak, anastomosis under tension, use of silk sutures and associated gastro esophageal reflux due to esophageal dysmotility. The spectrum of presentation comprised of persistent dysphagia, impacted esophageal foreign body or food particles, repeated chest infections and failure to thrive. After confirming the diagnosis by contrast study of the esophagus, all patients underwent repeated attempts of esophageal dilatation with no improvement in symptoms. Subsequently, right thoracotomy and stricturoplasty was performed at the anastomotic stricture site. All patients were kept on anti-reflux medication after surgery.

**Observation and results:** 52 patients between 8 months to 4 years of age underwent this surgery May 2008 to August 2021. There was no anastomotic dehiscence post operatively. Minor leak was present in 6 patients which was managed conservatively with antibiotics. Significant improvement in symptoms was noted after the procedure with no dysphagia and patients accepting both liquid and solid diet comfortably resulting in good weight gain. None of them required any dilatation post operatively.

**Conclusion:** stricturoplasty is an excellent single step solution to the complex and recurrent anastomotic strictures which are refractory to esophageal dilatation.



## Caustic esophageal stricture treated by instrumental dilatation: A review of 6 years of practice

**Somkieta F Ouedraogo** (Pediatric surgery department of the Pediatric Hospital center and university of Ouagadougou, Ouagadougou, Burkina Faso), **Koundia Thiombiano** (Pediatric surgery department of the Pediatric Hospital center and university of Ouagadougou, Ouagadougou, Burkina Faso), **Aissata Kaboré** (Pediatric department of the Pediatric Hospital center and university of Ouagadougou, Ouagadougou, Burkina Faso), **Toussaint W Tapsoba** (Pediatric surgery department of the Pediatric Hospital center and university of Ouagadougou, Ouagadougou, Burkina Faso), **Joseph J Damba** (Pediatric surgery department of the Pediatric Hospital center and university Charles de Gaulle of Ouagadougou, Ouagadougou, Burkina Faso), **Nadege Doulkom** (Pediatric surgery department of the Pediatric Hospital center and university Charles de Gaulle of Ouagadougou, Ouagadougou, Burkina Faso)

**Background:** Esophageal stricture is one of the most important and redoubtable complications following caustic ingestions in children. Instrumental dilatation is usually considered as the first line of treatment.

**Aims:** to evaluate the outcomes of caustic stenosis treatment when using the Lerut's dilatores

**Methodology:** This is a descriptive retrospective study from May 2014 to April 2020. All children under 15 years of age, hospitalized in the surgical department for caustic esophageal stricture, and who had a gastrostomy and esophageal dilatation with insertion of an endless wire were included.

**Results:** A total of 83 patients were included. The sex ratio was 2.2. The mean age was 4 years. The mean time from caustic ingestion to presentation at hospital was 90 days. Esophageal stricture was mostly caused by caustic soda (n = 41) and potash (n = 15). We performed in total 469 dilatations and had 3 esophageal perforations. After a mean follow-up of 17 months, we had 60.2% good results (n = 50) and 7.2% (n = 6) failures. The mortality rate was 13.2% (n = 11).

**Conclusion:** the using of the dilations by Lerut's dilatores give encouraging results in the treatment of esophageal stricture. These dilators are easy to use and their complications are rare. mortality could be reduced by adequate nutritional support

## MIRPE with anatomically shaped Nuss bar to eliminate bar displacement and reduce overcorrection – 15 years experience

**Ede Biro** (Department of Paediatrics, Division of Paediatric Surgery, University of Pécs, Pécs, Hungary), **Daniel Kardos** (Department of Paediatrics, Division of Paediatric Surgery, University of Pécs, Pécs, Hungary), **Péter Etlinger** (Department of Paediatrics, Division of Paediatric Surgery, University of Szeged, Pécs, Hungary), **Andras Farkas** (Department of Paediatrics, Division of Paediatric Surgery, University of Pécs, Pécs, Hungary)

**Introduction:** Nuss-bar (Fig.1.a) displacement and overcorrection have been reported in 3-10% of patients. Stabilizers decreased displacements prevalence, but both remain possible complications. To reduce these complications authors modified the bar shape (“saddle-shaped” Nuss-bar, Fig.1.b), resulting in a more anatomical sternal position and higher bar stability. A 4-5 mm deep saddle is formed in the middle part of the bar which is positioned behind the sternum.

**Aim:** To compare postoperative results of Nuss technique with “saddle-shape” modification in terms of bar displacement and overcorrection; also, to evaluate the efficacy of the chest wall measurement with calliper.

**Methods:** As first step, the authors determined the normal diameters of the chest in healthy population (Group 0). Patients were grouped according to the bar shape. Group 1, 33pts (29 boys, 88%) with original, Group 2 124pts (108 boys, 87%) with “saddle-shape” bar. Preoperative and postoperative measurements were compared to this standard. For comparison of results calliper was used (Fig.1.c). The calliper-index (CI) was calculated analogue to Haller-index (HI). Overcorrection was determined as 2SD from the mean of Group 0.

**Results:** Group 0 (healthy population): CI was measured to be 1.37 (2SD±0.26, n=127, 6-18 yrs). Group 1: mean age at surgery was 12 (6-17) yrs. The mean of HI (n=24/33) was 3.51 (3-5.3). The originally shaped bar displacement in 2 pts (6%), overcorrection in 6 pts (18%) were observed. Group 2: mean age on surgery was 14 (8-19) yrs. The mean of HI (n=89/124) was 3.84 (2.4-9.6). Preoperative mean of CI (n=86/124) was 1.94 (1.5-2.54). Two weeks postoperatively the mean of CI (n=82/124) was 1.56 (1.32-1.81). Bar displacement and overcorrection were not observed in this group.

**Conclusion:** Saddle-shape Nuss-bar eliminated bar displacement. This modification is effective to prevent overcorrection. The calliper measurement is non-invasive, inexpensive, simple, fast, reliable method to evaluate the results of MIRPE.

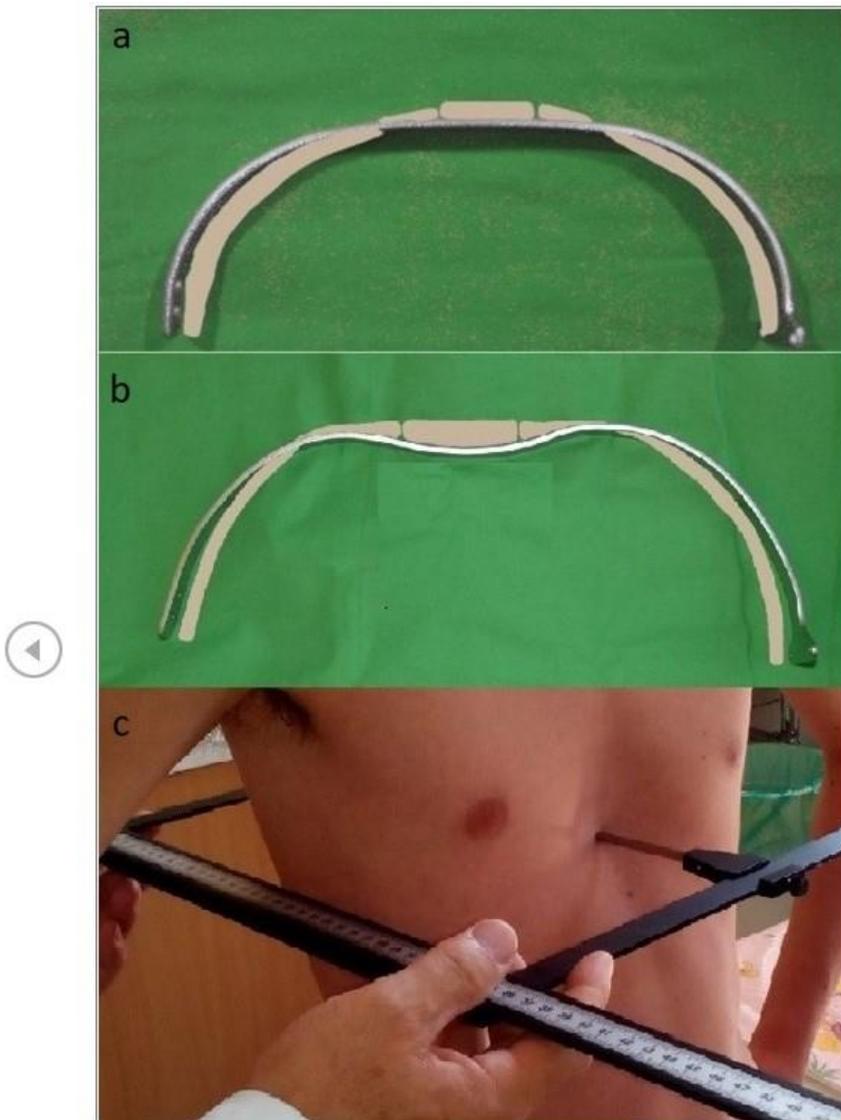


Fig1: Original shaped (a), modified “saddle shaped” (b) Nuss bar; and (c) measuring of the chest AP diameter with calliper.

## Fetal lung masses: clinical spectrum and perinatal treatment in a developing country

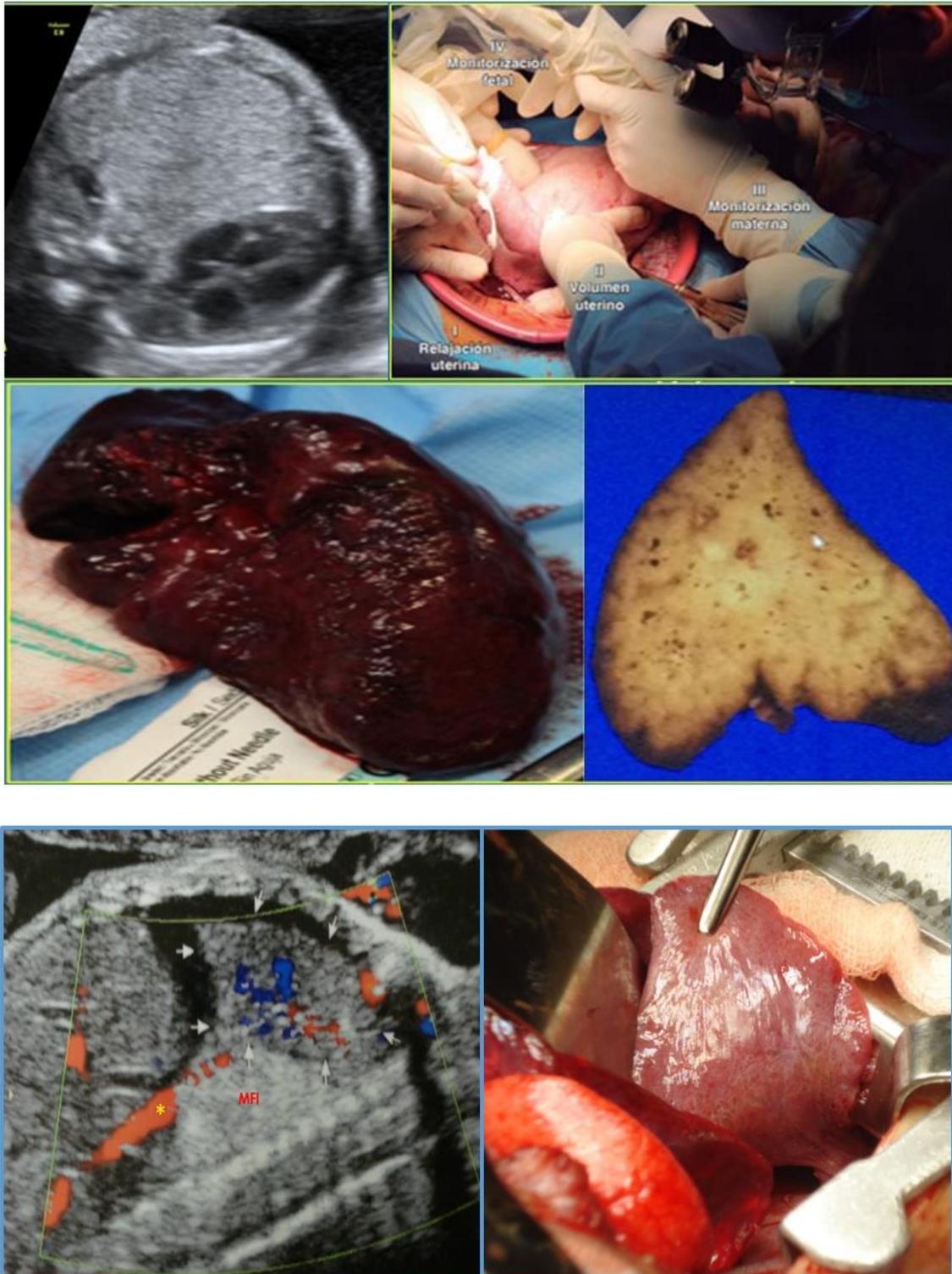
**Rogelio Sancho Hernández** (Pediatric Surgery Department, Instituto Nacional de Pediatría, Mexico City, Mexico), **Anné Azriel Durán Colín** (Instituto Nacional de Perinatología, Mexico City, Mexico), **Lizbeth Solorio Rodríguez** (Pediatría Integral y Terapia Respiratoria, Metepec, Mexico)

**Objective:** To describe the clinical spectrum of fetal lung masses FLM diagnosed by prenatal ultrasonography and the prognosis of perinatal treatment

**Methods:** Retrospective study of 15 fetus with FLM confirmed by pathology, into 3 groups: asymptomatic prenatal/asymptomatic postnatal (AsPre/AsPos), symptomatic prenatal/symptomatic postnatal (SPre/SPos) and prenatal symptomatic/persistent postnatal asymptomatic (SPre/AsPosP).

**Results:** In **SPre/AsPosP**, 4 with solid-cystic LFM without radiological involution and persistence: 3 elective neonatal surgery with extralobar pulmonary sequestration EPS (2 of them with ectopic location) 1 with macrocystic LFM with CVR (cyst volume ratio) <1.6 but without involution suggestive that was resolved by elective thoracoscopic approach of BC; **AsPre/AsPos** 1 with cystic FLM who received maternal steroid with prenatal involution and radiological regression. In **SPre/SPos** 10 LFM, 8 urgent surgery and 2 elective, 1 solid FLM with hydrothorax that required intrauterine thoracocentesis at 28 SDG without involution with CVR <1.6 and symptomatic at birth was performed by EXIT procedure second evacuating thoracocentesis, elective surgery of EPS; 1 with a total solid FLM of the left lung with a CVR 2.7 was obtained at term for an EXIT procedure with successful selective bronchoscopy of the right bronchus and left pneumonectomy, died 2 days due to MAC I and O; 1 macrocystic FLM without involution that required preoperative embolization and subsequent elective lobectomy due to IPS; 4 with CVR >1.6 debuted with pneumothorax due to MAC in their lobectomies, one of them with MAC IV and pulmonary blastoma; 3 fetuses with EPS, 1 with failed intrauterine embolization and another preterm with RDS, both with hemothorax, favorable evolution after their sequestrectomy

**Conclusions:** FLM with the absence of radiological involution could be resected early and electively in the neonatal stage or in infants aged 4-6 months, the EXIT procedure close to birth may represent an option in symptomatic LFM with CVR >1.6



## FLIT: A rare primary benign tumor of the lung which mimics pneumothorax and congenital pulmonary airway malformation

**Recep Kar** (Pediatric Surgery, Ankara City Hospital, Çankaya, Turkey), **Doğuş Güney** (Pediatric Surgery, Yildirim Beyazıt University, Ankara, Turkey), **Ayşe Ertoy** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Irem Akbaş** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Müjdem Nur Azili** (Pediatric Surgery, Yildirim Beyazıt University, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Yildirim Beyazıt University, Ankara, Turkey)

**Aim:** Fetal lung interstitial tumor (FLIT) is an extremely rare disease and benign tumor of the lung. In literature, there are a few studies as case reports. In this case we aimed to present the first FLIT case in our country.

**Case description:** One year old patient was admitted to the hospital with pulmonary symptoms. The patient's chest x-ray showed a massive right lung pneumothorax. After a chest tube insertion, the lung did not expand. Therefore, the patient was referred to our department. She was stable. The patient was evaluated and accepted as a congenital lobar emphysema. The chest tube that was inserted for pneumothorax was removed at the 2nd day of admission due to the fact that it couldn't drain air. On the 7th day of admission to our department, she had flexible bronchoscopy and thoracoscopic surgery and right lung upper lobe cystic lesion excision with stapler. The chest tube was removed on the 3rd post operative day and she was discharged uneventfully after medical treatment ended (figure 1). The pathology reported that the material as a fetal lung interstitial tumor.

**Conclusion:** FLIT is a rare and benign tumor of the lung which can be confused with other congenital pulmonary disease. When FLIT is misdiagnosed as a pneumothorax the air does not resolve with a chest tube. Primary surgical resection is a definitive treatment.

## Congenital sternal cleft deformity – A systematic review

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Ruchira Nandan** (Pediatric Surgery, Banaras Hindu University, Varanasi, India)

**Aim:** The management of Sternal cleft is challenging. We aimed to systematically review the literature to summarise the varied clinical characteristics, management and outcome.

**Method:** A PubMed search was done with the term “sternal cleft” on 26/02/2021. 190 articles were hit by search, and clinical cases were filtered for inclusion. Articles in non-English languages, animal studies and no clinical description were excluded. 152 PUBMED articles were included. Nine non-PUBMED indexed articles were also included from cross-reference.

**Results:** Of the 238 patients included, mean age mentioned in 217 patients was  $6.6 \pm 12.9$  years (1day-68years). One was stillborn. 143 (60.08%) patients had associated anomalies. Sternal cleft type (n=219) was complete; upper; lower; central in 68(31%), 118(53.9%); 30(13.7%); 3(1.4%) patients respectively. 143 (60.08%) patients had associated anomalies. Cardiovascular anomalies were most common (54.5%), followed by skin lesions (26.6%), body wall defects (23.8%), musculoskeletal anomalies (14.7%), craniofacial anomalies (6.3%), chromosomal anomalies (2.8%), pulmonary and airway anomalies (2.8%), renal anomalies (2.1%), gastrointestinal anomalies (2.1%).

Surgery was done in 183(83.6%) patients. Operative details were not mentioned in 9 patients. Autologous tissue, prosthetic and xenograft were used in 63, 35 and 2 cases, respectively. 174 of 183 operated survived, and 37 of 55 not operated survived. Overall mortality was 11.3%.

**Conclusion:** Sternal cleft has a female preponderance. Upper sternal cleft was the most common type. Congenital anomalies were present in 60%. Associated anomalies were associated with significantly higher mortality. Most patients underwent single-stage surgery.

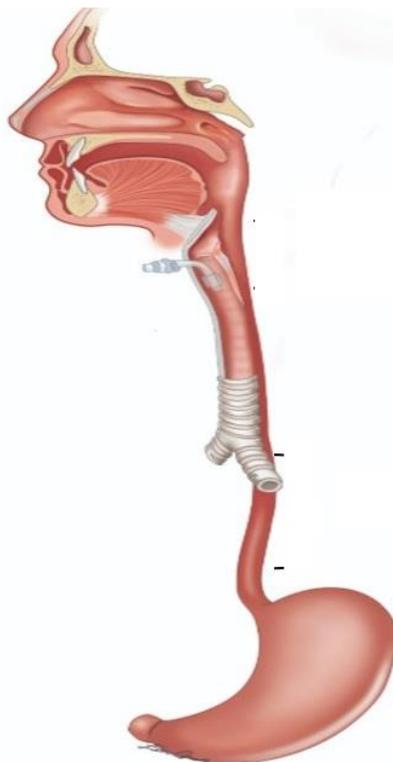
## A terrible electrical accident caused by a shower heater: Management of life-threatening laryngo-tracheal and esophago-gastric burn injury

**Doğuş Güney** (Department of Pediatric Surgery, Yıldırım Beyazıt University, Ankara, Turkey), **Fahri Akkaya** (Department of Pediatric Surgery, Ankara Şehir Hastanesi, Ankara, Turkey), **Müjdem Nur Azılı** (Department of Pediatric Surgery, Yıldırım Beyazıt University, Ankara, Turkey), **Emrah Şenel** (Department of Pediatric Surgery, Yıldırım Beyazıt University, Ankara, Turkey)

**Aim:** Electrical burn of aerodigestive system is a very rare but also a life-threatening injury that requires immediate treatment. Diagnosis is often delayed due to the atypical symptoms and the treatment options may be challenging. Herein, we aimed to share our experience with an electrical burn injury involving the upper gastrointestinal and respiratory systems.

**Case description:** A 5-year-old boy was presented with a loss of consciousness to the emergency department. The patient had to be intubated immediately due to bruising and stridor. Massive hematemesis was noticed. The patient was hurt in the shower when he had put the flowing shower handset in his mouth according to the information received after. The flexible bronchoscopic evaluation was performed on the second day of injury after the stabilization. The severe tracheal injury was present at the level of the distal trachea through the posterior wall of the carina. There were grade 4 esophageal and severe antral gastric burns associated with mucosal necrosis. On the 14th day, the bronchoscopic evaluation revealed severe laryngeal inflammation-necrosis starting at the middle of the trachea to the carina level with a tracheoesophageal fistula (TOF) formation. Tracheostomy and feeding jejunostomy were performed respectively. After Ng's removal, the proximal and distal esophagus became completely obliterated. Now, only the esophageal posterior wall is present, which acts as the posterior wall of the trachea along the TOF.

**Conclusions:** The patient whose upper esophagus and larynx are completely obliterated due to laryngopharyngeal electrical burn, provides breathing through the tracheostomy by using the posterior esophageal wall as the posterior tracheal wall. Preserving the gastric volume was critical for the use of the stomach for the replacement of the esophagus in the future. The surgical correction of aphonia and inability to oral intake are the waiting problems for a solution.



## ORAL PRESENTATION SESSION V

### Lower GIT 1 (colorectal & IBD)

#### Comparison of laparoscopic and open ileocecal resection for Crohn's disease in children

**Vojtech Dotlacil** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Richard Skaba** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Barbora Kucerova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Stepan Coufal** (Laboratory of Cellular and Molecular Immunology, Institute of Microbiology, Academy of Sciences of the Czech Republic, Prague, Czech Republic), **Ondrej Hradsky** (Department of Paediatrics, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Tereza Lerchova** (Department of Paediatrics, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** An ileocecal resection (ICR) is the most performed surgery for Crohn's Disease (CD) in children.

The aim of the study was to compare laparoscopic-assisted and open ileocecal resection in paediatric patients with CD at the author's department.

**Methods:** A retrospective review of consecutive CD patients who underwent ICR between March 2014 and December 2021 was performed.

The patients were divided into open (OG) and laparoscopic (LG) groups based on the operative approach.

Compared outcomes included patients' demographics, clinical characteristics, surgery, duration of hospitalization, postoperative complications and follow-up. Complications were classified according to the Clavien-Dindo classification (CDc).

R program was used for statistical analysis. P-values of  $< 0.05$  were considered statistically significant. To account for potential confounding effects, it was performed multivariate logistic regression analyses.

**Results:** Sixty-two patients (29 females, 46.7%) were included in the analysis. Forty-two patients in OG. The two groups preoperatively did not differ statistically from each other except for age at the time of diagnosis ( $p=0.008$ ), at the time of surgery ( $p=0.004$ ) and disease behaviour ( $p=0.028$ ). The median duration of the surgery was 130 minutes in OG versus 148 in LG (IQR 115–154 vs IQR 126–170,  $p=0.065$ ). Four patients (12.1%) experienced postoperative complications. There was no statistically significant difference in postoperative complications according to the CDc classification (OG 7.14% vs LG 5%,  $p=0.4$ ). The median length of hospitalization was 9 (IQR 8–13) in OG and 7 days (IQR 6–7.3) in LG ( $p=0.011$ ). The median length of follow-up was 21.5 months (IQR 12.8–40.3).

**Conclusion:** The laparoscopic approach has a shorter hospital stay, better cosmetic outcome and was not associated with an increased risk of 30-day postoperative complications, and therefore laparoscopic surgery should be considered the preferred surgical approach for primary ICR.

## Stoma Predictive factors in the management of Hirschsprung disease

**Khaoula Ben Hassine** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia), **Yosra Ben Ahmed** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia), **Tarek Boukesra** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia), **Intissar Chibani** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia), **Faouzi Nourira** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia), **Awatef Charieg** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia), **Said Jlidi** (Paediatric Surgery Department "B", Bachir Hamza, Children's Hospital of Tunis., Tunis, Tunisia)

**Aim:** Primary pull-through without a stoma is preferred in Hirschsprung management. Therefore, primary stoma still be needed, in some situations. This study aims to identify predictive factors of stoma confection.

**Methods:** This is a retrospective study including 69 patients treated for Hirschsprung disease in the pediatric surgery department B from January 2009 to December 2021.

**Results:** There were 49 newborns and 20 infants. There were 48 boys and 21 girls. Only one of them was premature. The neonatal weight range was 3.17 kg [2.2 -4.4kg]. The average age was 52.9 days [1day-450 days]. Six patients had Down syndrome. Five had a familial history of Hirschsprung disease. We diagnosed enterocolitis in 14 cases and perforation in 3 cases. A rectosigmoidien form was identified in 51 cases, a short form in 6 cases, transition segment beyond the splenic angle in 6 cases and a total form in two cases.

Fifty two patient were managed with rectal washout (75.4%). A stoma was needed before pull-through in 22 cases (32%). 13 boys and 9 girls had stoma (p=0.26)

Delayed diagnosis (p=0.86) perforation (3, p<), enterocolitis (14, p<), long aganglionic segment (7, p<), family history (3, p=0.02) and inefficient rectal washout (17, p<) were factors associated with stoma confection.

**Conclusions:** Despite the preference for primary pull-through, stoma preceding definitive treatment was needed in 30.2% of our patients. Multiple factors are incriminated specially enterocolitis, long aganglionic segment and family history of Hirschsprung disease.

## Whole-exome sequencing identifies new variants in Hirschsprung disease's patients

**Gunadi** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Alvin Santoso Kalim** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Kristy Iskandar** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Galuh Dyah Nur Astuti** (Radboud VUMC, Nijmegen, Netherlands)

**Aim:** To determine the genetic basis of Hirschsprung disease (HSCR) in Indonesia using the whole-exome sequencing (WES) method.

**Methods:** We performed WES in 39 sporadic HSCR patients and 16 controls. We determined the pathogenic variants using several filtering, including *n silico* prediction tools and population allele frequency databases to select pathogenic variants.

**Results:** Twenty-four (61.5%) males and 15 (38.5%) females were ascertained in this study, with 62% patients showed short-segment aganglionosis. Several candidate novel variants in HSCR related genes were identified: *RET*, *UBR4*, *BDNF*, *SOX10* and *ZEB2*. Interestingly, we also found a compound heterozygous variant in the *MUTYH* gene: the first variant, a known protein-truncating variant associated with colorectal cancer, p.Glu452Ter and the second variant is a novel variant, p.Ala39Val. In addition, there is no association between type of variants and type of aganglionosis.

**Conclusions:** For the first time, we performed WES approach and found several new genes and variants in Indonesian HSCR patients. Our study confirms the complexity of HSCR pathogenesis.

## RET mutations in Hirschsprung disease: is routine screening warranted for detection of Multiple Endocrine Neoplasia?

**Martina Ichino** (Pediatric Surgery, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Francesco Macchini** (Pediatric Surgery, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Anna Morandi** (Pediatric Surgery, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Alessia Dolci** (Endocrinology, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Francesca Maestri** (Pediatric Surgery, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Francesca Galbiati** (Pediatric Surgery, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Giovanna Mantovani** (Endocrinology, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Francesca M Elli** (Endocrinology, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Maura Arosio** (Endocrinology, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy), **Ernesto Leva** (Pediatric Surgery, IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano, Milano, Italy)

**Aim:** to assess the prevalence of *RET* mutations in Hirschsprung disease (HD) patients and associated characteristics, with attention to double effect mutations (loss/gain of function) typical of HD/Multiple Endocrine Neoplasia 2 (MEN2) association, to determine the worthiness of routine *RET* screening.

**Methods:** retrospective single center study. Patients with HD and results of *RET* mutation analysis, evaluated at our Center since January 2000, were included. *RET* screening (Next Generation Sequencing) is offered routinely. Disease-related variables were collected, data analysis performed with Fisher's test. A literature search of studies with routine *RET* screening in HD patients was performed.

**Results:** of 52 HD patients, 36 had *RET* screening. Prevalence of *RET* mutations is 22%. One patient (2.8%) with classic sporadic HD, has a typical HD/MEN2A Cys620Tyr exon-10 mutation. She underwent prophylactic thyroidectomy finding carcinomatous foci. Two have mutations described in HD (Arg330Gln, Tyr1062Cys), five have mutations never described (Gly47Leufs\*12, Gly28Alafs\*19, Leu95Phe, Gln863X). Sporadic cases are 91%, 16% presenting mutations. All familial cases have *RET* mutations. 82% of patients have classic HD, 19% with mutations; 18% have total colonic aganglionosis, 50% with *RET* mutations. Comorbidities are present in 22%: 14% have syndromic presentation (no *RET* mutation), 17% associated malformation (9% urinary tract anomalies). The prevalence of *RET* mutations is equal in patients with and without urinary tract anomalies ( $p=1$ ). Five studies with routine *RET* screening in HD were found (Table1). Including our series, on a total of 463 patients, 13 (2.8%) have classical *RET* HD/MEN2A mutations, and 13 (2.8%) other mutations associated with medullary thyroid cancer. HD segment is known for 23 of 26 patients with mutation: 70% have classic form.

**Conclusions:** Our series shows similar prevalence of HD/MEN2 *RET* mutations to literature series, without preference for long segment HD. We believe that routine *RET* mutations screening should be warranted in all HD patients.

*Table 1: Prevalence of RET gene mutations associated to MEN2 in cohorts of HD patients. Mutations are divided between classic MEN2A mutations (codons 609, 611, 618, 620 of exon 10) and other mutations associated with medullary thyroid cancer (MTC) (codon 649 of exon 11 and codon 791 of exon 13).*

Author	Year	N° of patients	N° of classic MEN2A/HD mutations (%) [HD segment]	N° of other mutations associated with MTC (%) [HD segment]
Angrist et al.	1995	80	2 (2.5)	-
Seri et al.	1997	39	1 (2.6) [1 L]	1 (2.6)
Sijmons et al.	1998	60	3 (5) [2C -1L]	-
Vaclavikova et al.	2012	157	3 (1.9) [3 TCA]	9 (5.7) [7 C – 2 TCA]
Virtanen et al.	2013	91	3 (3.3) [3 C]	3 (3.3) [3 C]
Our Center	2021	36	1 (2.8) [1C]	-
<b>TOT</b>	-	<b>463</b>	<b>13 (2.8)</b> <b>[6 C – 5 L/TCA]</b>	<b>13 (2.8)</b> <b>[10 C – 2 TCA]</b>

## Our experience of the surgical management of Hirshsprung's disease using de la Torre-Mondragon technique: a report of 52 cases

**Gacelle Fossi Kamga** (Paediatric Surgery, Yaoundé Gynaeco-Obstetric And Paediatric Hospital, Cameroon, Yaoundé, Cameroon), **Caroline E Dikongue Dikongue** (Yaoundé Gynaecobstetric And Paediatric Hospital, Yaoundé, Cameroon), **Florence O Obono Ebo** (Yaoundé Gynaecobstetric And Paediatric Hospital, Yaoundé, Cameroon), **Souleymane Lyhmi Njoya** (Yaoundé Gynaecobstetric And Paediatric Hospital, Yaoundé, Cameroon), **Faustin Félicien Mouafo Tambo** (University of Yaounde I, Yaounde, Cameroon)

**Aim:** This study aimed at describing the outcome of the surgical management of Hirschsprung's disease using the transanal pull-through technique described by De la Torre-Mondragon.

**Methods:** It was an observational retro-prospective and descriptive study within 8 years. All cases of Hirschsprung's disease diagnosed on barium enema and confirmed on the histology of the excised segment operated according to De LA Torre's technique were included. All patients with Hirschsprung's disease treated with other techniques were excluded. Data collected included age at surgery, sex, surgical indication and strategy, operative time, length of the resected segment, timing of the first passage of stool and beginning of oral feeding; postoperative complications, mortality, and duration of follow-up. Data were compared with Fisher's exact test and the Chi-Square test. A *p-value* of less than 0.05 was considered to indicate statistical significance.

**Results:** Fifty-two patients with a mean age of 18 months at the time of surgery were enrolled. The male predominance was remarkable. The surgical indication was not related to preoperative histological arguments but based on barium enema. 82.5% of patients were operated on without prior colostomy. The mean operative time was 190 minutes and mean length of resected segment 20 cm. The average time of the first passage of stools post-operatively was 1 day. Feeding was resumed on postoperative day 2. The mean hospital stay was 9 days. Soiling occurred in 4 cases, anastomotic stricture in 3 cases, and enterocolitis in 2 cases. There was one death unrelated to the procedure. The incidence of postoperative complications was not influenced by age at the time of surgery ( $p=0.3451$ ) nor the duration of surgery ( $p=0.6071$ ). The average follow-up period was 16 months.

**Conclusion:** Outcomes of Hirschsprung's disease treated by transanal pull-through as described by De la Torre-Mondragon, in our setting are comparable with those reported in literature.

## Comparison of surgical outcomes of total colonic aganglionosis with the short and long – Hirschsprung disease

**Can Ihsan Oztoran** (Pediatric Surgery, Ankara Yildirim Beyazit University, Faculty of Medicine, Ankara, Turkey), **Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital, Children's Hospital, Ankara, Turkey), **Süleyman Arif Bostanci** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Vildan Selin Çayhan** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Abdurrahman Urve Uzun** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Müjdem Nur Azili** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey)

**Aim:** Total colonic aganglionosis (TCA) is a rare form of Hirschsprung disease (HD), with more severe symptoms than rectosigmoid Hirschsprung disease. We aimed to compare the surgical outcomes of TCA with Short- HD, and Long-HD.

**Methods:** We evaluated the patients with HD and compared the patients according to the location of the aganglionic segment in terms of demographic data, surgery, length of hospital stay, and short and long-term complication. The medical records of 102 patients with HD from 2000 to 2021 were reviewed

**Results:** The patients included in this study were divided into three groups TCA(n=15), Short- HD (n=82), and Long-HD (n=5) according to the involved aganglionic segment. The data about the patients and surgical outcomes of the groups are shown in table 1. In our series, % 14,7 HD patients were TCA. The mean age at the definitive surgery was 18.2 (1–152) months. The most common methods of definitive surgery was TEPT and Duhamel procedure. Perianal excoriation and enterocolitis were the most common postoperative complications. The complication and mortality rates were higher in Long-HD and TCA groups.

**Conclusion:** In the study, it was found that symptoms were seen earlier, diagnosis and definitive surgery were performed earlier in patients in TCA group compared to other groups. The length of hospital stay was longer in the TCA group. Except for the higher incidence of perianal excoriation in the TCA group, there were no significant differences between the groups in terms of the incidence of postoperative complications, especially enterocolitis. However, the mortality rate is higher in TCA and Long-HD group

	TCA N=15	Short-HD N=82	Long-HD N=5	P
<u>Gender (B/G)</u>	11/4	62/20	5/0	0,15
<u>The Mean Age of Diagnosis (Month)</u>	3,2 Months	16,3 Months	11,1 Months	0,001
<u>The Mean Age of Definitive Surgery (Month)</u>	8,1 Months	19,5 Months	28,4 Months	0,001
<u>Associated Anomaly</u>	3	5		
<b><u>Definitive Surgery</u></b>				
<u>Duhamel</u>		34	2	
<u>Martin Procedure</u>	7			
<u>TEPT</u>	4 ( <u>Laparotomy Assisted</u> )	35	1 ( <u>Laparotomy Assisted</u> )	
<u>Laparoscopy assisted TEPT</u>		3		
<u>Soave</u>	0	3	1	
<u>Swenson</u>	3	7	1	
<u>Kimura Procedure</u>	1			
<u>The Mean of Hospital Stay</u>	9,6 days	6,5 days	8,2 days	0,01
<u>The Mean Follow-Up Period</u>	3,5 Years	6,5 Years	5,8 Years	
<b><u>Post-op Complications</u></b>				
<u>Perianal Excoriation</u>	3(% 20)	3(%3,6)	1(%20)	0,03
<u>Enterocolitis</u>	6 (%40)	18 (%21,9)	1(%20)	0,13
<u>Ostomy Complication</u>	2 (%13,3)		1(%20)	
<u>Ileus</u>	1(%6,7)	4 (%4,8)	1(%20)	0,51
<u>Constipation</u>	1(%6,7)	6 (%7,3)	1(%20)	0,65
<u>Soiling/Encopresis</u>	2(%13,3)	7 (%8,5)	1(%20)	0,62
<u>Anastomotic Leak</u>	1(%6,7)	1(%1,2)		0,24
<u>Post-Op Rectal Stenosis</u>	1(%6,7)	4(%4,8)		0,73
<u>Mortality</u>	1 (%6,7)	1 (%1,2)	1(%20)	0,03

**Table 1: The data of surgical outcomes according to the involved aganglionic segment.**

## Association between mucosal eosinophilia and lymphocytosis to functional outcomes of Hirschsprung disease patients after pull-through

**Diaz Adi Pradana** (Division of Pediatric Surgery, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta, Indonesia), **Gunadi Gunadi** (Division of Pediatric Surgery, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta, Indonesia), **Gabriella Eva** (Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta, Indonesia), **I Putu Ari** (Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta, Indonesia), **Fadhila Pratama** (Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta, Indonesia), **Hanggara Tri Rinonce** (Faculty of Medicine, Public Health and Nursing, Gadjah Mada University, Yogyakarta, Indonesia)

**Aim:** To determine the association between mucosal eosinophilia and lymphocytosis with the functional outcomes of Hirschsprung disease (HSCR) patients after pull-through.

**Methods:** A cross-sectional study was conducted for patients who underwent pull-through between January 2014 to June 2020 at our hospital. Functional outcomes were determined using the Krickenbeck classification.

**Results:** One hundred and fifteen HSCR patients were involved. Most HSCR patients underwent transanal endorectal pull-through (TEPT) (55.7%) and Duhamel (35.7%). The VBM rates were 96.9%, 85.4% and 90% in TEPT, Duhamel, and Soave groups, respectively ( $p=0.002$ ). There was no statistically significant difference in soiling frequency between groups (TEPT: 7.8% vs Duhamel: 12.2% vs Soave: 0;  $p=0.598$ ). The constipation rate was significantly higher in the Soave (30%) than in the Duhamel (3.1%) and TEPT (17.1%) group ( $p=0.005$ ). Lymphocytosis patients had a 24.8-fold higher chance of soiling ( $p=0.006$ ) and a 7.7-fold higher chance of constipation after Duhamel ( $p=0.031$ ). Moreover, eosinophilia patients had a 22.3-fold higher probability of having constipation after TEPT ( $p=0.039$ )

**Conclusion:** Mucosal eosinophilia and lymphocytosis might predict the functional outcomes of HSCR patients after pull-through.

## Evaluation of botulinum toxin in treatment of post operative obstructive symptoms in children with Hirschsprung

**Mehrdad Hosseinpour** (Isfahan University of Medical Sciences, Isfahan, Iran), **Mohamad Reza Sharifimehr** (Isfahan University of Medical Sciences, Isfahan, Iran)

**Aim:** The purpose of this study is to investigate children outcomes treated with botulinum toxin for obstructive symptoms after pull-through for Hirschsprung disease.

**Methods:** 21 children still complained of constipation postoperatively, were selected for botulinum toxin injection. Constipation score was recorded before injection, one and six months after. Resting anal pressure before injection was recorded before injection and six months after.

**Results:** The constipation score of children before injection, one month after injection and six months after injection was  $15.8 \pm 4.5$ ,  $23.1 \pm 4.5$  and  $20.0 \pm 2.8$  respectively; that was significantly different between three times ( $P < 0.001$ ). The mean resting anal pressure in manometry before injection was  $44.9 \pm 22.1$  mm Hg and six months after injection was  $17.9 \pm 5.4$  mm Hg, showing that the mean resting anal pressure after injection was significantly lower.

**Conclusion:** Intraspinal botulinum toxin injection is an efficient and safe method for improving obstructive symptoms after Pull-through surgery.

## Interest of High-Resolution Anorectal Manometry in Patients Operated on for Hirschsprung's Disease and Anorectal Malformations During Long-term Follow ups

**Viet Quoc Tran** (Pediatric Surgery, Children's Hospital 2, Ho Chi Minh City, Vietnam), **Kim Thien Lam** (Pediatric Surgery, Children's Hospital 2, Ho Chi Minh City, Vietnam), **Ngoc Minh Nguyen** (Pediatrics, Children's Hospital 2, Ho Chi Minh City, Vietnam), **Thach Ngoc Pham** (Pediatric Surgery, Children's Hospital 2, Ho Chi Minh City, Vietnam), **Nhan Truong Vu** (Pediatric surgery, Children's Hospital 2, Ho Chi Minh City, Vietnam), **Tung Huu Trinh** (Pediatrics, Children's Hospital 2, Ho Chi Minh City, Vietnam)

**Aim:** This study investigates the role of high-resolution anorectal manometry (HRAM) in the long-term follow-up of patients operated on for Hirschsprung's disease (HD) and anorectal malformation (ARM).

**Methods:** Consecutive charts of patients operated on for HD and ARM at *Children's Hospital 2, Ho Chi Minh City, Vietnam* from 2015 to 2019 were retrospectively reviewed. A reference population without any surgical intervention on the digestive tract (non-operated group) were recruited. The operated patients and the reference group who consented to undergo an HRAM were enrolled in this study. We investigated and compared the clinical characteristics and bowel function and manometric findings between the 3 groups.

**Results:** Eighty-one patients were enrolled with 50.6% of males; 28 HD patients, 24 ARM patients, and 28 non-operateds with the mean age 5.7 [5.0-6.5] years, 6.3 [5.4-7.2] years, and 6.6 [5.5-7.8] years; respectively. The rates of fecal incontinence in the HD group and ARM group were 96.6 % and 79.2%, respectively. Mean anal resting pressure was: 44.9 [39.5-50.3] mmHg in HD patients, 32 [26.6-37.4] mmHg for ARM patients, and 62.2 [55.6-68.8] for non-operateds ( $p < 0.001$ , One-way ANOVA test). An increased abnormally anal sphincters pressures was found in 39.3% HD patients, 16.7% ARM patients, and 14.3% non-operateds during push tests. Maximum tolerated volume was: 128 [100 -156] mL in HD patients, 163.8 [132.5 – 195] mL for ARM patients, and 182.1 [161.9 – 202.4] for non-operateds ( $p = 0.02$ , Welch-Robust test).

**Conclusions:** HRAM is an objective method providing useful information that could guide to a more adapted management in patients with defecation disorders after HD and ARM operation.

## Structured Transition-Program in ARM and HD. What we have learned from the first 100 patients

**Mark Malota** (Pediatric Surgery, München Klinik Schwabing, Munich, Germany), **Stuart Hosie** (Pediatric Surgery, München Klinik Schwabing, Munich, Germany)

**Aim:** The surgical repair of anorectal malformation (ARM) and Hirschsprung's disease (HD) is a domain of neonatal surgery. Primary intervention and follow-up care are mostly carried out in specialized centers, since these young patients do need long-term support in different aspects of daily life (e.g. somatic, growth and development, psychosocial).

However, upon reaching adulthood, patients are often left to be treated by "adult physicians" for whom these malformations and their potential complications represent unfamiliar terrain. This often results in mutual frustration for doctor and patient and thus the cessation of the follow-up care so essential for affected persons. The patients are "Lost in Transition".

**Methods:** Starting in 2020 we have followed up 108 patients so far born between 1961 and 2004 who had ARM (68) or HD (40) corrected surgically. Before their first consultation in the transition-program all patients had to fill out a questionnaire to report on basic demographic data, previous treatments and experiences with medical care during adulthood, actual complaints and functional bowel and bladder situation. Afterwards they underwent a physical examination, a colonic contrast enema and a proctoscopy. In 37 cases further diagnostics like colonoscopy, rectal manometry or full thickness rectal biopsies were performed.

**Results:** Ninety-eight surveys were completed. More than 50% of the patients were not satisfied with their former transition of care, 38 patients did not even have any sort of follow up before. In 24 patients we had pathological findings, which required operative correction (anastomotic stenosis, ulcer, misplaced anus or transition zone pull-through).

**Conclusions:** Our pilot project shows that a significant number of adult patients with HD or ARM fail to find an appropriate caretaker for transition of care. Furthermore there is a strong need for structured follow up of these patients until adulthood to avoid, recognize early and treat adequately long term complications.

## Anorectal malformations and Hirschsprung disease in children. The path from diagnosis to the postoperative period (the opinion of the parents)

**Evgeniia Pimenova** (*Fantasy Children's Clinic, Moscow, Russian Federation*), **Katerina Efimenkova** (*"Stomamama" patient community, Saint Petersburg, Russian Federation*)

**Aim:** Social survey dedicated on the awareness and psychological perception of parents of children with anorectal malformations (ARM) and Hirschsprung disease (HSCR).

**Methods:** We disseminated the anonymized questionnaire through patient community "Stomamama" and social media (25 questions). We asked how parents received information about the disease and prognosis after surgery; what problems the parents faced and whether these problems are solved after a certain time.

**Results:** A total of 107 respondents responded (59 cities, 5 countries). In 64/59.8% cases anomalies diagnosed in the maternity hospital. After diagnosis 15/14% of parents' received full information about anomaly from their physicians, 72/67.3% received incomplete information and 20/18.7% said that "learned nothing from the doctors". 59/55.1% were upset that "No one could tell about the follow-up" before surgery; and 76/71% pointed out the problem of lack of physicians who are competent in the postoperative management.

38/35.5% do not concealed the diagnosis of their child from others, 65/60.7% told only close relatives about the operation, 4/3.7% could not tell anyone about their problem. 75/70.1% felt «Depression/unwell/hopeless" after the diagnosis has been made. In 17/15.9% these feelings persisted after treatment. 72/67.3% parents noted that the psychological condition has become better than it was at the beginning; and only 2/2.8% worse. 99/92.5% expressed the need to develop patient communities.

89/83.2% agreed that families need psychological help. 67/62.6% noted that the psychologist should be guided in the surgical problem. 3/2.8% did not consider psychological assistance necessary.

**Conclusion:** Only 14% of parents were satisfied with the amount of information received from physicians. 71% cannot find a doctor who can competently help with problems after surgery. 83% think that families need the help of a psychologist and 63% would like a "special" psychologist who understands the issue. Parents consider patient organizations to be a very important support.

## Labelling male anorectal malformations: objective evaluation of radiologic imaging before surgery

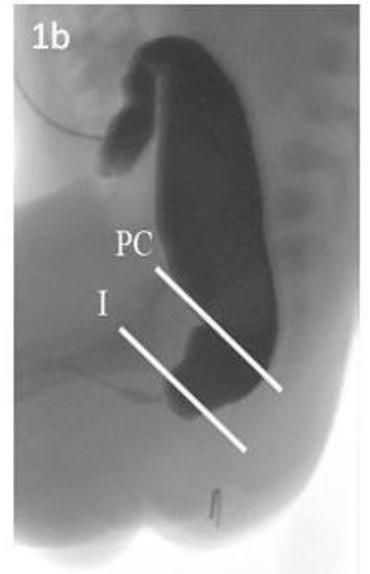
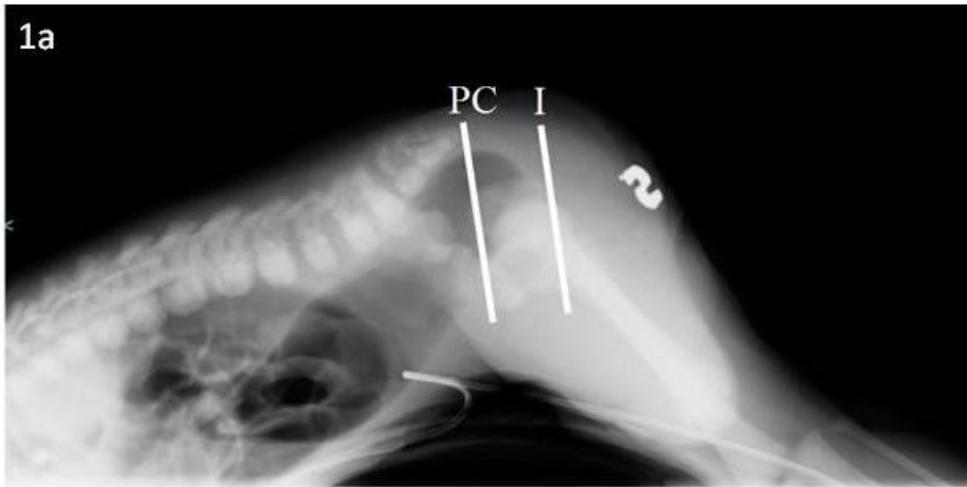
**Anna Morandi** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Francesca Maestri** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Martina Ichino** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Maria Angela Pavesi** (Pediatric Radiology Unit, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Antonio Di Cesare** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Ernesto Leva** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy)

**Aim:** To identify objective tools to define male anorectal malformation (ARM) type imperforate anus (IA) or rectourinary fistula on imaging performed as newborn and before anorectoplasty in patients receiving three-stage reconstruction.

**Methods:** With prospective observational study, prone cross-table lateral x-ray (CTLxRs) and colostograms of male born in 2012-2022 with IA or rectourinary fistula treated at our Center were blindly evaluated by 3 observers independently. Pubococcygeal (PC) and ischiatic (I) lines were considered to determine rectal pouch level on CTLxRs (Figure-1a) and colostograms (Figure-1b). On CTLxR, we described the “pigeon sign” when rectal pouch ended with a beak-like image, suspicious for rectourinary fistula (Figure-2). IA was hypothesized without “pigeon sign” at CTLxR or fistula image at colostogram. Rectourinary fistulae were defined rectobulbar (RB) when rectal pouch was below I line, rectoprostatic (RP) when between PC and I lines, rectovesical (RV) above PC line. Intraoperative diagnosis was recorded. Interobserver concordance and concordance with intraoperative diagnosis were evaluated with Fleiss' kappa. Sensitivity, specificity, positive (PPV) and negative predictive values (NPV) of “pigeon sign” were calculated.

**Results:** Since 2012, 114 patients received anorectoplasty (43.8% males); 23 had IA or rectourinary fistula, 13/23 (2 IA, 9 RB, 1 RP, 1 RV) underwent complete imaging at our Center. Evaluating CTLxRs, interobserver agreement was: 69.2% (k=0.54) on pouch ending, 84.6% (k=0.69) on “pigeon sign” presence, 76.9% (k=0.69) on hypothesized diagnosis; concordance with intraoperative diagnosis was 66.6% (k=0.56). “Pigeon sign” had 75% sensitivity, 100% specificity, 100% PPV, 50% NPV. Evaluating colostograms, interobserver agreement was: 84.6% (k=0.77) on pouch ending, 89.7% (k=0.86) on hypothesized diagnosis; concordance with intraoperative diagnosis was 92.3% (k=0.90).

**Conclusion:** Precise landmarks are useful examining CTLxRs and colostograms. PC and I lines, and “pigeon sign” are effective tools in ARM diagnosis on colostogram and CTLxR. Adequate CTLxR interpretation may modify neonatal surgical strategies.



## Comparison of outcome of laparoscopic assisted anorectoplasty versus posterior sagittal anorectoplasty in high variety ARM

**Muhammad Saleem** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Kashif Arslan** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Armaghan Ahmed** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Imran Hashim** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamaal Butt** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan)

**Aims and objective:** Anorectal malformation (ARM) is congenital anomaly of neonates, which is commonly encountered by pediatric surgeons worldwide. Currently, variety of therapeutic methods is available to treat ARM. The posterior sagittal anorectoplasty (PSARP) and laparoscopically assisted anorectoplasty (LAARP) procedures can be used for treating high variety ARM. Since its inception in 2000, LAARP has gained popularity with time. Authentic data is needed to compare its outcome with gold standard which is PSARP in our set up. We designed this study in order to compare the outcome of LAARP with PSARP in management of ARM.

**Materials and methods:** After approval from ethical committee, 62 male patients were enrolled in the study that was conducted at Department of Paediatric Surgery, The Children's Hospital and University of Child Health Sciences, Lahore and underwent either LAARP or PSARP by lottery method. Outcomes were documented on follow-up visits in both the groups on 2 weeks (14<sup>th</sup> post operative day), 1 month (30<sup>th</sup> post operative day) and 2 months (60<sup>th</sup> post operative day).

**Results:** In our study, hospital stay was  $5.4 \pm 1.7$  days overall, in which LAARP patients had stay for  $4.6 \pm 1.6$  days while PSARP patients for  $6.2 \pm 1.8$  days. The wound infection was 27.4 % overall comparing LAARP showed (16.1 %) with PSARP (38.7 %). Results of nerve stimulation were comparable in both groups. Rectal retraction was 22.6% (n=14) overall, in which LAARP showed 16.1% (n=5) while PSARP showed 29% (n=9). In our study, rectal mucosal prolapse was 24.2% (n=15) overall, showing 38.7% (n=12) in LAARP while 9.7% (n=3) in PSARP. (*p* value 0.500)

**Conclusion:** We conclude that LAARP for the treatment of high variety ARM gives better outcome and fewer complications when compared to PSARP.

## Fourchette preserving PSARP how to do it

**Vijai Datta Upadhyaya** (SGPGIMS, Lucknow, India), **Anju Verma** (SGPGIMS, Lucknow, India), **Rohit Kapoor** (SGPGIMS, Lucknow, India)

**Purpose:** Background: Vestibular fistula is the commonest anorectal malformation (ARM) in the female child. This study aimed to share the procedure (video presentation of technique) for primary fourchette preserving PSARP

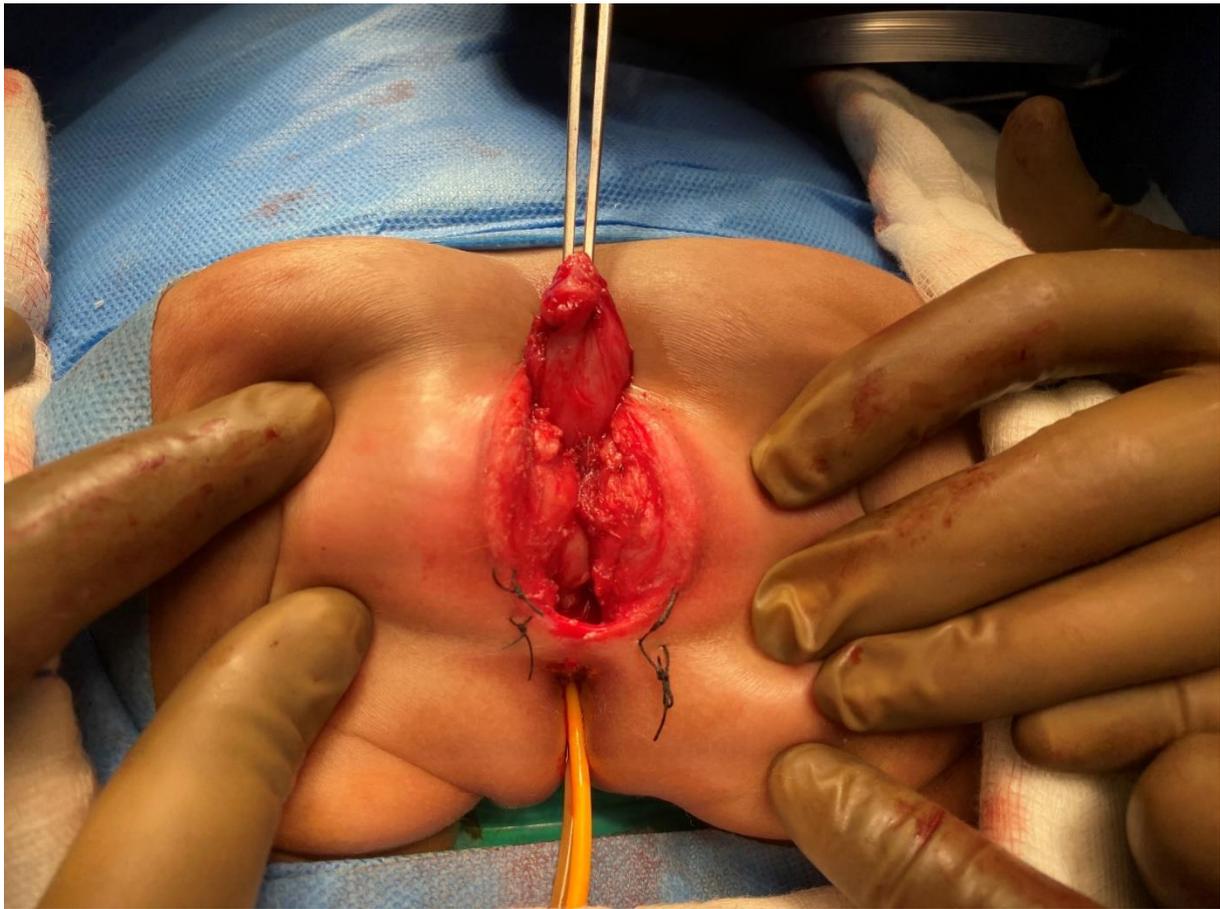
**Method:** In the period between June 2018 – June 2021, ten patients of vestibular fistula admitted after the neonatal age. All were treated with PSARP without opening the fourchette. The results were evaluated for anal continence and cosmetic appearance. Median follow-up was 12 months (range 6–24 months).

**Results:** A total of 10 patients were included in the study. Operative time ranges from 80 to 160 minutes. Post operative appearance of the perineum was satisfactory in all patients except minor superficial wound infection in 20% cases which was managed conservatively. Anal continence was good in 78% cases and fair in 14% cases. Around 16% percent of patients had minimal constipation and 10% patients had minor mucosal prolapse.

Frequency of daily stool was 3-4 times in follow up. There was no recurrence of fistula or anterior displacement of the neorectum.

**Conclusion:** In our experience primary PSARP for vestibular anus without opening fourchette is almost similar to conventional 3 stage procedure for vestibular anus (stoma followed by PSARP followed by Stoma closure)

**Link for video:** <https://drive.google.com/file/d/1txnX4kv9X9SuKIKoNdCakgOesGYvUDFp/view?usp=sharing>



## Outcome of children with high anorectal malformations after posterior sagittal anorectoplasty (PSARP): a report on 44 cases

**Gacelle Fossi Kamga** (Yaoundé gynaecobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon), **Caroline E Dikongue Dikongue** (Yaoundé Gynaecobstetric and Paediatric hospital, Cameroon, Yaoundé, Cameroon), **Florence O Obono Ebo** (Yaoundé Gynaecobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon), **Faustin Félicien Mouafo Tambo** (Surgery and sub-specialties, Yaoundé gynaecobstetric and paediatric hospital, Cameroon University of Yaoundé I, Yaoundé, Cameroon)

**Aim:** The aim of this study was to describe the outcome of patients after corrective surgery for high anorectal malformations using Pena's technique at the YGOPH through a clinical score.

**Methods:** This was an observational, retrospective study with prospectively collected clinical information. All patients with high anorectal malformations treated by PSARP between June 2006 to July 2021 were included. Cloacas and patients with complex associated malformations were excluded. Data concerning the demographics (sex, age at surgery), diagnosis, and treatment were collected from medical records. For children, less than 3 years bowel function was scored quantitatively using the Kelly score. The assessment of continence outcome in children more than 3 years of was done using the krickenberg's score.

**Results:** A total of 44 children were enrolled, thus the hospital frequency was 3.3 cases per annum. Anorectal malformations with fistulas accounted for 86.4% of cases (n=38). The sex ratio was 1.1. In boys, recto-urethral fistula was the most common whilst vestibular fistulas were predominant in girls. PSARP was performed in patients with a mean age of 7.1 months [5 weeks–2 years]. 10 patients had PSARP without colostomy. No deaths after PSARP were recorded. complications included wound dehiscence (n=8), anal stenosis (n=5), rectal mucosal eversion (n=6) and urethral strictures (n=2). The mean follow-up was 7.1 years (3.5 and 11 years). The Kelly score was good in 85% of patients less than 3 years and fair in 3 cases. According to krickenbeck's score, 87.5% of children above 3 years were continent, 37.5% had grade 1 and 2 soiling respectively, and 37.5% had constipation.

**Conclusion:** Functional outcome after repair of high ARM using posterior sagittal anorectoplasty at the YGOPH is comparable to results in the existing literature.

**Keywords:** High anorectal malformations, Peña's technique, child, Yaoundé, Cameroon.

## A review of patients with anorectal malformation treated at an academic hospital in South-Africa

**Mari Kirsten** (Paediatric Surgery, University of Pretoria at Steve Biko Academic Hospital, Pretoria, South Africa)

**Aim:** The aim of this study was to report the relative incidence of ARM subtypes, and the associated abnormalities in these babies

**Methods:** This is a descriptive retrospective study of patients with anorectal malformations. A review starts from 2008 until each child is school going age. Details about the gender, type of abnormality, age at presentation, associated abnormalities, surgeries and outcome of patients were recorded.

**Results:** Data of 216 patients were reviewed. Patients with cloaca were not included, as they are not part of the routine summaries of ARM patients.

The male:female ratio was 1.8:1. There were 69(31.9%) patients with a recto-urethral fistula, 61(28.3%) had a recto-vestibular fistula and 40(18.5%) presented with a perineal fistula. We recorded 33(15.3%) patients with ARM but no fistula and 4(0.5%) had anal stenosis.

The average age of neonates at presentation was 4.5 days. Most patients presenting after the neonatal period had low malformations. One boy with a recto-urethral fistula presented on day 31 of life.

No associated abnormalities were recorded in 118(54.6%) patients and the most common was cardiac abnormalities 57(26.4%). Genito-urinary system was affected in 29(13.4%) patients and the most common problem at birth was hydronephrosis. There were 2(0.9%) patients with oesophageal atresia and 2 patients with club feet.

**Conclusion:** The incidence of ARM as well as the sub-type of abnormalities at our setting is different from previous reports in Africa.

## Transanal recto-anal anastomosis for rectal atresia: A report of 6 cases

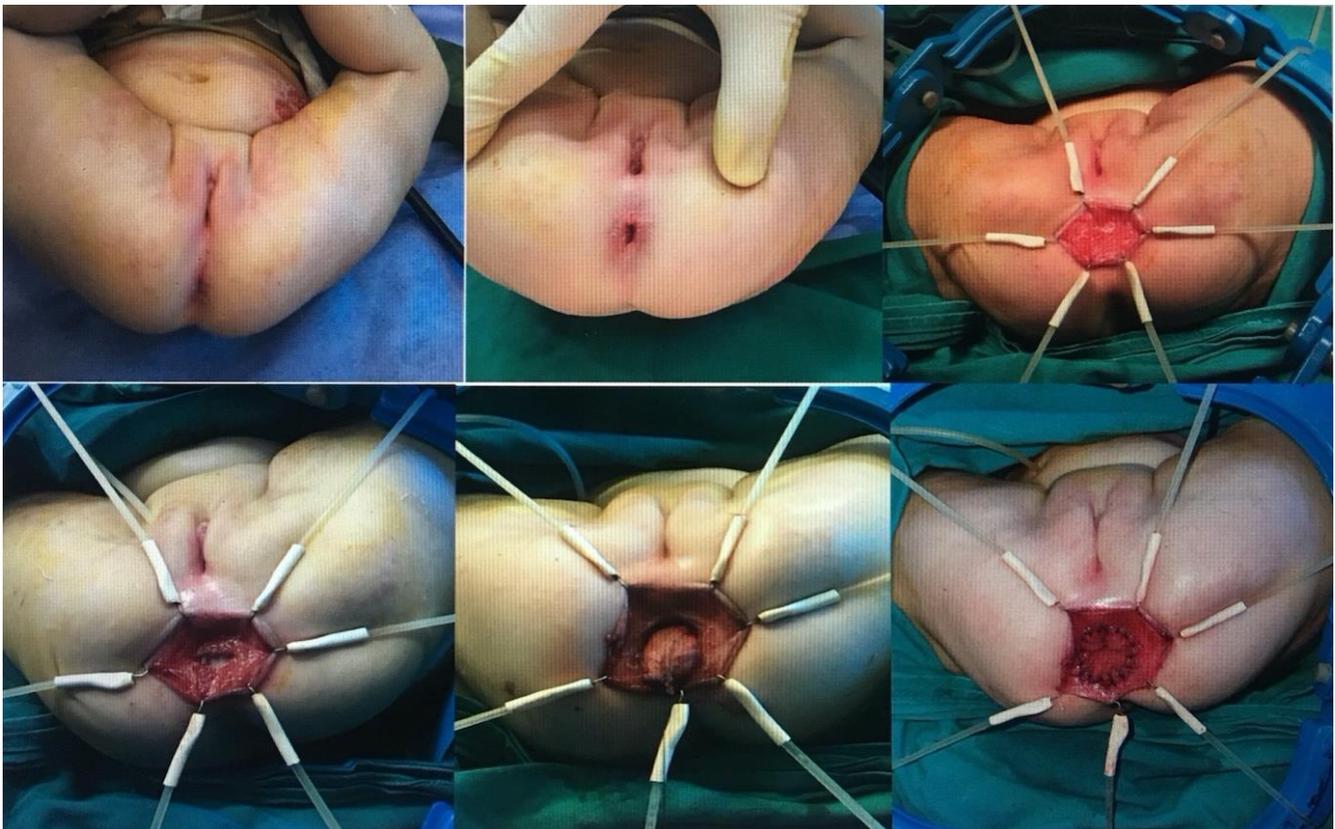
**Mohamed I Elswaf** (Pediatric Surgery Unit, General Surgery Department, Tanta University, Tanta, Egypt),  
**Sameh Shehata** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt)

**Background:** Rectal atresia is a rare anorectal malformation (ARM) characterized by well-developed anal canal, external and internal sphincters, and rectum with atretic segment of rectum. Various approaches and techniques were illustrated for its management. The ideal one should respect the anatomy with minimal scar or damage. These include magnetic compression anastomosis, transanal endoscopic-assisted proctoplasty (TAEAPP), Duhamel pull-through, posterior sagittal anorectoplasty (PSARP), transanal end-to-end rectoanal anastomosis and laparoscopic assisted transanal approach. Since the anal canal and lower rectum are usually well developed and are surrounded by a normal sphincter, the long-term prognosis of these patients is excellent in term of bowel control and continence.

**Methodology:** Herein, we present 6 cases of rectal atresia has been managed by transanal end-to-end recto-anal approach. We will describe the technique highlighting tricks needed for better results, its advantages and pitfalls.

**Results:** four females and 2 males. After confirmation of the diagnosis, Pena divided colostomy was done for all cases. The Stoma was located low in the sigmoid colon. Definitive surgery was done at 2.6 moths. Operative time was 55.4 mins. Oral feeding initiated 2 hours post-op. All infants were discharged in the 3<sup>rd</sup> post-op day. No wound infection was recorded in any case. Regular anal dilatations started after 2 weeks for al least 4 weeks. Children were followed for 18.2 months. Stomas were closed 9.5 weeks later.

**Conclusion:** Transanal end-to-end rectoanal anastomosis allows a safe anatomical reconstruction of anorectum in a significant proportion of patients with rectal atresia avoiding potential complications associated with posterior sagittal approach. However, to achieve an easy and safe anastomosis, a previously inserted low sigmoid colostomy is advisable.



## ORAL PRESENTATION SESSION VI

### Oncology

#### Sentinel lymph node biopsy in pediatric Wilms tumor

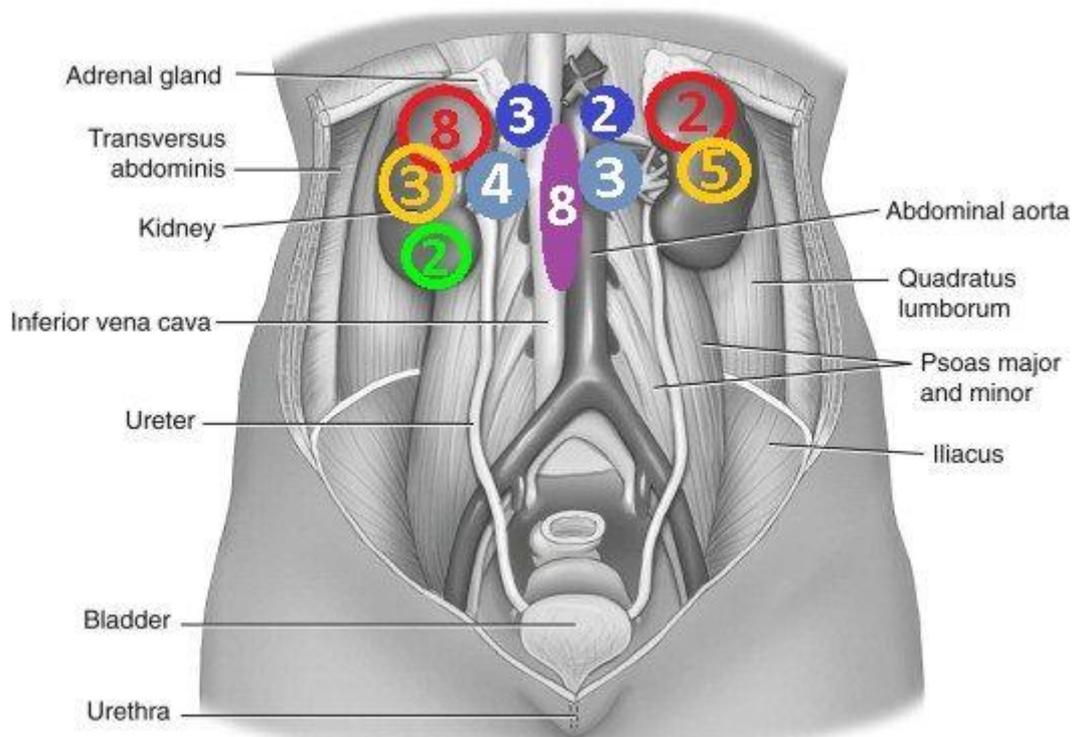
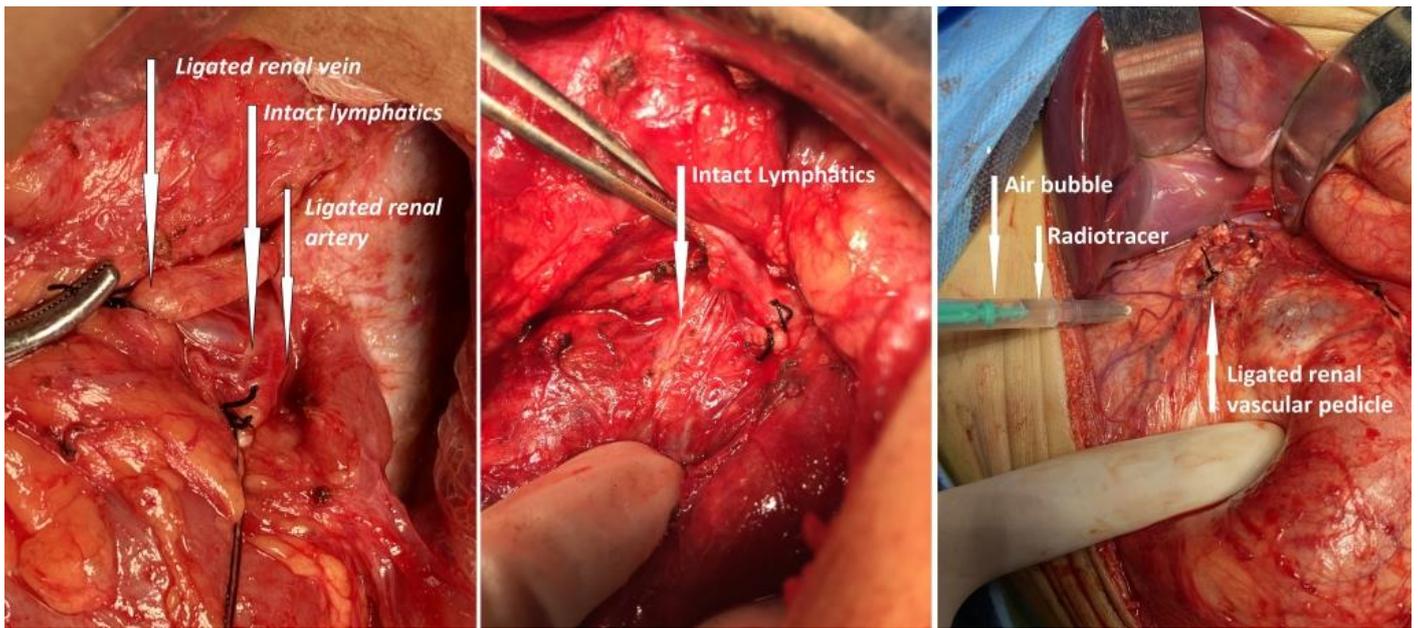
**Reza Shojaeian** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran), **Ramin Sadeghi** (Nuclear Medicine, Mashhad University of Medical Sciences, Mashhad, Iran), **Mehran Hradfar** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran), **Ahmad Mohammadipour Mohammadipour** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran), **Ali Azadmand** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran), **Mahdi Parvizi Mashhadi** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran), **Khashayar Atghiaee** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran), **Parisa Saeedi Sharifabad** (Pediatric Surgery, Mashhad University of Medical Sciences, Mashhad, Iran)

**Introduction:** Although the sentinel lymph node Biopsy (SLNB) is well established in solid tumors among adults but the experience on SLNB in pediatrics is still limited. In this article we report our experience of sentinel lymph node detection that is applied on pediatric solid renal tumors.

**Material and methods:** Twenty 1–16 year old children with non-metastatic primary Wilms tumor regarding the radiological studies were enrolled. At the time of radical nephrectomy, radio tracer injection was carried out after renal vein, artery and ureter ligation. Sentinel node detection and sampling was performed in every location with radiotracer count of 3 times more than background. Finally lymph node sampling was completed following the standard current discipline in Wilms tumor surgery.

**Results:** A single SLN was detected in 16 patients. 4 patients had more than one SLN. The most common site of SLN detection was inter aortocaval space. Histopathologic studies revealed tumor involvement in 3 sentinel nodes (15%). All other lymph node samples were also studied and LN involvement was not detected in any of the cases with tumor free sentinel lymph node (no false negative case). Multiple LN involvement was reported in two patients with positive SLN in which, other involved lymph nodes were removed with the tumor during radical nephrectomy.

**Conclusion:** Intraoperative SLNB is a safe and feasible tool to improve the accuracy of staging in pediatric Wilms' tumor. We suggest to ligate renal artery and vein prior to radiotracer injection to diminish the background confounding effect.



## Surgical violations and their impact on the outcome of unilateral Wilms tumor – a multicenter review of practice

**Ahmed Elgendy** (Surgical Oncology Unit, Tanta University, Tanta, Egypt), **Mohamed Abouheba** (Pediatric Surgery Department, Alexandria University, Alexandria, Egypt), **Mahmoud Mostafa** (Pediatric Surgery Department, Assiut University, Assiut, Egypt), **Mohamed Salem** (Surgical Oncology Department, South Egypt Cancer Institute, Assiut University, Assiut, Egypt), **Abdelmotaleb Ebeid** (Pediatric Surgery Department, Tanta University, Tanta, Egypt), **Sherif Shehata** (Pediatric Surgery Department, Tanta University, Tanta, Egypt), **Sameh Shehata** (Pediatric Surgery Department, Alexandria University, Alexandria, Egypt)

**Aim:** Wilms tumor (WT) is a surgical neoplasm as per surgeons' view. We aimed to assess types and numbers of surgical violations (SVs) that performed during WT nephrectomy and their influence on prognosis.

**Methods:** Retrospective review of 112 patients with unilateral WT who presented to three tertiary Egyptian institutions between January 2015 and December 2020. All participating centers adopt children's oncology group protocol. Massive, initially unresectable tumors were managed by delayed surgery (after biopsy and chemotherapy). The SVs were analyzed by chi-square test and logistic regression.

**Results:** Upfront nephrectomy was performed in 62 patients, whilst the remaining 50 underwent delayed resection. Thirty-three SVs were practiced among 31 patients (22 during primary surgery and 11 during delayed surgery) with an overall incidence of 29.5%. Absence of lymph nodes sampling represented 78.8% (26/33) of all violations (fifteen in primary surgery patients and eleven in delayed surgery patients). Intraoperative tumor rupture and spillage accounted for 15.2% (5/33), and unnecessary resection of organs occurred in 6% (2/33). The two aforementioned SVs happened during primary surgeries. There were no SVs regarding incorrect abdominal incisions or unwarranted preoperative biopsies in any patient included. Follow-up to December 2021 showed that 14 patients had tumor relapses (6 local, 6 distant, and two both). Three-year overall and event free survival for the entire cohort were 89% and 87%, respectively. The SVs were not significantly correlated with both, mortality ( $p$ -value=0.326) and distant relapse ( $p$ -value=0.861). However, SVs had a significant impact on local recurrence ( $p$ -value=0.003).

**Conclusions:** Surgical violations are significant predictors for local recurrence, and they were more frequent in primary surgery patients. Failure of lymph node documentation was the main problem encountered in either primary or delayed surgery. Careful assessment of tumor resectability and adequate lymph nodes sampling can surely reduce SVs and improve future practice.

## A 1 in a million surprise; the retroperitoneal extra-renal Wilms tumour

**Tanvir Rafe** (Paediatric Surgery, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK), **Harmit Ghattaura** (Paediatric Surgery, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK), **Esther Blanco** (Paediatric Surgery, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK), **Darren Fowler** (Paediatric Surgery, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK), **Mohammad Bader** (Paediatric Surgery, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK), **Kokila Lakhoo** (Paediatric Surgery, John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, Oxford, UK)

**Aim:** We demonstrate a rare presentation, with fewer than 60 worldwide cases, of a common paediatric malignancy. ERWT may be found in locations including endocervix, uterus, testis, retroperitoneum, skin, and thorax. Theories for development include ectopic metanephric blastema, primitive mesodermal tissue of mesonephric duct remnants, as well as malignant transformation of cells with persistent embryonal potential.

**Case description:** A 4-year-old girl presented with a 3-week history of intermittent abdominal pain. There was no associated weight loss, haematuria and no change in bowel habit. A palpable mass was felt in the right iliac fossa. MRI showed a mass (8.0x11.7x10.5cm) likely to be of ovarian origin. Both kidneys appeared normal with right hydronephrosis (Figure 1). Ovarian tumour markers (AFP/bHCG/CA-125) were normal however LDH was elevated at 1441. At laparotomy, the tumour was retroperitoneal and adherent to the aorta therefore a decision was made for nephrostomy and biopsy. Tissue core biopsy did not show ovarian tissue but instead showed renal elements suggesting Wilms tumour (WT). Staging CT chest showed multiple, bilateral lung metastases. The patient was started on a chemotherapy regime as per metastatic Wilms' protocol. She subsequently underwent elective ureteric stent insertion, left oophorectomy for fertility preservation and total tumour excision (post-operative stage 1 Intermediate Risk). Following excision, the final diagnosis was retroperitoneal ERWT. Complete thoracoscopic removal of the two remaining lung nodules was performed, revealing viable tumour. Post-operatively she received further chemotherapy and whole lung radiotherapy. No germline pathological variant of WT1 gene was found.

### Conclusions

- Clinicians should have a high index of suspicion when treating tumours in aberrant locations; particularly in context of negative tumour markers. Rapid recognition and diagnosis are essential in allowing timely delivery of treatment.
- Within the literature, authors have treated according to WT protocol with an outcome that parallels WT.

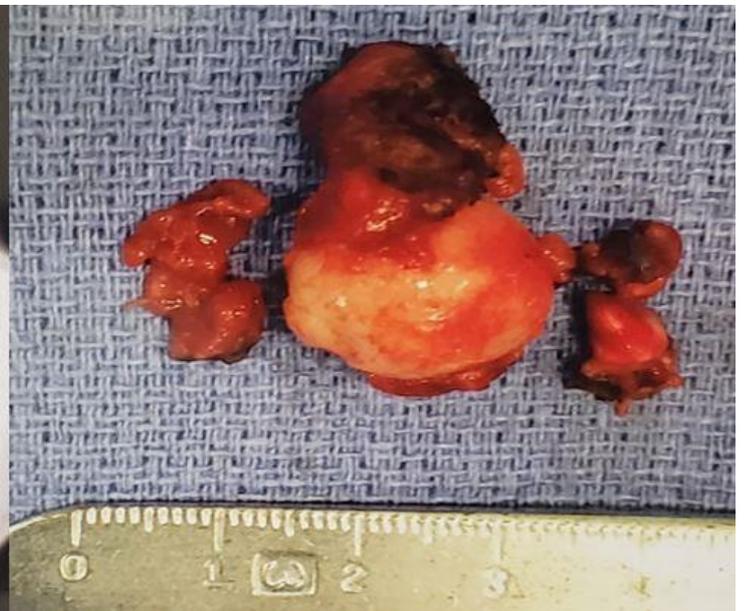
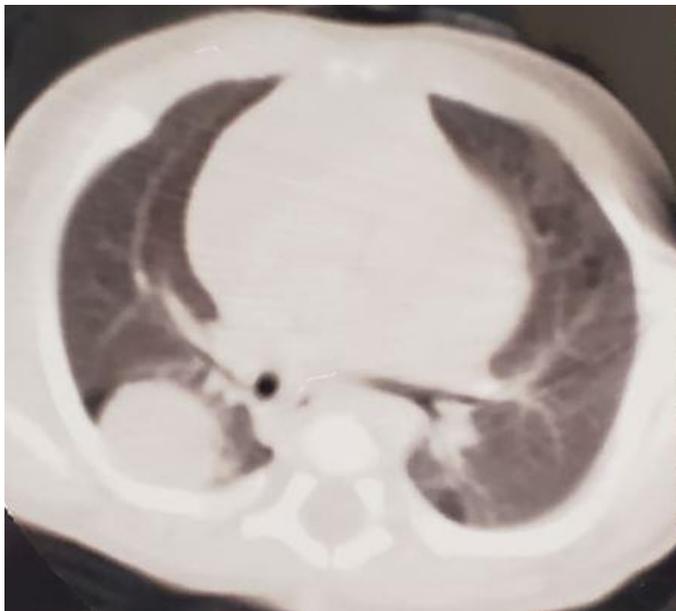
## Long term follow up in a premature neonate with metastatic congenital mesoblastic nephroma

**Devin Hosein** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Douglas James** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Joan Graziano** (Hematology/Oncology, Richmond university medical center, Staten Island, New York, New York, USA), **Santosh Parab** (Neonatology, Richmond university medical center, Staten Island, New York, New York, USA), **Anthony Barone** (Neonatology, Richmond university medical center, Staten Island, New York, New York, USA), **Jason Sulkowski** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Michael Smith** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Francisca Velcek** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA)

**Aim:** To highlight long term outcome of a very premature infant with congenital mesoblastic nephroma successfully treated with early surgical intervention and adjuvant chemotherapy on development of metastatic lesions with complete response and no residual disease.

**Case description:** At 27 weeks gestation during routine ultrasound for a twin pregnancy secondary to in-vitro fertilization, twin A was noted to have an abdominal mass. Mother went into pre-term labor and a Caesarean section was performed. Twin A weighed 1360 grams and was noted to have a large palpable right sided abdominal mass without any other associated abnormalities. Twin B unfortunately expired shortly after birth due to severe pulmonary hypoplasia. Imaging of the abdominal mass for Twin A was consistent with a renal mass. A right radical nephrectomy was done on day-of-life 21. The mass involved the superior pole with surgical pathology consistent with congenital mesoblastic nephroma with capsular invasion (Stage III). (Figure 1) Post operative course was uneventful. Due to extreme prematurity, adjuvant chemotherapy was not given. On surveillance chest X-ray at 15 weeks, a right upper lobe nodule was found, better characterized on computed tomography, which also demonstrated multiple hepatic nodules. A right thoracotomy and wedge resection was performed, the pathology of which demonstrated metastatic congenital mesoblastic nephroma. (Figure 2) Post operative course was satisfactory. Based on multi-disciplinary discussion, chemotherapy was initiated at 17 weeks of life with vincristine, cyclophosphamide and dactinomycin with complete clinical response. On 6 years follow up, there has been no evidence of disease and the child is thriving well.

**Conclusion:** To our knowledge this is the earliest gestational age premature baby with metastatic congenital mesoblastic nephroma. This was treated with a combination of early surgical intervention with subsequent adjuvant chemotherapy with the longest follow-up demonstrating no evidence of disease.



## Changing Trends from Inguinal Radical Orchiectomy to Testis-Sparing Surgery in Childhood Testicular Tumors

**Ozlem Balci** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Asli Nur Abay** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Sule Yesil** (Hematology-Oncology, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Ibrahim Karaman** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Ismet Faruk Ozguner** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Burcak Kurucu** (Hematology-Oncology, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Derya Erdogan** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Gurses Sahin** (Hematology-Oncology, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Ayşe Karaman** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey)

**Aim:** Pediatric testicular tumors are rare entities accounting for only 1-2% of all pediatric solid tumors. Herein we aimed to present the experiences of a tertiary pediatric hospital on testicular tumor and to reveal the changing surgical treatment trends over the years.

**Methods:** The patients who underwent surgery for testicular tumors between 1992-2022 were reviewed retrospectively. The patients' age, presentation, tumor location, tumor markers, ultrasonographic findings, histopathological types, surgical method and postoperative follow-up were evaluated. The patients were evaluated as prepubertal, postpubertal, and in 10-years periods according to the operation time.

**Results:** A total of 47 children with testicular tumor were identified. The median age was 6.2 years (0.04-18.4 years). Twenty-eight (59.6%) patients had left, 14 patients (29.8%) right, and 5 patients (10.6%) bilateral testicular tumors. The size of the tumor measured on US varied between 1-6cm. Thirty-two (68%) patients were at prepubertal ages. Twenty-four (51.1%) of the tumors were germ cell tumors and 79.2% of these patients were in prepubertal age, and 70.8% of germ cell tumors were localized in the left testis. The most common germ cell tumors were yolk sac tumor (n=9) and mature cystic teratoma (n=7). Paratesticular rhabdomyosarcoma (n=6) was the most common testicular tumors of non-germ cell origin. Radical inguinal orchiectomy was performed in 27 (71%) and testis-sparing surgery was performed in 11 cases (29%) for primary testicular tumors. Only testicular biopsy was performed in 9 cases for testicular involvement of Acute Lymphoblastic Leukemia and NonHodgkin Lymphoma. No recurrence was detected with a median follow-up period of 6.5 years (6 months-21.4 years).

**Conclusion:** Radical inguinal orchiectomy is still the standard surgical treatment for malignant testicular tumors. With the support of imaging methods, tumor markers and peroperative frozen examination, testis-sparing surgery should be preferred in prepubertal and some carefully selected postpubertal benign testicular tumors.

**Table 1.** Characteristics of patients with prepubertal and postpubertal testicular tumors.

		Prepubertal (n=32, 68%)	Postpubertal (n=15, 32%)	<i>p</i>	
<b>Age</b>		2.8 (0.04-10.7)	15.4 (11.4-18.4)		
<b>Presentation</b>	Scrotal swelling/mass	19 (59.4%)	5 (33.3%)	0.084*	
	Testicular stiffness	7 (21.9%)	2 (13.3%)		
	Pain	1 (3.1%)	-		
	Ultrasonography finding	5 (15.6%)	7 (46.7%)		
	Peroperative (undescended testis)	-	1 (6.7%)		
<b>Location of the tumor</b>	Right	9 (28.1%)	5 (33.3%)	0.033*	
	Left	22 (68.8%)	6 (40%)		
	Bilateral	1 (3.1%)	4 (26.7%)		
<b>Type of tumor</b>	Germ cell tumors (n=24, 51.1%)	Mature cystic teratoma	6 (31.6%)	1 (20%)	0.037*
		Dermoid kist	1 (5,3%)	-	
		Immature teratoma	3 (15.8%)	-	
		Yolk sac tumor	8 (42.1%)	1 (20%)	
		Embryonal carcinoma	1 (5.3%)	-	
		Mixed germ cell tumor	-	1 (20%)	
		Seminoma	-	2 (40%)	
	Non-germ cell tumors (n=14, 29.8%)	Paratesticular RMS	6 (66.7%)	-	0.063*
		Leydig cell tumor	1 (11.1%)	-	
		Sertoli cell tumor	1 (11.1%)	1 (20%)	
		Adrenal rest tumor	1 (11.1%)	2 (40%)	
		Gonadoblastoma	-	2 (40%)	
	Malignant tumor testicular involvement (n=9, 19.1%)	Acute Lymphoblastic Leukemia	3 (75%)	2 (40%)	0.524 <sup>#</sup>
NonHodgkin Lymphoma		1 (25%)	3 (60%)		
<b>Surgery</b>	Testis-sparing surgery	8 (28.6%)	3 (30%)	1.000 <sup>#</sup>	
	Radical inguinal orchiectomy	20 (71.4%)	7 (70%)		

\*Pearson chi-square test, <sup>#</sup>Fisher's exact test

Table 2. Testicular tumors and surgical treatment methods by years

		Years			<i>p</i>
		1992-2001 (n=17, 36.2%)	2002-2011 (n=16, 34%)	2012-2021 (n=14, 29.8%)	
<b>Age</b>		5.8 (0.04-15.4)	4.4 (0.3-16.1)	13.5 (0.8-18.4)	0.063 <sup>#</sup>
<b>Type of tumor</b>	Germ cell tumors (n=24, 51.1%)	9 (52.9%)	8 (50%)	7 (50%)	0.151*
	Non-Germ cell tumors (n=14, 29.8%)	2 (11.8%)	6 (37.5%)	6 (42.9%)	
	Malignant tumor testicular involvement (n=9, 19.1%)	6 (35.3%)	2 (12.5%)	1 (7.1%)	
<b>Surgery</b>	Testis-sparing surgery	-	5 (35.7%)	6 (46.2%)	0.036*
	Radical inguinal orchiectomy	11 (100%)	9 (64.3%)	7 (53.8%)	

<sup>#</sup>Kruskal-Wallis test, \*Pearson chi-square test

## Ovarian Sparing Surgery for Ovarian Mature Teratoma: A Reliable Surgical Option

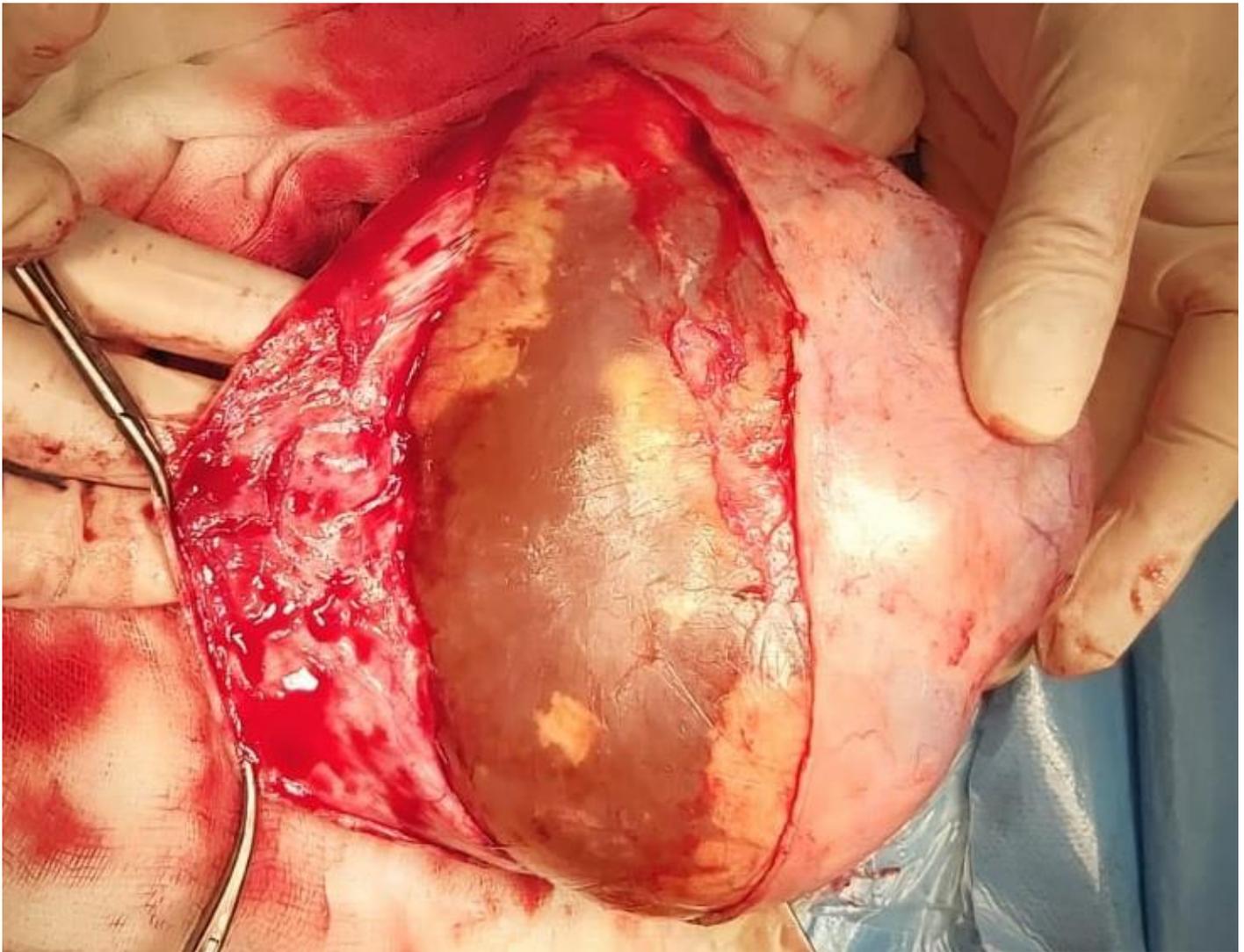
**Müjdem Nur Azılı** (Pediatric Surgery, Yıldırım Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Can İhsan Öztörün** (Pediatric Surgery, Yıldırım Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Yıldırım Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Sabri Demir** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Vildan Selin Çayhan** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Tural Jumazade** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Ülfet Nihal İrdem Köse** (Pediatric Surgery, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Neriman Sarı** (Pediatric Oncology, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Derya Özyürek** (Pediatric Oncology, Ankara City Hospital, Childrens' Hospital, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Yıldırım Beyazıt University, Faculty of Medicine, Ankara, Turkey)

**Aim:** Although the standard treatment of ovarian mature teratoma (OMT) is oophorectomy, it can involve both ovaries with an incidence of 10-20%, both synchronously and metachronously. We aimed to describe our experience with ovarian sparing surgery (OSS) for OT regarding its effectiveness and reliability in children.

**Methods:** This is a single-center study that was designed and retrospectively performed on girls under 18 years of age who underwent OSS for OMT between January 2017 to December 2021. The patients who were diagnosed with unilateral or bilateral OT were included in the study. OSS was performed in patients who had radiological imaging revealing mature cystic teratoma with fat and calcification content, and normal tumor marker levels.

**Results:** We evaluated 15 patients, including 14 unilateral and 1 bilateral synchronous OMT. The mean age was 13.1 years (4-17). OT was localized on the right ovary in 11 (73.3%) patients, on the left ovary in 3 patients, and bilateral in 1 patient. The main presenting symptoms were abdominal distension (n=7, 46.6%) and abdominal pain (n=4, 26.6). Although emergency surgery was required in 3 patients (20%), OSS could be performed in all cases with an average size of 10.2 cm between 3 and 28 cm. We had seen no complications related to the surgical option. The mean follow-up was 19 months (5-62 months). The follow-up was done with ultrasonographic examinations. In the follow-up, it was determined that there were follicles in all preserved ovaries and there was no recurrence.

**Conclusion:** To our opinion, OSS is a reliable method for OMT with high effectiveness in keeping the ovarian reserve and being away from complications. We could perform OSS even whether it was accompanied by torsion or a big-sized lesion. There was no recurrence in the follow-up period.



## Rectal adenocarcinoma in adolescent – report of a rare case

**Rebeka Pechanová** (Department of Pediatric Surgery, National Institute of Children's Diseases, Bratislava, Slovakia), **Igor Béder** (Department of Pediatric Surgery, National Institute of Children's Diseases, Bratislava, Slovakia), **Jaroslav Bibza** (Department of Pediatric Surgery, National Institute of Children's Diseases, Bratislava, Slovakia), **Alexandra Kolenová** (Department of Pediatric Hematology and Oncology, National Institute of Children's Diseases, Bratislava, Slovakia), **Daniel Pindák** (Department of Surgery, National Cancer Institute, Bratislava, Slovakia)

**Aim:** Colorectal carcinoma is a well known malignancy, most commonly affecting adults aged 50 years and older. In pediatric population is incidence of this tumor sporadic. Several genetic syndromes are associated with these tumors in young patients, one of them being Lynch syndrome, often called hereditary nonpolyposis colorectal cancer.

**Case description:** We report a case of a 16-year-old boy with history of 6 months of abdominal discomfort, loose stools, enterorrhagia and weight loss. Initial CT of abdomen and pelvis revealed a semicircular solid thickening of the rectal wall 18mm above the dentate line. Biopsy identified an invasive tubular rectal adenocarcinoma. Immunohistology proved high microsatellite instability. The patient was staged with thoracic and abdominal CT and pelvic MRI as T4N2Mx. According to the up-to-date protocols he was indicated for neoadjuvant therapy- immunotherapy and external radiotherapy. The follow-up MRI showed good effect. Nine months after the diagnosis patient underwent Dixon operation- anterior rectal resection with descendento-ano anastomosis with protective axial ileostomy. Complete tumor resection was proved perioperatively by histopathologist. Due to finding of anastomotic stricture on colonoscopy and attack of subacute appendicitis, stoma reversal was postponed for 10 months after the resection. Surgery was complicated by extensive bowel adhesions and postoperative period by colitis. The patient is currently with no residual malignancy, full GIT continuity, having no defecation problems. However, he is suffering from recurrent episodes of colitis and mild depression. Genetic testing confirmed Lynch syndrome.

**Conclusions:** This case is presented to wider the recognition of a rare malignancy in adolescent in which the early diagnosis improves the prognosis significantly. Attention should be paid on the complexity of management of these patients with the emphasis on the cooperation with an adult oncologist and surgical oncologist. This patient represents the first case of an adolescent with colorectal carcinoma treated this way in Slovakia.

## Long term outcome of sacrococcygeal teratoma in terms of bowel and bladder function: A single center study done at Children's hospital Lahore

**Jamaal Butt** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Muhammad Saleem** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Moeziah Moeziah** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Imran Hashim** (Children Hospital, University Of Child Health Sciences, Lahore, Pakistan), **Mehboob Ahmed** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Armaghan Ahmad** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamil Akhtar** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan)

**Aim:** Sacrococcygeal teratoma (SCT) is the most common congenital neoplasm, with a reported prevalence of 1 in 10 000-40 000 live births. Majority of the tumours are benign, and treatment is complete resection, including coccygectomy. Most infants have a favourable neonatal prognosis. Follow-up studies of children with SCT indicate function.

Objective of this study is to evaluate urinary tract and bowel function in children with SCT and assess predictors of poor outcome.

**Method:** A retrospective study conducted at Pediatric Surgery department of CH&UCHS. Charts of 17 patients were reviewed from year 2017 to 2021 and contacted via phone call. Urinary and bowel function were accessed using a predefined questionnaire. Perioperative, postoperative and histopathologic risk factors were analysed.

Degree of constipation, incontinence and voluntary bowel movements was accessed according to Krickenberg Classification and bowel function score by Rintala et al.

**Results:** Median age at surgery was 8 months with mean follow-up age of 3.93 years with male to female ratio of 1:2. Most common type was Altman type IV = 42.9% & 54.5% had associated spinal anomalies. Complete resection in 69.2% with mature histology in 66.7%. Post operative complications included wound infection in 15.4%, disruption and rectal perforation with colostomy in 23.1%. 18.2% had isolated urinary complaints, 27.3% had isolated bowel complaints, and 9.1% had bowel, bladder & lower limb weakness. Rintala bowel function score index was used to analyse the functional fecal outcome. 44.4% had score of < 15%, 33.3% had score 15-17, while 22.2% had score of 18-20. According to Krickenberg criteria, 22.2% had soiling or constipation. Postoperative functional urinary outcome was analysed which showed leakage without stress in 44.4%, 66.7% passed urine normally without straining, 12.5% had social problem.

**Conclusion:** Uncontrolled voiding, difficulty in bladder emptying and constipation were more common in patients with sacrococcygeal teratoma.

## “Inside out” – an exceptional intussusception

**Daniel Kardos** (Department of Pediatrics, University of Pecs, Pecs, Hungary), **Agnes Vojcek** (Department of Pediatrics, University of Pecs, Pecs, Hungary), **Gabor Ottoffy** (Department of Pediatrics, University of Pecs, Pecs, Hungary), **Peter Vajda** (Department of Pediatrics, University of Pecs, Pecs, Hungary), **Bela Kajtar** (Department of Pathology, University of Pecs, Pecs, Hungary), **Ede Biro** (Department of Pediatrics, University of Pecs, Pecs, Hungary)

**Aim:** To present a case of appendiceal intussusception associated with malignancy. Recorded MIS technique was used as surgical treatment and prepared for presentation.

**Case description:** A 2.5-year-old boy presented with signs of MIS-C. Three weeks before his admission he had COVID-19 infection, and since then he suffered from persistent high fever, petechiae on his lower extremities, several nosebleeds and periorbital edema. On admission the COVID-19 PCR test was positive (Ct: 36). In his laboratory test highly elevated CRP, D-dimer, IL-6, Ferritin, pro-BNP, APTT levels with mild leukopenia, neutropenia and anemia were noted. The blood smear showed activated lymphocytes without obvious abnormal cell population. Bilateral purulent otitis was also present. US revealed minimal pericardial fluid, hepatosplenomegaly, ileocecal lymphadenitis and ileo-ileal invagination without abdominal complaints. High dose of IVIG, steroid, ceftriaxone, aspirin and LMWH therapy were started. Beside the good clinical response, in the laboratory tests slightly decreased white blood cell count with relative lymphocytosis was reported. The control US after two days showed ileocolic intussusception without abdominal complaints and signs of ileus. The US guided hydrostatic reduction of the intussusception was incomplete, thus laparoscopic exploration was done. At the surgery the vermiform appendix was found to be thickened and intussuscepted into the caecum (McSwain Type III). The ileum was normal. After unsuccessful laparoscopic reduction, transumbilical ileocecal extraction was done. A 7.5 cm long, thickened, fragile appendix was removed. Histopathology revealed myeloid sarcoma as an extramedullary infiltration of AML. Oncological treatment of the patient is in progress. No surgical complications occurred to date.

**Conclusions:** No similar case in childhood was found in the literature. The presented case advocates that atypical presentation and clinical course of intussusception should always raise suspicion of a serious underlying disease. Using MIS technique is feasible for the treatment of intussusception.

## Management of pulmonary inflammatory myofibroblastic tumor in childhood – a single center experience

**Natalie Polivka** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic), **Jiri Snajdauf** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic), **Barbora Kucerova** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic)

**Aim:** Analysis of the management of pulmonary inflammatory myofibroblastic tumor (IMT) in children.

**Methods:** A single center retrospective study (years 2011–2021) of children who underwent lung surgery for IMT.

**Results:** Twenty-one children underwent lung surgery for primary pulmonary neoplasm – in 8, an IMT was identified (38%). Median age of patients was 12.8 years (7.7–15.4 years) with 5 boys and 3 girls. Presenting symptoms were recurrent respiratory infections (38%), pain (38%), cough (25%), current respiratory infection (25%), fatigue (13%), hemoptysis (13%) and in 2 patients an incidental finding on X-ray was observed. Preoperative histological verification was obtained in 2 patients by CT guided biopsy. Preoperative bronchoscopy was performed in two patients only, in one histopathology showed no tumor, in the other no biopsy was taken due to bleeding. Tumor localization was in the left upper lobe (2/9), left lower lobe (1/9), right upper lobe (1/9), right middle lobe (2/9), right lower lobe (2/9), 1 tumor was situated between the left upper and lower lobe (1/9) and in 1 patient 3 synchronous masses were found (right middle lobe, right lower lobe and 1 attached to the diaphragm). Four lobectomies and 5 wedge resections were performed. Anaplastic Lymphoma Kinase (ALK) gene mutation on chromosome 2p23 was found in 6 patients, 2 patients were ALK negative. No metastases were found. In 2 patients recurrence was detected on PET-CT. One patient is currently treated by Crizotinib with partial tumor regression. The other patient underwent surgical treatment after unsuccessful biological therapy and histopathology showed a pulmonary hyalinizing granuloma.

**Conclusions:** Outcomes of patients with pulmonary inflammatory myofibroblastic tumor are favorable if diagnosis and treatment are managed by a multidisciplinary team. Histopathological verification should be considered if suspected recurrence is seen on PET-CT.

## Tru-Cut ultrasound guided biopsy in pediatric oncology: a single centre study

**Perla Bonifazi** (Department Of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Anna Maria Fagnani** (Department Of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy), **Giulia del Re** (Department Of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Alessandra Preziosi** (Department Of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Anna Morandi** (Department Of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Ernesto Leva** (Department of Pediatric Surgery, Department of Clinical Sciences and Community Health, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy)

**Aim of the study:** To evaluate safety and efficacy of Tru-cut ultrasound-guided biopsy (US Tru-cut) in the diagnosis of solid masses in pediatric population.

**Methods:** We retrospectively analysed the patients who underwent US Tru-cut in our Center between November 2020 and December 2021. We considered intra- and post-operative complications (Clavien-Dindo classification) and biopsy effectiveness.

**Main results:** The study included 14 procedures in 13 patients respectively affected by: abdominal (7), pelvic (1), soft tissue (3) intrahepatic mass (1) and pancreatic mass (1). The median age at diagnosis was 5,8 years (range 1 month – 15 years). All the procedures were performed with the Interventional radiology team in the operating room under general anaesthesia. No intraoperative complication occurred. In the early post-operative period only one patient (mainly necrotic abdominal mass) required transfusion due to anemization (Clavien-Dindo grade II). No additional complication related to the procedure was recorded. Biopsy was diagnostic in all patients (4 neuroblastoma, 1 ganglioneuroblastoma, 1 rhabdomyosarcoma, 1 ovarian fibroma, 1 germ cell tumor, 1 hepatoblastoma, 1 vascular tumor, 1 intramuscular haemangioma, 1 pancreatoblastoma, 1 Burkitt lymphoma) and sufficient to perform biological investigations. In one case (rhabdomyosarcoma) a second US Tru-cut of the homolateral lymph node region was performed for disease staging.

**Conclusions:** Our experience demonstrate that US Tru-cut is a safe and effective procedure. US helps in identifying the more appropriate portion of the lesion to obtain diagnostic tissue, avoiding dangerous areas. Necrotic abdominal masses might be at risk of bleeding. In addition, prognostic biological studies can be performed to individualize therapy.

## Evaluation of Post-Thyroidectomy Complications in a Comprehensive Hospital of Children's

**Merve Duman Küçüküray** (Pediatric Surgery Department, Dr. Sami Ulus Maternity and Children's Research Hospital, Ankara, Turkey), **İbrahim Karaman** (Pediatric Surgery Department, Dr. Sami Ulus Maternity and Children's Research Hospital, Ankara, Turkey), **Ayşe Karaman** (Pediatric Surgery Department, Dr. Sami Ulus Maternity and Children's Research Hospital, Ankara, Turkey)

**Aim:** Thyroid nodules are rare in children and its malignancy rate is quite high compared to adults. However, pediatric patients have a better response to treatment. In this study, we present our patients who underwent surgery for thyroid nodules and we aimed to determine frequency and risk factors of post-thyroidectomy complications, similarities and differences with literature and the role of the surgeon's case volume.

**Methods:** Children with thyroid nodules and underwent thyroid surgery who were treated in Dr. Sami Ulus Maternity and Children's Research Hospital Pediatric Surgery Department were retrospectively reviewed from 2005 to 2018.

**Results:** A total of 45 patients who underwent thyroid surgery were identified and the data of 52 thyroidectomy operations, which were performed for these patients were analyzed. The female/male ratio was 3:1, and the mean age was  $14.1 \pm 2,6$  years (range 8-18 years). Malignancy was detected in 26.7% of the patients and the most common subtype was papillary thyroid carcinoma with an incidence of 58.3%. Postoperative transient complications were observed in 25% of the patients with no permanent complications. Among 52 surgical procedures; 11 (%21,1) is with transient hypocalcemia and 2 (%3,8) with transient vocal cord paralysis. These complications have been seen who underwent bilateral resection. Two main pediatric surgeons had performed the operations. The decision of all patients to operate was made by the council. Fine needle aspiration biopsy results were found to be significant in predicting malignancy.

**Conclusions:** In this study complication rates were found to be similar with literature. Due to the relatively low incidence of thyroid pathologies that require surgical intervention in children, it was thought that it would be appropriate to conduct such cases by comprehensive pediatric hospitals where a multidisciplinary approach is adopted.

**Keywords:** Thyroid nodule, children, thyroidectomy, hypocalcemia, thyroid cancer.

### Surgical Techniques and Complication Rates

Thyroid surgery	n	Hypocalcemia n (%)	Vocal cord paralysis n (%)
Bilateral	29	11 (%38)	2 (%9,5)
Subtotal thyroidectomy	3	-	-
Near-total thyroidectomy	3	-	1
Total thyroidectomy	14	7	1
Complementary thyroidectomy	7	4	-
Removal of thyroid tissue remnants	2	-	-
Unilateral	23	-	-
Nodulectomy	6	-	-
Subtotal lobectomy	5	-	-
Lobectomy	12	-	-
Total	52	11	2

## Factors associated with necrotizing soft tissue infections in pediatric population at a high-complexity reference centre

**Andrés Ramirez** (Pediatric surgery, Universidad Nacional de Colombia, Bogotá, Colombia), **Iván Molina** (Pediatric surgery, Fundación Hospital Pediátrico la Misericordia, Bogotá, Colombia), **Javier Valero** (Pediatric surgery, Fundación Hospital Pediátrico la Misericordia, Bogotá, Colombia), **Daniela Moreno** (Pediatric surgery, Universidad Nacional de Colombia, Bogotá, Colombia), **Fernando Fierro** (Pediatric surgery, Fundación Hospital Pediátrico la Misericordia, Bogotá, Colombia), **Vicky Cardenas** (Pediatrics, Universidad Nacional de Colombia, Bogotá, Colombia)

**Aim:** To characterize the pediatric population that presented necrotizing soft tissue infection at the Fundación Hospital Pediátrico la Misericordia (HOMI)

**Methods:** This was a retrospective study of pediatric patients with diagnosis of necrotizing soft tissue infections treated by the pediatric surgery service at HOMI, a referral hospital for oncological pediatric patients over a 5-year period (2017 to 2021). A descriptive analysis was performed.

**Results:** The study included 52 patients, 65.4% were female, the average age was 8.1 years (sd: 5.53). The infection was most frequently located in the perineum (59.6%). Early symptoms were present in 88.5% (pain being the most frequent) and late symptoms in 73.1%. All but one patient had identifiable risk factors for infection, immunocompromised was the most frequent (73.1%), followed by oncological diagnosis (51.9%) and surgical procedures (abdominoperineal, colostomy and bone marrow biopsy, with 13.3% each one) All patients underwent surgical debridement (mean 3 procedures per patient, SD: 2.0) and 32.7% underwent colostomy. The most isolated microorganism in the tissues in monomicrobial and polymicrobial infections was *Escherichia coli* (11.5% in each group). 57.7% required management in the Intensive Care Unit. The average mortality was 23.1%, being higher in patients with acute lymphoblastic leukemia and neutropenia (35.0%).

**Conclusions:** In the present study, the highest frequency of soft tissue infections was in the immunosuppressed and oncological population. The characteristics of our study and mortality were different from those described in the literature due to the predominance of this population.

## Therapeutic effectiveness of sirolimus for complicated lymphatic malformations in children: A multicenter analysis

**Yu Jeong Cho** (Department of Surgery, Hanyang University Guri Hospital, Hanyang University College of Medicine, Guri-si, Korea), **So-Hyun Nam** (Department of Surgery, Dong-A University College of Medicine, Busan, Korea), **Seong Chul Kim** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Dae Yeon Kim** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Jung-Man Namgoong** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Hyunhee Kwon** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Suhyeon Ha** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Min Jeng Cho** (Department of surgery, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea), **Ju Yeon Lee** (Department of Surgery, Chonnam National University Children's Hospital, Gwangju, Korea), **Eunyoung Jung** (Department of Pediatric Surgery, Keimyung University Dongsan Medical Center, Daegu, Korea)

**Aim:** Sirolimus has emerged as a safe and effective treatment for complicated lymphatic malformation (LM). We aim to prove the effectiveness and safety of sirolimus as a therapeutic option for patients with complicated LM.

**Methods:** We reviewed medical records and radiological images of patients treated for complicated LM with sirolimus for at least six months across 6 hospitals from January 2018 to March 2022. All patients were administered oral sirolimus starting at 0.8mg/m<sup>2</sup> every twelve hours with target serum concentration levels of 8-15 ng/ml. Evaluation for clinical symptoms and LM volume on magnetic resonance imaging (MRI) were reviewed to assess the effect of sirolimus treatment. Evaluation of disease response was divided into three categories: significant (>50%), moderate (20%-50%), and modest (<20%).

**Results:** Of the 44 patients treated with sirolimus for complicated LM, 23 patients were enrolled in the study. The median age at the initiation of sirolimus treatment was 4.0 years (Range: 1 month-14.9 years) and the median duration of treatment was 2.6 years (Range: 8 months-3.5 years). The most common lesions were located in the head & neck and mediastinum (60.9%). Five patients had tracheostomy for respiratory distress caused from LM and 2 were weaned off of mechanical ventilation after a year of sirolimus treatment. 18 patients (78.1%) demonstrated significant and moderate volume reduction of LM on MRI or improvements in clinical symptoms such as less bleeding and restoration of organ function. Eight patients (34.7%) were taken off the medication due to adverse effects: four had gastrointestinal symptoms (17.4%), three had respiratory complications, and one had skin/appendages (4.3%). None of the patients had Grade 3 and higher toxicities attributable to sirolimus.

**Conclusion:** Our early experience showed that sirolimus administration brought satisfactory outcomes without fatal complications to over 70% of patients with intractable LM.

## Pediatrics Ewing's Sarcoma of the Buccal – Lingual with Distance Metastases: A Case Report

**Anastasia Luana** (Surgery, MRCCC Siloam Hospitals Jakarta, Jakarta, Indonesia), **Eldiyani Yessi** (Surgery, Medistra Hospital Jakarta, Jakarta, Indonesia)

Ewing's sarcomas (ES) are rare malignancy primarily affecting skeletal system. An aggressive tumor with a tendency towards recurrence following resection and early metastasis. Peak incidences are between the ages of 10- 20 years old about 30% of the cases founded in younger age. The extra skeletal form is rarely encountered in the head and neck region. This is a case report of a 4 -year -old boy who presented with a 9-month history of painless, huge right buccal- lingual mass, followed by inability of chewing, drooling, and malnourish. Clinical findings revealed a huge mass in right buccal about 15cm x 12cm x 10 cm with no tenderness, solid in consistency intra oral buccal aspect attached to lingual side protruded into collar and push the tongue outside that easily to bleed with no ulceration. The chest CT revealed coin appearance in both lungs.

The lesion was previously attempted for surgery elsewhere to do the mass reduction and ended with incisional biopsy due to huge mass that high risk of bleeding, unfortunately the histopathological findings cannot establish due to lack of sample and the pathologist ask for more sample to examine and for immunohistochemistry. In our department the patient was treated with surgery, radiotherapy and chemotherapy and the result of histopathological with immunohistochemistry revealed extra skeletal Ewing's sarcoma. After 5-month surgical procedure the PET scan revealed the is no residual mass in cervical lymph node and the lung lesion was clear.

**Keywords:** Ewing's sarcoma, buccal mass, immunohistochemistry, distance metastases

## ORAL PRESENTATION SESSION VII

### Urology & Genital/DSD 3

#### Tunica Vaginalis Flap versus Preputial Dartos flap For Primary Snodgrass Repair of Hypospadias

**Manal Dhaiban** (Paediatric Surgery and Urology, Pakistan Institute of Medical Sciences, Islamabad, Pakistan),

**Nadeem Akhtar** (Paediatric and Neonatal Surgery, Pakistan Institute of Medical Sciences, Islamabad, Pakistan)

**Aims:** The aim was to compare the outcome of standard Snodgrass repair using Tunica vaginalis Flap (TVF) versus Dartos Flap (DF) as soft tissue cover in primary hypospadias, particularly in relation to the occurrence of Urethrocutaneous fistula (UCF) and whether tunica vaginalis flap had a preventive role in reducing the early postoperative complications.

**Methods:** Patients diagnosed with hypospadias who fulfilled the criteria were randomised into two groups based on the type of inter-positional layer used to cover the neourethra. All patients had primary Snodgrass repair, then categorised to Group 1 where TVF and Group 2 where DF was used as inter-positional layer between the urethroplasty and the skin. All patients were followed up to 6 weeks. The Outcome of treatment was taken as treatment success or failure depending on the presence or absence of the postoperative Urethrocutaneous fistula during the follow up period.

**Results:** Total of 60 patients' data were analysed. The mean age of patients  $4.6 \pm 2.2$  years. Hypospadias meatus was commonly distal penile (TVF=70%, DF=63%), mid-Penile in 20% for both groups, and proximal penile 10% in TVF group, and 16% in DF group. The TVF group had a successful outcome in 96.6% and only one patient (3.33%) developed UCF, whereas, the DF group had a success rate of 90% with a higher rate of UCF occurring in 3 patients (10%), but it did not reach a statistical significance ( $P=0.301$ ). The overall rate of postoperative complications were more in the DF group (8.5%) as compared to TVF group (3.3%); however, this difference was not found to be statistically significant ( $P= 0.243$ ).

**Conclusion:** In our study, Snodgrass repair with Tunica Vaginalis Flap was associated with an acceptable complication rate and good cosmetic results, thus may be an alternative to Dartos Flap for the coverage of neourethra in primary hypospadias.

## A Survey Study on Approach to Penile Curvature Among Turkish Surgeons

**Murat Cakmak** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Firat Sertturk** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Pari Khalilova** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ufuk Ates** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** The presence of penile chordee and its treatment approach continues to pose a debate on pediatric surgeons. The treatment protocol could not be determined clearly due to the lack of evidence-based practices on this subject. In this study, it was aimed to investigate the approach of Turkish pediatric surgeons to penile chordee treatment.

**Methods:** Questionnaire questions were prepared including controversial issues in the literature. The survey was submitted via Google Forms and 80 people responded to the questionnaire.

**Results:** A total of 80 pediatric surgeons participated in the study. Of the pediatric surgeons participating in the study, 41.3% (n=33) performed routine erection tests; 58.3% (n=47) stated that they did not do it to every patient. Most of the participants (85%) were using instruments to evaluate curvature and 45% (n=36) of the participants stated that they performed penile chord surgery if it was 30 degrees and above, 27.5% (n=22) 20 degrees and above, 20% (n=16) 15 degrees and above, 7.5% (n=6) if it was 10 degrees and above. The reasons for correction were: hypospadias surgery (76.3%), cosmetic considerations (71.3%) and future sexual life (56.3%). Plication techniques were the most common methods with a ratio of 45%. For chordee correction, 48.8% of the surgeons preferred surgery between 1-2 years old and 42.5% between 6 months-1 years of age.

**Conclusions:** Penile curvature treatment is still debateful regarding many aspects. There is not a consensus on the topic to guide the surgeons in detail.

## Parental perceptions about hypospadias dressing & Role of dedicated specialist Hypospadias nurse in enhanced patient care pathways

**Shreya Kulkarni** (Norfolk and Norwich University Hospital, Norwich, UK), **Joshua Cave** (Paediatric Surgery, Norfolk and Norwich University Hospital, Norwich, UK), **Joanne Parr** (Paediatric Surgery, Norfolk and Norwich University Hospital, Norwich, UK), **Ravindar Anbarasan** (Paediatric Surgery, Norfolk and Norwich University Hospital, Norwich, UK), **Jonathan Clibbon** (Plastics and Reconstructive Surgery, Norfolk and Norwich University Hospital, Norwich, UK), **Milind Kulkarni** (Paediatric Surgery, Norfolk and Norwich University Hospital, Norwich, UK), **Azad B Mathur** (Paediatric Surgery, Norfolk and Norwich University Hospital, Norwich, UK)

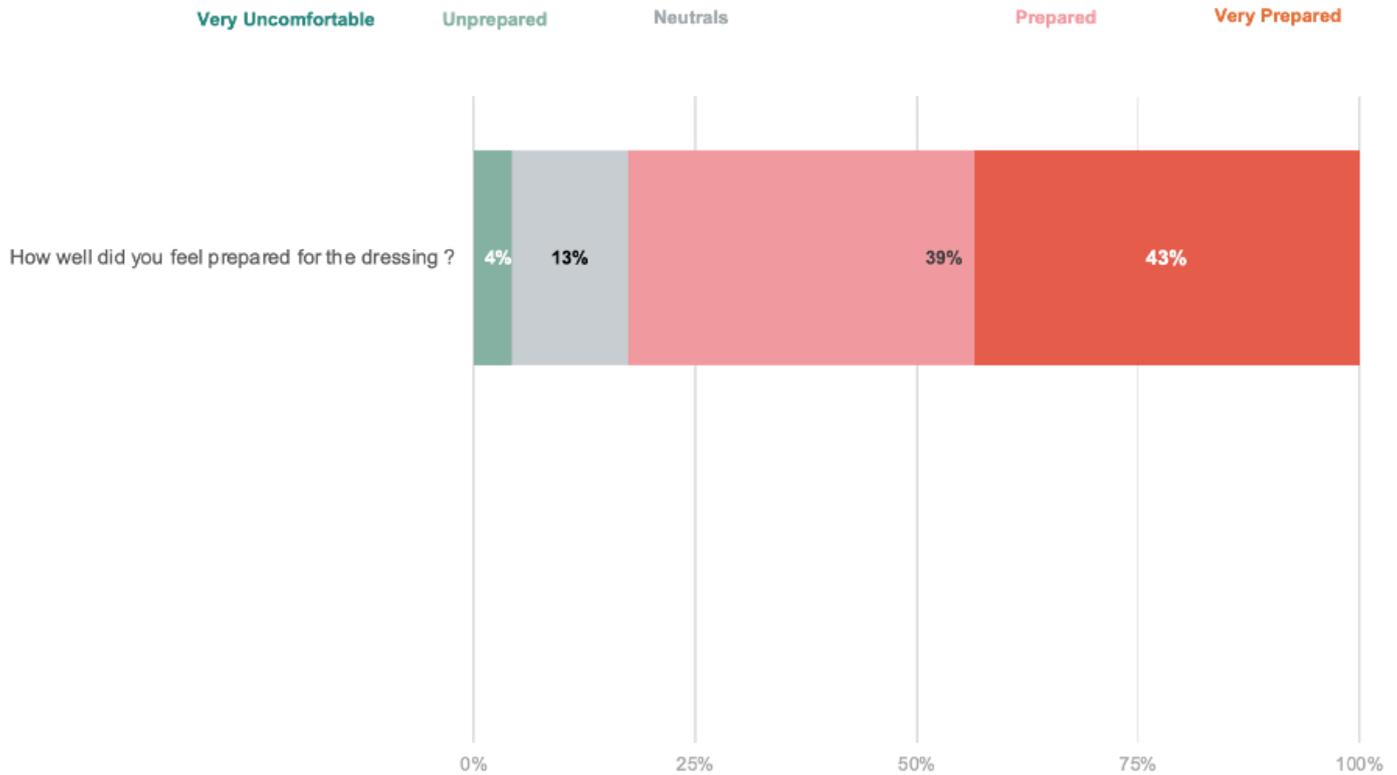
**Aim:** Post-operative hypospadias dressings remain a challenging and variable issue of modern Hypospadias surgery. Besides giving compression, the dressing protects delicate repair, maintains an upright position and keeps stents in place. The dressing needs to be comfortable to the patient and should allow easy removal. Our units utilises a standardised Double nappy; with an inner stent & dressing and outer nappy for soiling. Specialist nurse practitioner's role in supporting Parents after discharge is invaluable in dealing with any problems in a timely manner and preventing repeated hospital visits. We aimed to determine Parental Perception & Satisfaction on Post-operative Dressing care following Hypospadias surgery.

**Methods:** Parents of patients undergoing Hypospadias surgery completed a focused questionnaire immediately after removal of Dressing, during a 3 month period. The 5 point Likert scale Questionnaire assessed Parental comfort for Hypospadias dressing care and in the post-operative period (caring, cleaning and changing dressings at home).

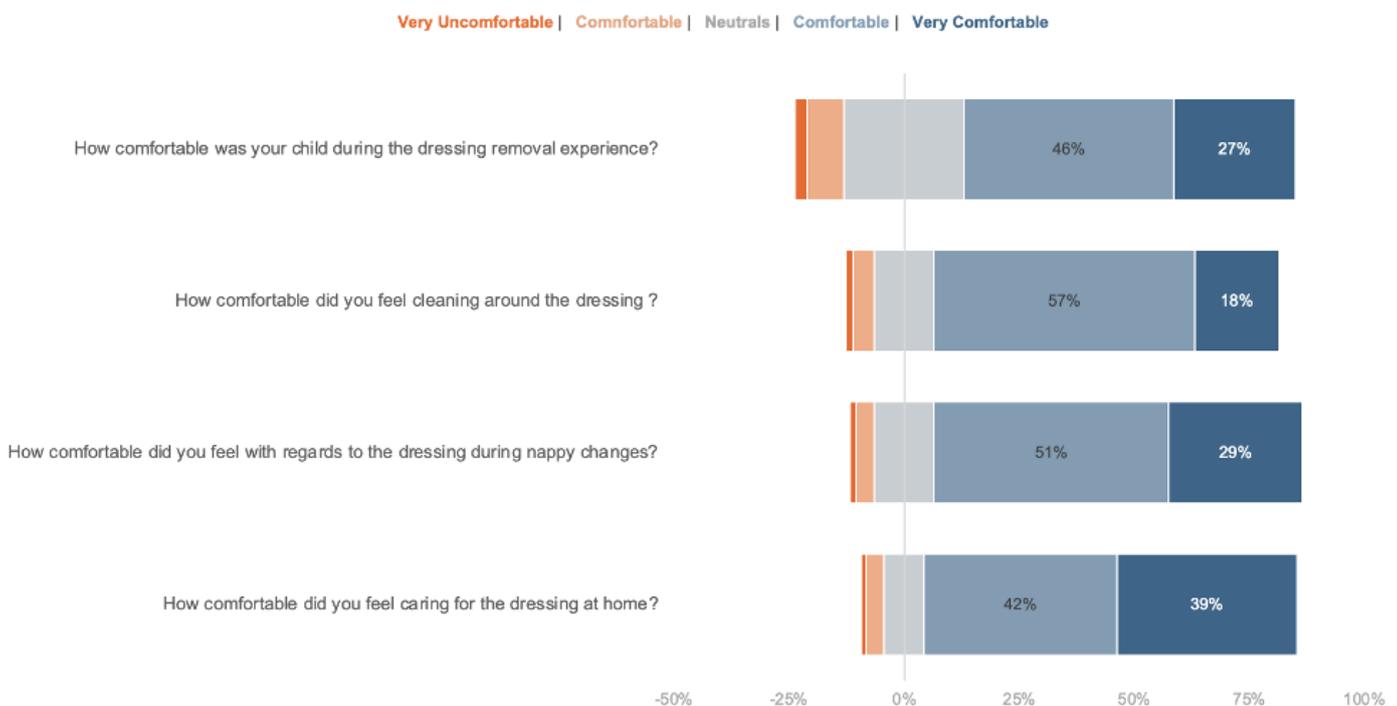
**Results:** 23 Survey responses were collected. 83% of Parents felt Prepared for care of the Post-operative dressings, with majority (91%) having no concerns regarding the use of a double nappy. The majority of Parents reported being comfortable or very comfortable in caring for the dressing at home (73%), cleaning around the dressing (65%) and nappy changes around the dressings (60%). The Parental perceptions of their child's comfort during the dressing removal showed more varied responses, however the majority of parents (91%) would not recommend any sedation for the dressing removal if given a choice. 100% of Parents were satisfied with the functionality of the dressing, with 74% stating they were very satisfied.

**Conclusions:** Advances and innovations of Hypospadias dressings, may introduce new anxieties and demands on parents during the Post-operative period of Hypospadias Surgery. Peri-operative support of Parents and Families, and involvement of specialist nursing pathways improves parental preparedness and satisfaction.

## Parental Preparedness regarding Post Operative Hypospadias Dressing Care



## Parental Comfort regarding Post Operative Hypospadias Dressing Care



## Hypospadias complications & management in a Tertiary Referral center

**Ahmed T Hadidi** (*Sana Klinikum Offenbach, Seligenstadt, Germany*)

**Aim:** To analyse patients referred with hypospadias complications following hypospadias repair and present a plan of management.

**Materials & Methods:** Between January 2003 and December 2020, 921 patients were referred with complications following hypospadias repair. Among those, 653 patients maintained follow up more than a year. Patients were classified into 5 groups: Group 1 patients, presented with persistent dysuria (241), Group 2 presented recurrent fistula (243), patients in Group 3 had wound dehiscence (131), two patients presented diverticulum due to stenosis (Group 4). Thirty six patients in Group 5 had extensive scarring and penile curvature associated with stenosis and/or fistula.

The mean age at surgical correction was 3.5 years (range 1-18). The complications were corrected using 1 of 6 techniques; urethral advancement (46), Slit-like Adjusted Mathieu (SLAM) (404), lateral based onlay flap (122), Thiersch Duplay (33), chordee excision and distal urethroplasty (12) and two stage buccal mucosal grafts (36). The mean follow-up was 54 months (range 1-18 years)

**Results:** The failed Hypospadias repair was corrected with a single procedure in 524 (80%). 28 patients (4%) underwent a planned two stage repair and 101 patients (16%) required 237 procedures to complete the repair.

**Conclusions:** Careful patient selection is necessary to achieve good outcome with the TIP technique. Urethral stricture was the commonest complication encountered in the study population. Fistula following TIP procedure recurred frequently after simple closure and required incision of the narrow urethra and reconstruction of a wider urethra. Vascularised skin flaps were the first choice and gave excellent results.

## Age-dependent early complications of hypospadias repair – a single institutional experience

**Benjamin W Woodward** (Royal Alexandra Children's Hospital, Brighton, UK), **James Dale** (Royal Alexandra Children's Hospital, Brighton, UK), **Hesham Elagami** (Royal Alexandra Children's Hospital, Brighton, UK)

**Aim:** To correlate age at hypospadias repair with early post-operative complications and highlight need for adaptation to post-operative care in older children, to avoid such complications.

**Methods:** Anecdotal evidence from post-COVID era suggests boys with delayed surgery for hypospadias suffer increased rates of early post-operative complication. Hence, a retrospective analysis was conducted of all patients undergoing hypospadias repair between March 2019 to 2022. Data was gathered from electronic records and case notes and included age at first surgery, nature of surgery, severity of hypospadias, number and nature of early complications (within 72 hours of surgery).

**Results:** Of 105 patients undergoing hypospadias repair, 10 were excluded (insufficient documentation). One third were aged under 2 years at first surgery (range 1.2 to 4.6 years). Patients were divided into Group A (<2yrs of age at first surgery) or Group B (>2yrs). While patients in Group A encountered no early post-operative complications, 7 in Group B (12%) suffered a range of complications including dislodged stents (3/6), significant spasmodic pain requiring prolonged hospital stay (2/6) and urinary retention (2/6). More than half of these children required emergency supra-pubic catheter insertion (figure 1).

**Conclusions:** Significantly more children undergoing hypospadias surgery after the age of 2yrs suffered considerable complications within the early post-operative period. This resulted in prolonged hospital stays and a number returning to theatre for insertion of a supra-pubic catheter. Review of notes revealed non-compliance with medication (oxybutynin), patients' own forceful interference with stents and ineffective intra-operative dressing application as predominant aetiology. We recommend a tailored approach to the post-operative care of older children undergoing hypospadias repair, including strict parental education regarding dressing/stent care and medication compliance, as well as efforts to enhance robustness of dressings and stent-anchorage in children likely to pull at stents. The need to aim for early correction of hypospadias is further highlighted here.

	Group A (<2yrs at first surgery)	Group B (>2yrs at first surgery)	p value
Early post-operative complications n (%)	0/35 (0%)	7/60 (12%)	0.048
Emergency SPC insertion n (%)	0/35 (0%)	4/60 (7%)	0.131

**Figure 1**

## Evaluation of risk factors of meatal stenosis development following circumcision

**Mehrdad Hosseinpour** (Isfahan University of Medical Sciences, Isfahan, Iran), **Mohammad Reza Molla-Abasi** (Isfahan University of Medical Sciences, Isfahan, Iran)

**Aim:** The aim of this study was to assess the risk factors of meatal stenosis development following circumcision

**Methods:** This case control study was conducted on 98 children with meatal stenosis (case group) and 98 children without meatal stenosis (control group). Age of child at the time of circumcision, place of circumcision, person performing circumcision, procedure of circumcision, number of diaper change per day, type of surgery and anesthesia, history of previous surgery and trauma and appearance of meatitis following circumcision were evaluated.

**Results:** The mean age of patients referring to physician in case and control group was  $4.04 \pm 2.68$  and  $4.41 \pm 3.44$  years. None of the patients without history of previous surgery, trauma and meatitis showed meatal stenosis, indicating significant relation between meatal stenosis and the history of previous surgery, trauma and meatitis ( $P < 0.01$ ). Furthermore, there was significant relation between meatal stenosis with person performing surgery, technique of circumcision surgery, type of diaper, number of diaper change times, and age of child at time of circumcision ( $P < 0.01$ ).

**Conclusions:** According to these findings, meatal stenosis is a multi factorial disease and is influenced by several factors. It seems that by regular diaper change, performing circumcision at proper age in the presence of an expert person with suitable technique can be avoided meatal stenosis to a large extent.

## How safe is circumcision in a patient with a normal looking preputium?

**Duygu Tatli Ucarci** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey), **Y. Doruk Bilgili** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey), **B. Haluk Guvenc** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey)

**Aim:** Circumcision is perceived as a simple surgical procedure by the common society. Patients having an underlying uncommon penile anomaly with an apparently normal looking (intact) preputium, on the other hand, may face an unexpectedly higher chance of morbidity when performed by unskilled hands. Such complications predispose functional or cosmetic problems that need to be corrected in the future. In this retrospective study, we investigated types of penile anomalies detected during the perioperative period in patients with an intact preputium, who applied for circumcision.

**Methods:** The documents of 1284 patients who had been circumcised in our clinic during the past eight years were reviewed and 1071 patients who applied without any medical complaints were identified.

**Results:** A total of 159 patients (14.84%) presented with an additional penile anomaly which required surgical correction. The mean age was 6.44 years (6 months-16 years), and the distribution of anomalies were observed as 45 degree and above penile torsion in 95 cases (8.87%), penoscrotal web in 35 cases (3.26%), and glandular hypospadias in 29 cases (2.7%). Circumcision was accomplished following surgical correction of the mentioned anomalies in all patients without any complications. Patients did not require any additional interventions during the follow-up period.

**Conclusions:** It is highly probable that almost all of these patients have been examined at least once by a general practitioner or pediatrician throughout their lives. Their parents, however, were unaware of an accompanying penile anomaly until they applied to our clinic. This situation probably must be a clue concerning insufficient training during the medical education. We believe that, during the pediatric age, strict legal arrangements are required considering mandatory consultation by a specialist surgeon prior to circumcision.

## Supernumerary Kidney: An Extremely Rare Case in Children

**Mehmet Hanifi Okur** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Tahsin Onat Kamçı** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Bahattin Aydoğdu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Selver Özekinci** (Pathology, Dicle University Medical School, Diyarbakır, Turkey)

**Aim of Study:** We aimed to present a very rare urological anomaly confused with retroperitoneal mass.

**Case Description:** A 15-years-old girl was referred to our department due to retroperitoneal mass from a high-volume oncology hospital. Physical examination didn't detect any significance. Preoperative laboratory values were unremarkable. PET-CT was interpreted as moderately increased FDG uptake is present in a relatively smooth-circumscribed heterogeneous soft tissue lesion with a size of approximately 46.5 x 47 mm in sagittal-axial sections in the lower pole anterolateral of the left kidney, whose intermediate planes cannot be discerned with the kidney (SUV max; 2.85, late; 2.36). The patient underwent a laparotomy. Perioperatively, we found a mass in a retroperitoneal area that mimicked neural crest-derived mass in appearance but was actually a supernumerary kidney. The patient underwent surgery and the supernumerary kidney was resected laparoscopically. The sample was sent to the pathology laboratory. And this sample was interpreted as kidney tissue by the pathologist. Eight months of the follow-up period were uneventful.

**Conclusion:** The surgeon should keep in mind that a supernumerary kidney may mimic a retroperitoneal mass.

**Keywords:** supernumerary kidney, retroperitoneal mass, kidney

## Hydrosalpinx in Pediatric Population: Case Report and Literature Review

**Katarzyna Polak** (Pediatry, Hospital Universitario Nuestra Senora de Candelaria Tenerife, Santa Cruz de Tenerife, Spain), **Simona Rusu** (Paediatric Surgery, Hospital Universitario Nuestra Senora de Candelaria Tenerife, Santa Cruz de Tenerife, Spain)

**Aim:** Hydrosalpinx is an adnexal pathology with a rare incidence in pre and post-menarchal girls. It could cause diagnostic dilemmas and a debatable therapeutic approach. We present the case of one of our patients with hydrosalpinx and review of the cases reported in the literature.

**Case report:** We describe the case of a 12-years-old post-pubertal girl who presented with 5 days of colicky abdominal pain with periods of acute episodes with resolution on painkillers. No previous medical history. Clinical examination revealed tenderness in the lower abdomen. The initial diagnosis workup consisted of laboratory (normal range) and ultrasound scan that suggested the possibility of a right-sided ovarian teratoma. Second sonography revealed a cystic process in the pelvis, and the performed MRI confirms engorgement and dilatation of the right fallopian tube. Exploratory laparoscopy was considered, but upon discussion with the gynaecology team, it was decided to proceed with conservatory treatment and prescription of hormonal therapy. One year later, the hydrosalpinx is resolved.

A PRISMA review of the medical literature of the last 15 years revealed 11 case reports, 6 case series and one literature review. This sums up a total of 61 cases, with a median reported age of 12 years. In the majority of the cases was proceeded with a surgical approach and salpingectomy. Reported associated conditions are previous abdominal surgery, Hirschsprung disease, and Congenital Adrenal Hyperplasia. However, the vast majority of the cases remain

**Conclusion:** Hydrosalpinx should be in the differential diagnosis for pelvic cystic masses with a multidisciplinary approach when confirmed. Conservative management should be offered when possible in order to provide the best option for future fertility.

## ORAL PRESENTATION SESSION VIII

## Lower GIT 2 (colorectal &amp; IBD)

## Does Protocol Miconazole Administration Improve Mortality and Morbidity on Surgical Necrotizing Enterocolitis?

**Koshiro Sugita** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Mitsuru Muto** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Masakazu Murakami** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Keisuke Yano** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Toshio Harumatsu** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Shun Onishi** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Takafumi Kawano** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Motofumi Torikai** (Department of Neonatology, Kagoshima City Hospital, Kagoshima, Japan), **Satoshi Ibara** (Department of Neonatology, Kagoshima city hospital, Kagoshima, Japan), **Satoshi Ibara** (Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan)

**Aim:** Our previous study reported that miconazole (MCZ) had anti-inflammatory effects and prevented the development of gastrointestinal perforation in premature infants. The purpose of this study was to investigate the potential favorable effect of MCZ administration on necrotizing enterocolitis (NEC) in premature infants.

**Methods:** Out of 1172 premature infants, 15 patients with NEC (1.3 %) underwent surgery between 2011 and 2020. Protocol MCZ administration for 3 weeks was applied for neonates born at < 26 weeks' gestation or weighing < 1000 g. We compared MCZ (+) with MCZ (-) regarding background characteristics, clinical outcome and neurological prognosis using the Kyoto Scale of Psychological Development (Developmental Quotient: DQ). DQ included three domains as follows; postural-motor domain, cognitive-adaptive domain, language-Social domain.

**Results:** MCZ (+) NEC patients [gestational age: 25 (23-26) weeks, birth weight: 665 (565-781) g] had significantly earlier birth and lower birth weight comparing with MCZ (-) NEC patients [gestational age: 29 (27-30) weeks, birth weight: 1004 (944-1429) g]. MCZ (+) NEC patients (29 [25-30] day) underwent surgery 10 days later comparing with MCZ (-) NEC patients (19 [16-21] day). Body weight at surgery of MCZ (+) NEC patients were almost same as those of MCZ (-) NEC patients in spite of smaller birth weight ( $p=0.142$ ). Mortality had no significant difference between NEC patients with and without MCZ ( $p=0.600$ ). There were no significant differences of DQ of all domains at 1.5 years of corrected age [MCZ (+): 79 [58-93], MCZ (-): 91 [87-96],  $p=0.248$ ] and at 3 years of chronological age [MCZ (+): 84 [56-87], MCZ (-): 86 [85-87],  $p=0.374$ ], respectively.

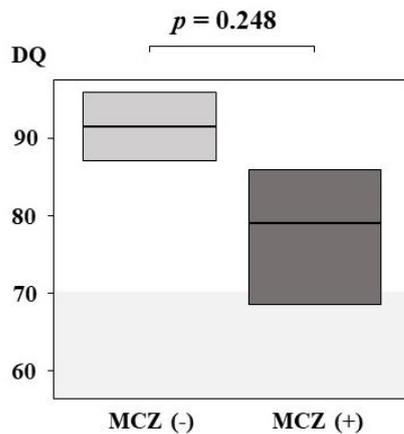
**Conclusions:** Protocol MCZ administration did not improved mortality, but it delayed the onset of NEC in neonates born at < 26 weeks' gestation or weighing < 1000 g and thus kept the DQ level of those patients.

**Table. Patient characteristics**

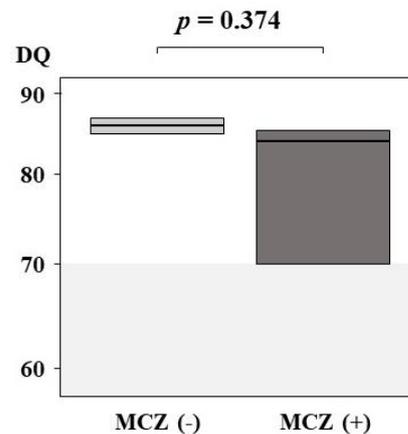
NEC	MCZ(+) (n=10)	MCZ(-), (n=5)	<i>p</i> -value
Gender, male (n)	4 (40.0%)	3 (60.05)	0.608
Gestational age (weeks)	25 [23-26]	29 [27-30]	0.014
Birth weight (g)	665 [565-781]	1004 [944-1429]	0.007
Age at surgery (days)	29 [25-30]	19 [16-21]	0.124
Body weight at surgery	999 [734-1199]	1102 [1077-1334]	0.142
Mortality	4 (40.0)	1 (20.0)	0.600

**Figure 1. DQ of all domain**

**a. 1.5 years of corrected age**



**b. 3 years of chronological age**



## Neutrophil-Lymphocyte-Ratio and Platelet-Lymphocyte-Ratio novel biomarkers for diagnosing, assessing diseases severity and length of stay for paediatric acute appendicitis in the Emergency Department

**Ryan Donnelly** (General Surgery, Waterford University Hospital, Waterford, Ireland), **Keogh Shane** (General Surgery, Waterford University Hospital, Waterford, Ireland), **Markus Kostka** (General Surgery, Waterford University Hospital, Waterford, Ireland), **Fawaz Aisling** (General Surgery, Waterford University Hospital, Waterford, Ireland), **Gerry O'Donoghue** (General Surgery, Waterford University Hospital, Waterford, Ireland)

**Introduction:** Paediatric acute appendicitis (AA) is a common surgical presentation. Timely diagnosis prevents complications and reduces length of hospital stay (LOS). Diagnosing and assessing the risk of complicated appendicitis (CA) from uncomplicated appendicitis (UA) is challenging. In comparison to cumbersome predictive scoring tools, ratios such as a neutrophil-lymphocyte-ratio (NLR) and platelet-lymphocyte-ratio (PLR) may provide additional tools in diagnosing AA and assessing disease activity.

**Methods:** A single centre retrospective study of consecutive patients admitted with a provisional diagnosis of AA who underwent an appendectomy, between 2018-2021 was performed. A database was constructed from patient electronic records. Diagnostic accuracy was assessed using receiver operating characteristic curve analysis, with optimal cut-off points determined by Youden's Index (J). Correlations were assessed using Pearson's correlation coefficient (r).

**Results:** 329 patients with a mean age of 12.2 years were identified. 69.9% had a histological diagnosis of AA, 77.4% UA and 22.6% CA. 31.1% had a normal appendix on histology. The mean NLR value was higher in the AA group compared to normal (9.42 vs. 4.03,  $p<0.001$ ). NLR was higher in the CA compared to UA (11.8 vs. 6.62,  $p<0.001$ ). LOS was higher in the CA group (4.79 vs. 2.17 days,  $p=0.005$ ). NLR ( $r=0.102$ ,  $p=0.06$ ) and CRP ( $r=0.550$ ,  $p<0.001$ ) had a positive correlational with LOS. NLR had the greatest accuracy of the biomarker ratios in predicting CA with an area under the curve (AUC) of 0.821 ( $p<0.0001$ ). The optimal cut-off for the NLR was  $>2.65$  ( $J=0.591$ ). PLR failed to diagnose and predict the severity of AA (AUC=0.178). Additionally NLR cut-off for differentiating CA from UA was 8.95 (AUC=0.648,  $J=0.285$ ).

**Conclusion:** NLR levels predicted the presence of CA and a longer LOS. NLR is a useful adjunct that can be implemented into clinical practice to optimise patient outcomes. PLR did not identify AA within this paediatric population.

## Two Potential Novel Biomarkers in the Diagnosis of Pediatric Appendicitis: Ischemia Modified Albumin and Pentraxin 3

**Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Sena İnal Azizoğlu** (Pediatrics, Başakşehir Çam and Sakura Hospital, İstanbul, Turkey), **Ayten Bakır** (Pediatric Surgery, Marmara University Medical School, İstanbul, Turkey), **Sergey Klyuev** (Pediatric Surgery, Saratov State Medical University, Saratov, Russian Federation), **Diego Falchi** (General Medicine, Sassari University, Sassari, Italy)

**Objective:** In this meta-analysis, we aimed to review the diagnostic value of pentraxin 3 (PTX3) and ischemia modified albumin (IMA) biomarkers in acute appendicitis.

**Method:** Studies focusing on the value of PTX3 and IMA in the diagnosis of appendicitis were searched related to the PubMed database. Only randomized prospective clinical trials of the pediatric age group were included in this study. The selection of articles were obtained based on abstract.

**Results:** After screening, 6 articles based on the diagnostic value of IMA in appendicitis and 5 article the diagnostic value of PTX3 were reviewed. A total of the 5 studies were included. The data of the 385 patients were reviewed. Sensitivity of PTX3 was 73-92% and specificity 88-100%, while IMA sensitivity was 89-96.7% and specificity was 26-99.7% in acute appendicitis.

**Conclusion:** Although the results of the present study indicate that PTX3 and IMA can be shown as biomarkers in the differential diagnosis of acute abdomen, further study is needed to determine the cut-off value.

**Keywords:** Appendicitis, Pediatric surgery, Pentraxin-3, ischemia modified albumin

## Appendicitis in childhood: what has been changed in the last few decades?

**Balázs Fadgyas** (Surgery and Traumatology, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Gábor István Garai** (Surgery and Traumatology, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Georgina Monostori** (Pediatrics, Zala county Hospital, Zalaegerszeg, Hungary), **Lídia Judit Gácsi** (Semmelweis University, Budapest, Hungary), **Sándor Sárközy** (Surgery and Traumatology, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Ferenc Csitári** (Surgery and Traumatology, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Dorottya Őri** (Mental Health, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Péter Vajda** (Surgical Division, Department of Pediatrics, Medical Centre, University of Pécs, Pécs, Hungary)

**Aim:** To investigate the progress of the management in children with acute appendicitis. Do we have less misdiagnosed cases and postoperative complications in childhood nowadays?

**Methods:** A retrospective observational cohorts were analyzed. Appendectomies were performed between 1976 and 1985 (group A, n=1293) and between 2011 and 2020 (group B, n=1182) were included. Groups were divided into the following subgroups: CAA (complicated – perforated); UCAA (uncomplicated -non-inflamed (NI), simplex, catarrhal, phlegmonous and gangrenous), LA (laparoscopic), OA (open and converted LA cases included), younger (0-5.99 yrs) and elder (6-14.99 yrs) subgroups. Non-inflamed and simplex cases were analyzed separately. Patients older than 15 years and patients with other co-morbidities were excluded. Histological results and complications were analyzed with Chi<sup>2</sup>-test.

**Results:** In group A the proportion of CAA cases was 20.6% (255/1293) and UCAA 79.4% (1027/1293), only OA were performed. Proportion of younger and elder patients was 20.4 and 79.6% (264 and 1029/1293).

In group B the proportion of CAA cases was 13.6% (161/1182) and UCAA was 86.4% (1021/1182), OA was performed in 714/1182 cases and LA in 468/1182. Proportion of younger and elder patients was 8.2 and 91.8% (97 and 1085/1182).

Compare to group B, in group A more CAA cases ( $p < 0.0001$ ) and more younger patients were observed ( $p < 0.0001$ ).

The complication rate was higher in group B (8.7%) ( $p = 0.0105$ ). In the OA subgroup both the total and the UCAA complication rate was higher in group B ( $p = 0.002$  and  $0.0002$ ), respectively. There was no difference between group A and B in CAA patients ( $p = 0.0667$ ).

**Conclusions:** Fewer NI cases were considered and fewer younger patients underwent appendectomy nowadays, probably due to better our diagnostic methods. In order to understand the higher rate of complications lately, especially in OA and UCAA subgroups, further studies are needed.

## Effect of the COVID-19 pandemic on the complicated acute appendicitis in children

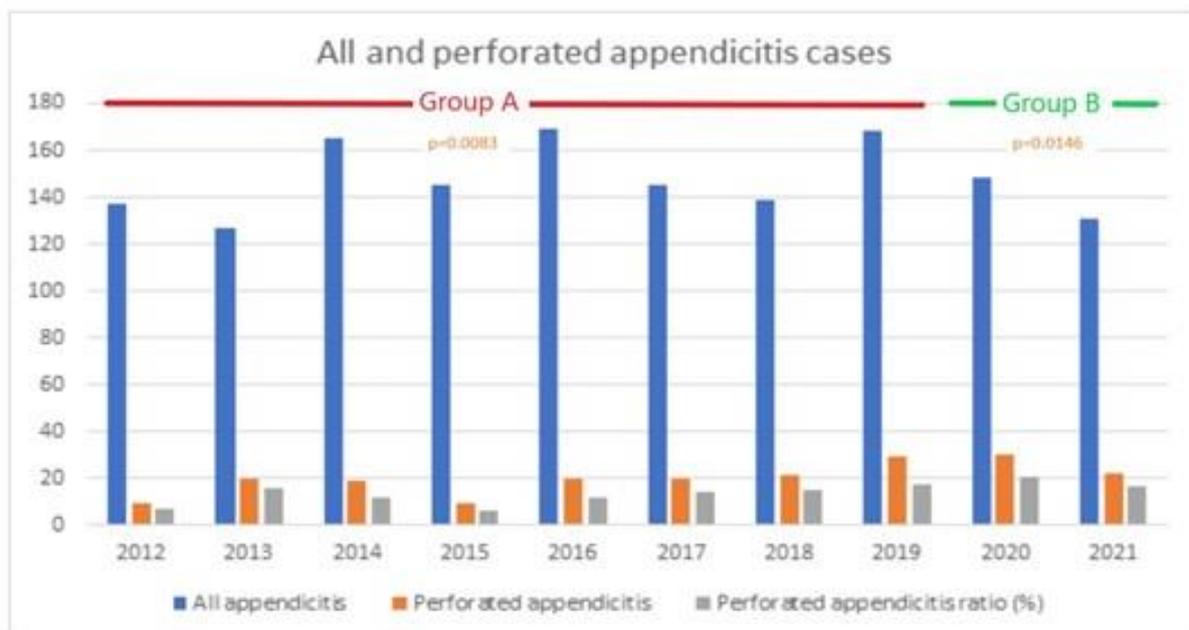
**Balázs Fadgyas** (Surgery and Traumatology, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Dorottya Őri** (Mental Health, Heim Pál National Institute of Pediatrics, Budapest, Hungary), **Péter Vajda** (Surgical Division, Department of Paediatrics, Medical Centre, University of Pécs, Pécs, Hungary)

**Aim:** To study the effect of the COVID-19 pandemic on complicated acute appendicitis in childhood.

**Methods:** Children aged between 0-18 years, with acute appendicitis were analysed, whom treated at the authors' institute between 2012 and 2021. Into group A patients before (2012-2019) and into group B cases during the pandemic (years 2020-2021) have been included. From 2020, the COVID status of the patients were tested. Groups were subdivided into perforated (complicated) and non-perforated appendicitis sub-groups according to their histological findings. Chi<sup>2</sup> for trend and Fischer's exact tests were used for statistical analysis.

**Results:** During the whole study period (2012-2021), altogether 1474 appendectomies were performed. In group A 1195, in group B 279 patients were operated on. The two investigated groups were homogenous according to the gender ( $p=0.0938$ ) and age ( $p=0.3132$ ). Most of cases were non-perforated (1275/1474, group A: 1048/1195 group B: 227/279). The rate of complicated appendicitis cases was significantly less before the pandemic (group A 12.3%, group B 18.6%  $p=0.0083$ ). In group B, the rate of complicated cases (41.2%) were significantly higher among COVID positive patients ( $p=0.0146$ ) (see Figure).

**Conclusion:** In line with the international literature, more perforated appendicitis cases were treated during the COVID pandemic at the authors institute, especially in 2020. The high rate of perforated appendicitis among COVID positive patients may refer to the delayed patient referral and/or turning to healthcare under the pandemic, need further investigation.



## Appendectomy in Malrotation: is it really needed

**Vijai Datta Upadhyaya** (Pediatric Surgery, SGPGIMS, Lucknow, India), **Basant Kumar** (SGPGIMS, Lucknow, India), **Pratibha Naik** (SGPGIMS, Lucknow, India), **Pujana K** (SGPGIMS, Lucknow, India)

**Introduction:** The mal-rotation of the bowel is the condition classified as anomaly of rotation and fixation of the bowel, which can either be complete or partial. Mal-rotation of the intestine is one of the frequently encountered surgical emergency in paediatric patients. Appendectomy is an integral part management of Malrotation midgut. we reviewed our cases who underwent surgery for mal-rotation, and followed up; to arrive at a conclusion that doing away with appendectomy is the way forward in the management of mal-rotation and should be the standard of care.

**Material & Methods:** This retrospective observational study was conducted in a tertiary care centre. All confirmed cases of mal-rotation of gut managed from January 2009 to July 2017 were reviewed. The details of the patients were recovered from electronic data recording system of hospital and manual operation theatre record. The details searched included total number of patients operated for mal-rotation of gut, appendix excised or retained after Ladd's procedure and their follow up in OPD. The new anatomical location of the appendix was also mentioned in the discharge summary,

**Result:** A total of 41 patients underwent Ladd's procedure with appendectomy and 25 without appendectomy. The follow of the patient's post-surgery was done for a minimum of 3 year or till the age of 18 years. During this follow up period none of the patients presented or experienced medical conditions attributable to retained appendix were recorded, like acute appendicitis or appendicular lump or perforation peritonitis due to ruptured appendix.

**Conclusion:** In view of the findings of our study and various studies supporting the utility of appendix, Ladd's procedure without appendectomy should be considered the new Gold standard in the surgical management of the mal-rotation.

## Evaluation of the effect of botulinum toxin injection versus rectal myectomy in the treatment of functional constipation

**Mehrdad Hosseinpour** (Isfahan University of Medical Sciences, Isfahan, Iran), **Asad o Ilah Roshany** (Lorestan University of Medical Sciences, Khoram abad, Iran)

**Aim:** The purpose of this study is to compare the outcome of Botox injection versus posterior rectal myectomy in treatment of children with functional constipation

**Methods:** 64 children with chronic functional constipation, were selected for botulinum toxin injection (34 patients) or posterior rectal myectomy (34 patients). constipation score was recorded before and one year after procedure.

**Results:** The constipation score of children before injection was  $36.7 \pm 7.3$ . It was  $13.67 \pm 5.24$  one year later ( $p = 0.001$ ). Constipation score of children before myectomy was  $36.18 \pm 6.48$ . It was  $12.43 \pm 4.72$  one year later ( $p = 0.001$ ). There was no significant differences between outcome scores of groups in one year post procedure evaluation.

**Conclusion:** Intra sphincteric botulinum toxin injection is a non invasive, and efficient procedure in treatment of chronic constipation. Its efficacy is similar to posterior rectal myectomy

## A multivariable study on children with intractable constipation receiving intrasphincteric botulinum toxin injections

**Luke Uden** (University of Western Australia, Perth, Australia), **Parshotam Gera** (Perth Paediatrics, Perth, Australia)

**Aims:** This study explores the efficacy and use of intrasphincteric botulinum toxin (Botox) in intractable constipation across several variables and comorbidities, including anal cushion of veins and rectal ectasia as predictor of Botox efficacy, and general Botox efficacy in children with intractable constipation. Additionally, rectal ectasia as a predictor of encopresis, and the number of patients also presenting with anal fissures or an anal cushion of veins will be included.

**Methods:** This study involves the review of the records of 50 children that received intrasphincteric Botox injections (10IU/Kg, at 3,6,9 o'clock) for intractable constipation in Perth, Western Australia, since December 2020. All patients had rectal biopsy to exclude Hirschsprung's disease. Through analysis, the percentage of children that had improved following Botox administration(s), amongst other statistics within the sample, is identified. Improvement is defined by a reduction in dosage of laxatives, severity of symptoms, and examination findings at their most recent consultation post-operatively, when compared to those prior.

**Results:** This study is currently ongoing, with complete results by the end of May 2022, at the latest. Currently, data from 22 patients has been gathered (13 females and 9 males); 17 received 1 round of Botox, 4 received 2 rounds and 1 received 3 rounds.

Analysis on a group of 15 patients showed that 9 had an improvement in symptoms with decreased laxatives, 2 had an improvement of symptoms only, and 4 had no significant improvement. Of the 14 patients with rectal ectasia, 7 presented with encopresis. 12 of the patients had an anal cushion of veins, with 8 of these patients showing an improvement with Botox. Other significant variables included anal fissure and developmental disorders.

**Conclusions:** Results, so far, show that Botox is effective in managing intractable constipation in children and the study expects other results across a range of variables.

## Perianal abscess in neonates and infants. Do we need to change our management?

**Natalija Roško** (Department of Pediatric Surgery and Traumatology 3rd Faculty of Medicine Charles University and Thomayer University Hospital, Thomayer University Hospital, Prague, Czech Republic), **Tomáš Pešl** (Department of Pediatric Surgery and Traumatology 3rd Faculty of Medicine Charles University and Thomayer University Hospital, Thomayer University Hospital, Prague, Czech Republic), **Milan Machart** (Department of Pediatric Surgery and Traumatology 3rd Faculty of Medicine Charles University and Thomayer University Hospital, Thomayer University Hospital, Prague, Czech Republic)

**Aim:** During many years in our hospital perianal abscess in neonates and infants required surgical drainage, almost always without antibiotic treatment. Often we can read in different reputable medicine articles about nonoperative management of perianal abscess and fistula-in-ano. We aimed to report and analyze our results of treatment.

**Methods:** a 10- year period (January 2011 to November 2021, inclusive) retrospective study of neonates and infants (from birth to 2 years) with perianal abscess was analyzed. We focused on patients who required surgical drainage of perianal abscess and complications after surgery.

**Results:** during 10-year period we had treated 104 patients with perianal abscess. 83 patients were younger than 2 years. Mean age was 4,7 months. 62 out of 83 patients underwent surgical treatment. 56 of them in general anesthesia (77 operations were held: 48 incisions and drainage alone and 29 incisions and drainage with laying open of the fistula). In 28 cases developed fistula(s) in ano (50%) and in 21 patients – recurrences (37,5 %). The rest 6 patients, who underwent ambulant incision, had no fistula formation or recurrences. 22 patients had conservative treatment. 13 of them were already draining spontaneously and 9 had regressed with local treatment. Only 3 patients developed fistula in ano (13,6%).

**Conclusion:** Our management of perianal abscess in neonates and infants according to “Ubi pus, ibi evacua” and is originally based on experience in the adult population. The best results were in cases, where ambulant incision was preferred. On the other hand, patients, who underwent surgical treatment in general anesthesia more often developed fistula in ano (50%) compared with patients who had conservative treatment (13,6%). The conservative management of perianal abscess appears to be safe and we are inclined to make changes and reduce operative approach in general anesthesia.

## Laparoscopic Appendicostomy with Buttons in-Corporated (LABC) – An ACE Up Ones Sleeve?

**David S Thompson** (Royal Alexandra Children's Hospital, Brighton, UK), **Saravanakumar Paramalingam** (Royal Alexandra Children's Hospital, Brighton, UK)

**Aim:** We describe our surgical technique, protocol and outcome for LABC as a novel modification on the existing technique.

**Methods:** Retrospective review of a single surgeon's experience performing LABC in just over a 2 year period (March 2019 – June 2021).

Open Hasson technique was used to gain pneumoperitoneum. LABC required three 5 mm self-retaining ports: supraumbilical (5mm 30 degree telescope), left and right iliac fossa (RIF) working channels. The appendix was assessed for suitability and minimally mobilised to preserve its blood supply. It is then exteriorised via the RIF port incision, forming a simple stoma with a 10Fr or 12Fr balloon device inserted within. The ACE is activated on the first post-operative day and advanced based on standardised unit protocols. All patients were converted to a mini button device (12/14Fr) at 6-8 weeks. Individual ACE washout protocols were then customised to each child with community support.

**Results:** Eleven patients successfully underwent LABC with no conversion and the appendix was a suitable conduit in all (5:6 M:F, median age 9.8years 5.3-14.6years). All but one were confirmed functional constipation on diagnostic workup (1 patient with neuropathic bowel and bladder following neuroblastoma resection). 2 patients were diagnosed with severe developmental disorders. Median length of stay was 3 days (2-5). All patients were converted to button devices on the day ward but 1 patient with profound neurodevelopmental delay requiring a general anaesthetic. There has been complete compliance at follow up with one reported complication of a port site infection requiring oral antibiotics.

**Conclusion:** LABC is a simple and safe technique. We believe the compliance to washout protocols and subsequent improvement in symptoms are due to the in situ device and lack of hesitancy in utilisation thereby improving presenting symptoms.

## The utility of Mucous Fistula Re-feeding (MFR) in Neonates; a prospective feasibility study

**Harmit Ghattaura** (Birmingham Children's Hospital, Birmingham, UK), **Manobi Boroogh** (Birmingham Women's Hospital, Birmingham, UK), **Ingo Jester** (Birmingham Children's Hospital, Birmingham, UK)

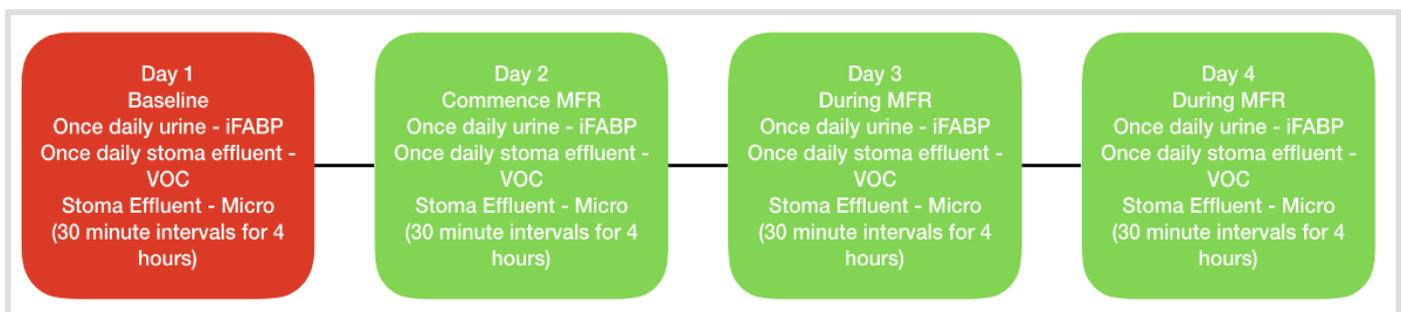
**Aim:** MFR is widely performed and complications exist but are poorly documented. A literature review highlighted the need for a prospective multi-centre collaborative study.

**Method:** We hypothesised that microbiological changes in stoma effluent, changes in volatile organic compounds (VOCs) and raised urinary intestinal fatty acid binding proteins (iFABP) are all pre-clinical identifiers of complications including sepsis. We aimed to recruit 12 neonates eligible for MFR. Patient demographics and data regarding weight gain, enteral feed, parenteral nutrition (PN) and complications were collected. Baseline biomarkers were as outlined in Figure 1. Qualitative data regarding MFR was collected from parents and staff.

(Ethics approval IRAS No – 234541).

**Results:** 3 pre-term neonates (Birthweight 590-1240g) with a diagnosis of necrotising enterocolitis (NEC) were recruited to the feasibility study. MFR was initiated median 66 days (44-75) after surgery and lasted 20 days (14-34). Mean feed volume increased from 30 to 114mls/kg/day during MFR. Neonates showed greater weight gain during MFR (21.6 vs 28.9g/day) 1 patient had minor complications of stoma prolapse and bleeding. There were no major complications. All patients were treated for suspected sepsis after initiation of MFR (25-240 hours). Our biomarker data demonstrated significant changes in the neonatal microbiome during MFR; both number and type of species. 1 patient grew *Staph. epidermidis* in peripheral blood cultures. Up to 3 days prior to clinical deterioration, an abundance was detected in the stoma effluent with a VOC profile consistent with lipid damage in mucosa accompanying this. Qualitative data showed that healthcare staff and parents feel MFR is greatly beneficial to babies.

**Conclusion:** This is the first report of a prospective feasibility study including qualitative data. Although heavily burdened by COVID-19 and limited results we gained a much better understanding of MFR benefits, challenges and ensuring the viability of a multi-centre study.



**Figure 1. Sample collection Schematic**

## Analysis of direct costs of Trans Anal saline Irrigation to pharmacological measures for bowel dysfunction

**Ravi Patcharu** (Paediatric Surgery, Command Hospital, Air Force, Bangalore, Bangalore, India)

**Aim:** Comparison of direct costs of transanal irrigation with saline(TAI) over pharmacological measures(PM) in the management of bowel dysfunction due to organic or functional disorders in children above the age of 4 years.

**Methods:** Children >4 years with bowel dysfunction due to organic or functional causes and persistence of symptoms despite 3 months of PM, were divided into 3 groups based on symptoms: Constipation group, Pseudoincontinence group and fecal Incontinence group. The existing medication, number of diapers used daily and their costs were noted for each patient. In all patients, PM was stopped and TAI was initiated. The response was evaluated over a period of 6 months in terms of improvement in symptoms and reduction in number of daily diapers. The direct costs involved in continuing with TAI for a period of 6 months after achieving improvement in symptoms versus the costs that would be involved had PM been continued, were compared using paired 't' test.

**Results:** 34 patients (20 male, 14 female) with an average age of 76.7 months (48-195 months) formed part of the analysis. The underlying etiology was ARM in 4 patients, Hirschsprung's disease in 9, Neurogenic Bowel Disease in 13 and Functional constipation in 8. Based on symptoms, the three groups were: Constipation:12 (8males, 4females), Pseudoincontinence:15 (8males, 7females), Incontinence:7 (4males, 3 females). After TAI, the reduction in diaper usage in the Pseudoincontinence group was 59.4% and that in the Incontinence group was 36.9%. In all the groups, there was a statistically significant reduction ( $p<0.05$ ) in direct costs in patients who were initiated on TAI in comparison to continuing on PM.

**Conclusion:** TAI is a cost saving treatment strategy for management of failed pharmacological measures for bowel dysfunction in children and has the potential to be used as the primary therapy for management of this subset of patients with improved outcomes, especially in resource challenged setups.

## ORAL PRESENTATION SESSION IX

### Trauma & Musculoskeletal trauma

#### The cervical collar's influence on the airway patency and the cervical blood flow in children

**Anna Ziola** (Department of Pediatric Surgery and Urology, Uppersilesian Child's Health Center, Katowice, Poland), **Andrzej M. Bulandra** (Department of Pediatric Surgery, Medical University of Silesia, Katowice, Poland), **Lidia Hyla – Klekot** (Department of Pediatric Surgery, Medical University of Silesia, Katowice, Poland), **Tomasz Koszutski** (Department of Pediatric Surgery, Medical University of Silesia, Katowice, Poland)

**Aim:** The investigation of the effects of the cervical collar application on the patency of airways and the blood flow in the cervical vessels in children.

**Methods:** The study was conducted on a group of 214 healthy children aged 6 to 18 years old. Each child underwent spirometry and ultrasound measurements of the tracheal cross-section before and after placement of cervical collar. The cross-section of the common carotid arteries and the internal jugular veins, as well as Doppler measurements of the blood flow in the common carotid arteries, internal carotid veins and vertebral arteries were also performed.

**Results:** The usage of cervical collar resulted in a significant decrease in all spirometry parameters and a non-significant decrease in the transverse dimension of a trachea. FVC decreases about 20%, FEV1 – decreases about 22% and PEF – decreases about 25%. Bilateral dilatation of the upper part of internal jugular veins (left-15%, right -8%) and the narrowing of the lower part of the left jugular vein (12%) were observed after cervical collar placement. The analysis of the blood flows revealed a decrease in the time-averaged mean velocity in both common carotid arteries (1,5-1,8cm/s) and a decrease in the peak systolic (3,45cm/s) and end diastolic velocities (1,5cm/s) in the left common carotid arteries occurring after collar placement. In addition, the cervical collar reduced the maximal flow velocity in the left internal jugular veins. There was no significant effect of the collar on the blood flow in the vertebral arteries.

**Conclusions:** The usage of a cervical collar has a negative effect on the patency of the airways and respiratory parameters in children. It also disturbs the blood flow in arteries and veins supplying the brain. In light of the results usage of cervical collar should be more restricted and personalized in pediatric population.

## Traumatic Pancreatic Injury Presentation, Management, and Outcome: A Retrospective Single Centre Study

**Omar Zeinedine** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Jiří Šnajdauf** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Petrášová Natalia** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Vladimír Mixa** (Department of Anaesthesiology and ICM, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Radan Keil** (Department of Internal Medicine, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** To study the outcomes of our approach to diagnosis, management and treatment of pancreatic injury in pediatric patients.

**Methods:** We retrospectively analyzed data of patients admitted with pancreatic injury to our center between 1994 and 2019.

**Results:** There were 37 patients with pancreatic injury admitted over a 25-year period, with a mean age of 9 years (range 2 – 17,7). Eighteen patients (48,6%) suffered a bicycle handlebar injury to the epigastrium, 12 patients (31,7%) had an unspecified fall and the remainder suffered other blunt trauma. All patients presented with abdominal pain and elevated pancreatic enzymes, but differed in the onset of symptoms. The extent of injury based on CT scans was grade II in 5 patients, grade III in 22 and grade IV in 10 patients. ERCP was performed in 28 patients, 9 received a stent and 5 of those did not require further surgical interventions. Surgical treatment was indicated in 28 patients (distal pancreatectomy in 19 patients; head resection with Roux-an-Y pancreatojejunostomy in 9 patients). Pseudocyst developed in 10 children of which 4 were managed by cystogastrostomy. There was one death due to other severe associated injuries.

**Conclusions:** Our results support the view that pancreatic injury belongs to trauma centers with dedicated pediatric ERCP and a surgical team experienced in pancreatic surgery. Successful stent placement can prevent further surgical interventions. In patients with ductal injury and continued clinical and chemical deterioration early operation is important. Despite the severity of pancreatic injury, mortality in our study was low.

## Biomechanical comparison of K-wire fixation methods on 3D printed radius bone models

**Anna Lamberti** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology, Pécs, Hungary), **Aba Lőrincz** (Department of Thermophysiology; Institute for Translational Medicine, Medical School, University of Pécs; Pécs, Hungary), **Roland Told** (3D Printing and Visualization Center, University of Pécs, Pécs, Hungary), **János Mandler** (3D Printing and Visualization Center, University of Pécs, Pécs, Hungary), **Péter Maróti** (3D Printing and Visualization Center, University of Pécs, Pécs, Hungary), **Gergő Józsa** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology, Pécs, Hungary)

**Introduction:** Distal forearm fractures are the most common pediatric fractures, in which Kirschner wire fixation is the most widely used operative method. However, there is still lingering controversy regarding the number of wires and site of insertion throughout published literature. The study aims to critically compare the biomechanical stability of different K-wire fixation techniques.

**Methods:** Different osteosyntheses were reconstructed on 189 bone models under novel, standardized conditions. The model was created using 3D printing and molding techniques. The simulated fracture was fixed using two K-wires inserted from radial and dorsal directions (crossed wire fixation) or both from the radial direction (parallel wire fixation). Single wire fixations with shifted exit points were also included. Additionally, 3-point bending tests and torsion tests were performed.

**Results:** We measured the maximum force required for a 5 mm displacement of the probe under dorsal and radial loads (crossed wire: 249.49 N and 355.89 N; parallel wire: 246.36 N and 308.27 N; single wire: 115.86 N and 166.46 N; on average; n=9 in all cases). We also measured the torque required for 5° and 10° torsion, which varied between 0.15 Nm and 0.36 Nm; on average; n=9 in all cases).

**Conclusions:** The crossed wire fixation provided the most stability during the 3-point bending tests. Against torsion, both the crossed and parallel wire fixation were superior to the single wire fixations. Shifting the K-wire's exit point distally resulted in greater stability under radial load and torsion, yet lesser stability under dorsal load.

The presented novel method is suitable for the standardized evaluation of different fracture fixation methods and can serve as a basis for further preclinical investigations. According to the findings, crossed wire fixation potentially withstands greater bending and tilting forces following the operation. These observations both support clinical decision-making and preoperative planning.

## Distal humeral coronal shear fractures in children and adolescents: Results of a multicenter case series

**Martin M Kaiser** (Department of Operative and Conservative Pediatric and Adolescent Medicine, University Hospital Halle, Halle (Saale), Germany), **Justus Lieber** (Department of Pediatric Surgery and Pediatric Urology, University Children's Hospital, Tübingen, Germany), **Ralf Kraus** (Clinic for Trauma Surgery and Orthopedics, Klinikum Bad Hersfeld, Bad Hersfeld, Germany)

**Aim:** Distal humeral coronal plane shear fractures (DHCPFs) are uncommon and are often challenging to treat due to their size, location, and articular nature. Aim of this study was to report management strategies and functional results.

**Methods:** Based on a multi-center data questionnaire we retrospectively reviewed patients below 16 years of age with DHCPF (13-B3.1 AO-classification) treated at 13 German pediatric trauma centers.

**Results:** Fifty-one patients with a DHCPF (01/2012 – 12/2021) were analyzed. Mean age was 12.9 years (10 – 15) and there was a trend for males (30 : 21) and the left elbow (30 : 21). The diagnosis was established using conventional X-ray (100%), additional CT-scan (65%), and MRI-scan (18%). All fractures except 2 showed relevant displacement. Consequently, 2 cases were treated conservatively. Forty-nine patients received open surgical reconstruction including internal osteosynthesis using screws (n=48), plates (4), K-wires (3), and resorbable pins/screws (6), sometimes combined with additional sutures or anchor systems. Early revision of osteosynthesis became necessary in 4 cases. Patients received additional plaster immobilization in 47%, physiotherapy in 57%, and metal removal in 62%. Late complications were 1 osteonecrosis, 1 joint mouse, and 1 cartilage defect. After a mean follow-up of 9.9 months (2 – 25), 1 elbow axial deviation was documented, 2 patients reported persistent pain. Mild/moderate loss of elbow movement was observed in 35%. Three late corrections were performed.

**Conclusion:** In this world's largest series of pediatric/adolescent DHCPFs these fractures start to occur at the age of 10, but are typically observed at the age of >12. Because of their intra-articular nature and predilection toward displacement, these fractures are frequently treated operatively. Surgical techniques, types of complications, and postoperative care are very inhomogeneous due to the different approaches between the centers. Nevertheless, good outcomes are observed in most cases.

## Success of the Conservative Vascular Strategy in Treatment of Pulseless Pink Supracondylar Humerus Fractures in Children

**Radek Štichhauer** (Department of Pediatric Surgery and Trauma, University Hospital and Faculty of Medicine Hradec Králové, Charles University, Hradec Králové, Czech Republic), **Jindřich Preis** (Department of Pediatric Surgery and Trauma, University Hospital and Faculty of Medicine Hradec Králové, Charles University, Hradec Králové, Czech Republic), **Ladislav Plánka** (Department of Pediatric Surgery, Orthopedics and Trauma, University Hospital, Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic), **Jakub Turek** (Department of Pediatric Surgery, Orthopedics and Trauma, University Hospital, Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic), **Jiří Urban** (Department of Trauma Surgery, Hospital České Budějovice, České Budějovice, Czech Republic), **Martin Konečný** (Department of Pediatric Surgery and Trauma, Hospital Ústí nad Labem, Ústí nad Labem, Czech Republic), **Ivo Kopáček** (Department of Trauma, University Hospital Ostrava, Ostrava, Czech Republic), **Jiří Vojta** (Department of Pediatric Surgery and Trauma, University Hospital Bulovka, Prague, Czech Republic), **Veronika Chrenková** (Pediatric Surgery Department, National Institute of Children's Diseases and Faculty of Medicine, Comenius University, Bratislava, Slovakia), **Filip Hanák** (Clinic of Pediatric Orthopedics and Trauma, 2nd Faculty of Medicine, Charles University in Prague and Motol University Hospital, Prague, Czech Republic)

**Aim:** The treatment of pulseless pink supracondylar humerus fractures (SCHF) is still controversial. In this study, the outcomes of two treatment approaches (with and without vascular surgery) of this injury were compared.

**Methods:** A retrospective multicenter study was performed among patients with the pink type of supracondylar humerus fractures treated in ten departments of pediatric surgery, trauma, or orthopedics in the Czech and Slovak Republic between the years 2014 and 2018.

**Results:** Of the total 3,608 cases of displaced SCHF, 125 had the pulseless pink type. Of those, 91% (114/125) did not undergo vascular surgery and 9% (11/125) underwent vascular surgery. The patients who did undergo vascular surgery had radial artery pulsation restored more frequently in the operating room (73% vs. 36%;  $p = 0.02$ ), within 6 hours (91% vs. 45%;  $p = 0.004$ ), and within 24 hours of surgery (91% vs. 57%;  $p = 0.05$ ). However, 72 hours after surgery, there was no significant difference in radial artery pulsation between the vascular surgery and the non-vascular surgery groups (91% vs. 74%;  $p = 0.24$ ). Additionally, no significant differences in long-term neurological (9% vs. 22%;  $p = 0.46$ ) or circulatory (9% vs. 7%;  $p = 0.57$ ) deficits were found between these two groups.

**Conclusions:** The performance of vascular surgery in patients with a pulseless pink SCHF is associated with a more prompt restoration of a radial artery pulsation. However, the vascular surgery does not bring any advantage in terms of long-term neurological or circulatory deficits. Therefore, we do not recommend this procedure for pulseless pink SCHF.

## Ultrasound Imaging of the Injured Elbow Joint in Children

**Martin Čepelík** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Prague, Czech Republic), **Tomáš Pešíl** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Prague, Czech Republic)

**Aim:** Plain radiographs are golden standard for the evaluation of the skeletal trauma in children. However, in not fully ossified skeleton results given by radiographs can be unclear and other imaging methods are necessary to confirm the diagnosis. Aim of our study is to evaluate the use of the ultrasound imaging in cases where conventional radiographs cannot provide sufficient information for the proper therapeutic decision.

**Methods:** Prospective study held in level 1 trauma center between 2017-2022. Ultrasound imaging was performed in 51 pediatric patients with suspect skeletal trauma of the elbow joint with unclear findings on conventional radiographs. All patients were followed up (1-16 months) to confirm the diagnosis made by the ultrasound and to evaluate the outcome of the therapy.

**Results:** In our cohort of patients, we have found following diagnoses that can be diagnosed and evaluated using ultrasound imaging – dislocation of the humeroradial joint, avulsion of both medial and lateral epicondyle, fracture of the capitulum of the humerus and fracture of the proximal radius. In all 51 patients the decision regarding the diagnosis and the following therapy was based on the ultrasound findings and in all patients the diagnosis has been confirmed during the following surgery or in the follow up examinations.

**Conclusion:** Ultrasound imaging can be used as an auxiliary method for the evaluation of the skeletal trauma in not fully ossified pediatric elbow. Advantages of the ultrasound imaging are availability, ease of use, cost and zero radiation dose for the patient.

## Distal radial growth disturbance in children – reason and management

**Peter P. Schmittenebecher** (Pediatric Surgery, Municipal hospital, Karlsruhe, Germany), **Peter Laier** (Trauma surgery, orthopedics and hand surgery, Municipal hospital, Karlsruhe, Germany)

**Aim:** Growth disturbances at distal radius are rare. Because of high growth potency often surgical correction is needed. We analyzed reasons and management of this problem.

**Methods:** All osteotomies done at our department between 2006 and 2021 were collected and distal radial corrections selected. Age, gender, reason of malgrowth, kind of malalignment, method of correction and osteosynthesis, course, radiological follow-up and final function were analyzed.

**Results:** 11/164 osteotomies affected the distal radius (5 boys, 6 girls, 9-15 years old). 9 posttraumatic (6 distal radius fractures, 2 radial shaft fractures, 1 unknown) and 2 non-posttraumatic cases (amion rupture, osteomyelitis) were found. 3x length deficit was in the foreground, 5x loss of radial inclination, 3x loss of palmar tilt. Most cases had mixed findings. 4x lengthening was done by external fixator, with plates during consolidation of callus. 7x palmar plates were used for initial complete correction (6 with bone substitute). 7x ulnar epiphyseodesis and 2x ulnar shortening were added.

8 treatments are finished. 8-141 month later all patients have no pain and free function. 4x the radius was still 2-5 mm short, 3x a dorsal tilt of 5-10° was found, the radial inclination was 7-28°. In 3 patients treatment is still in progress with plates in situ and free function.

**Conclusion:** Growth disturbance of the distal radius physis leads to different combinations of length deficit, reduced radial inclination and loss of palmar tilt. With length deficit > 1cm, continuous lengthening is recommended. With < 1cm immediate correction with bone substitution is possible. In adolescents healing and function are usually undisturbed. The length of ulna have to be kept in mind in the longtime course.

## Management of the fracture of distal diaphysis and metaphysis of the radius by growth plate protecting technique

**Lucian Zatzko** (Clinic of Pediatric and Trauma Surgery 3FM CU and TUH, Thomayer University Hospital, Prague, Czech Republic), **Tomas Pesl** (Clinic of Pediatric and Trauma Surgery 3FM CU and TUH, Thomayer University Hospital, Prague, Czech Republic), **Martin Cepelik** (Clinic of Pediatric and Trauma Surgery 3FM CU and TUH, Thomayer University Hospital, Prague, Czech Republic), **Petr Havranek** (Clinic of Pediatric and Trauma Surgery 3FM CU and TUH, Thomayer University Hospital, Prague, Czech Republic)

**Aim:** Displaced fractures of distal part of diaphysis and metaphysis of the radius if unstable after primary closed reduction may need surgical stabilization. Retrograde transphyseal K-wire insertion is usually used. We developed physis sparing minimally invasive antegrade intramedullary pinning method that works reliably.

**Method:** Our technique consists of an antegrade intramedullary osteosynthesis using titanium elastic nail (TEN). The nail inserted from the diaphysis of the radius above the fracture line downwards into the distal fragment. Thus the distal radial growth plate is not touched, and the fragments are stable. Additional plastic splint fixation of the limb for 4 weeks is necessary followed by rehabilitation and removal of the implant 3-5 months after osteosynthesis.

**Results:** This technique has been successfully used in 31 patients. All patients healed uneventfully and with full range of movement recovery. There were no growth disorders in this group of patients so far.

**Conclusion:** Unstable displaced distal diaphyseal and metaphyseal fractures of the radius can be treated with success by antegrade intramedullary nailing. The entry point of the implant is then above the fracture line and distal radial physis is not touched. This technique eliminates the risk of physeal damage and subsequent serious deformity of distal radius.

## Autologous Platelet-Rich Plasma in the Delayed Union of Long Bone Fractures

**Madhan Jeyaraman** (Orthopaedics, Faculty of Medicine – Sri Lalithambigai Medical College and Hospital, Dr MGR Educational and Research Institute, Chennai, India), **Rajni Ranjan** (Orthopaedics, School of Medical Sciences and Research, Sharda University, Greater Noida, India)

**Introduction:** Fracture of long bones unite without any complication except for 2% to 10% which may lead to delayed or non-union of the fracture. Management of delayed union of fractures poses a great challenge for orthopaedic surgeons. Tissue Engineering and Regenerative Medicine (TERM) has revolutionized the era to use biological substances to treat diseases in a minimally invasive way. Various studies and researches have proved the osteogenic activity of PRP. The growth factors present in the PRP induce the locally available resilient progenitor or stem cells and convert the atrophic environment into a trophic environment. We investigated the safety and efficacy of autologous platelet-rich plasma (PRP) injection in the delayed union of long bone fractures.

**Materials and methods:** A total of 25 cases of delayed union of long bone fractures whose age less than 18 years were augmented with 3 doses of autologous PRP at 3 weekly intervals and were followed up for 12 months. All the cases were documented with pre- and post-procedural and 12<sup>th</sup> month visual analog score (VAS) and Warden's score.

**Results:** Out of 25 cases, 21 (84.00%) cases showed good union of fracture with adequate callus formation by 10 – 12 weeks with 3 doses of autologous PRP injections. The mean pre-procedural VAS and Warden's score at final follow-up showed statistically significant results ( $p < 0.05$ ). No other complications were noted due to autologous PRP application among the study participants during the study period except for 3 cases (2 cases of non-union, 1 case of implant failure).

**Conclusion:** Autologous injection of PRP is safe and effective in the management of delayed union of long bone fractures.

**Keywords:** Orthobiologics; Platelet-rich plasma; Delayed union; Tissue Engineering; Regenerative Medicine

## Monocentric study of pancreatic injuries and its most common complications in childhood

**Štěpánka Bibrová** (Clinic of Paediatric Surgery, Orthopaedics and Traumatology, University Hospital Brno and Faculty of Medicine, Masaryk University, Brno, Brno, Czech Republic), **Ladislav Plánka** (Clinic of Paediatric Surgery, Orthopaedics and Traumatology, University Hospital Brno and Faculty of Medicine, Masaryk University, Brno, Brno, Czech Republic), **Jiří Tůma** (Clinic of Paediatric Surgery, Orthopaedics and Traumatology, University Hospital Brno and Faculty of Medicine, Masaryk University, Brno, Brno, Czech Republic)

**Aim:** Analysis of pancreatic injuries in childhood on the basis of a retrospective monocentric study during 21 years.

**Methods:** Study of patients with blunt pancreatic injuries, admitted to the Children's Traumatology Center, Department of Pediatric Surgery, Orthopedics and Traumatology, University Hospital Brno between 1. 1. 2000 to 31. 12. 2021, for whom etiology and degree pancreatic injuries, used diagnostic and therapeutic methods and complications, especially posttraumatic pseudocysts of pancreas, were statistically evaluated. Based on the results, diagnostic-therapeutic algorithm for pancreatic injuries and their complications in children is compiled.

**Results:** Together 36 patients with pancreatic injuries were evaluated (1.2% of all patients with blunt abdominal injuries). The most common etiological factors were falls on bicycle or scooter and car accidents. Ultrasound and CT examinations were used to diagnose injuries, ERCP was used to diagnose the extent of injuries in 15% of patients and MRCP examinations in 12%. Conservative therapy was provided in 2/3 of patients. Surgical therapy was required in 1/3 of patients for associated injury to other intra-abdominal organs. Even in these patients, it was not necessary to perform surgery on the injured pancreas itself. More than half of the patients (54%) developed posttraumatic pancreatic pseudocysts. The pseudocyst was treated conservatively in 50% of patients, and endoscopic pseudocystogastrostomy was performed in 33% of patients. Only 1 patient had to perform surgical therapy of the pseudocyst after failure of external drainage.

**Conclusions:** There are worldwide discussions in literature on pancreatic injuries regarding appropriate method of therapy, especially for higher degrees of injury, for which an indication for surgical treatment is possible. Our long-term study shows that conservative method of therapy and an endoscopic treatment of pseudocyst has a very good prognosis even for more severe degrees of injury and the subsequent quality of life of patients is favorable.

## Endovascular treatment of a traumatic thoracic pseudoaneurysm in a pediatric patient – A Case report

**Muniba Afzal** (General Surgery, Hamad Medical corporation, Doha, Qatar), **Noora Al Shahwani** (General and thoracic surgery, Sidra Medicine, Doha, Qatar), **Safaa Najjar** (General and thoracic Surgery, Sidra Medicine, Doha, Qatar)

Blunt aortic injury (BAI) as a result of thoracic trauma is a rare entity in the pediatric population. The endovascular approach has been preferred method of management in adults. However, due to scarcity of data and lack of follow-up in pediatric population, there are no guidelines for management. We are reporting a successful repair of traumatic thoracic aortic aneurysm in a 13 year old boy.

**Case report:** 13 year old boy, brought to hospital after sustaining multiple injuries in a motor vehicle accident. Examination showed scalp laceration, tenderness over the right clavicle, tenderness over the pelvic brim on left side. Computed tomography (CT) showed pulmonary contusion, hepatic and splenic lacerations and bulge of the aortic arch, with thin surrounding periaortic hematoma, suggesting traumatic pseudo aneurysm. CT Angiography demonstrated a bulge at the level of aortic isthmus, measuring about 1 x 1.4 x 0.8 cm. There was no extra-luminal leakage of contrast to suggest rupture.

The patient's initial management was conservative. A multi-disciplinary team discussion involving multiple specialties led to the decision to defer any acute treatments to allow for recovery from associated injuries.

After a week of ICU care, the patient underwent endovascular aortic stenting. Access was obtained through the right femoral artery. Baseline aortogram showed the aneurysm of descending thoracic aorta distal to left subclavian artery. Two overlapping Cheatham platinum stents measuring 39 and 34mm were placed with no residual flow.

**Conclusion:** The management of BTAI in pediatric population is an ongoing discussion. The benefits and risks need to be evaluated, taking into consideration the site of injury, size of patient, and associated injuries. Further studies need to be conducted with long term follow up to establish the durability of grafts, patency and their effect on aorta in the pediatric age group.

## Injury of the right side of the diaphragm in a 6-year-old boy

**Antonín Šafus** (Department of Pediatric Surgery and Traumatology, Faculty of Medicine Charles University, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Radek Štichhauer** (Department of Pediatric Surgery and Traumatology, Faculty of Medicine Charles University, University Hospital Hradec Králové, Hradec Králové, Czech Republic)

**Aim:** This presentation will describe the clinical symptoms, treatment and postoperative period of a traumatic rupture of the right side of the diaphragm in a 6-year-old boy.

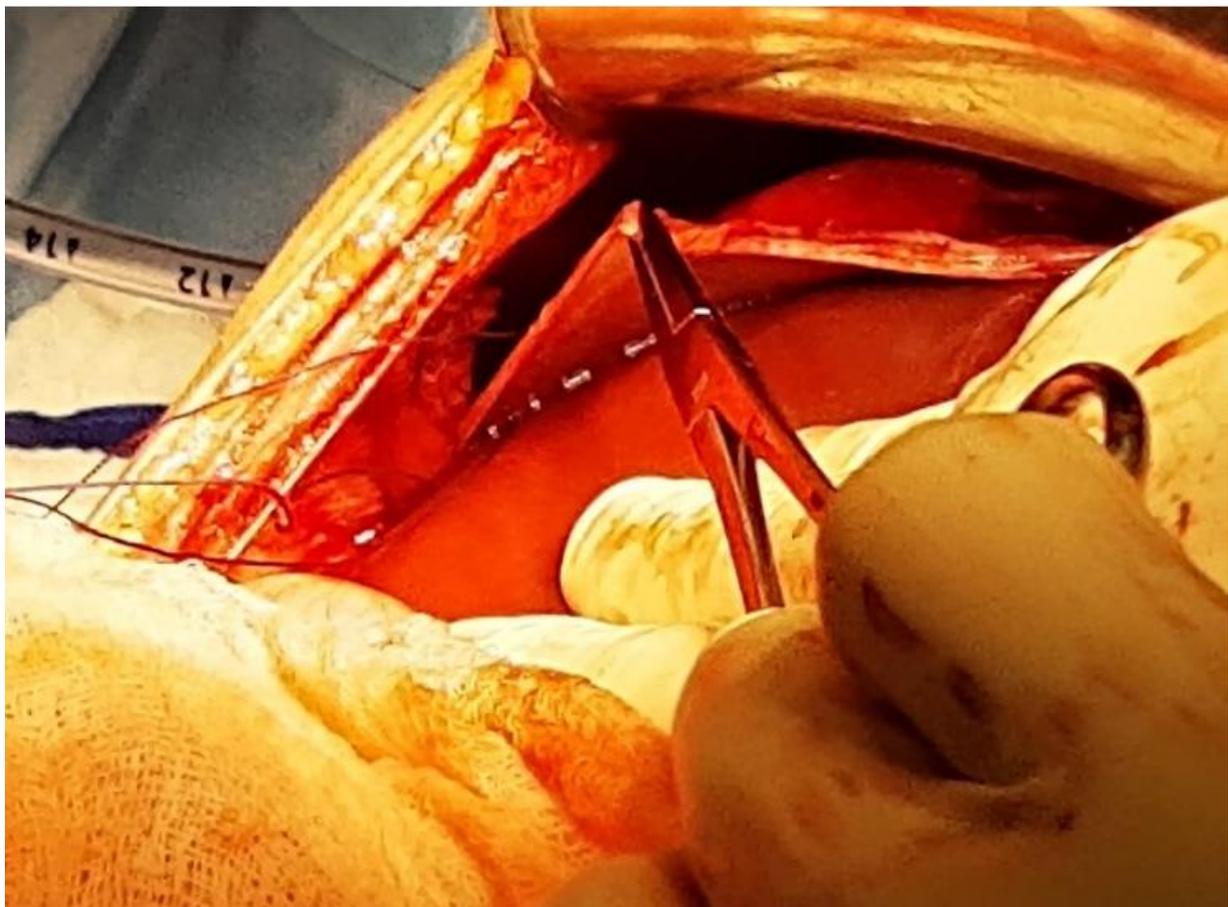
**Case description:** The boy was hit by a car at a speed of 20 km/h and afterwards was stuck under the car. After impact, he was conscious, vomited once and was significantly short of breath.

Pre-hospital care: no breath sounds on the right side, the O<sub>2</sub> saturation decreased and a needle decompression was performed on the right side of the chest for a suspected tension pneumothorax.

Hospital care: the airways were clear, with acute respiratory insufficiency development, inaudible breathing and dullness on right sided chest percussion, an O<sub>2</sub> saturation of 87% with incipient cyanosis. No source of bleeding was found and on ultrasound examination, the right diaphragm was higher than normal. There was a progressive deterioration of consciousness due to hypoxia. The liver was dislocated to the right thoracic cavity on X-ray. Orotracheal intubation was performed. The CT examination demonstrated a rupture of the right side of the diaphragm, a right pneumothorax and a small left pneumothorax. Prompt surgery was indicated, where most of the anterior part of the right diaphragm was detached, without any signs of abdominal trauma. The ruptured diaphragm was sutured, with the placement of abdominal and thoracic drains. The left-sided pneumothorax progressed in the ICU so a second thoracic drain was introduced. Artificial lung ventilation was stopped on the 1st postoperative day.

The patient was discharged from the hospital on the 13th postoperative day. At the follow up appointment 2 months after the accident, the patient was found to being completely recovered.

**Conclusions:** Traumatic diaphragmatic injury in children is very rare, especially on the right side. The outcome depends on its early diagnosis and that of any other associated injuries.



## A bleeding dilemma: Interventional radiology and the standalone paediatric major trauma centre

**Abigail T Campbell** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Ella Teasdale** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Catherine Bradshaw** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Sarah Yassin** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Juliette King** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK)

**Aim:** To review the role of interventional radiology (IR) in blunt abdominal solid organ injury in children at a standalone paediatric major trauma centre (PMTC).

**Methods:** Retrospective analysis of abdominal solid organ injuries at a PMTC between January 2015 and September 2020 was undertaken, excluding penetrating trauma and injuries grade (Gr) < III. Demographics, mechanism and management were reviewed. Clinical and radiological criteria were assessed to ascertain the role for embolisation.

**Results:** 68 children were admitted with high-grade (GrIII-GrV) solid organ injury. 3 patients had 2 injured organs totalling 71 injuries; 34 spleens (20 GrIII; 8 GrIV; 6 GrV), 22 livers (9 GrIII; 7 GrIV; 6 GrV), 15 kidneys (2 GrIII; 7 GrIV; 6 GrV).

1 death occurred due to traumatic brain injury. 2 laparotomies (splenectomy and repair of concurrent bowel injury) were performed in haemodynamically unstable patients. IR was successfully utilised for 2 splenic artery embolisations, requiring transfer to an alternative centre (Image: Patient 1&2). 3 patients, that were managed conservatively, had evidence of ongoing bleeding and embolisation may have been warranted. (Image: Patient 3-5).

**Conclusion:** The role of IR in solid organ injury in children remains to be determined. Without access to IR, children either required transfer to alternative centres for embolisation or had continued conservative management despite a falling haemoglobin, often necessitating transfusion.

Although children can be safely managed without 24/7 access to IR, this is a national directive for all major trauma centres. It remains a challenge for all standalone PMTCs to balance the logistics of providing 24/7 access to IR and the optimal management of injured children.

	Mechanism of injury	IR indication (day post injury)	Organ	Grade	Lowest Hb, units (day post injury)	Signs of hypovolaemia	Transfusion volume	Length of stay (days)	Complications
1		Bleeding (von Willebrand's disease) (2)	Spleen	2		Y			None
2		Pseudoaneurysm (56)	Spleen	5		N			Delayed Pseudoaneurysm
3	Fall from height	N/A	Kidney	5	53 (3)	Y	3 units	11	DMSA: 21% function R side
4	Fall from bike	N/A	Spleen	4	66 (3)	Y	?at least 1 unit	9	De-vascularised spleen with cyst
5	Fall on a rope	N/A	Kidney	4*	83 (4)	Y	None at BCH	11	Hypertension

\*Active extravasation of contrast

## Psychosocial Impact of Electric Burn in Children; A Tertiary Care Experience from Rawalpindi

**Faizan Shahid** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), **Mudassar Fiaz Gondal** (Pediatric surgery, Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), **Noor ul Sabah Butt** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan)

**Aim:** Electrical Burn Injuries are very common in the pediatric population and are usually accidental and sometimes occupational. The objective of our study was to evaluate the epidemiology of electrical burn injuries and prospectively evaluate the long term psychosocial impact of electrical burn injuries in children.

**Materials and Methods:** A qualitative interview study was conducted among thirty one patients presented to Holy family hospital prospectively. Demographic details, mode of presentation, detail of injury, Total body surface area, initial condition and surgical interventions were noted at the time of admission. Their physical and psychological outcomes were evaluated by administering Strength and Difficulties Questionnaire (SDQ) and Body Dysmorphic Disorder Questionnaire (BDDQ) via telephonic interviews after six weeks of discharge from the hospital. The study was conducted over a span of 1 year from January 2021 to January 2022.

**Results:** There were 31 patients who presented to the department of pediatric surgery during the span of the study. The mean age was 9.9 years  $\pm$  3.133 SD and 80.6% patients were above 8 years of age with a male to female percentage of 87.09% to 12.90% respectively. 22 (70.96%) patients incurred high voltage electrical burn while 9 (29.04%) suffered low voltage electrical burn. Mortality was 12.90% (n=4). Out of 27 individuals who survived, 18 (66.66%) were labelled as having Body Dysmorphic Disorder upon administration of BDDQ through a six week follow-up. Majority of the patients had abnormal or borderline results in different scales of SDQ.

**Conclusion:** The long-term psychological stress and the varied spectrum of psychiatric disorders in electrical burn patients is profound. The prevention of burn injuries can be effectively achieved by educating parents about safety measures and improving health infrastructure. Implementation of a dedicated national program for psychological support of burn patients should be made accessible to all patients.

## Burns of refugees/asylum seekers children who had to leave their homes due to the war

**Sabri Demir** (Pediatric Surgery and Pediatric Burn Center, Ankara City Hospital, Ankara, Turkey), **Ahmet Erturk** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Sarper Muftuogullari** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Suleyman Arif Bostanci** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Can Ihsan Ozturun** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey), **Dogus Guney** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey), **Vildan Selin Cayhan** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Mujdem Nur Azili** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey), **Emrah Senel** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey)

**Aim:** We aimed to share our data about burned-children treated in our pediatric-burn-center (PBC), which occurred in the children of four countries (Syria, Iraq, Afghanistan, and Somalia) who had to leave their homes due to the civil war.

**Methods:** Children who were lived in refugee camps in their own countries, where civil wars continued, and who were under the status of asylum seeker/refugee in Turkey, were treated in our PBC were included in the study. Age, gender, nationality, cause, months-of-burns, length-of-stay at PBC, whether there was inhalation injury, total burned body surface area (TBSA), grafting, and mortality rates were evaluated, retrospectively. Data were compared with Turkish patients. Statistical analysis was done by SPSS.  $P < 0.05$  was considered significant.

**Results:** Between 01 February 2012 and 28 February 2022, 1673 burned children were treated in our PBC. Of these, 279 (16.7%) were citizens of countries where civil war continued. The length-of-stay at PBC for foreigners was longer ( $P < 0.001$ ), TBSA was bigger ( $P < 0.001$ ), the incidence of fire/flame burns and related inhalation injury was higher ( $P < 0.001$ ), and grafting rates were higher ( $P = 0.001$ ). The mortality rate of foreigners was five times higher (8.6% versus 1.65%,  $P < 0.001$ ). Of the foreigners, 86.7% were Syrian, 6.1% Iraqi, 5.4% Afghan, and 1.8% Somalian. Refugees/asylum seeker victims were injured mostly in the winter-months and by the flame/fire burns caused by the fuel-stove used for heating in the refugee camps (Figure-1). The second most common cause was the fires caused by other reasons in the tents/barracks, followed by bomb explosions.

**Conclusion:** Asylum-seekers/refugees, mostly children, and women, escaping from the war live in terrible conditions in the camps. Fuel-stoves and related fires are the most common cause of burns in the refugee camps. For this reason, international organizations should find a solution to the heating problem in camps other than fuel-stoves.

## Clinical importance in the early identification of non-accidental trauma in pediatric population: a comparative study

**Luz Nélide Garzón** (Medicine, Universidad Nacional de Colombia, Bogotá, Colombia), **Daniela Moreno** (Pediatric surgery, Universidad Nacional de Colombia, Bogotá, Colombia), **Diana Girardot** (Medicine, Universidad Nacional de Colombia, Bogotá, Colombia), **Claribeth Vásquez** (Medicine, Universidad Nacional de Colombia, Bogotá, Colombia), **Maria Alejandra Hernandez** (Medicine, Universidad Nacional de Colombia, Bogotá, Colombia), **Sergio Prado** (Epidemiology, Universidad Nacional de Colombia, Bogotá, Colombia), **Iván Molina** (Pediatric surgery, Fundación Hospital Pediátrico la Misericordia, Bogotá, Colombia), **Fernando Fierro** (Pediatric surgery, Fundación Hospital Pediátrico la Misericordia, Bogotá, Colombia), **Javier Valero** (Pediatric surgery, Fundación Hospital Pediátrico la Misericordia, Bogotá, Colombia)

**Aim:** To compare the pediatric population that presented accidental and non-accidental abdominal trauma treated in a reference hospital in Bogotá, Colombia.

**Methods:** Comparative retrospective case series study of children who presented accidental abdominal trauma (AT) and non-accidental abdominal trauma (NAT). They were treated at Fundación Hospital Pediátrico la Misericordia from June 2013 to December 2019. Statistical analysis was performed calculating measures of central tendency and dispersion.

**Results:** The study included 175 patients. There was no gender predilection. The most common trauma mechanism in AT was falling (35.17%) and in NAT was aggression (40%). No difference was found in the dispersion of the ISS. The requirement for surgical approach was higher in the NAT group (63.33% vs 25.52%). This group presented greater involvement of intra-abdominal organs (75% vs 52.95%), greater involvement of the small (20%) and large (20%) intestines. Multiple intra abdominal organs were involved (25% vs 11.76%), longer intensive care unit stay (56.67% vs 39.31%), prolonged hospital stay (7.5 days vs 4 days), higher complications and mortality (6.67% vs 2.07%).

**Conclusions:** Non-accidental abdominal trauma is the cause of greater morbidity and mortality in children compared to accidental trauma. For this reason, early identification of these cases is important in order to prevent future complications.

## Liver transplantation after severe hepatic trauma in a 10-year-old girl

**Petra Dubská** (Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic), **Libor Janoušek** (Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic), **Jiří Froněk** (Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic)

The liver is the most likely organ to sustain injury as a result of abdominal trauma. Severe hepatic trauma is a rare indication of liver transplantation (LTx). LTx is generally indicated in cases of uncontrollable hemorrhage, acute liver failure, or late post-traumatic consequences. Hepatic vein thrombosis, sepsis, and major hepatic resections are factors associated with the progression of irreversible liver failure. Herein we report one case of LTx for hepatic trauma in a pediatric patient.

**Case report:** A 10-year-old girl with blunt abdominal trauma due to a go-kart accident was referred to our center from a regional hospital, where she had undergone an explorative laparotomy with packing of the liver trauma, and been listed as hemodynamically unstable, with multiple organ failure. Emergency Computed Tomography revealed intraabdominal collections, with a laceration of the liver S V.-VI. And a lesion of v. portae. We decided to carry out an abdominal exploration based on the vital indication. A thorough abdominal debridement revealed bleeding from the branch of the hepatic portal vein for S V. and a deep laceration of the liver from the gallbladder to S7 (grade IV liver injury according to the American Association for the Surgery of Trauma Organ Injury Score). A right hepatectomy was performed. The patient continued to experience liver dysfunction, and 2 days post-surgery, the patient was placed on the waiting list for LTx. A liver transplantation {DCD, full graft} was performed 6 days after the initial trauma, and postoperative recovery was excellent.

**Conclusions:** LTx after severe hepatic trauma is a sustainable practice considering its current favorable outcomes and the fact that without LTx, such trauma would lead to inevitable death. Our patient, who was brought to us with blunt abdominal trauma resulting in a grade IV liver injury, has been doing well for the past year.

## ORAL PRESENTATION SESSION X

### Mininvasive & robotic surgery

#### Nationwide analysis of Laparoscopic Pyloromyotomy in Patients with Infantile Hypertrophic Pyloric Stenosis

**Johannes Leonhardt** (Pediatric Surgery, Klinikum Braunschweig gGmbH, Braunschweig, Germany), **Oliver Muensterer** (Pediatric Surgery, Dr. von Haunersche Children`s Hospital, LMU Klinikum Munich, Munich, Germany), **Ahmad Alsweed** (Pediatric Surgery, Klinikum Braunschweig gGmbH, Braunschweig, Germany), **Andrea Schmedding** (Pediatric Surgery and Pediatric Urology, Goethe University Frankfurt, University Hospital, Frankfurt, Germany)

**Aim:** Although there is no clear evidence that laparoscopic pyloromyotomy is superior to the open procedure, it has become standard procedure in for many pediatric surgery centers. In Germany some pyloromyotomies are still carried out by general surgeons. The aim of this study was to analyse the distribution of open (OP) and laparoscopic pyloromyotomy (LP) in Germany.

**Methods:** The national database of administrative claims data of the Institute for the Remuneration System in Hospitals (InEK) was analyzed regarding numbers of patients with pyloromyotomy from 2019-2021. This database contains data of all hospital admissions with their diagnosis and procedures. All patients with the main diagnosis Q40.0 and procedures 5-432.01, 5-432.00, 5-432.02 younger than 18 years were analyzed.

**Results:** From 2019 to 2021 **2050** patients had pyloromyotomy due to infantile hypertrophic pyloric stenosis in Germany. The numbers declined from 699 patients in 2019 to 657 patients in 2021. 85.5 % of the patients were male. Regarding age, 31.1% were admitted before 28 days of age. All in all, LP was performed in 690 patients (32.3%) with an increase from 216 patients in 2019 (30.9%) to 239 patients in 2021 (36.4%). In 33 patients, (4.7%) there was conversion to open approach. In 21 patients (11 with OP) there was an injury to the stomach, in 23 patients (15 with OP) to the duodenum needing intraoperative repair. Transfusion of blood was given in 37 patients (25 with OP). Mean length of stay was 6.7 after OP and 5.7 days after LP.

**Conclusion:** Laparoscopic pyloromyotomy has been increasing in frequency in Germany recently, although about two thirds of patients still undergo an open procedure. Conversion from laparoscopic to open procedure is relatively rare. Complications were similar in both groups. Compared to other countries, length of stay is quite long in Germany, even after laparoscopic pyloromyotomy.

## Laparoscopic completely extraperitoneal repair versus open herniotomy of inguinal hernia in children: a randomized prospective comparative study

**Thach Ngoc Pham** (Pediatric Surgery, Children's Hospital 2, Ho Chi Minh City, Vietnam, Ho Chi Minh city, Vietnam), **Viet Quoc Tran** (Pediatric Surgery, Children's Hospital 2, Ho Chi Minh City, Vietnam, Ho Chi Minh city, Vietnam)

**Aim:** Considerable controversy exists regarding the role of laparoscopic hernia repair and its benefits over open herniotomy repair. This study aimed to compare the outcomes of the laparoscopic inguinal hernia repair with the open one.

**Methods:** A randomized prospective comparative study has been conducted at Children's Hospital 2 in Ho Chi Minh City, Vietnam, from January 2019 to August 2020. Patients presented with inguinal hernia were submitted into 2 groups of operation: laparoscopic completely extraperitoneal repair versus open herniotomy repair. The outcomes of the 2 groups were reported and compared in terms of clinical and operative characteristics, and postoperative complications.

**Results:** Six hundred and forty-eight patients were enrolled in this study. The mean age at surgery was  $47.91 \pm 31.7$  months. 324 patients underwent laparoscopic surgery and 324 others with open surgery. Postoperative diagnosis reported 8.3% (27/325 cases) patients with contralateral hernia patency were revealed while the laparoscopic repair. Mean surgical time was  $22.1 \pm 10.1$  minutes for laparoscopic surgery, significantly higher than  $16.9 \pm 6.5$  minutes for open surgery ( $P < 0.05$ ). Rate of conversion to open surgery is 1.8% (6/324 cases). Rate of redo surgery in the laparoscopic group is 0.9% (3/324 cases: 01 case of recurrence and 02 cases of hydrocele) compared with 0.3% (1/324 cases) in the open group. There were not significantly different ( $p < 0.05$ ) in terms of the size and the resistance index of the testicles reported on doppler ultrasound performed before surgery and after 3 months of surgery in the groups of patients operated on with laparoscopic surgery and open surgery, respectively.

**Conclusions:** The laparoscopic technique, in this study, have given with the possibility of revealing the patency of contralateral inguinal hernia. However, the limitation of surgery time and the rate of redo-surgery are still controversial in cases operated on with the laparoscopic technique.

## Changing Paradigms from open herniotomy to single port Laparoscopic assisted needle herniotomy in children

**Muhammad Sharif** (pediatric surgery and pediatric burn department, King Edward Medical University / Mayo Hospital Lahore, Lahore, Pakistan), **Shakeel Khan** (pediatric surgery and pediatric burn department, King Edward Medical University / Mayo Hospital Lahore, Lahore, Pakistan), **Ahmad Hassan** (Pediatric surgery and pediatric burn department, King Edward Medical University / Mayo Hospital Lahore, Lahore, Pakistan), **Hafiz Muhammad Arif** (pediatric surgery and pediatric burn department, King Edward Medical University / Mayo Hospital Lahore, Lahore, Pakistan)

**Aims and objectives:** To present our initial experience of laparoscopic needle herniotomy in children

**Setting:** KEMU/Mayo Hospital Lahore

**Duration:** 1<sup>st</sup> June 2021 to 30<sup>th</sup> December 2021

**Study design:** Randomized control trial

**Materials and Methods:** After taking ethical approval from ethical committee all patients of age 6 month to 12 years with inguinal hernia were included in study.

Data was collected on detailed proforma regarding age, sex, side, operative time, cosmesis, and postoperative complications

**Results:** Total of 66 patients were divided in two groups. The patients who were operated via open technique were placed in Group-A whereas those operated via laparoscopic assisted needle herniotomy were placed in Group-B. Out of 33 patients in Group-A, 25 were males whereas 08 were female. In Group-B 28 were males and 05 were females. Average operating time of open herniotomy was 28±2 minutes. The average operating time of needle herniotomy was 21±2 minutes.

Postoperatively there was no recurrence, wound infection or scrotal hematoma in Group-B (Needle Herniotomy) patients. Whereas one out of 33 patients of Group-A (Open Herniotomy) developed scrotal hematoma and one suffered with recurrence after two months of initial procedure. The cosmetic outcome of needle herniotomy was far better than the open herniotomy.

**Conclusion:** We conclude that laparoscopic needle herniotomy has better outcome than open herniotomy in terms of operating time, Post operative complication and cosmesis.

## Open vs Laparoscopic Inguinal Herniotomy In Children: Operative Times, Costs and Surgical Outcomes

**Karen Milford** (Department of Paediatric Surgery, Nelson Mandela Children's Hospital, University of the Witwatersrand, Johannesburg, South Africa), **Anri Smit** (Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa), **Lieketseng Masemane** (Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa), **Lezandri van der Merwe** (Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa), **Michael Chua** (Division of Urology, The Hospital for Sick Children, University of Toronto, Toronto, Canada), **Clover-Ann Lee** (Department of Anaesthesia, Nelson Mandela Children's Hospital, University of the Witwatersrand, Johannesburg, South Africa), **Andrew Grieve** (Department of Paediatric Surgery, Nelson Mandela Children's Hospital, University of the Witwatersrand, Johannesburg, South Africa)

**Aim:** Inguinal herniotomy can be performed using open or laparoscopic techniques. We present a retrospective record review comparing operating room times (ORT), operating times (OT) and disposables and drug costs between the two approaches in a non-profit healthcare setting in South Africa.

**Methods:** Health records were screened for eligibility and queried for relevant variables. Open or laparoscopic inguinal herniotomies performed between 27 August 2020 and 27 August 2021 were considered. Patients with strangulation and intestinal gangrene, whose herniotomy was secondary to another procedure, or where there was insufficient data for analysis were excluded. Variables collected included the cost of disposable and single-use instruments and intraoperative medication, ORT, OT, surgical outcomes and patient demographics. Fixed costs including overhead costs and human resources were excluded, as were per-minute theatre costs. The between group differences were assessed using Fisher-exact test for nominal data and Mann-Whitney U test for non-parametric continuous variables with significance set at a p-value of <0.05.

**Results:** 52 open hernia (unilateral  $n = 34$ ; bilateral  $n = 18$ ) and 50 laparoscopic hernia repairs (unilateral  $n = 40$ ; bilateral  $n = 10$ ) were included. Between the open and laparoscopic groups, there was no difference between the cost of disposables and medication (ZAR 1532.91 vs ZAR1407,  $p = 0.563$ ), in OT (26.5 vs 28.5 minutes,  $p = 0.139$ ), or in ORT (70 vs 70 minutes,  $p = 0.736$ ). Patients undergoing open repair were younger (6.57 vs 41.46 months,  $p < 0.0001$ ) and weighed less (8.35 vs 14.2kg;  $p < 0.001$ ). The shortest follow-up time was 4.8 months ( $m=11.8$ ). The open group had one recurrence and two local haematomas. The laparoscopic group had 3 open conversions and one local haematoma.

**Conclusion:** Laparoscopic and open inguinal herniotomy in children are comparable in terms of variable costs and ORT. Complication rates remain low in both approaches.

## Laparoscopic percutaneous single port inguinal hernia repair in children: modified technique with Ethibond® and a single Prolene® loop

**Juliana Mancera** (Pediatric Surgery, Universidad Militar Nueva Granada, Bogota, Colombia), **Viviana Barragan** (Pediatric Surgery, Universidad Militar Nueva Granada, Bogota, Colombia), **Fredy Orozco** (Pediatric Surgery, Fundación Clínica Infantil Club Noel, Cali, Colombia), **Guillermo Sarmiento** (Pediatric Surgery, Fundación Clínica Infantil Club Noel, Cali, Colombia), **Juan C Dueñas** (Pediatric Surgery, Fundación Clínica Infantil Club Noel, Cali, Colombia)

**Aim:** Inguinal hernia repair is a common surgery in pediatrics, and the laparoscopic approach has become effective. The current trend favors reducing the number of incisions. Therefore, Patkowski described the use of a single loop of Prolene® that ligates the sac, which we found harsh in children's tissues. Surpassing this, Ponski described the use of Ethibond® but had trouble advancing this suture through the needle. We present a variant of the percutaneous laparoscopic technique, using a single Prolene® loop and ligating the sac with Ethibond®.

**Methods:** We propose the following modifications to Piatkowski's technique: 1). Use of epidural needle, 2). Use of a single Prolene® loop, 3). Advancement of the Ethibond® beyond the tip of the needle, 4). Higher caliber Ethibond® (2/0), 5). Air-drying the needle to facilitate the suture advance. There were special cases in which an additional port was required. After institutional ethical committee approval, a retrospective review of this percutaneous laparoscopic technique, using a single Prolene® loop and ligating the sac with Ethibond® was performed. We present our clinical experience.

**Results:** Seventy-seven inguinal hernias (56 patients) were repaired between January 2021 and December 2021. Most of the patients were male (55%) with an average age of seven years. A third of the patients had bilateral hernia (36%), and 42% were right-sided. We had a single intraoperative complication concerning an iliac vein hematoma without requirement of additional intervention. Postoperative follow-up was between 1-12 months. Four recurrences (5.1%) were detected, related to incarcerated hernias. There were no complications linked to testicular issues or hydrocele.

**Conclusions:** We demonstrate the application of some modifications to the extracorporeal technique, without transgressing its basic principles. We consider this technique is less invasive, simple, easy to reproduce, with excellent cosmetic results, and with a post-surgical complication average rate similar to laparoscopic herniorrhaphy.

## Partial laparoscopic splenectomy as reliable treatment for patients with enlarged and symptomatic nonparasitic splenic cyst

**Jakub Turek** (Clinic of paediatric surgery, orthopaedics and traumatology, University Hospital Brno; Faculty of Medicine, Masaryk University in Brno, Brno, Czech Republic), **Jiří Tůma** (Clinic of paediatric surgery, orthopaedics and traumatology, University Hospital Brno; Faculty of Medicine, Masaryk University in Brno, Brno, Czech Republic), **Ladislav Plánka** (Clinic of paediatric surgery, orthopaedics and traumatology, University Hospital Brno; Faculty of Medicine, Masaryk University in Brno, Brno, Czech Republic)

**Aim:** The observation strategy for nonparasitic splenic cysts (NPSC) is the appropriate approach in children, until the excessive volume of the cysts or subjective symptoms appears. Different surgical methods were proposed in management of this condition. The aim of this study is to demonstrate the feasibility and outcome of the partial laparoscopic splenectomy in children with NPSC.

**Methods:** A retrospective review of paediatric patients who underwent the splenic surgery from 2006 until 2021 was performed. From 75 patients, 17 underwent partial laparoscopic splenectomy due to NPSC. Two main indications for surgery were: the cyst over 8 cm in one of the dimensions and the symptomatic NPSC. Demographic data, indications, characteristic of the cysts, hospital stay, surgery course and complication were monitored. The follow up continued up to the adulthood of patients.

**Results:** 17 children (9 boys and 8 girls) who underwent partial laparoscopic splenectomy were identified. Mean age at the time of a surgery was 13.6 years (6-18) and the mean time of hospital stay was 10 days (7-12). 7 patients presented with the progressive enlargement of the cyst, 5 with the palpable mass and the rest with abdominal pain. One patient has histologically diagnosed posttraumatic pseudocyst, the rest were evaluated as epithelial cysts of the spleen. We observed 3 patients with complications: the reoperation due to the postoperative excessive bleeding, the conversion to laparotomy due to inflammatory infiltration and recurrence of the cyst. There were no statistical significant difference between laparoscopic partial and complete splenectomy in terms of number of complications.

**Conclusion:** Partial laparoscopic splenectomy appeared as appropriate surgical treatment in indicated patients with the NPSC, presented with the relatively small number of complications and promising outcomes for patient. As the procedure is not commonly performed, only experienced surgeon should be performing the surgery to achieve satisfactory results.

## Distribution of robot-assisted surgery in children – a nationwide analysis

**Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Elisabeth Ammer** (Department of General-, Visceral- and Pediatric Surgery, University Medicine Goettingen, Goettingen, Germany), **Fritz Kahl** (Department of General-, Visceral- and Pediatric Surgery, University Medicine Goettingen, Goettingen, Germany)

**Aim:** The first publications about a pediatric robot-assisted surgery in Germany were published in 2001. Since then the use of robots in adult urology increased much. In Germany, pediatric surgery is decentralized, furthermore surgeries in children are not limited to pediatric surgeons. We wanted to analyze the nationwide distribution of robotic surgery in children 20 years after the first publication.

**Methods:** The national database of administrative claims data of the Institute for the Remuneration System in Hospitals (InEK) was analyzed regarding numbers of patients with the use of a complex robotic system for surgeries in the years 2019-2021. This database contains data of all hospital admissions in Germany with their diagnosis and procedures. All patients with the procedure 5-987.0 younger than 18 years were analyzed.

**Results:** From 2019 to 2021 there was an increase of robot-assisted surgeries in children from 105 cases in 2019 to 116 in 2020, and 144 cases in 2021. In the same period the number of adults who had robot-assisted surgeries increased from 28,710 in 2019 to 41,477 in 2021. 6% of the children were under the age of 3 years, 4% between 3 and 5 years, 10% between 6 and 9 years and 81% between 10 and 17 years of age. Main procedure was pyeloplasty performed in 166 patients, 10 % of the patients were younger than 6 years. Other procedures were nephrectomy in 30 patients, cholecystectomy in 23 patients, thymectomy in 22 patients, fundoplication in 9 patients and splenectomy in 8 patients.

**Conclusion:** Robot assisted surgery still has a very limited use in surgery in children in Germany, most procedures performed are urologic surgeries.

## Preliminary experience of advanced pediatric thoracic robotic surgery in 17 patients

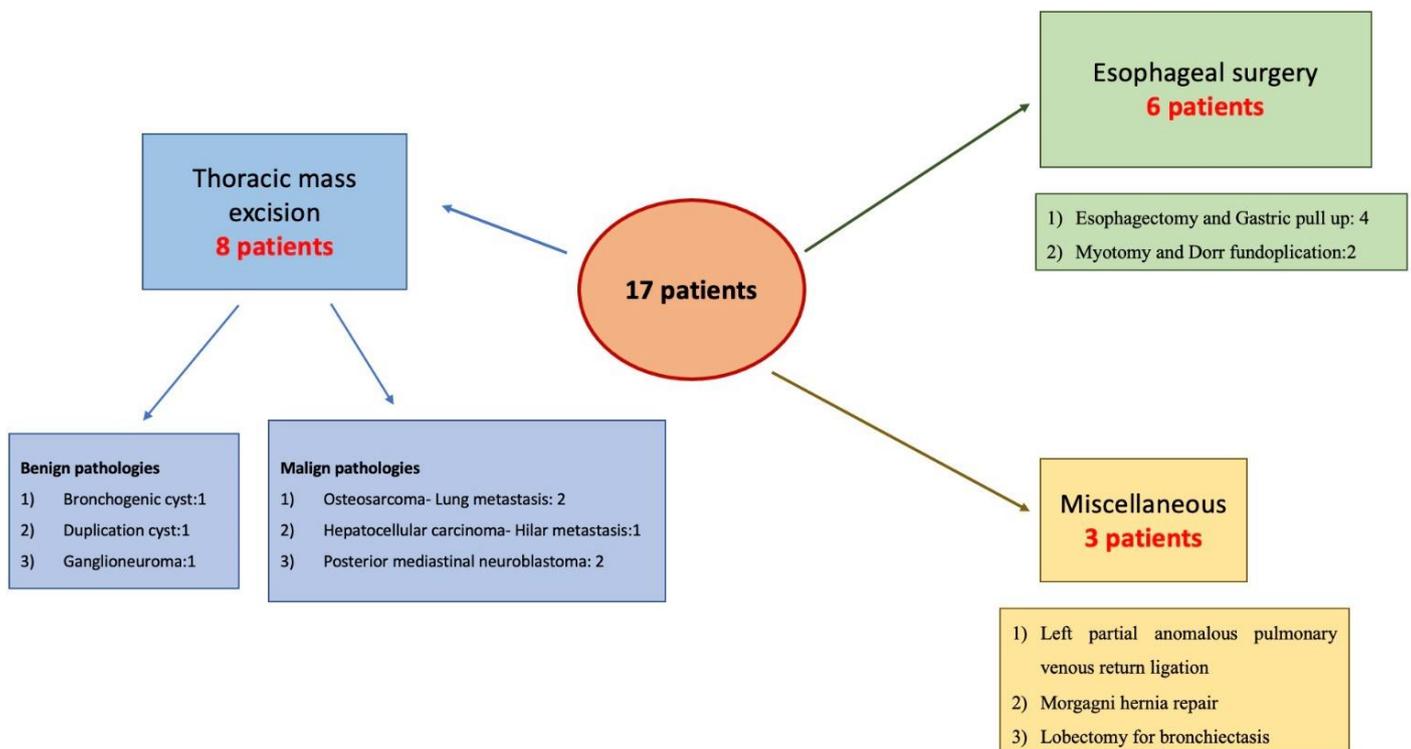
**Zafer Dokumcu** (Division of Pediatric Thoracic Surgery, Ege University Faculty of Medicine, Izmir, Turkey), **Ulgen Celtik** (Ege University Faculty of Medicine, Izmir, Turkey), **Coskun Ozcan** (Division of Pediatric Thoracic Surgery, Ege University Faculty of Medicine, Izmir, Turkey), **Ata Erdener** (Division of Pediatric Thoracic Surgery, Ege University Faculty of Medicine, Izmir, Turkey)

**Aim:** Robotic-assisted surgery has been found safe and feasible for many pediatric cases. However, reports on advanced pediatric thoracic robotic surgery (APTRS) are limited in the literature. The aim of the study was to share our preliminary experience of APTRS in 17 patients.

**Methods:** Through October 2020 to April 2022 17 APTRS has been performed in our institution. A retrospective analysis was performed including demographics, indications, console time, complication rate, length of hospital stay, and postoperative complications.

**Results:** 17 patients (M/F: 5/12) were operated with robot, including operations for thoracic mass excision in 8, esophageal surgery in 6, and miscellaneous pathologies in 3 patients. The summary of indications are depicted in Figure 1. The median age at operation was 11,5 years (10 month-17 years). The median weight was 30 (15-65) kg. Median console time was 142 (25-200) minutes. There was no conversion. Median length of hospital stay was 4 (1-43) days. Postoperative complications were extended air leak and atelectasis in two patients (11.8%).

**Conclusion:** Our preliminary experience in pediatric robotic thoracic surgery supports its utilization in even complex cases. Robotic thoracic surgery seems beneficial in especially posterior mediastinal mass excision and esophagectomy in corrosive esophageal strictures comparing to thoracoscopy.



## Robotic-Assisted Laparoscopic Appendicovesicostomy

**Gokhan Berktug Bahadir** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Sevim Ecem Unlu Balli** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Gulenay Korkmaz** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Ozlem Ekici** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Bahadir Caliskan** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Ervin Mam-bet** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Haluk Ozturk** (pediatric surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Ilhami Surer** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Suzi Demirbag** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey)

**Aim:** It was aimed to share the technical details of Robotic-assisted laparoscopic right Lich Gregoir and RALA.

**Case Description:** The nine-year-old boy was by neurogenic bladder. As a result of the examinations performed on the patient, right vesicoureteral reflux, double ureter and neurogenic bladder were detected. Appendicovesicostomy and reflux surgery were decided for clean intermittent catheterization.

**Conclusions:** Robotic techniques are being increasingly used in minimally invasive pediatric urology. Pediatric surgeons have gained experience with robotic procedures in children, and are beginning to apply these techniques in more complex cases, such as robotic-assisted laparoscopic appendicovesicostomy (RALA). Robotic surgery allows the surgeon to perform fine suturing and precise dissection under magnified vision, making it ideal for complex reconstructive urinary tract surgery.

**Keywords:** children, robotic surgery, mitrofanoff

## Laparoscopic transperitoneal pyeloplasty for congenital pelviureteric junction obstruction in infants and children

**Mostafa Zain** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt), **Mohamed Elsawaf** (Department of Pediatric Surgery, Tanta University, Tanta, Egypt), **Mohamed Abouheba** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt), **Ahmed Khairi** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt), **Sameh Shehata** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt)

**Aim:** Laparoscopic pyeloplasty (LP) has become the method of choice for surgical correction of UPJO in many centers achieving an equivalent 95% success rate to open surgery. Being technically demanding, many urologists still avoid LP in children. The limited laparoscopic working space and small ureteral caliber make anastomosis challenging. The aim of this study is to evaluate the early outcomes of laparoscopic pyeloplasty in children with UPJO as regards resolution of symptoms, improvement of renal ultrasound and scintigraphy, and any post-operative complications.

**Methods:** A prospective study was conducted on 25 consecutive patients aged 3 months to 18 years from January 2018 to June 2021. Our standard approach dismembered Anderson-Hynes laparoscopic transabdominal pyeloplasty was performed in all cases. Post-operative follow-up included RUS at 3 and 6 months and DTPA study 6 months after surgery.

**Results:** In the study period, a total of 25 patients (11 boys, 14 girls) were included. The mean age at operation was 27.2 months (range 4–72 months). The mean operating time was 183 min (range 110–240 min). There were no conversions. We encountered 1 early upward migration of the stent to the renal pelvis obstructing UPJ requiring redo on the 7th postoperative day. Another 2 patients suffered stenosis of UPJO requiring endopyelotomy that was successful in 1, while the other was conventionally re-operated 8 months later. RUS follow-up showed a reduction of mean pelvic dilatation from 32.6 mm (range 2.4–83 mm) preoperatively to 17.2 mm (range 7–38 mm) postoperatively. Postoperative DTPA showed a slight increase in renal function from a mean of 42.2% (range 34–54%) to 45.6% (range 38–53%).

**Conclusion:** Laparoscopic Pyeloplasty is as effective as open surgery in preservation of renal function and resolution of hydronephrosis, but with less morbidity and better cosmesis. Laparoscopic pyeloplasty is feasible, effective, and safe, but it requires advanced laparoscopic experience.

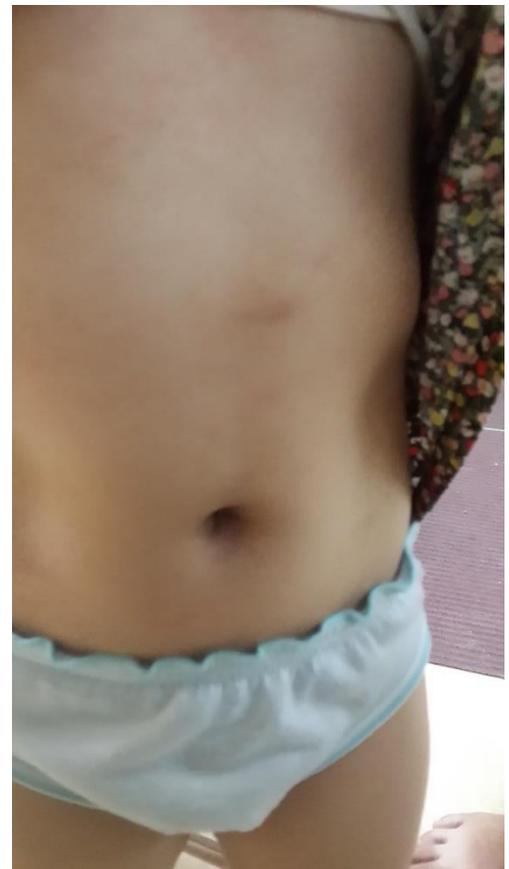
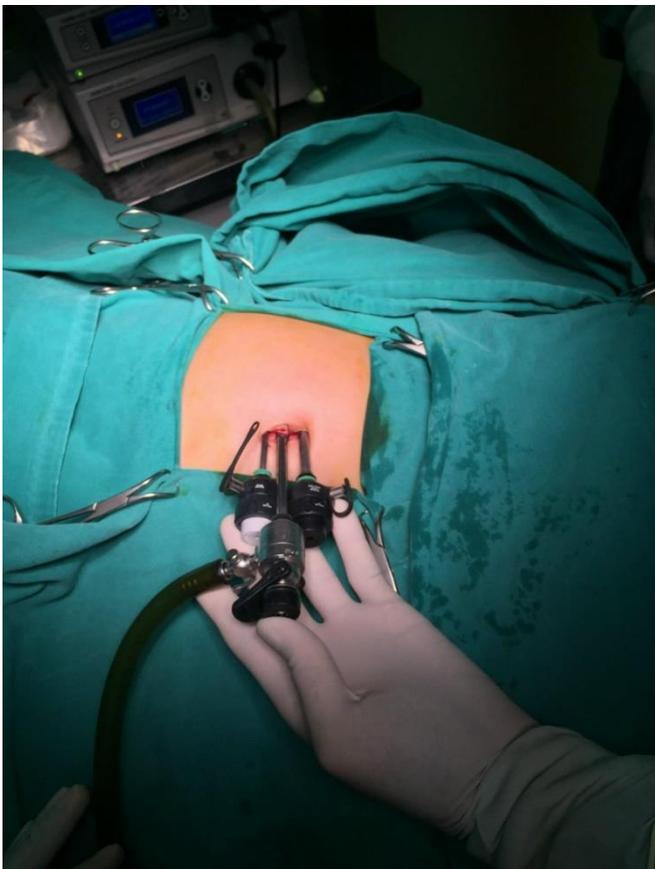
## Transumbilical laparoendoscopic single site surgery for upper heminephroureterectomy in management of renoureteral duplication in children

**Tran Ngoc Son** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Nguyen Thi Hong Van** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Hoang Van Bao** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Tran Van Quyet** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** We present our technique and results of transumbilical laparo-endoscopic single site surgery (TULESS) for heminephroureterectomy in the management of reno-ureteral duplication (RUD) in children.

**Case description:** Three girls (aged 8-20 months old) with symptomatic RUD (dripping and/or urinary infection with decreased function of the upper renal moiety) underwent TULESS for heminephroureterectomy at our center from 2018 to 2021. Two patients had RUD on the left and one – on the right side. A single 15 mm umbilical incision was made. Two 6-mm trocars and one 4-mm trocars were placed at different points at the same incision. Using 5mm and 3-3,5mm conventional straight laparoscopic instruments, the upper dilated ureter was dissected; the vascular vessels of the upper renal moiety were exposed, clipped and divided; the renal parenchyma was transected using the harmonic scalpel; The specimen was extracted in a nylon bag via the umbilical incision. The operative duration was 120 – 140 minutes. There were no intraoperative or post-operative complications. The blood loss was minimal. No drain was used. There was no need for an additional port or conversion to open surgery. All the patients recovered well, resumed oral feeding at POD 1 day and were discharged POD 3. At a follow-up of 8 – 30 months, all three patients were asymptomatic. Postoperative cosmesis was excellent as all patients were virtually scarless.

**Conclusions:** Our TULESS technique with conventional laparoscopic instruments for upper heminephroureterectomy of reno-ureteral duplication in children is feasible, safe, with excellent cosmesis.



## Transumbilical laparoendoscopic single site surgery with conventional instruments for nephrectomy of nonfunctional symptomatic kidney in children

**Tran Ngoc Son** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Nguyen Thi Hong Van** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Hoang Van Bao** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** To present our technique and results of transumbilical laparoendoscopic single site surgery (TULESS) for nephrectomy of the nonfunctional symptomatic kidney (NSK) in children.

**Methods:** Medical records of all patients with NSK undergoing TULESS for nephrectomy at our center from 2018 to 2021 were reviewed. For TULESS, a single 12-15mm umbilical incision was made and 2 ports 6 mm, 1 port 3.5mm were placed in different points at the same incision. Conventional 3mm -5mm straight laparoscopic instruments were used. The renal vessels were exposed, clipped and divided. The ureter was transected near the urinary bladder. The specimen was extracted in a nylon bag via the umbilical incision.

**Results:** 5 patients (aged 2 to 8-year-old) with the diagnosis of NSK were enrolled with different etiology: pyelo-ureteral junction obstruction in 1 patient, multicystic kidney in 1, hypoplastic kidney in 3 (2 with ectopic pelvic location). The mean operative duration was 90 minutes (ranged 60-120 minutes). There were no intraoperative or postoperative complications. The blood loss was minimal. There was no placement of an additional port or conversion to open surgery. All the patients recovered well, resumed oral feeding on the first postoperative day and were discharged 2 days later. At a median follow-up of 16 months, all the patients were asymptomatic. The postoperative cosmesis was excellent as all the patients were virtually scarless.

**Conclusions:** Our TULESS technique with conventional laparoscopic instruments for nephrectomy of non-functional kidney in children is feasible, safe, with excellent cosmesis.





## Laparoscopic management of congenital midureteric stricture from a crossing renal vessel in a 2-year-old girl

**Mostafa Zain** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt), **Mohamed Elsawaf** (Department of Pediatric Surgery, Tanta University, Tanta, Egypt), **Ahmed Hassan** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt), **Ahmed Oshiba** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt), **Mohamed Abouheba** (Department of Pediatric Surgery, Alexandria University, Alexandria, Egypt)

**Aim:** Congenital midureteric stricture (CMS) is a rare cause of hydronephrosis in children. Most congenital strictures of the ureter occur either at the ureteropelvic junction (UPJ) or ureterovesical junction, with mid-ureteral strictures representing only 4%–5% of all cases of ureteral obstruction in children. Here, we report a case of CMS that was managed laparoscopically at our center.

**Case description:** A two-year-old girl was referred to our center with incidentally discovered hydronephrosis. Abdominal ultrasound showed SFU grade 4 hydronephrosis on the right side with upper ureteric dilatation. VCUG was normal. A DTPA scan showed a hydronephrotic right kidney with reduced uptake, no response to Lasix, and split renal function of 38% on the right side. Laparoscopic exploration revealed midureteric stricture from a crossing renal vessel. Laparoscopic dismembered ureteroureterostomy with DJ stent was done. Ultrasound at 3 months after removal of the stent showed decrease in the AP pelvic diameter from 38 mm to 30 mm. A DTPA scan was done 1 year after surgery and showed increased split function (42%) and improved excretion curve.

**Conclusion:** CMS is a rare cause of hydronephrosis that should be considered especially when there is proximal ureteric dilatation.

## Laparoscopy in selected adrenal tumors in children

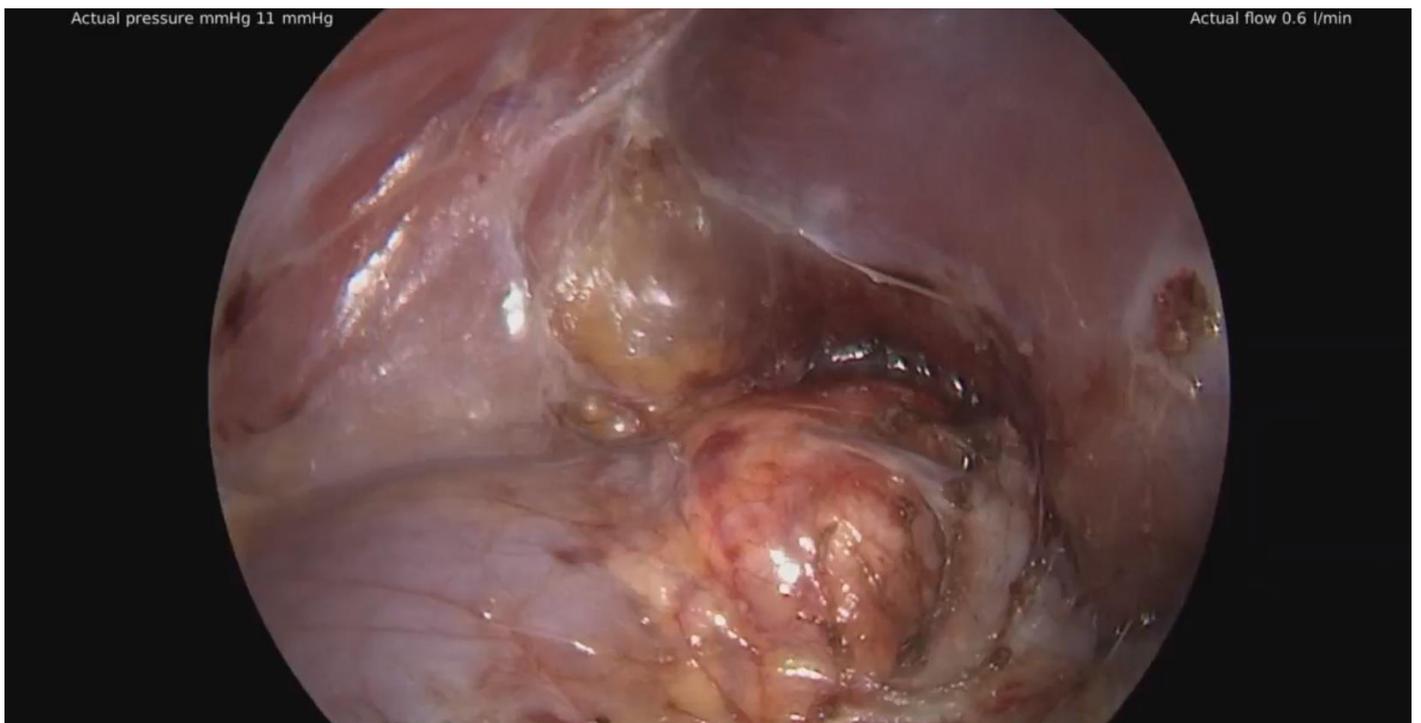
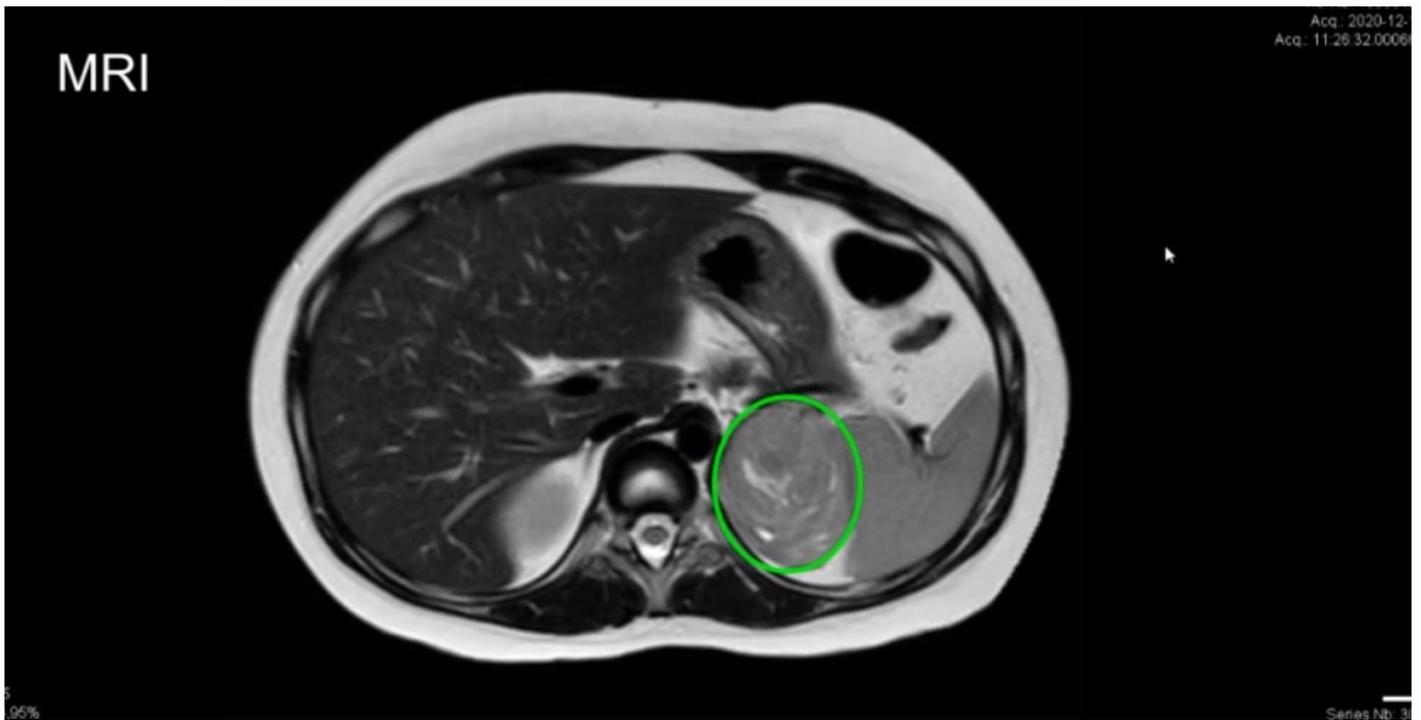
**Magdalena Lewandowska** (Department of Paediatric Surgery and Oncology, Central University Hospital, Medical University of Lodz, Lodz, Poland), **Paweł Polityło** (Department of Paediatric Surgery and Oncology, Central University Hospital, Medical University of Lodz, Lodz, Poland), **Janusz Jabłoński** (Department of Paediatric Surgery and Oncology, Central University Hospital, Medical University of Lodz, Lodz, Poland)

**Aim:** In our study we reviewed our experience in laparoscopy for adrenal tumors in children to evaluate feasibility, reliability and safety of this approach.

**Methods:** In our Department, from September 2017 to January 2022, 13 patients were operated on laparoscopically for adrenal tumors. The youngest patient was 3 months old, the oldest 11 years old. In 12 cases imaging and laboratory tests performed before the surgery indicated a limited and benign nature of the tumor. In one patient, a 4-month-old boy, the right adrenal tumor with metastases to the liver and bone marrow was diagnosed preoperatively. He was qualified for the primary tumor resection. All patients were operated on by a peritoneal approach.

**Results:** 7 of the operated tumors were located on the right side, 6 – on the left side. All of them have been completely removed. There were no intraoperative complications, and in one case there was conversion due to technical difficulties. Histopathology results showed: 8 neuroblastic tumors, 2 adenomas of the adrenal cortex, 1 adrenal cyst, and in 2 patients, the solid mass in the left adrenal area appeared to be an extrapulmonary sequester. The postoperative course in all children was uneventful, and on the 3-4th day after surgery they were discharged home in a good general condition.

**Conclusions:** In the described cases, laparoscopy turned out to be a feasible, reliable and safe method of surgery, it allowed for a detailed insight into the surgical field and complete removal of lesions without damaging them. At the same time, as a minimally invasive technique, it enabled patients to quickly return to normal activity and shortened the hospital stay.



## Laparoscopy in duodenal atresia – single center's experience

**Krystian Toczewski** (Department of Paediatric Surgery and Urology, Wrocław Medical University, Wrocław, Poland), **Bartosz Gogolak** (Department of Paediatric Surgery and Urology, Wrocław Medical University, Wrocław, Poland), **Sylwester Gerus** (Department of Paediatric Surgery and Urology, Wrocław Medical University, Wrocław, Poland), **Dariusz Patkowski** (Department of Paediatric Surgery and Urology, Wrocław Medical University, Wrocław, Poland)

**Aim:** To present a single European university center's experience with laparoscopic repair of duodenal atresia.

**Methods:** Retrospective review including all patients with duodenal atresia or diaphragm treated laparoscopically since 2016. Patients with Ladd bands or other extrinsic obstructions of the duodenum were excluded.

**Results:** 30 patients were included in the study (23 [64%] girls). Median gestational age was 37hbd and birth weight 2340g. 63% had other congenital anomalies. 4 patients, all with type I atresia, had a late presentation (age at operation 35-395 days). Among others, the surgery took place on the 3<sup>rd</sup> day of life (median). Atresia type I was present in 9 cases (33%), type II in 6 (22%), and type III in 12 (44%). There were 3 (10%) conversions to open surgery, all due to anatomical reasons. A drain was left in 53% of patients. Feeding was started on the 5th postoperative day, and full feeding was reached on the 10th (median). There were 3 minor complications and 1 other patient had undergone second surgery. Because of delayed GI passage and elevated liver enzymes, so 29 days postoperatively the patient had undergone duodenoscopy and percutaneous liver biopsy complicated with hemorrhage, which led to laparotomy for hemostasis. The anastomosis was then revised with Heineke-Mikulicz enteroplasty. The symptoms continued due to motility dysfunction. All patients are alive.

**Conclusion:** Laparoscopy in experienced hands is a feasible method with good postoperative outcomes and all benefits of a minimally invasive procedure.

## ORAL PRESENTATION SESSION XI

### Hepatobiliary surgery

#### Kasai Portoenterostomy for children with biliary atresia – is it for all or for none

**Rajeev Redkar** (Pediatric Surgery, Lilavati Hospital & Research Centre, Mumbai, India), **Vinod Raj** (Pediatric Surgery, Mahatma Gandhi Memorial Medical College and Superspeciality Hospital, Indore, India), **Vinod Raj** (Lilavati Hospital & Research Centre, Panjim, India)

**Aim:** To find out association between liver function tests, liver histopathology and outcomes of biliary atresia (BA) following Kasai Portoenterostomy (KPE)

**Materials and Methods:** This is a retrospective study of children who underwent KPE at a single institute by single surgeon. The patient records analyzed and data of complete blood counts, liver function tests, coagulation profile and histopathology reports collected. The outcomes recorded as alive and jaundice free, alive but jaundiced, and deceased. Statistical analysis done using SPSS 23.

**Observations:** Total of 173 children operated during January 2000 to December 2020. Of these, 36 matched inclusion criteria. The parameters assessed were percentage of direct bilirubin, ratios of Aspartate transaminase (AST) to Alanine transaminase (ALT); Gamma glutamyl transferase (GGT) to AST; GGT to ALT and Aspartate transaminase to platelet ratio index (APRI). Among histopathology reports, fibrosis grade and bile ductular size noted. Among 36, 26 alive and ten are deceased. Among 26 alive, all are jaundice free except 4. Of the parameters, ratio of AST to ALT, APRI and grade of fibrosis found statistically significant and further analysis showed if AST to ALT ratio < 2.1, APRI < 1.8 and grade of fibrosis < four, irrespective of age at surgery, had 96.2 % probability of successful KPE. Based on these observations, a scoring system and risk prediction model constructed based on Receiver operating characteristic (ROC) curves which are first in BA management.

**Results and Conclusion:** BA children can be subjected to risk prediction model and KPE performed in those who have a score less than seven out of 20 while others could be offered an upfront primary liver transplantation.

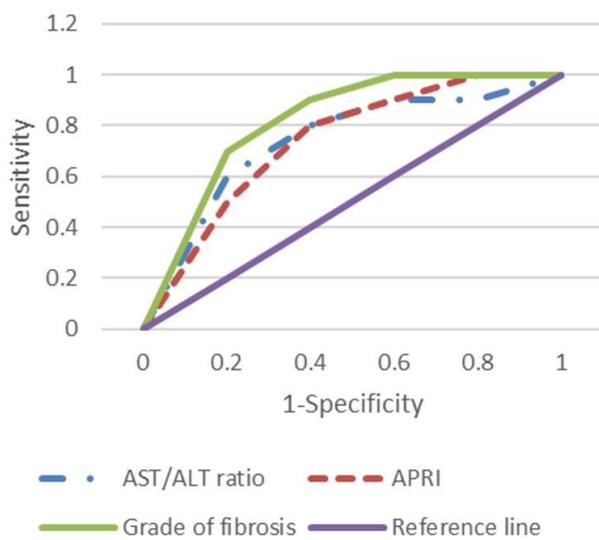
**Table 1 – Statistical analysis**

Variables	Score	df	Sig	AUROC
Grade of fibrosis	6.754	1	0.009	0.816
AST/ALT ratio	7.490	1	0.006	0.866
APRI	6.949	1	0.008	0.863
Bile duct size	2.340	1	0.126	0.659
Overall statistics	18.604	4	0.001	

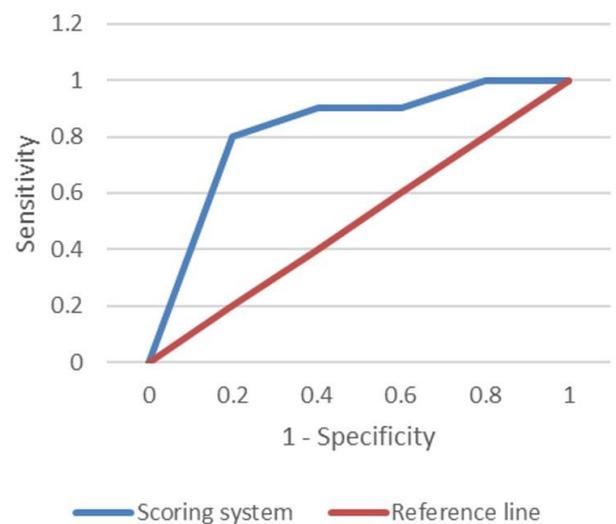
**Table 2 – Scoring system and risk prediction model**

Grade of fibrosis	Score	Ratio of AST/ALT	Score	APRI index	Score	Cumulative score	Risk
Grade 1	1	0 to 1.0	1	0 to 1	1	3 to 7	Mild
Grade 2	2	1.01 to 2.19	2	1.01 to 1.8	2	8 to 16	Moderate
Grade 3	3	2.20 to 2.39	3	1.81 to 2.39	3	17 to 20	Severe
Grade 4	4	> 2.4	4	> 2.4	4		
Grade 5	5						
Grade 6	6						

**Figure 1 - ROC Curve**



**Figure 2 - ROC curve**



## Exploring alternative pathway of stem cell proliferation for hepatic regeneration by partial liver resection in extra hepatic biliary atresia

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Madhvi Tripathi** (All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Prasenjit Das** (All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Devendra K Gupta** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Minu Bajpai** (All India Institute of Medical Sciences, New Delhi, New Delhi, India)

**Aim:** Ongoing fibrosis despite successful Kasai for biliary atresia (BA) accounts for significant morbidity. We aimed to resect a part of liver along with Kasai to stimulate an alternative path of stem cell proliferation for hepatic regeneration

**Methods:** BA cases operated from April 2014 to October 2020 were divided into two groups; A: in whom non anatomical liver resection (segment 2,3) was done along with Kasai procedure and B: only Kasai was done. Preoperative; Day 7; 1 month; 3 months 6 month and 12-month bilirubin and APRI was compared in both groups.

**Results:** Of 52 BA cases operated from April 2014 to October 2020, Group A:B was 25:27. The median(range) age at presentation was comparable as A; 96 (54-242) and B 89(47-310). There were 14:7 females in Group A:B. Mean ( $\pm$  SD) preoperative bilirubin in Group A:B was  $12.5 \pm 6.3$ :  $11.9 \pm 3.9$  mg/dl. Day 7 bilirubin in Group A:B was  $8.8 \pm 4.1$ :  $9.1 \pm 3.6$  mg/dl. Serum bilirubin at 1 month post-operative period was  $6.5 \pm 3.8$  v/s  $9.7 \pm 4.7$  mg/dl in Group A v/s B ( $p < 0.05$ ). Serum bilirubin at 3 month post operative period was  $5.8 \pm 2.7$  v/s  $13.8 \pm 7.3$  in Group A:B ( $p < 0.05$ ),  $0.8 \pm 1.2$  v/s  $3.8 \pm 2.4$  in Group A:B at 6 months and  $0.5 \pm 0.4$  v/s  $2.2 \pm 1.2$  at 12 months. Preoperative APRI in Group A:B was  $3.2 \pm 3.8$ :  $1.55 \pm 1.18$ . Day 7 APRI in Group A:B was  $0.79 \pm 0.48$ :  $1.04 \pm 0.70$ . At 1 month post operative period the APRI was remarkable low in the study Group (A)  $0.52 \pm 0.39$  v/s (B)  $2.75 \pm 2.91$ . Similar trend followed till 12 months post op. Mortality was 14/25: 23/27 in Group A:B with 10/11:1/4 being jaundice-free at follow up of 17-84 months.

**Conclusion:** The resection of a part of the liver may trigger an alternative path of stem cell proliferation for hepatic regeneration with reduced fibrosis and improved survival.

## Local instillation of mitomycin-c at portal plate after Kasai porto-enterostomy in extra hepatic biliary-atresia: randomized control trial

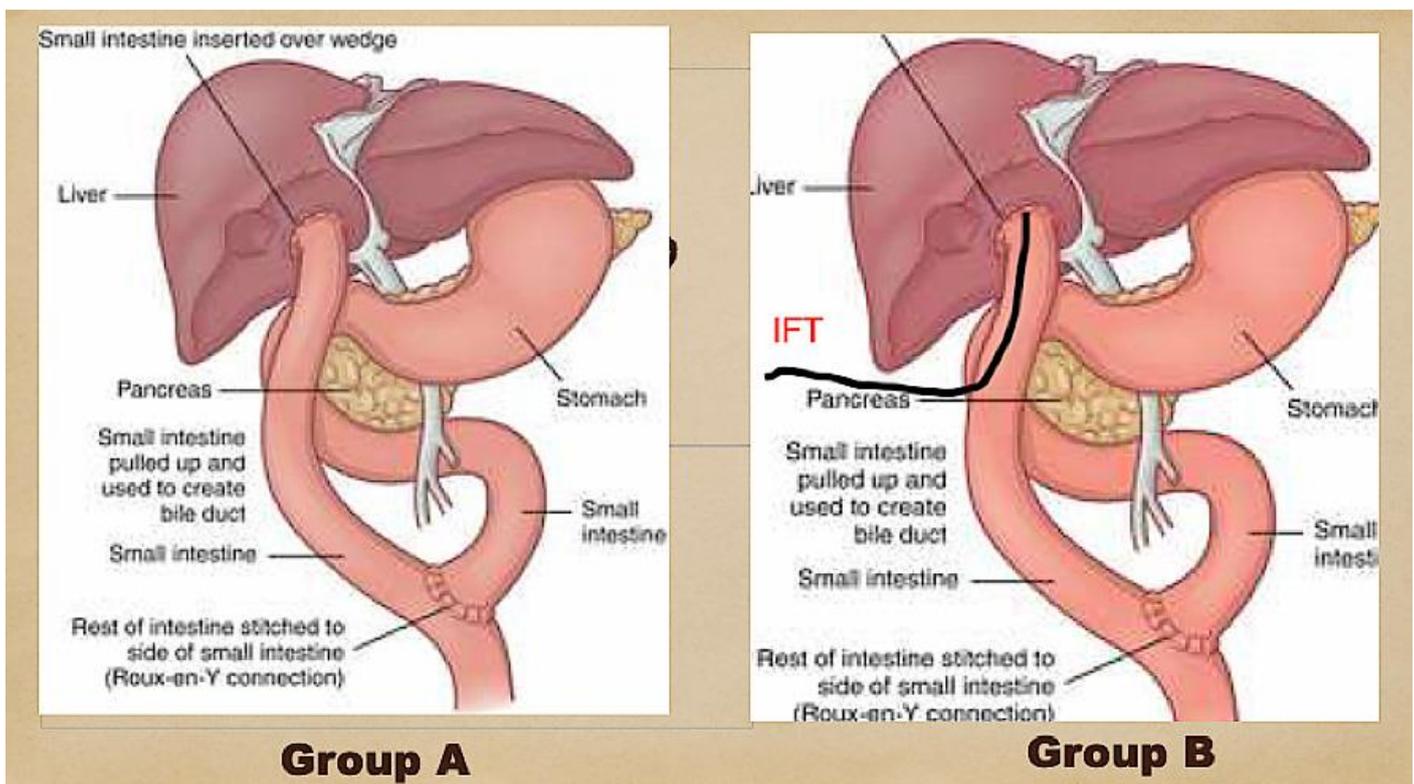
**Shailesh Solanki** (Pediatric Surgery, Pgimer, Chandigarh, India), **Ravi Prakash Kanojia** (Pediatric Surgery, Pgimer, Chandigarh, India), **Sadhna Lal** (Pediatric Gastro, Pgimer, Chandigarh, India), **Pramod Gupta** (Biostatistics, Pgimer, Chandigarh, India), **Ram Samujh** (Pediatric Surgery, Pgimer, Chandigarh, Chandigarh, India)

**Aim:** Extrahepatic biliary atresia (EHBA) is a disease with unclear etiology. Despite a lot of research, Kasai porto-enerostomy (KPE) is the only available treatment before liver transplant. Even after KPE and initial bile flow, the prognosis is not same for all children due to ongoing sclerosis in the region of porta hepatis. Mitomycin-C (MMC) has anti-fibroblastic property and its instillation at portal plate could decrease/arrest this process and improves bile flow. We carried out a study to establish technical feasibility and evaluate the effect of MMC in terms of bile drainage and nadir bilirubin levels.

**Patients and Method:** Study was approved by Institute Ethics committee. Patients with EHBA were randomly allocated to Group-A (KPE only) and Group-B (KPE plus MMC). All children underwent standard KPE, in group-B additional placement of 5 Fr infant feeding tube near the porta though the roux limb was done i.e. tip of tube was in close contact with porta and hub was outside the abdominal wall. Postoperative protocol was same for all patients, in group B children, instillation of MMC was done according to protocol.

**Result:** Total of 30 patients (Group A = 16, Group B = 14) were enrolled in study from 2018 to 2020. At 3 months follow up, 10 children in group A and 11 in group B were passing normal color stool with significant decrease in their bilirubin level. In group A, there was three mortality and one child was passing clay color stool. At 1 year follow-up, 7 children in group A and 10 in group B had bilirubin <1.

**Conclusion:** Technical feasibility is possible for the procedure. The instillation of MMC was well tolerated by all patients. Early results are encouraging and study can be continued to get more insight information. Long term results are necessary to validate the technique and result.



## Prognostic factors for the outcome of patients with biliary atresia following Kasai surgery at children hospital no. 2

**Tri Thanh Tran** (Department of Hepato-Pancreato-Biliary Surgery and Liver Transplant, Children's Hospital No 2, Ho Chi Minh, Vietnam), **Kiet Tuan Kiet** (Department of Hepato-Pancreato-Biliary Surgery and Liver Transplant, Children's Hospital No 2, Ho Chi Minh, Vietnam), **Duy Phi Ho** (Department of Hepato-Pancreato-Biliary Surgery and Liver Transplant, Children's Hospital No 2, Children's Hospital No 2, Ho Chi Minh, Vietnam)

**Context:** Kasai surgery is considered the standard of treatment for biliary atresia. The prognosis for outcome of Kasai surgery is very important in the long-term treatment and follow up of biliary atresia.

**Aims:** To determine the prognostic factors for the outcome of Kasai surgery in patients with biliary atresia.

**Materials and Methods:** A prospective study in pediatric patients with biliary atresia who underwent Kasai surgery at Children Hospital 2 from 05/2021 to 04/2022. Age, AST, ALT, GGT, ALP, total bilirubin, direct bilirubin, albumin, PT, PT%, INR, CMV infection, TC sign, the ratio of total and direct bilirubin at 1 week, 2 weeks, 1 month after surgery and before surgery, the ratio of GGT after surgery at 1 week, 2 weeks, 1 month and before surgery, cholangitis. The patients in the study were followed at least 3 months after surgery.

**Results:** There were 21 patients in the study; 10 males (47.6%), the success rate was 38.1%, 100% of the patients lived until the end of the study. ALT, direct Bilirubin before surgery, the ratio of total and direct bilirubin 1 month after surgery compared to before surgery (TB30/TB0 and DB30/DB0) are predictive factors of surgical outcome. The ratio  $TB30/TB0 < 0.446$  has a predictive value for successful Kasai surgery with a sensitivity of 92.3% and a specificity of 87.5%. The ratio  $DB30/DB0 < 0.477$  has a predictive value for successful Kasai surgery with a sensitivity of 92.3% and a specificity of 87.5%.

**Conclusion:** ALT, direct Bilirubin before surgery, the ratio of total and direct bilirubin 1 month after surgery and before surgery (TB30/TB0 and DB30/DB0) are prognostic factors for the outcome of Kasai surgery.

## Prognostic Factors and Outcomes of Kasai-Portoenterostomy (KPE): Nine Year Experience From a Single High-Volume Center

***Nipun Wickramasekara*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka), ***Jenosha Ignatius*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka), ***Ananda K Lamaheewage*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka)

**Aim:** Outcome data after KPE reported worldwide shows considerable regional and institutional variation. It is not known whether the same standards of outcomes reported in western world can be replicated in resource poor countries.

**Methodology:** We reviewed 79 patients over a period of 9 years at Lady Ridgeway Hospital. 36 were lost to follow up. Primary endpoints were jaundice clearance (COJ), native liver survival (NLS) and overall survival (OS). Two categories were based on age at KPE (A : <60 days n=22, B : >60 days, n=21)

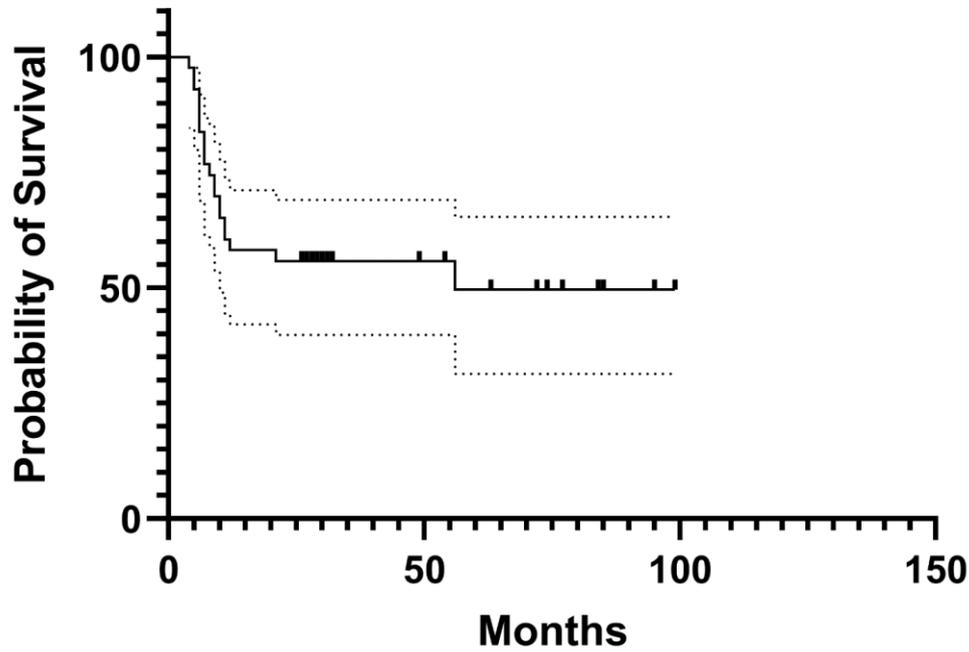
Kaplan-Meier analysis was used to estimate survival with endpoints taken as death or liver transplant and compared using log-rank test. Categorical data and actual survival were compared with chi-square and fisher exact test.

**Results:** Median age at surgery was 60 days (range: 30–180). COJ (total bilirubin < 2 mg/dL.) at 3 months after KPE was 20.93 %. There was no significant relationship between the COJ and age groups (p-value = 0.295).

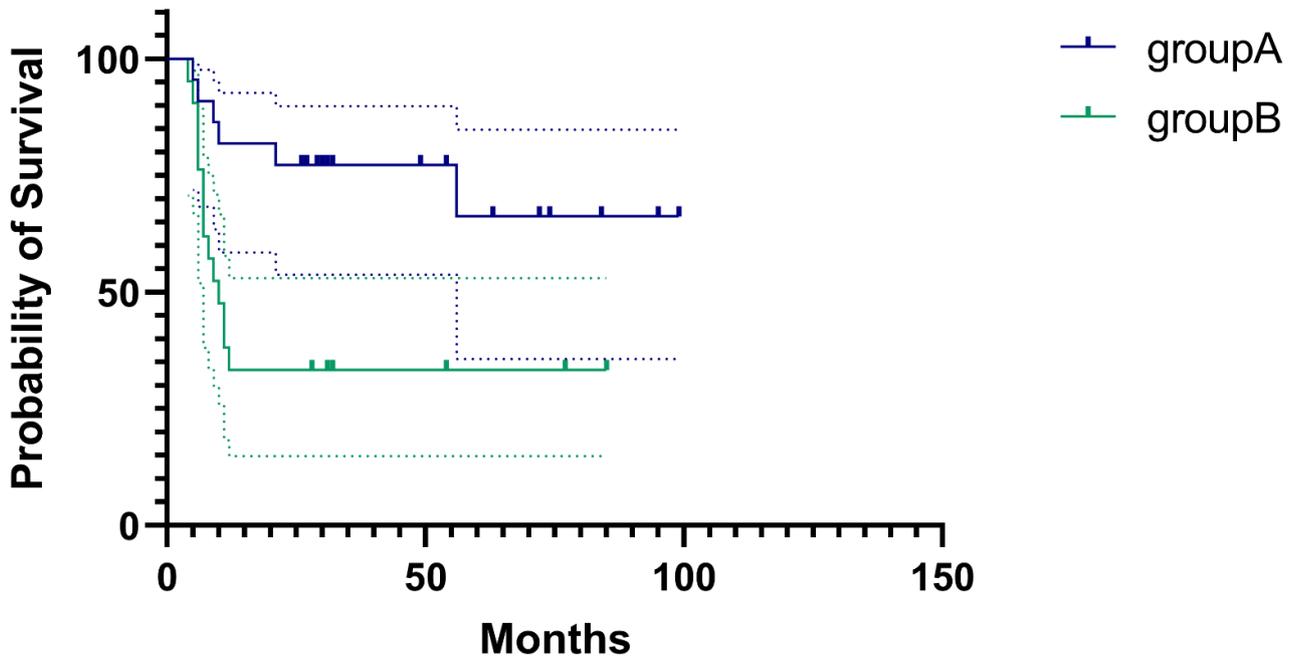
Until the last follow up, 23 patients were surviving with their own liver. Four (9.3 %) received transplant (NLS 53.49 %, OS 62.79%) and 16 patients (37.21 %) were recorded dead after KPE at a median age of 7 (range: 4 – 12) months. Kaplan-Meier analysis estimated 4 and 6 year NLS approximately 55.8 % (95 % CI: 39.8 – 69.1) and 49.6 % (95 % CI: 31.4 – 65.4) respectively. There was a significant difference in the NLS between groups A and B (p-value = 0.005).

**Conclusion:** These data reaffirm that early surgery has a significant favorable effect on NLS. While NLS was comparable with data from the developed world, significantly low OS can be explained by limited access to transplant. Thus, when the survival depends on native liver longevity, emphasis should be on as early KPE as possible.

## Survival proportions: Native liver survival



## Survival proportions: Native liver survival



## Laparoscopic versus open Kasai procedure for biliary atresia: long term results of a randomized clinical trial

**Tran Ngoc Son** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Duong Van Mai** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Pham Thanh Tung** (Department of Pediatric Surgery, National Children's Hospital, Hanoi, Vietnam), **Nguyen Thanh Liem** (Vinmec Research Institute of Stem Cell and Gene Technology, Hanoi, Vietnam)

**Aim:** To compare the long-term results of the laparoscopic Kasai procedure (LKP) versus the open Kasai procedure (OKP).

**Methods:** A randomized clinical trial was carried out from October 2009 to February 2017. Patients with a diagnosis of biliary atresia were divided randomly into 2 groups: one group underwent LKP and the other group – OKP. All the surgical procedures were performed by the same surgeon. Operative principles of hilar dissection and postoperative management for both groups were similar. Patients' characteristics and outcomes were compared between the two groups.

**Results:** 122 patients were enrolled in the study with a median age at surgery of 80 days (range: 39 to 140 days). 61 patients underwent LKP and 61 patients – OKP. There were no significant differences between the two groups regarding the patient's gender, age at surgery, mean values of preoperative liver functional tests, need for intraoperative blood transfusion. There was no conversion from laparoscopic to open surgery. The mean operative time of LKP was longer than OKP (213 minutes vs. 131 minutes,  $p < 0.001$ ). The median follow-up was of 62 months (range: 2 months to 142 months) for all the patients and 116 months (range: 61-142 months) for the survivors. In the sixth month after the Kasai procedure, the rate of jaundice-free patients was 52.5% for LKP and 60.7% for OKP ( $p=0.23$ ). The 5- and 10- year cumulative survival rates with native liver after LKP were respectively 52.5% and 44.3% vs. 63.9% and 58.9% after OKP ( $p=0.09$ ).

**Conclusions:** The operative time of LKP was longer than OKP. The long-term results of LKP tend to be inferior to the OKP but the differences were insignificant in this series. Multicenter studies with larger patient cohorts were needed for determining the optimal choice between the two approaches.

## Collagen gene cluster expressions impact on liver fibrogenesis in biliary atresia patients

**Kristy Iskandar** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Akhmad Makhmudi** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Gunadi** (Universitas Gadjah Mada, Yogyakarta, Indonesia)

**Aim:** We determined the expressions of the collagen gene cluster: *COL6A1*, *COL6A2*, *COL6A3*, and *COL1A1* in biliary atresia patients.

**Methods:** The expression of *COL6A1*, *COL6A2*, *COL6A3*, and *COL1A1* genes in liver of BA patients and controls were determined by qPCR. The data were analyzed using the Livak method.

**Results:** Twenty BA patients and 18 controls were involved in this study. A significant down-regulated of expression of *COL6A1* ( $\Delta C_T$   $9.06 \pm 2.64$  vs.  $5.41 \pm 2.41$ ;  $p=0.0009$ ), *COL6A2* ( $\Delta C_T$   $8.25 \pm 2.07$  vs.  $5.77 \pm 3.51$ ;  $p=0.02$ ), *COL6A3* ( $\Delta C_T$   $11.2 \pm 6.08$  vs.  $6.78 \pm 3.51$ ;  $p=0.024$ ), and *COL1A1* ( $\Delta C_T$   $3.26 \pm 1.71$  vs.  $0.19 \pm 2.76$ ;  $p=0.0015$ ) were observed in liver BA patients compared to controls. Moreover, there was a significant association between expressions of collagen gene cluster and liver cirrhosis ( $p=0.0085$ ,  $0.04$ , and  $0.0283$  for *COL6A1*, *COL6A2*, and *COL6A3*, respectively).

**Conclusion:** Our study shows the aberrant of collagen gene cluster expressions in BA patients, suggests the role of the collagen gene cluster in the liver fibrogenesis of BA.

## Angiographic patterns of extrahepatic portal venous system in children with prehepatic portal hypertension and its etiological and clinical relevance

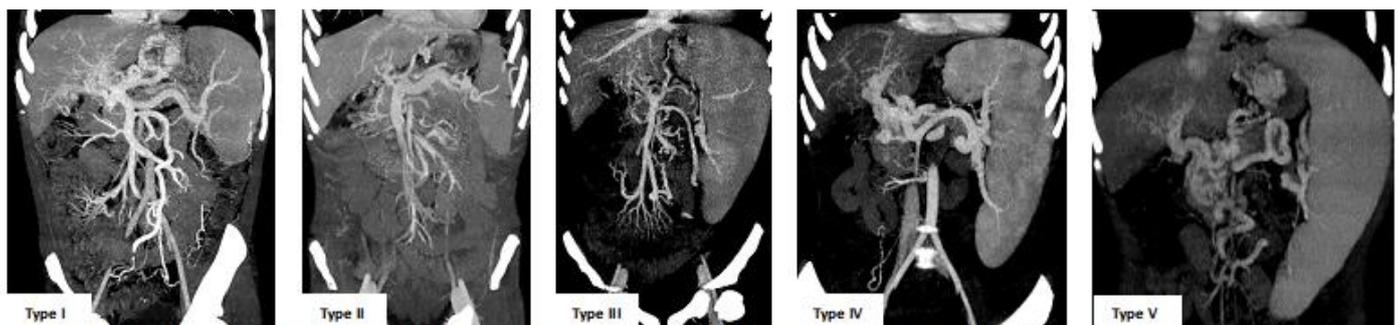
**Rustam Yuldashev** (Pediatric surgery, Tashkent pediatric medical institute, Tashkent, Uzbekistan), **Makhmud Alev** (Pediatric surgery, Tashkent pediatric medical institute, Tashkent, Uzbekistan), **Muzaffar Maksudov** (Department of radiology, M. Fedorovich clinic sanatorium, Tashkent, Uzbekistan), **Umar Khaydarov** (Department of radiology, M. Fedorovich clinic sanatorium, Tashkent, Uzbekistan)

**Aim:** To study relationship between the angiographic pattern of extrahepatic portal vein obstruction and its etiology and clinical manifestations.

**Methods:** Clinical and angiographic findings in 155 children with extrahepatic portal vein obstruction (EHPVO) were reviewed. Anatomy of extrahepatic portal venous system (EPVS) was categorized into five imaging pattern (Fig.1). Assessment of the severity of esophageal varices (EV) was performed according to Alvarez classification, and gastric varices (GV) by Sarin's classification.

**Results:** Based on multislice CT angiography most common observed pattern of EHPVO was type I (n=75; 48.4%) and type II (n=45; 29%). Types III (n=8; 5.2%), IV (n=13; 8.4%), and V (n=14; 9%) of EHPVO were observed less frequently. According to anamnesis 81 (52%) children with EHPVO had pathological conditions in neonatal period. Of these, 35 (22.6%) had an umbilical vein catheterization, 11 (7%) had a history of omphalitis and 9 (5.8%) had prolonged jaundice. Thirteen (8.4%) patients had various septic conditions in neonatal period (osteomyelitis and other musculoskeletal infections) and it was more common associated with widespread thrombosis throughout the EPVS (type 5; n=14) – 28% of observations. Significantly lower risk of bleeding from EV ( $p=0.01$ ) noted in children with type IV pattern, whereas children with type III and V patterns had higher grades of EV and incidence of GV (75% and 64% accordingly).

**Conclusion:** Majority of children with EHPVO have no identifiable etiological factors. However angiographic pattern of portomesenteric occlusion may provide a clue to its etiology, and clinical manifestation, especially in children with widespread thrombosis throughout the EPVS.



**Figure 1.** Imaging of patterns of portal venous obstruction in children with extrahepatic portal hypertension

**Type I** - occlusion of the portal vein at the level of bifurcation and intrahepatic branches.

**Type II** - occlusion of the main portal vein with or without intrahepatic branch occlusion.

**Type III** - occlusion of portal and splenic veins.

**Type IV** - occlusion of portal and superior mesenteric veins.

**Type V** - occlusion of portal, mesenteric and splenic veins (widespread thrombosis of extrahepatic portal venous system)

## Advantages of MesoRex shunt compared with distal splenorenal shunt for extrahepatic portal vein occlusion

**Omer Khamag** (Paediatric Surgery, University of Cape Town / Red Cross War Memorial Children's Hospital, Cape Town, South Africa), **Pro Alp Numanoglu** (Paediatric Surgery, University of Cape Town / Red Cross War Memorial Children's Hospital, Cape Town, South Africa)

**Aim:** To review surgical management of extrahepatic portal vein obstruction (EHPVO) at Red Cross War Memorial Children's Hospital and compare Meso-Rex shunt (MRS) with distal splenorenal shunt (DSRS).

**Methods:** A single-centre retrospective review documenting pre- and post-operative data in 21 children. Twenty-two shunts performed, 15 MRS and 7 DSRS over 18-year period. Patients were followed up for a mean of 11 years (range: 2-18). Data analysis included demographics, albumin, prothrombin time (PT), partial thromboplastin time (PTT), International normalized ratio (INR), fibrinogen, total bilirubin, liver enzymes and platelets before the operation and 2-years after shunt surgery.

**Results:** One MRS thrombosed immediately post-surgery and the child was salvaged with DSRS. Variceal bleeding was controlled in both groups. Significant improvements (P-value < 0.05) were seen amongst MRS cohort in serum albumin, PT, PTT, and platelets and there was a mild improvement in serum fibrinogen. The DSRS cohort showed only a significant improvement in the platelet count. Neonatal umbilical vein catheterization (UVC) was a major risk for Rex vein obliteration.

**Conclusion:** In EHPVO, MRS is superior to DSRS and improves liver synthetic function. DSRS does control variceal bleeding but should only be considered when MRS is not technically feasible or as a salvage procedure when MRS fails.

**Keywords:** Portal Hypertension, Extrahepatic portal vein occlusion, Variceal bleeding, Portosystemic shunts, Distal Splenorenal shunt, MesoRex shunt.

**Table 1:** Liver function and platelet values prior to and 2 years post-shunt surgery for both MRS and DSRS.

Value	Pre-operative (mean)		Postoperative (mean)		P value	
	MRS	DSRS	MRS	DSRS	MRS	DSRS
Albumin	32.8	31.0	39.0	32.16	0.025	0.61
PT	14.6	14.39	12.6	13.6	0.04	0.53
PTT	35.6	34.0	31.79	39.56	0.018	0.18
INR	1.9	1.27	1.2	1.2	0.24	0.42
Fibrinogen	2.04	2.14	2.44	2.12	0.15	0.87
Total Bili	17.93	10.6	14.5	14.66	0.16	0.11
ALT	49.86	37	36.33	38	0.06	0.23
AST	47.2	40	42.0	48.5	0.54	0.79
Platelets	98.13	100.0	182.06	149.0	0.01	0.02

### 3D-Reconstruction and Heterotopic Implantation of Reduced Size Monosegment or Left Lateral Segment and left lobe Grafts in children: A New Technique in Pediatric Living Donor Liver Transplantation to Overcome Large-For-Size Syndrome

**Elvan Onur Kırımker** (General Surgery, Ankara University Faculty of Medicine, Ankara, Turkey), **Deniz Balci** (General Surgery, Ankara University Faculty of Medicine, Ankara, Turkey), **Ege Evin** (Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey), **Aydan Kansu** (Pediatric Gastroenterology, Ankara University Faculty of Medicine, Ankara, Turkey), **Zarife Kuloğlu** (Pediatric Gastroenterology, Ankara University Faculty of Medicine, Ankara, Turkey), **Ceyda Tuna Kirsaclioglu** (Pediatric Gastroenterology, Ankara University Faculty of Medicine, Ankara, Turkey), **Suat Fitöz** (Pediatric Radiology, Ankara University Faculty of Medicine, Ankara, Turkey), **Ozlem Selvi Can** (Pediatric Anaesthesiology, Ankara University Faculty of Medicine, Ankara, Turkey), **Tanil Kendirli** (Pediatric Intensive Care, Ankara University Faculty of Medicine, Ankara, Turkey), **Meltem Bingöl Koloğlu** (Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey)

**Aim:** Monosegmental grafts and hyperreduced Left Lateral Segment grafts (LLS) have been introduced to overcome the problems of large-for-size grafts in pediatric living donor liver transplantation (LDLT). Recently we introduced a new method of reduced size monosegment or LLS grafts transplanted in the right diaphragmatic fossa (RDF) heterotopically in small infants.

**Methods:** There were 12 pediatric recipients who underwent LDLT with heterotopically implanted reduced monosegmental or LLS grafts, at our center. Measurements for graft reduction and volume estimation of RDF was done by a 3D-reconstruction software. Recipient operation consists of removal of the native liver with IVC preservation and implantation of the liver graft to right side of IVC after 180 degree rotating and placing the reduced monosegment or LLS or left lobe graft in the RDF. Hepatic vein anastomosis is done similar to the right lobe graft implantation.

**Results:** The mean recipient age was  $23.7 \pm 13.3$  months (range: 5-156 months) and body weight was  $10.4 \pm 2.5$  kg (range: 4.2 kg-31 kg). Primary diagnoses of the recipients were biliary atresia (n:7) and progressive familial intrahepatic cholestasis (PFIC)(n:4), fulminant liver failure (n:1) Mean GRWR was  $2.8 \pm 0.27$ . Reduced and hyperreduced LLS grafts were used in 8 cases, reduced monosegment III grafts were used in 2 patients and left lobe grafts were used in two older children. Bile duct reconstruction was done by Roux-Y-hepatojejunostomy in 10 patients and duct to duct anastomosis in 2 patients. All patients recovered from the LT operation and are doing well with a mean follow up of 13.3 months.

**Conclusions:** The advantages of this technique are to assure stable inflow and outflow of venous anastomoses similar to ones performed for right lobe LDLT and to be able to implant a larger graft in sicker patients with higher PELD scores. LDLT with heterotopically implanted reduced monosegmental or LLS seems feasible for the treatment of neonates and small infants.

## Radiological Parameters Determining Survival Outcomes in Pediatric Hepatoblastoma

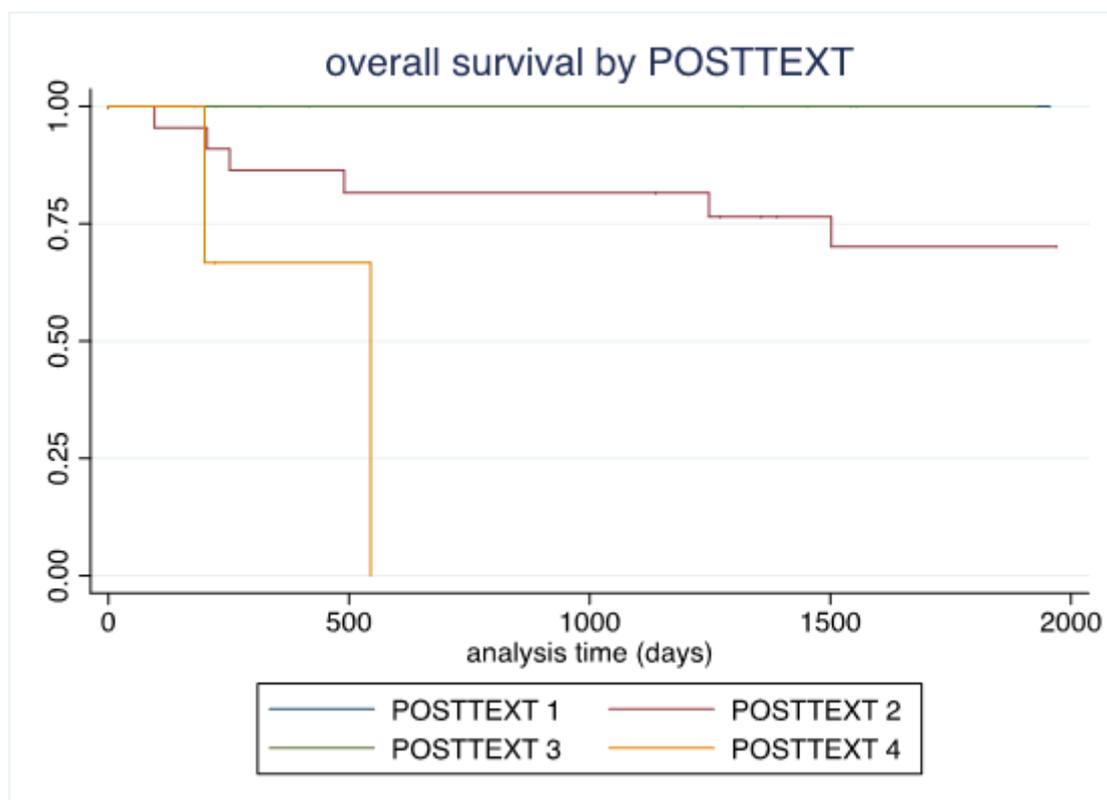
**Kulpreeya Sirichamratsakul** (Surgery, Songklanagarind hospital, Songkhla, Thailand), **Surasak Sangkhathat** (Surgery, Songklanagarind hospital, Songkhla, Thailand), **Supika Kritsaneepaiboon** (Radiology, Songklanagarind hospital, Songkhla, Thailand)

**Objectives:** To evaluate survival outcomes after major hepatic resections for hepatoblastoma since 2004–2021 and to identify radiological parameters associated with poorer survival outcomes

**Methods:** This retrospective cohort study reviewed the medical records of pediatric patients who were diagnosed with hepatoblastoma and underwent surgical resection at Songklanagarind Hospital between 2004 and 2021. Radiologic parameters, clinical factors and pathological factors were collected. Survival analysis was done and prognostic factors were identified.

**Results:** During the study period, 42 cases of hepatoblastoma were operated on in our institute. Three cases with incomplete radiological materials were excluded, leaving 39 (13 females and 26 males) cases were in the analysis. Except for 2 cases, all received preoperative chemotherapy following the THAI-POG regimen. The two- and five-year overall survival rates were 78.0% and 70.9%, respectively. On log-rank analysis, the radiological parameters that were associated with poorer survival were poor response to neoadjuvant chemotherapy, presence of metastasis, post-chemotherapy tumor diameter, POSTTEXT-IV, presence of portal vein involvement and presence of residual disease. Of these, presence of poor neoadjuvant response, portal vein involvement, and metastasis were the 3 factors independently associated with worse outcome. In non-metastatic hepatoblastoma cases who had at least 25% reduction in size after neoadjuvant chemotherapy, 5-year survival probability was 90.9% (95%CI 50.8-98.6%).

**Conclusion:** In non-metastatic hepatoblastoma, curative outcome is expectable when the tumor responds well to chemotherapy and there is no residual tumor. Even though the PRETEXT did not make significant effect of survival in the study, the patients with POSTTEXT portal vein involvement, stable or increasing tumor size or metastasis after neoadjuvant chemotherapy were associated with poorer overall survival. Post-operative AFP higher than 5,000 ng/dL also indicate poorer outcomes.



## Long-term morbidity of children operated for pancreatic tumors – a single center study

**Natalia Petrasova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Jiri Snajdauf** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Barbora Kucerova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Ondrej Petru** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Martin Kyncl** (Department of Radiology, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University, Prague, Czech Republic)

**Aim:** To present the management and long-term outcomes of pediatric patients treated for pancreatic tumors in a high-volume tertiary center providing a centralized care for pediatric pancreatic surgery.

**Methods:** A retrospective study of patients with pancreatic tumors treated between 1991 – 2021.

**Results:** The study group comprised 34 patients, 6 boys and 28 girls, who were diagnosed with pancreatic tumors at an average age of 9.1 years (2 months – 18 years) over a 30-year period. The histopathological types included 27 solid pseudo-papillary tumors of the pancreas (SPTP), 4 insulinomas, 2 carcinomas and one serous cystadenoma. The tumor locations were pancreatic head (n=18), body (n=15) and tail (n=14) with some tumors occupying more than one location. The surgical approaches included 17 distal pancreatectomies, 11 duodenum-preserving pancreatic head resections (DPPHR), 2 body resections, 3 Whipple procedures and one local excision. Three patients required an additional splenectomy and one patient underwent right hepatic lobectomy for metastasis. Early complications were rare but severe, and included one lesion of common bile duct, one perforated gastric ulcer, one biliary and one pancreatic fistula and hemoperitoneum; all but one required surgical treatment. Late complications were diabetes mellitus (n=1), recurrent pancreatitis (n=3), asymptomatic cholecystolithiasis (n=2), chronic abdominal pain (n=1) and pseudocyst (n=2). One patient with SPTP suffered recurrence and underwent pylorus-sparing duodenopancreatectomy. The mean length of follow-up was 7.7 years (range 0.2 – 27.9) with a 93% survival rate, not including four patients who were lost to follow-up.

**Conclusions:** This study emphasizes the use of duodenum preserving surgery in children as the preferred treatment option in low risk malignancies. Given the complexity of pancreatic surgery, complications are severe and often require further surgical treatment. Life-long follow-up is essential due to the risk for recurrence, metastases and long-term morbidity.

## High grade pediatric pancreatic trauma: Is conservative management reliable?

**Nellai Krishnan** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India), **Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India), **Mehak Sehgal** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India), **Pramod Garg** (Department of Gastroenterology, All India Institute of Medical Sciences, New Delhi, India), **Atin Kumar** (Department of Radiology, All India Institute of Medical Sciences, New Delhi, India), **Minu Bajpai** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India)

**Aim:** We report our institutional experience with non-operative management of high-grade pediatric pancreatic trauma.

**Methods:** A prospective case series of high-grade pancreatic trauma in children who presented to our level I pediatric trauma center from Jan 2019 to March 2020 is described.

**Results:** We identified four cases of high-grade blunt pancreatic trauma in children aged 3;7;8;11 years. Two had isolated pancreatic injuries. The Injuries were Grade 3 in 1 and Grade 4 in 3. All of them were hemodynamically stable at the time of presentation. One patient was referred for pseudoaneurysm of the gastroduodenal artery and pancreatic transection. This patient underwent successful angioembolization. All patients were managed non-operatively for the pancreatic injury. Three of them received total parenteral nutrition for the duration they were nil per oral. Two patients developed an intraabdominal fluid collection for which a pigtail catheter was inserted. One of these patients developed a subcutaneous pancreatic fistula over the anterior abdominal wall that healed over 2 months. One patient also had ascites with bile leak, which was demonstrated on Hepatobiliary scintigraphy, and underwent Endoscopic stenting of the pancreatic duct. The duration of hospital stay of the four cases was 8; 13;32 (+22 days elsewhere) and 62 days. All of them recovered completely. At a follow-up of 24-36 months, all patients are asymptomatic.

**Conclusion:** Non-operative management of high-grade pancreatic injury in children is effective and safe in hemodynamically stable patients. Complete transection of the pancreatic duct is not an absolute indication for surgical intervention. Interventional endoscopic procedure is a useful supplement in the care of these patients.

## Clinico-etiological profile and outcome of liver abscess in children

**Hiramani Pathak** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **S Roy Choudhury** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Sukanta Basu** (Pediatrics, Lady Hardinge Medical College, New Delhi, India), **Ravinder Kaur** (Microbiology, Lady Hardinge Medical College, New Delhi, India)

**Aim:** This study was aimed at analyzing the clinico-etiological profile, complications, treatment and outcome of liver abscess in children.

**Methods:** All children with liver abscess admitted in our tertiary care hospital over 18-months period were recruited. Laboratory parameters included hematological, biochemical and microbiological cultures of aspirated pus and blood. Other parameters relating to clinical presentation, etiology, risk factors, complications and follow-up up to one month from discharge were analyzed.

**Results:** Out of total 102 patients (age 2-15 years), Fontan triad was observed in 66 (64.7%), anemia 86 (84.3%), jaundice 20 (19.6%), malnutrition 90 (89.2%), and hemato-oncological problems in 12 (11.8%). Blood/pus culture positivity was in 20 (19.6 %) patients; organisms identified were *Klebsiella* 6 (30%), *Staph. aureus* 5 (25.0 %), MRSA 4 (20.0%), *Acinetobacter* 1 (5%), *Esch. coli* 2 (10%) and *Pseudomonas* 2 (10%). Diagnosis with characterization of the abscess was done with ultrasonography in all and CT scan in 23 (22.5%) patients for accurate localization and extent of spread. Right, left and both lobes were involved in 53 (52%), 26 (25.5%), and 23 (22.5%) cases respectively. Pleural effusion, intrapleural extension of abscess and intra-peritoneal rupture were noted in 48 (47.1%), 28 (27.4%) and 16 (15.6%) cases, respectively.

A protocol based management guided by imaging included intravenous antibiotics and antimicrobials, needle aspirations, catheter (pigtail) drainage and open surgical drainage in 31 (30.3%), 22 (21.6%), 33 (32.4%) and 12 (11.8%) patients respectively. Mortality was in 9 (8.8%) patients from overwhelming sepsis, extrahepatic spread and deranged liver function. Residual lesions on USG was common (44.1%) at follow up; only 6 required re-admission with three re-aspirations.

**Conclusion:** The bacterial culture positivity rate was only 19.6%. Amoebic or other etiology could not be established. Deranged liver function, MRSA positivity and ruptured abscess were associated with higher mortality. Protocol based management led to satisfactory outcome.

## Difficulties in managing Mucocele of Gall Bladder (Gallbladder hydrops) in Children via laparoscopy

**Vijai Datta Upadhyaya** (Pediatric Surgery, SGPGIMS, Lucknow, India), **Basant Kumar** (SGPGIMS, Lucknow, India), **Shyamendra Sharma** (Pediatric Surgery, SGPGIMS, Lucknow, India), **Pujana K** (SGPGIMS, Lucknow, India)

**Aim:** Mucocele of gall bladder (Gallbladder hydrops) is a rare clinical entity in pediatric age group. It is caused by blockage in cystic duct, which can be either mechanical or functional. The diagnosis is made when gallbladder content is clear mucous like fluid replacing the green or brown bile. This study was done to share difficulties we face in managing 8 cases Mucocele of Gall Bladder (Gallbladder hydrops) in Children.

**Method:** Our study comprised of 8 paediatric patients diagnosed with Mucocele of Gall

bladder with Cholelithiasis cover a period of 5 years in SGPGIMS Lucknow, Uttar Pradesh. In all patients clinical history was noted, pre operative diagnosis made using Ultrasound abdomen. Routine investigations with LFT and Serum Amylase and Lipase were done. In all patients laparoscopic cholecystectomy has been tried but in 2 patients converted to open cholecystectomy due to various reasons.

**Results:** All the patients presented in emergency with complaint of severe pain in the upper abdominal. LFT and serum amylase and lipase were within normal limit in all patients. Ultrasound (USG) abdomen shows enlarged distended Gall bladder minimal gallbladder wall thickening and stone impacted at neck region. Laparoscopic cholecystectomy done in 6 cases, in 2 cases converted to open due to very short cystic duct and very dense adhesions respectively.

**Conclusion:** Mucocele of Gallbladder (Gallbladder hydrops) is very rare in children. It should be considered as a differential diagnosis of pain abdomen with right hypochondriac mass in children. It can be managed successfully via Laparoscopic cholecystectomy.

## ORAL PRESENTATION SESSION XII

## Upper GIT

## Comparison of ileal mycobiota in necrotizing enterocolitis and spontaneous intestinal perforation

**Alena Kokesova** (Department of Pediatric Surgery, 2nd Faculty of Medicine, Charles University in Prague, University Hospital Motol, Prague, Czech Republic), **Stepan Coufal** (Laboratory of Cellular and Molecular Immunology, Institute of Microbiology of the Czech Academy of Sciences, v.v.i., Prague, Czech Republic), **Miloslav Kverka** (Laboratory of Cellular and Molecular Immunology, Institute of Microbiology of the Czech Academy of Sciences, v.v.i., Prague, Czech Republic), **Martin Kostovcik** (Laboratory of Fungal Genomics and Metabolism, Institute of Microbiology of the Czech Academy of Sciences, v.v.i., Prague, Czech Republic), **Helena Tlaskalova-Hogenova** (Laboratory of Cellular and Molecular Immunology, Institute of Microbiology of the Czech Academy of Sciences, v.v.i., Prague, Czech Republic), **Michal Rygl** (Department of Pediatric Surgery, 2nd Faculty of Medicine, Charles University in Prague, University Hospital Motol, Prague, Czech Republic)

**Aim:** Necrotizing enterocolitis (NEC) and spontaneous intestinal perforation (SIP) are devastating surgical emergencies of preterm infants caused by distinct pathophysiology. There is still no information about the role of microbiota in SIP etiology, but it is a proven predisposing factor for NEC. Fungi that populate gastrointestinal tract (gut mycobiota) are substantial part of the gut microbiota.

The objective was to determine mycobiota associated with NEC and compare it with SIP.

**Methods:** Ileal effluent samples obtained during surgery for NEC Bell stage IIIb and SIP were studied. The study was approved by hospital ethics committee, informed consent was signed. The mycobiota was characterized through Illumina MiSeq Platform sequencing of the fungal internal transcribed spacer 1 (ITS1) region. Taxonomic distribution was examined by QIIME 2 platform statistical differences were tested by Sidak's multiple comparison test in GraphPad Prism version 6.0.

**Results:** In this prospective study we analyzed 58 samples from 12 NEC and 8 SIP infants. NEC neonates did not significantly differ from SIP infants in delivery, gestation, day of sampling, enteral feeding, or antibiotic and antifungal treatment. The order *Melasseziales* dominated in NEC and the difference from SIP was significant (43% vs. 11%,  $p < 0.05$ ). NEC was different from SIP in *Saccharomycetales* (23 % vs. 8%,  $p < 0.05$ ). The largest relative abundance difference was found in Pleosporales (0.744% vs. 22%,  $p < 0.05$ ).

**Conclusions:** This is the first study investigating mycobiota directly in effluent samples taken during surgery for NEC/SIP. NEC mycobiota is distinctive from SIP. Further research to elucidate its role in NEC etiology is needed. Mycobiota knowledge could help in NEC/SIP antifungal treatment decisions.

## Comparison of delayed primary esophageal repair in patients with long gap esophageal atresia with neonatal esophageal replacement by gastric pull up

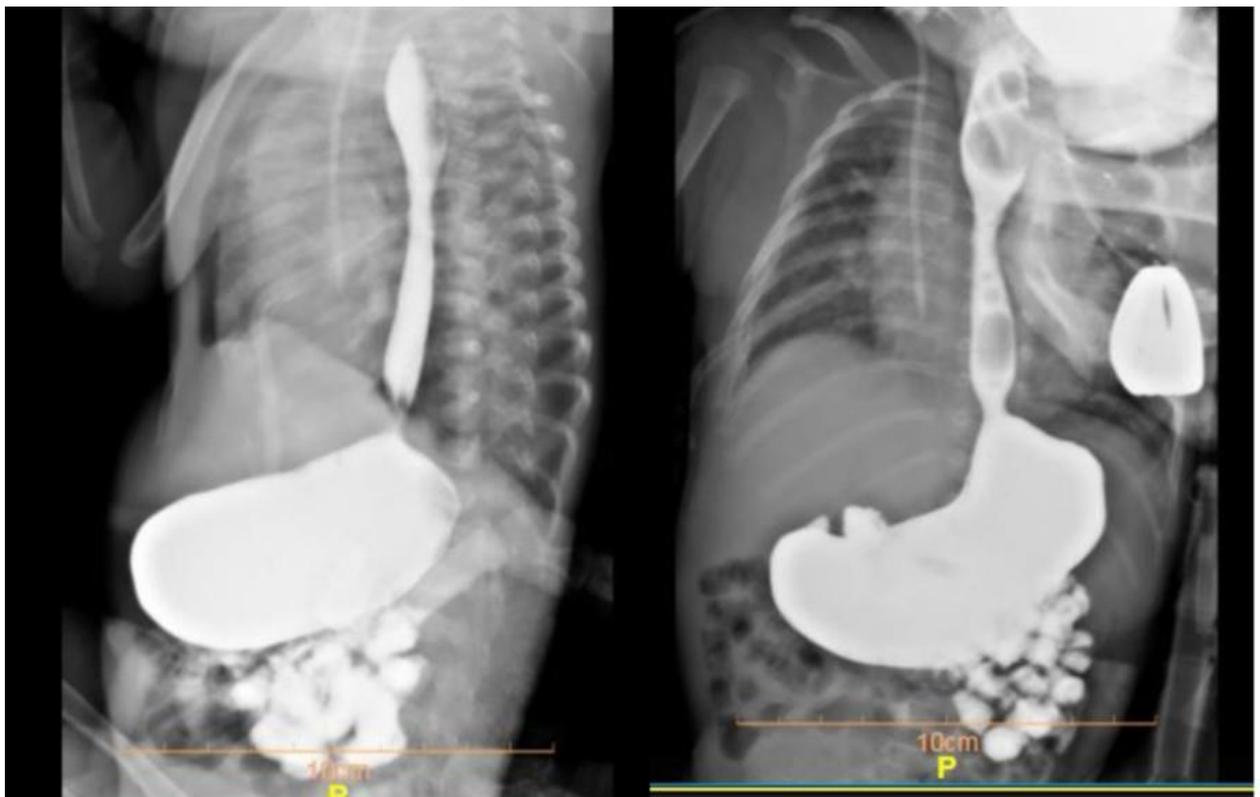
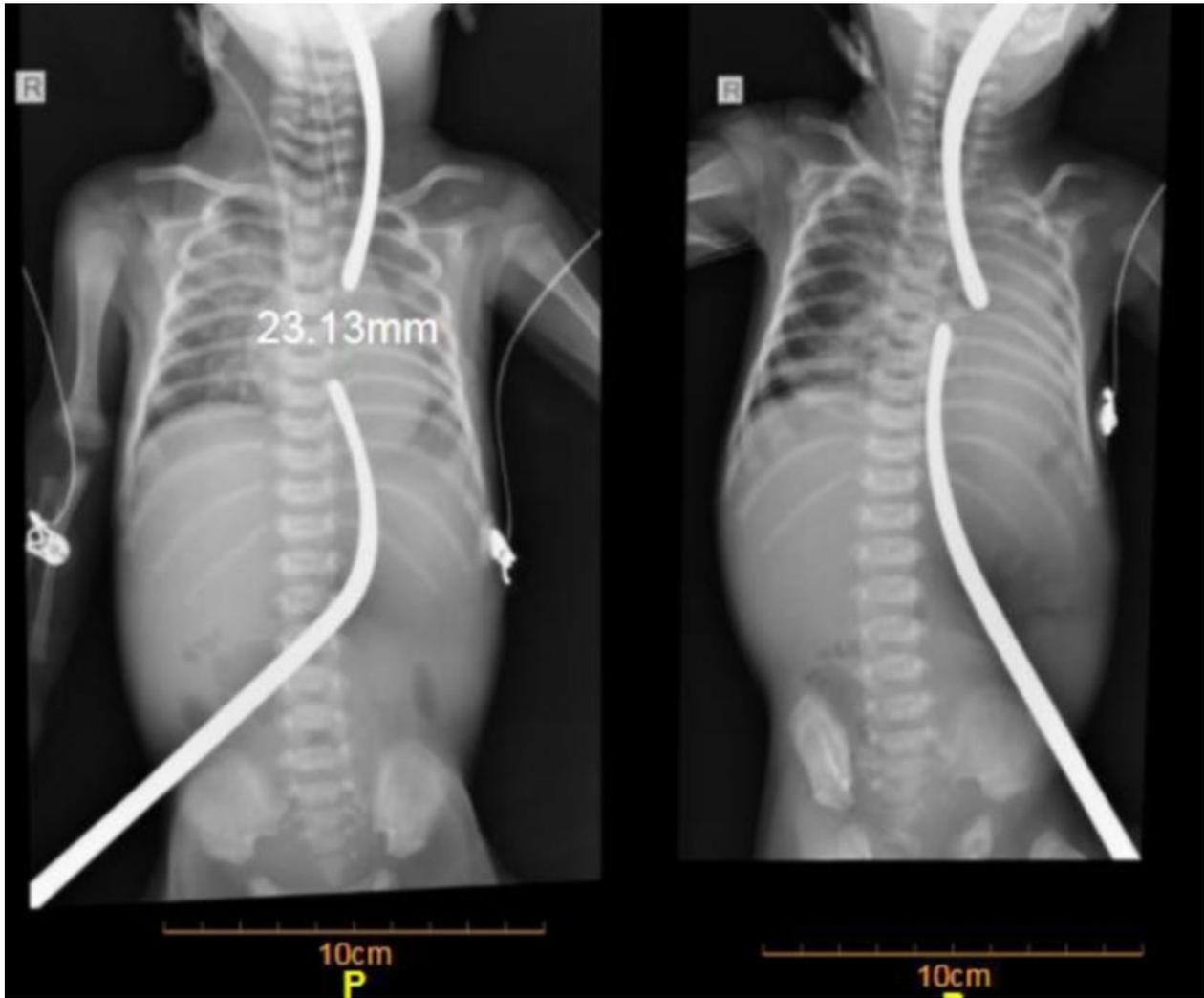
**Saeid Aslanabadi** (Section of Pediatric Surgery, Department of Surgery, Tabriz University of Medical Sciences, Tabriz, Iran), **Nazila Hasanzadeh Ghavifekr** (Section of Pediatric Surgery, Department of Surgery, Tabriz University of Medical Sciences, Tabriz, Iran), **Davoud Badebarin** (Section of Pediatric Surgery, Department of Surgery, Tabriz University of Medical Sciences, Tabriz, Iran), **Ahmad Mohammadipour** (Section of Pediatric Surgery, Department of Surgery, Mashahd University of Medical Sciences, Mashahd, Iran)

**Aim:** Treatment of long gap esophageal atresia is one of the most challenging issues in pediatric surgery. The aim of this study was to evaluate the results of delayed primary repair (DPR) with neonatal gastric transposition (GT).

**Methods:** Twenty five patients with long gap esophageal atresia (type A) were divided into two study groups. The DPR group (14 patients) underwent tube gastrostomy in infancy and intermittent evacuation of the upper esophageal secretions. The gap between the upper and lower esophageal pouch was measured primarily and within 20-day intervals. when the gap reached at least 2 vertebrae bodies the primary repair was performed. The GT group (11 patients) underwent esophageal replacement by gastric pull up in neonatal period and all patients were followed up for at least 6 months. The success rate and complications were compared.

**Results:** The success rate of preserving the patient's esophagus in the DPR group was 85.71% (12 cases) and no mortality observed. Neonatal gastric transposition was successful in all patients, but neonatal mortality in the postoperative period was 36.36% (4 patient). During the follow-up period, anastomotic site stenosis and gastroesophageal reflux were the most common complications. The incidence of stenosis in the DPR group was significantly higher than GT group ( $P=0.005$ ). Dilatation was often successful, and revision surgery of the stenotic site required in only one case.

**Conclusion:** In case of DPR, it is possible to preserve the patient's own esophagus by performing primary anastomosis in a large number of patients with long gap esophageal atresia. The incidence of anastomotic stenosis in esophageal preservation is significant but can be treated successfully with regular dilatation in the most cases. Due to the surgical risks and mortality in neonatal gastric replacement, it is recommended that this method be considered for cases when the delayed primary repair is not possible.



## Assessment of growth and development following staged gastric tube esophageal replacement in children

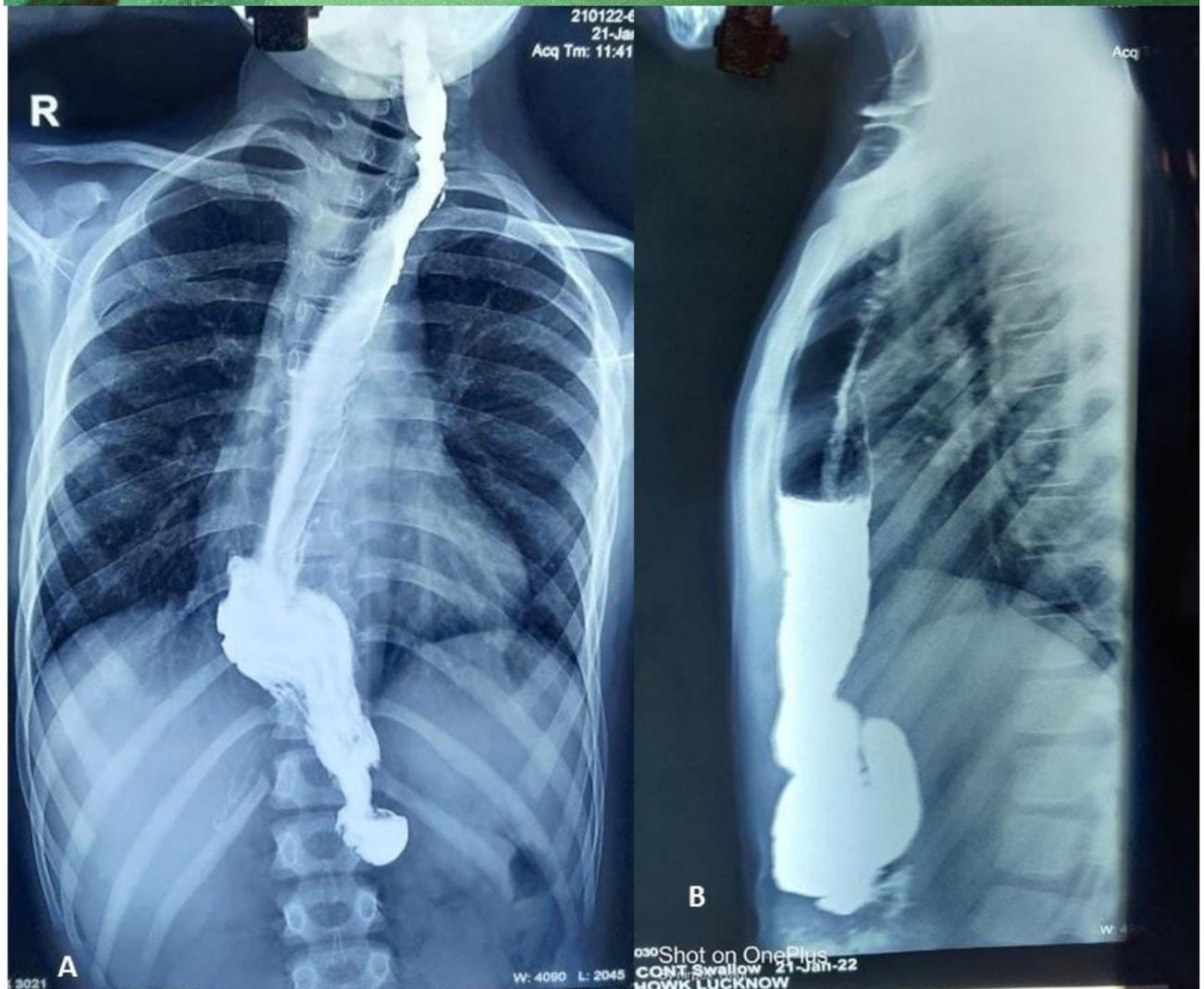
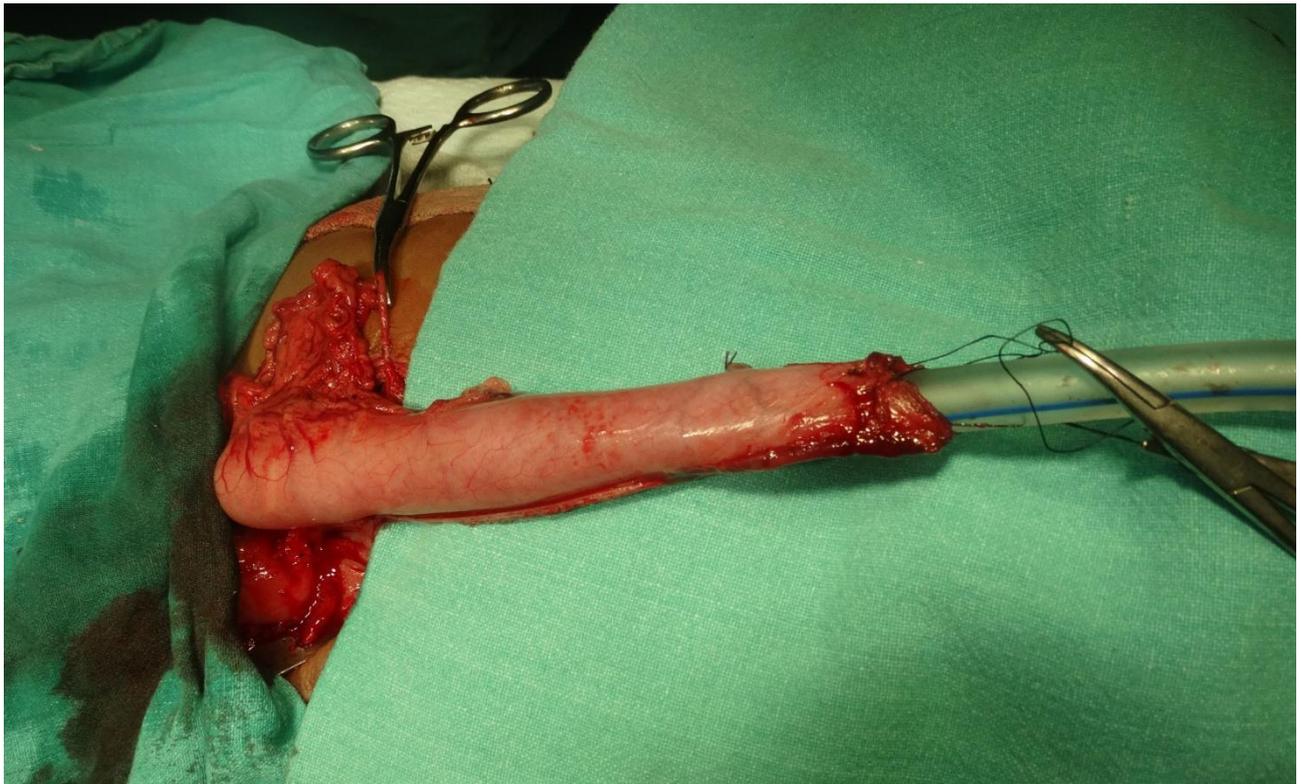
**Jiledar Rawat** (Pediatric Surgery, King George's Medical University Lucknow Up India, Lucknow Uttar-Pradesh, India), **Sudhir Singh** (Pediatric Surgery, King George's Medical University, Lucknow, India), **Nirpex Tyagi** (Pediatric Surgery, King George's Medical University, Lucknow, India), **Sarita Singh** (Department of Anesthesiology, King George's Medical University, Lucknow, India)

**Aim:** To present the follow-up result of cases of staged gastric tube esophageal replacement in children.

**Methods:** Patients with long gap esophageal atresia with or without tracheoesophageal fistula in whom primary esophageal anastomosis either was not possible or was not successful in the neonatal period, on cervical esophagostomy and abdominal gastrostomy were studied (Jan 2012-Jan 2022). Second stage of surgery were done at age of around one year, isoperistaltic gastric tube is constructed and placed retrosternal in thorax up to neck, a stoma were created (Figure 1). Around at 18 months the cervical stoma anastomosis was performed. Cases were assessed on the parameters including weight for age, height for age, presenting complaints, serum hemoglobin, serum proteins, contrast swallow, nuclear scan for reflux and upper GI endoscopy.

**Results:** Total of 25 cases were studied, in 19 all three staged were completed. Total of 18 patients came for follow up. Total of 16 were asymptomatic (88%), in two patients presenting complaints were one patient repeated chest infections, not gaining weight and in other fistula at jejunostomy site. Mean weight was 18.8 kg and mean height was 110 cm. Overall, age at recent follow up was directly associated with weight & height and showed a strong positive relation ( $r = 0.985$ ,  $P = <0.001$ ). Overall laboratory parameters including hemoglobin, serum proteins were normal. Contrast swallow was normal in seventeen patients (Figure 2 A and B) and in one reflux was present. Nuclear scan showed reflux in four patients. Endoscopy showed reflux in three patients. Anastomotic site was normal in all patients. No mortality occurred.

**Conclusion:** The option of managing patients with gastric tube pull up in three stages is best option for our setup. Though the sample in our study is small, follow-up duration is also require more to draw a firm conclusion.



## Esophageal atresia in very low birth weight infants: staged repair or primary anastomosis?

**Silke Steiner** (Pediatric Surgery, Klinikum Stuttgart, Stuttgart, Germany), **Steffan Loff** (Pediatric Surgery, Klinikum Stuttgart, Stuttgart, Germany), **Martin Sidler** (Pediatric Surgery, Klinikum Stuttgart, Stuttgart, Germany)

**Aim:** Advances in neonatal and anesthetic care has increased survival rates in very low birth weight (VLBW) infants with esophageal atresia (EA) with or without tracheo-esophageal fistula (TEF). Controversy exists regarding primary versus staged repair in this population. We analyzed our outcomes of VLBW infants with EA/TEF and reviewed publications since the most recent review from 2000.

**Methods:** We retrospectively analyzed data of VLBW patients with EA/TEF treated in our institution between 2014–2021. Conducting a systematic literature search, we identified publications concerning VLBW EA/TEF patients since 2000. Outcomes of interest were anastomotic insufficiency, stricture formation, the need for anti-reflux procedure, or mortality.

**Results:** Among the 74 patients with EA/TEF treated during the study period, 10 were of VLBW.

Median birth weight was 1150g (range 725-1490g). Primary repair was performed in one patient weighing 1360g, whereas 9 patients underwent staged repair. No mortality, no anastomotic leak occurred. A stricture requiring dilatation during the first year of life occurred in 6 patients (range: 1 to 6 dilatations; one dilatation in the child with primary repair), anti-reflux surgery was necessary in 6 patients.

Our literature search identified 1643 publications, of which 22 retrospective cohort studies were included. Only two articles compared staged vs primary repair. These latter two articles recommend staged repair of EA/TEF in VLBW due to a lower complication rate. However, other reports claim superior anastomotic outcome following primary repair in preterm low birthweight infants compared to full-term neonates. Overall, the heterogeneity of outcomes reported across publications significantly limits their comparability.

**Conclusion:** Staged repair appears to remain a treatment choice with a low rate of complications and mortality. Prospective, multi-center patient registries or standardized reporting of short and long-term outcome is required to permit comparison of treatment strategies in patients with EA/TEF.

## Anastomotic stricture prediction in patients with esophageal atresia with distal fistula

**Natalia Petrasova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Jiri Snajdauf** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Alena Kokesova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Jitka Styblova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Ondrej Hradsky** (Department of Paediatrics, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Isabel Meusel** (Second Faculty of Medicine, Charles University, Prague, Czech Republic), **Barbora Kucerova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Martin Kyncl** (Department of Radiology, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Magdalena Simsova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** To investigate potential risk factors for anastomotic stricture formation and to assess the predictive role of post-operative esophagrams in identifying high-risk patients.

**Methods:** After institutional ethical committee approval, we performed a retrospective electronic record review of patients with esophageal atresia with distal fistula (EA/TEF) operated between 2011 and 2020 at a single center. Fourteen predictive factors were tested for stricture development in the first years of life using generalized linear regression. Esophagrams were used to calculate early and late stricture indices (SI1 – 7-10 days postoperatively, SI2 – two months postoperatively) by dividing anastomosis diameter by upper pouch diameter in millimeters. The best cut-off levels were obtained using a receiver operating characteristic (ROC) curve. P value < 0.05 was considered significant.

**Results:** Of 185 patients operated for EA/TEF in the 10-year period, 169 patients (93 girls, 76 boys) met the inclusion criteria. Primary anastomosis was performed in 130 patients and delayed anastomosis in 39 patients. Stricture formed in 55 patients (33%) within 1 year from anastomosis. Five risk factors showed strong association with stricture formation in unadjusted models: long gap ( $p=0.007$ ), delayed anastomosis ( $p=0.042$ ), anastomotic leak ( $p=0.052$ ), SI1 ( $p=0.013$ ) and SI2 ( $p<0.001$ ). Recurrent fistula was found in 10% of all stricture patients ( $p=0.066$ ). The final model adjusted for multiple factors showed SI1 ( $p=0.035$ ) as significantly predictive of stricture formation. The best cut-off ratios were 0.275 for SI1 and 0.390 for SI2. The area under the ROC curve demonstrated an increased predictability from SI1 (AUC 0.641) to SI2 (AUC 0.877).

**Conclusions:** This study supports the association of long gap, delayed anastomosis and anastomotic leak with stricture formation. Stricture index measured on early esophagram is a simple and efficient tool with potential for stricture prediction. The ratios  $\leq 0.275$  for SI1 and  $\leq 0.390$  for SI2 were predictive of stricture formation.

## Determining the risk factors for anastomotic stricture after esophageal atresia repair: Results from the Turkish Esophageal Atresia Registry

**Can Ihsan Oztoran** (Pediatric surgery, Ankara Yıldırım Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Çiğdem Ulukaya Durakbaşa** (Pediatric Surgery, Istanbul Medeniyet University, Faculty of Medicine, Istanbul, Turkey), **Tutku Soyer** (Pediatric Surgery, Hacettepe University, Faculty of Medicine, Ankara, Turkey), **Zafer Dökümcü** (Pediatric Surgery, Ege University, Faculty of Medicine, İzmir, Turkey), **Binali Firinci** (Pediatric Surgery, Ataturk University, Faculty of Medicine, Erzurum, Turkey), **Berat Dilek Demirel** (Pediatric Surgery, Ondokuz Mayıs University, Faculty of Medicine, Samsun, Turkey), **İlhan Çiftçi** (Pediatric Surgery, Selçuk University, Faculty of Medicine, Konya, Turkey), **Ayşe Parlak** (Pediatric Surgery, Uludağ University, Faculty of Medicine, Bursa, Turkey), **Mustafa Onur Öztan** (Pediatric Surgery, Izmir Katip Celebi University, Faculty of Medicine, İzmir, Turkey), **Gülnur Göllü** (Pediatric Surgery, Ankara University, Faculty of Medicine, Ankara, Turkey), **İbrahim Akkoyun** (Konya Education and Research Hospital, Department of Pediatric Surgery, Konya, Turkey), **Ayşe Karaman** (University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Department of Pediatric Surgery, Ankara, Turkey), **Cengiz Gül** (University of Health Sciences Turkey, Zeynep Kamil Maternity and Children Health and Research Application Center, Department of Pediatric Surgery, İstanbul, Turkey), **Gül Salçı** (Karadeniz Technical University, Faculty of Medicine Department of Pediatric Surgery, Trabzon, Turkey), **Hüseyin İlhan** (Eskisehir Osmangazi University, Faculty of Medicine Department of Pediatric Surgery, Eskisehir Turkey), **Akgün Oral** (Dr. Behcet Uz Education and Research Hospital, Department of Pediatric Surgery, Izmir, Turkey), **Gonca Topuzlu Tekant** (Istanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, Department of Pediatric Surgery, İstanbul, Turkey), **Seyithan Özaydın** (University of Health Sciences Turkey, Başakşehir Çam and Sakura City Hospital, Department of Pediatric Surgery, İstanbul, Turkey), **Önder Özden** (Cukurova University, Faculty of Medicine Department of Pediatric Surgery, Adana, Turkey), **Gürsu Kıyan** (Marmara University, Faculty of Medicine Department of Pediatric Surgery, İstanbul, Turkey), **Ali Onur Erdem** (Adnan Menderes University, Faculty of Medicine Department of Pediatric Surgery, Aydın, Turkey), **Osman Uzunlu** (Pamukkale University, Faculty of Medicine Department of Pediatric Surgery, Denizli, Turkey), **Abdullah Yıldız** (Sisli Hamidiye Etfal Education and Research Hospital, Department of Pediatric Surgery, İstanbul, Turkey), **Esra Özçakır** (University Of Health Sciences Bursa Yüksek İhtisas Training And Research Hospital), **Nazile Ertürk** (Muğla SıtkıKocaman University, Faculty of Medicine Department of Pediatric Surgery, Muğla, Turkey), **Başak Erginel** (Istanbul University, Faculty of Medicine Department of Pediatric Surgery, İstanbul, Turkey), **Tülin Öztaş** (University Of Health Sciences Diyarbakır Training And Research Hospital, Diyarbakır, Turkey), **Ahmet Atıcı** (Mustafa Kemal University, Faculty of Medicine Department of Pediatric Surgery, Hatay, Turkey), **Mehmet Mert** (University Of Health Sciences Van Training And Research Hospital, Van, Turkey), **Hakan Samsun** (Private Antakya Academy Hospital, Department of Pediatric Surgery, Hatay, Turkey), **Mehmet Ali Özen** (KoçUniversity, School of Medicine Department of Pediatric Surgery, İstanbul, Turkey), **Emrah Aydın** (Tekirdağ Namık Kemal University, Faculty of Medicine Department of Pediatric Surgery, Tekirdağ, Turkey), **Serpil Sancar** (Bursa City Hospital, Bursa, Turkey)

**Aim:** Anastomotic stricture (AS) is the most common complication after esophageal atresia (EA) repair. The aim of this study was to determine the risk factors for developing AS after EA repair.

**Methods:** The data registered from the Turkish Esophageal Atresia Registry (TEAR) between 2014 and 2021 were evaluated for demographic features, prenatal findings, associated anomalies, surgical treatment, and outcome. Patients were enrolled into two groups according to the occurrence of AS. Patients with and without AS were compared for demographic and operative features and postoperative complications in the first year of life. Multivariable logistic regression analysis was performed to define the risk factors for the development of AS after EA repair.

**Results:** Among the 713 cases, 144 patients (20.19%) were enrolled in AS group, and 569 (79.81%) were in no-AS group. The relevant data is shown in Table 1. The multivariable logistic regression showed that being a term baby (OR 1.706; p=0.006), having a birth weight over 2500 g (OR 1.72; p=0.006), presence of gastroesophageal reflux (OR 5.267; p<0.001) or a recurrent tracheoesophageal fistula (OR 4.363; p=0.006) were the risk factors for the development of AS (Table 2).

**Conclusion:** Our national cohort of EA patients demonstrates that 20% of registered patients developed AS within the first year of life. The risk factors for developing AS were being a term baby, birth weight over 2500 g, presence of gastroesophageal reflux, and recurrent tracheoesophageal fistula. The increased risk of developing AS in term babies and babies with normal birth weights may be associated with the higher primary anastomosis rates in those patients.

Table 1: The statistical analyses of the data according to the groups

	AS group (n=144)	Non-AS group (n=569)	P
Gender (G/B)	65/79	266/303	0,79
Gestational Weight			
<1500 gr	6 (9,2%)	59 (90,8%)	<b>0,01</b>
1500-2500 gr	52 (16,7%)	260 (83,3%)	
>2500 gr	86 (25,6%)	250 (74,4%)	
Gestational week	36,79±2,60	35,94±3,10	<b>0,03</b>
Gestational height(cm)	47,09±4,17	45,48± 5,41	<b>0,002</b>
Age of mother	28,64±5,98	28,71±6,12	0,98
Term baby	93(64,6%)	283 (49,7%)	<b>0,01</b>
Spontaneous pregnancy	127 (88,19%)	491 (82,38%)	0,54
Twin pregnancy	9 (6,25%)	22(3,8%)	0,21
Antenatal diagnosis	39 (27,08%)	153 (26,88%)	0,96
Polyhydramnios	64 (44,44%)	237 (46,92%)	0,54
Associated anomalies	98 (68,1%)	434(76,3%)	<b>0,043</b>
Down syndrome	1(0,7%)	11(1,9%)	0,30
Type of atresia			
Gross type A	16 (18,8%)	69 (81,2%)	0,5
type B	3 (14,3%)	18(85,7%)	
type C	124 (21,7%)	448 (78,3%)	
type D	1 (5,6%)	17(94,4%)	
type E	0	16 (100%)	
Timing of surgery			
Primary surgery	134 (21,4%)	493 (78,6%)	<b>0,035</b>
Delayed surgery	10 (11,6%)	76 (88,4%)	
Type of surgery			
Thoracotomy	136 (21%)	513(79%)	0,10
Thoracoscopy	8 (12,5%)	56(87,5%)	
Having a gastrostomy	7 (4,9%)	34 (6%)	0,68
The length of atresia			
≤ 2 vertebrae	74 (20,2%)	293 (79,8%)	0,84
>2 vertebrae	35 (19,4%)	145 (80,6%)	
Tense anastomosis			
Yes	46 (25,1%)	137 (74,9%)	<b>0,043</b>
No	74 (18,2%)	333 (81,8%)	
Chest tube	118 ( 96,7%)	415 ( 92,6%)	0,14
Divided azygos vein	110(88,7%)	334 (74,4%)	<b>0,001</b>
Right-sided aortic arch	18(14,6%)	56(12,5%)	0,53
Transanastomotic nasogastric tube	122(84,7%)	406(71,3%)	<b>0,005</b>
Duration of nasogastric tube (days)	11,52 ±11,21	11,36 ±8,9	<b>0,89</b>
Postoperative intubation	131(91,0%)	503(88,6%)	0,40
Duration of intubation (days)	6,38±8,57	11,21±22,88	0,015
Anastomotic leakage	9 (6,3%)	26 (4,6%)	0,40
Recurrent tracheoesophageal fistula	10(6,9%)	8(1,4%)	<b>0,00</b>
Presence of gastroesophageal reflux	37 (25,7%)	33 (5,8%)	<b>0,00</b>
Number of esophageal dilatations	3,21±2,99	1,80±1,5	<b>0,022</b>

Bold typeface represents statistically significant p values (p<0.05).

**Table 2:** Multivariable logistic regression analysis for AS in children with EA

	<b>OR</b>	<b>95% CI</b>	<b>P values</b>
<b>Term baby</b>	<b>1,706</b>	<b>1,162-2,506</b>	<b>0,006</b>
<b>Associated anomalies</b>	1,408	,939-2,113	0,098
<b>Primary surgery</b>	,548	,274-1,097	0,089
<b>Type of surgery</b>	0,613	0,241-1,560	0,305
<b>Standard anastomosis</b>	0,739	0,294-1,861	0,521
<b>Tense anastomosis</b>	0,701	0,424-1,160	0,167
<b>Divided azygos vein</b>	1,99	1,154-2,794	0,238
<b>Transanastomotic nasogastric tube</b>	0,232	0,029-1,877	0,171
<b>Recurrent tracheoesophageal fistula</b>	<b>4,363</b>	<b>1,528-12,460</b>	<b>0,006</b>
<b>Presence of gastroesophageal reflux</b>	<b>5,267</b>	<b>3,115-8,900</b>	<b>0,000</b>
<b>Gestational week</b>	0,926	0,850-1,008	0,075
<b>Gestational height (cm)</b>	0,952	0,903-1,004	0,069
<b>Gestational weight</b>	<b>1,720</b>	<b>1,170-2,529</b>	<b>0,006</b>

## Management of esophageal strictures in patients with epidermolysis bullosa by balloon dilation: Long term outcomes

**Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Pari Khalilova** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Sumeyye Sozduyar** (Department of Pediatric Surgery, Elazig City Hospital, Elazig, Turkey), **Ozlem Selvi Can** (Department of Anesthesiology and Reanimation, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** Esophageal strictures are common in patients with epidermolysis bullosa. In this study, we aimed to present the long-term results of patients who developed esophageal stricture on the basis of epidermolysis bullosa and underwent endoscopic balloon dilatation.

**Methods:** The charts of 31 patients with epidermolysis bullosa and esophageal stricture who were included into dilatation program between 2003 and 2021 were retrospectively reviewed. Children's charts were reviewed in terms of long-term outcomes, nutritional status, change of dysphagia scores and complications.

**Results:** 19 of the patients were female and 12 were male. The median age was 17 (3-41) years. The strictures were dilated 186 times in total (mean 6 times). It was observed that the average of the dysphagia scores of the patients at the time of first admission was 2,03 and this average was 0.86 in the long-term results. Two patients underwent gastrostomy. In one of the patients, perforation developed during the dilatation procedure, and in the other child the stenosis could not be passed with the endoscope at all. The dilatation program of 13 patients is still in progress. One patient died from urinary problems and one patient died from complications related to amyloidosis by refusing colon interposition during the dilatation program.

**Conclusions:** Endoscopic balloon dilatation is a minimally invasive method in patients with esophageal stricture with epidermolysis bullosa. Even though the esophagus could not be visualized and passed with a scope it is still applicable and gastrostomy may be avoided. The long-term results of the study seem satisfactory.

## Aortoesophageal fistula (AEF) in a child with a button battery stuck in the esophagus

**Roman Koreň** (Clinic of Pediatric Surgery of Slovak Medical University, Children`s University Hospital Banská Bystrica, Banská Bystrica, Slovakia), **Martin Michalisko** (Clinic of Pediatric Surgery of Slovak Medical University, Children`s University Hospital Banská Bystrica, Banská Bystrica, Slovakia), **Iveta Valachová** (Pediatric Clinic of Slovak Medical University, Children`s University Hospital Banská Bystrica, Banská Bystrica, Slovakia), **Peter Kenderessy** (Clinic of Pediatric Anesthesiology and Intensive Medicine of Slovak Medical University, Children`s University Hospital Banská Bystrica, Banská Bystrica, Slovakia)

**Aim:** An aortoesophageal fistula (AEF) is a pathological communication between the esophagus and the thoracic aorta which results from a thoracic aortic aneurysm or dissection, foreign body ingestion, esophageal malignancy or as a postoperative complication. AEF is most commonly manifested by massive hemorrhage or exsanguination to gastrointestinal tract which can be mortal. The authors present a case of a successfully managed repetitive massive hemorrhage from an AEF in a child with a late diagnosis of a button battery stuck in the esophagus.

**Case description:** It was a case of 18-months old girl initially hospitalized in regional hospital for non-specific difficulties, her parents did not mention foreign body ingestion. The stuck button battery was diagnosed and subsequently extracted on the fifth day after the ingestion. There was a finding of deep ulcers on the esophagus during the endoscopic extraction and minor fistula to mediastinum on CT. The girl was discharged on the 17th day of hospitalization when ulcers were healed. There was a sudden hematemesis on the 27th day after the ingestion. Gastroscopy showed an adherent coagulum in the stomach without any sign of hemorrhage in the esophagus. Surgery with perioperative gastroscopy was indicated because of continuous hemorrhage. There was a visible vessel in the central part of the healing ulcer of the esophagus. There was a massive hemorrhage in the course of the gastroscopy in the attempt to clip the visible vessel. The hemorrhage was stopped by introducing Sengstaken-Blakemore tube. Subsequent CT confirmed AEF and the child was transported to the cardiovascular center, they successfully performed endovascular stent-graft of AEF.

**Conclusion:** The authors refer a risk of AEF formation as a late complication of stuck button battery in esophagus. It is important to be ready to treat massive hemorrhage using Sengstaken-Blakemore tube. Definitive treatment of AEF is endovascular stent-graft implantation.

## Corrosive Substance Ingestion: When to Perform Endoscopy?

**Ufuk Ates** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Gollu Gullur** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Sertturk Firat** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Anar Jafarov** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Merve Bulbul** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Sozduyar Sumeyye** (Department of Pediatric Surgery, Elazig City Hospital, Ankara, Turkey), **Meltem Bingol-Kologlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Aydin Yagmurlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Murat Cakmak** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** Accidental ingestion of corrosive substances is a difficult and important medical problem to manage. Upper gastrointestinal system endoscopy is still controversial in such cases. The aim of this study is to present an algorithm that will regulate the treatment and follow-up of pediatric patients presenting with corrosive ingestion with a patient-based evaluation.

**Methods:** Children who admitted pediatric emergency department with corrosive substance investigation between July 2015-December 2021 were included. Patient demographics, complaints, examination findings, medical treatments, endoscopy findings and follow-up findings were analyzed. Between July 2015-December 2019 endoscopy was performed to all patients. After December 2019 endoscopy was performed to patients who had hypersalivation and/or dysphagia.

**Results:** 172 patients who were followed up and treated in our clinic due to corrosive substance ingestion. Vomiting was the most common symptom in symptomatic patients (%32, n:55). In the endoscopic evaluation of 19 patients with hypersalivation, it was observed that esophageal corrosion was stage 1 in 5 patients, stage 2a in 1 patient, stage 2b in 3 patients, and the rest were normal. Of 14 patients with dysphagia, 1 was stage 1, 2 was stage 2a and 4 was stage 2b, the rest were normal. Out of 10 patients with both hypersalivation and dysphagia, 3 were stage 1, 1 was stage 2a, 3 was stage 2b, and the rest were normal. Hypersalivation and dysphagia were found together in the only patient who developed stenosis and required dilatation in the follow-up, and it was stage 2b in the endoscopic evaluation. In the long-term follow-up of the patients without hypersalivation and dysphagia, no complications developed and no additional treatment was required.

**Conclusions:** If there is no hypersalivation and dysphagia in patients presenting with corrosive substance ingestion; there is no need for endoscopic evaluation of patients.

## POEM (per oral endoscopic myotomy) in the treatment of paediatric achalasia: a systematic review

**Farah Roslan** (Department of Paediatric Surgery, Leicester Childrens' Hospital, Leicester, UK), **Haitham Dagash** (Department of Paediatric Surgery, Leicester Childrens' Hospital, Leicester, UK), **Paul Losty** (University of Liverpool, Institute of Life Courses and Medical Sciences, Liverpool, UK)

**Aim:** POEM (Per oral endoscopic myotomy) has gained widespread popularity in the definitive treatment of achalasia. There is however very limited data available in the paediatric population. This study was undertaken to critically appraise and evaluate (i) the overall success rate (%) of POEM and (ii) document the incidence (%) of concomitant GERD (gastro-oesophageal reflux disease) as well as that of oesophagitis.

**Methods:** We conducted a systematic review and comprehensive search of Pubmed, Medline, Embase and Web of Science databases from 2008-2022. The terms “POEM”, “per-oral endoscopic myotomy”, “achalasia” and “paediatric” were used in various combinations. The review was conducted using adherence to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Only full length published papers were included. Exclusion criteria included: case series less than 5 patients, single case reports, abstracts, and non-English language studies. Data are presented as mean with range(s) in parentheses.

**Results:** 13 studies were identified comprising of 446 patients with a mean age of 13.5 years. All 13 studies used Eckardt scores (<3) as the primary outcome measure of success. The pre-operative score(s) were 7.4 (11 studies) and post-operative score(s) 0.9. LES (lower oesophageal sphincter pressure measurements) were documented in 7 studies with a pre-op LES of 32.7 mm/Hg versus 7.0 post-operatively. The distensibility index (DI) was used in 3 studies with preoperative index – 4.6 mm<sup>2</sup>/mm Hg versus 7.2 mm<sup>2</sup>/mm Hg postoperatively. At a follow-up of 17.6 (1–134) months, the success rate of POEM was 93.9%. GERD incidence varied from 0–28.5% (10 studies). Oesophagitis was recorded in 0-55% of patients.

**Conclusion:** POEM has a success rate of 93.9% in the short term. The high incidence of concomitant GERD symptoms and oesophagitis is a concern and these factors need to be taken into account when best defining POEM outcomes.

## Laparoscopic Heller myotomy in pediatric achalasia

**Ines Teixeira** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Sara Fernandes** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Tiago Tuna** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Leonor Carmo** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Miguel Campos** (Pediatric Surgery, São João Hospital Center, Porto, Portugal)

**Introduction:** Achalasia is a rare condition characterized by disturbed esophageal motility, with an annual incidence of 1:100.000 in general population and less than 5% occurring in pediatric patients. Therapeutic control of achalasia is difficult and no curative approach has been described.

**Objective:** Describe outcomes of laparoscopic Heller myotomy (LHM) for achalasia treatment in pediatric population at our tertiary pediatric surgery center.

**Methods:** A retrospective longitudinal cohort study was conducted in pediatric patients submitted to LHM for achalasia in a tertiary pediatric surgery center from 2005 to 2021. Demographic data, clinical findings and postoperative follow up was screened from the medical records. Descriptive statistics are presented and outcomes discussed.

**Results:** Fifteen patients with achalasia were selected, 12 were males (80%) and mean age was 11.6 ( $\pm 2.8$ ) years. Most common presentation of disease was solid dysphagia (93%), weight loss (46.7%) and vomiting/regurgitation (33.3%). Timed esophagogram was performed in 14 patients (93.3%), manometry was conducted in 11 patients (73.3%) and all patients were submitted to upper endoscopy. Eight patients (53.3%) received pharmacological and/or endoscopic treatment before surgery. All patients were submitted to LHM with Dor fundoplicature. Mean hospital length of stay was 3 (2–9) days. All patients had postoperative relief of symptoms in immediate postoperative. Median postoperative follow up period was 4 (0.3–11) years. During overall follow up, thirteen patients (86%) need no further interventional treatment for achalasia and 2 patients (13.3%) needed endoscopic dilatation due to relapsed symptoms. Three patients (20%) suffered from gastroesophageal reflux disease (GERD), controlled conservatively. No patient needed re-intervention for achalasia.

**Conclusion:** LHM is safe and effective in symptomatic relief of achalasia in pediatric patients. Nonetheless, there is no proved curative treatment for achalasia. Follow up and therapeutics are essential for disease control in a long term.

## Efficacy Two-Dimensional Shear Wave Elastography in the Diagnosis and Follow-up of Infantile Hypertrophic Pyloric Stenosis

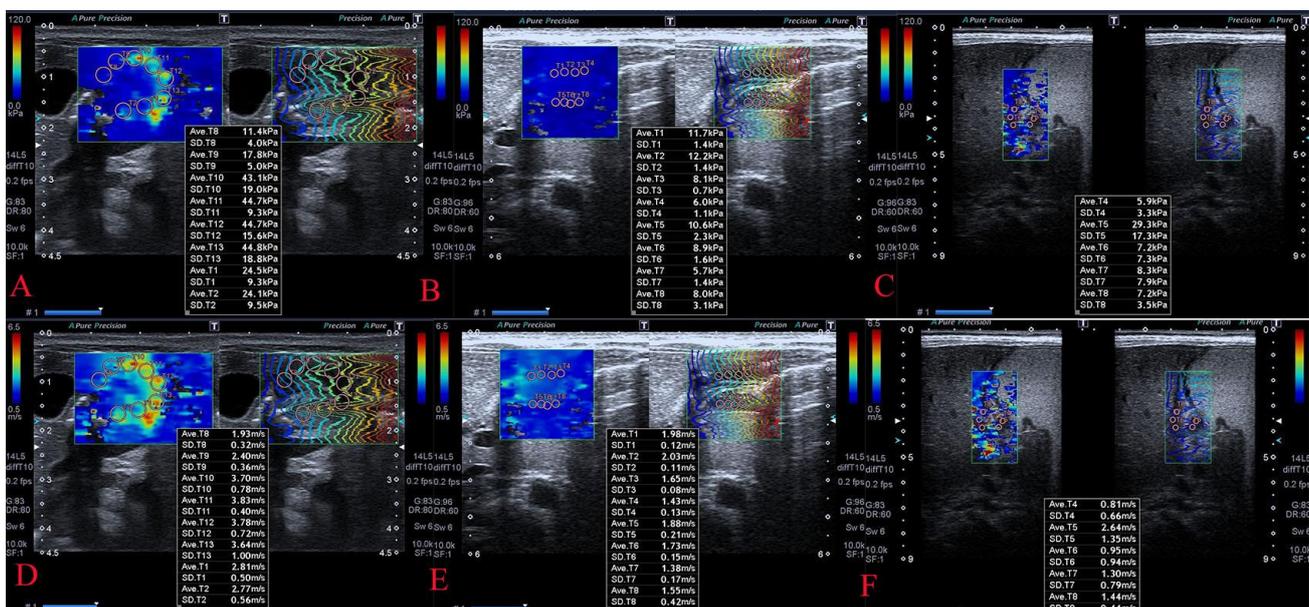
**Sabri Demir** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Havva Akmaz Unlu** (Pediatric Radiology, Ankara City Hospital, Ankara, Turkey), **Gulsah Kiris Uzun** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Can Ihsan Ozturun** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey), **Ahmet Erturk** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Dogus Guney** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey), **Ayşenur Alimli** (Pediatric Radiology, Ankara City Hospital, Ankara, Turkey), **Mujdem Nur Azili** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey), **Emrah Senel** (Pediatric Surgery, Ankara Yildirim Beyazit University, Ankara, Turkey)

**Aim:** We aimed to investigate the effectiveness of Two-Dimensional Shear-Wave Sonoelastography (2D-SWE) in the diagnosis and postoperative follow-up of Infantile Hypertrophic Pyloric Stenosis (IHPS).

**Methods:** Twenty-three infants were included in the study. They were divided into IHPS and control groups. Thirteen were included in IHPS and 10 in the control group. The patients' preoperative B-mode US values (longitudinal length and single-wall thickness of the pylorus) and 2D-SWE values (kPa and m/s values) were compared with the control group. Infants with IHPS underwent Ramstedt pyloromyotomy. They were invited for follow-up on the tenth day, first, third, and sixth months postoperatively. The values of follow-ups were compared with each other and with preoperative values. Statistical analysis was performed with SPSS ver.21.  $P < 0.005$  was considered significant for all values.

**Results:** No difference was found between groups regarding age, gender, body weight, and week of birth. The pyloric lengths of the IHPS group were longer than the control group ( $P < 0.001$ ), and single-wall thicknesses were thicker ( $P < 0.001$ ). Stiffness of the pylorus of the IHPS group was four-times higher than that of the control group (27.4 versus 7.66 kPa), and the propagation speed of shear-wave waves in the tissue was also higher (1.34 m/s versus 2.69;  $P < 0.001$ ). Both kPa and m/s values of the IHPS group decreased over time and returned to normal in the third postoperative month (Figure-1.A - F).

**Conclusion:** Since the stiffness of the pylorus increases in IHPS, 2D-SWE, which is used to evaluate the stiffness of the tissues, can be used as a reliable imaging method in the diagnosis and follow-up of IHPS, as well as B mode US, especially in diagnosing suspicious cases. Besides, it can be a more reliable imaging method than the conventional US by showing that the pyloric tissue does not soften in the follow-up of patients who underwent inadequate surgery.



## Comparison of conventional protocol feeding vs Ad libidum feeding after pyloromyotomy in IHPS

**Gohar Rasheed** (Paediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Muhammad Saleem** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamaal Butt** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Imran Hashim** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamil Akhtar** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan)

**Aims & Objective:** The best feeding regimen after pyloromyotomy for hypertrophic pyloric stenosis continues to be a topic of some debate. Postoperative emesis and length of hospital stay are principal concerns. So multiple researches are being conducted regarding the best method of feeding.

To compare mean hospital stay and time to goal feeds in Ad-libitum versus protocol feeding after pyloromyotomy in infantile hypertrophic pyloric stenosis.

**Material and methods:** It was a randomized control trial conducted on 60 patients (30 in each group) presenting to our hospital with features of Infantile Hypertrophic Pyloric Stenosis (IHPS). Patients were resuscitated and Arterial Blood Gases (ABGs), serum electrolytes (S/E) and complete blood count (CBC) were sent. Post operatively patients were divided in two groups randomly (Protocol group, Ad-libitum group) by closed envelope method. Consent was taken from parents regarding inclusion in the study. All demographic data and results were noted down in a proforma. The collected data was entered and analyzed in computer software SPSS (Statistical Package for Social Sciences) version 24.0.

**Results:** On the comparison of the both groups, it was noted that mean number of episode of emesis was  $2.96 \pm 1.09$  in Ad-libitum group and  $3.50 \pm 1.10$  in the protocol feed group but the difference was not statistically significant. It was noted that there was significant difference for the mean length of hospital stay ( $p$ -value  $< 0.05$ ) and similarly there was significant difference in time to goal feeds ( $p$ -value  $< 0.05$ ).

**Conclusion:** Ad-libitum is good feeding method after pyloromyotomy as it reduces hospital stay and time to goal feeds.

## Prenatal findings, etiology and types of meconium peritonitis

**Hironu Miyake** (Shizuoka Children's Hospital, Shizuoka, Japan), **Koji Fukumoto** (Shizuoka Children's Hospital, Shizuoka, Japan), **Masaya Yamoto** (Shizuoka Children's Hospital, Shizuoka, Japan), **Akiyoshi Nomura** (Shizuoka Children's Hospital, Shizuoka, Japan), **Risa Kanai** (Shizuoka Children's Hospital, Shizuoka, Japan), **Yuri Nemoto** (Shizuoka Children's Hospital, Shizuoka, Japan), **Takafumi Tsukui** (Shizuoka Children's Hospital, Shizuoka, Japan)

**Aim:** Meconium peritonitis (MP) is a chemical peritonitis due to intestinal perforation in the prenatal period which is caused by several etiologies. Recently, more and more patients are being diagnosed prenatally. We aimed to analyze the prenatal findings, etiology and types of MP.

**Methods:** A total of 51 patients with MP managed in our institution from 1979 to 2020 were included. Clinical data including prenatal findings, etiology and types of MP were collected and analyzed.

**Results:** For the types of MP, cystic type was the most common (41.2%), followed by fibroadhesive type (37.3%) and generalized type (21.6%). Although 76.5% of patients had abnormal prenatal findings, MP specific findings such as intraabdominal cyst, ascites and calcification were only seen in 41.2% of patients. In the patients with fibroadhesive type, intestinal dilatation was the most common finding (57.9%), followed by polyhydramnios (31.6%), ascites (15.8%), calcification (15.8%) and intraabdominal cyst (5.3%). In patients with generalized type, the most commonly seen finding was ascites (45.5%), followed by intestinal dilatation (27.3%), polyhydramnios (9.1%) and calcification (9.1%). Polyhydramnios was more commonly found in cystic type compared to fibroadhesive type and generalized type ( $p=0.01$ ). Intraabdominal cyst was commonly detected in cystic type compared to fibroadhesive type and generalized type ( $p<0.01$ ). In terms of etiology, intestinal volvulus was the most common cause of MP (56.9%), followed by intestinal atresia (37.3%). In cystic type patients, the most common etiology was intestinal volvulus (81.0%). On the other hand, 68.4% of patients had intestinal atresia in fibroadhesive type patients. In generalized type patients, 54.5% had intestinal volvulus. There are statistically significant differences found among the etiology of 3 types of MP ( $p<0.01$ ).

**Conclusion:** The type of MP depends on prenatal findings and etiology. These findings will help us prepare for the appropriate perinatal management of patients with MP.

## Hematemesis and melena associated with Menkes disease

**Ondřej Marek** (Clinic of Paediatric surgery, orthopaedics and traumatology, University hospital Brno; Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic), **Jiří Tůma** (Clinic of Paediatric surgery, orthopaedics and traumatology, University hospital Brno; Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic), **Robert Doušek** (Clinic of Paediatric surgery, orthopaedics and traumatology, University hospital Brno; Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic), **Ladislav Plánka** (Clinic of Paediatric surgery, orthopaedics and traumatology, University hospital Brno; Faculty of Medicine, Masaryk University Brno, Brno, Czech Republic)

**Aim:** Find out the cause of bleeding into GIT in a patient with Menkes disease (MD) and compare with available literature.

**Case description:** MD is a recessively inherited disease linked to the X chromosome caused by mutation on genes coding for the copper-transport, leading to copper deficiency. Children with MD typically begin to develop symptoms during infancy and often do not live past age three. The symptoms involve multiple organ systems. This disease is characterized by sparse, kinky hair, failure to gain weight and grow and deterioration of the nervous system.

We describe one male infant 3,5 years old with MD who had gastrointestinal bleeding from solitary gastric polyps. This patient was hospitalized for hematemesis or melena a total of eight times in period from October 2021 to the beginning of January 2022. Gastrofibroscopy was performed five times with the finding of polyps up to 15 mm in size overlapping the entrance to the pyloric canal. The electrocoagulation loop polypectomy was performed three times during gastrofibroscopy and sclerosing with 1 % aethoxysclerol to residuals of the polyps were performed twice. Histological examination confirmed perfused polyps with anomalous varicose veins in the submucosa, which are described in the literature with MD. Due to repeated problems and deteriorating nutritional status, a Billroth I stomach resection and a nutritional jejunostomy were performed in early January. After surgery, the patient has had a clinically significant improvement in his health. Patient does not suffer for melena or hematemesis, gains weight, tolerates half of the daily caloric intake taken orally, the rest of caloric intake is received by nutritional jejunostomy.

**Conclusion:** A rare diagnosis MD can lead to surgical complications. Gastrofibroscopy is necessary for confirmation and histological sampling. Billroth I stomach resection and nutritional jejunostomy led to an improvement in the quality of life.

## Incidence, Predictors of the Need to Re-Do Pancreatectomy in Infants with Congenital Hyperinsulinism: Tertiary Center Experience

**Ali H. Al-Ameer** (Department of Pediatric Surgery, King Fahad Medical City, Riyadh, Saudi Arabia), **Afrah Al-somali** (King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia), **Zakaria Sobhy Habib** (Department of Surgery, King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia)

**Aim:** The primary aim of the study is to investigate the factors that may predict the need to redo-pancreatectomy in infants with CHI. Secondary objectives are determining the incidence and outcomes of redo-pancreatectomy in those infants.

**Methods:** Retrospective study for all patients underwent near-total/ subtotal pancreatectomy for CHI for the period 2005 to 2021 at our institution. Demographic and clinical data were retrieved and described. Comparison between the two groups of patients (group A = underwent single pancreatectomy/ group B = needed redo pancreatectomy) was performed to determine predictors for the recurrence of the disease and the need to redo-pancreatectomy.

**Results:** Total of fifty eight patients underwent pancreatectomy during the study period: Ten patients (17.2%) required redo-pancreatectomy for persistent refractory hypoglycemic attacks, one required third redo surgery. The median follow-up period was 70 months (IQR 33-110 months). The outcomes for patient with redo-pancreatectomy upon last follow-up were 5 patient (50%) have hypoglycemia controlled with medications, 4 patients (40%) are diabetic, and 1 patient (10%) is euglycemic off medications.

Univariate logistic regression analysis revealed that higher extent of surgical resection at initial surgery was associated with significant decrease risk for the need to redo pancreatectomy (odds ratio 0.793, 95% confidence interval 0.645- 0.975,  $p = 0.0279$ ). In addition, patients who had gastrostomy tube insertion with or without nissen fundoplication were at significant higher risk to develop recurrence of refractory hypoglycemia for which redo pancreatectomy was performed (odds ratio 3.097, 95% confidence interval 1.114- 8.605,  $p = 0.0302$ ).

**Conclusion:** Even after near/subtotal pancreatectomy for infants with CHI, 17% of those will need Redo-pancreatectomy for disease recurrence. Aggressive initial surgical resection would decrease that chance, while gastrostomy tube insertion for continuous feeding might increase the risk of having recurrence of CHI.

## ORAL PRESENTATION SESSION XIII

### Global pediatric surgery

#### Spectrum of Pediatric Surgery Worldwide

**Ruta V Dagilyte** (Pediatric surgery department, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania), **Dayang A Abdul Aziz** (Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia), **Paula J Arribas** (Pediatric Surgery Department, Parc Taulí University Hospital, Sabadell, Spain), **Sarah Ellul** (Paediatric Surgery Department, Mater Dei Hospital, Swatar, Malta), **Gabriella Grech** (Department of Paediatric Surgery, Mater Dei Hospital, Msida, Malta), **Saioa Santiago-Martínez** (Pediatric Surgery Department. Recerca I3PT. Institut d'Investigació i Innovació Parc Taulí., Parc Taulí University Hospital, Sabadell, Spain), **Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Touabti Souhem** (Mother and child hospital Setif Algeria, Setif, Algeria), **Judith Lindert** (Great Ormond Street Hospital, London, UK), **WomenInPediatricSurgery** ([womeninpediatricsurgery.org](http://womeninpediatricsurgery.org))

**Aim:** Definition of pediatric surgery (PS) varies all over the world. This study aimed to look at the differences in the spectrum of PS: addressing who are our patients, distribution, and organization of the PS workforce.

**Methods:** An online questionnaire was sent out among pediatric surgeons in multiple countries via an international Women in Pediatric Surgery Group. The questionnaire comprised questions about PS workforce distribution and organization present in each country.

**Results:** Pediatric surgeons from 17 countries and three continents answered the questionnaire. In 66.7% of correspondent countries, patients are treated for different disorders until 18 years of age, while others consider 16-17 years as the age limit. Workforce distribution differs significantly across the globe, with an average of 4.68 surgeons (Min=0.49; Max=20.95) for 100,000 children. High-income countries have a significantly larger PS workforce and trainee concentration than low- and middle-income countries ( $p < 0.05$ ). Countries with less than 2 million children may have a larger concentration of pediatric surgeons (average surgeon/100,000 children=5.80; Min=0.97; Max=20.95) than countries with more than 2 million (average= 3.91; Min=0.49; Max=6.62).; however, no statistical significance was seen ( $p=0.2$ ). An average of 34.2 PS departments, defined as more than two surgeons in a unit, per country was observed (Min=1, Max=200). In 82.4% of countries, there is a designated national PS organization, only 1 reported no clear national licensing system for pediatric surgeons.

**Conclusion:** PS ranges from abdominal surgery to neonatal, neurosurgery, trauma and thoracic surgery with various national workforce organization systems. Our data suggests that PS is more available in high-income and less populated countries. This study should serve as a reference point for future investigations in ensuring equal PS availability across the globe.

## Working as a Pediatric Surgeon Worldwide

**Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Dayang A Abdul Aziz** (Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia), **Saioa Santiago-Martínez** (Pediatric Surgery Department. Recerca I3PT. Institut d'Investigació i Innovació Parc Taulí., Parc Taulí University Hospital, Sabadell, Spain), **Paula J Arribas** (Pediatric Surgery Department, Parc Taulí University Hospital, Sabadell, Spain), **Ruta V Dagilyte** (Pediatric surgery department, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania), **Sarah Ellul** (Paediatric Surgery Department, Mater Dei Hospital, Swatar, Malta), **Gabriella Grech** (Department of Paediatric Surgery, Mater Dei Hospital, Msida, Malta), **Touabti Souhem** (Mother and child hospital Setif Algeria, Setif, Algeria), **Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Charlotte Vercauteren** (Pediatric surgery, UZ Brussel – UZ Antwerpen – Saffier, Brussels, Belgium), **Judith Lindert** (Great Ormond Street Hospital, London, UK), **Sofia Vasconcelos-Castro** (Department of Pediatric Surgery, Centro Hospitalar Universitário São João, Porto, Portugal), **Helena Reusens** (Department of Pediatric Surgery, Queen Fabiola University Children's Hospital – ULB, Brussels, Belgium), **WomenInPediatricSurgery** ([womeninpediatricsurgery.org](http://womeninpediatricsurgery.org))

**Aim:** Pediatric surgery is smaller and with fewer resources than general surgery. Pediatric surgeons (PS) also deal with not only patients, but also parents and caretakers; hence, this post particular challenges to the overall care. This study aimed to evaluate the burden and work satisfaction amongst pediatric surgeons worldwide.

**Methods:** PS worldwide were invited to anonymously fill in an online questionnaire accessed via a common link. Data collected were demography, availability of their posts, where they work, work variation (academic and clinical), hours at work, and job satisfaction, including work-life balance.

**Results:** A total of 526 PS from 6 continents participated in this study. Female respondents were 57%, and males were 43%.

Most PS (83%) had to write between 1 to 5 applications to secure a job; only 62% had a permanent contract, and 85% had a full-time job. Ninety-four percent (94%) of respondents were still in practice; 61% of respondents worked in University Hospitals. Regarding variation of work, 94% were active in clinics (46% performed surgeries more than 10 hours per week), 53% were involved in teaching, and 23% were active in research. In terms of working hours, 50% of respondents worked between 40 to 50 hours a week, 52% did on-call duties from home unless needed in hospitals.

On job satisfaction, 86% of respondents were satisfied with their jobs, 32% would like to reduce their work time, and 22% would like a reduction in the number of duties. Only 51% of respondents felt satisfied with their work-life balance.

**Conclusion:** Pediatric surgeons perform many more tasks than just surgery, and most have a full-time job. Many worked in University hospitals. Although most PS are satisfied with their job, only half experience good work-life balance hence a third of PS prefers lesser working hours and a reduced number of duties.

## Worldwide Gender differences in Pediatric Surgery

**Sarah Ellul** (Paediatric Surgery Department, Mater Dei Hospital Malta, Swatar, Malta), **Paula J Arribas** (Pediatric Surgery Department, Parc Taulí University Hospital, Sabadell, Spain), **Dayang A Abdul Aziz** (Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia), **Helena Reusens** (Department of Pediatric Surgery, Queen Fabiola University Children's Hospital – ULB, Brussels, Belgium), **Saioa Santiago-Martínez** (Pediatric Surgery Department. Recerca I3PT. Institut d'Investigació i Innovació Parc Taulí., Parc Taulí University Hospital, Sabadell, Spain), **Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Sofia Vasconcelos-Castro** (Department of Pediatric Surgery, Centro Hospitalar Universitário São João, Porto, Portugal), **Charlotte Vercauteren** (Pediatric surgery, UZ Brussel – UZ Antwerpen – Saffier, Brussels, Belgium), **Touabti Souhem** (Mother and child hospital Setif Algeria, Setif, Algeria), **Judith Lindert** (Great Ormond Street Hospital, London, UK), **Gabriela Grech** (Department of Paediatric Surgery, Mater Dei Hospital, Msida, Malta), **Ruta Dagilyte** (Pediatric surgery department, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania), **WomenInPediatricSurgery** ([womeninpediatricsurgery.org](http://womeninpediatricsurgery.org))

**Aim:** Pediatric surgery is a speciality with a high female to male ratio. Gender inequality is well reported. Our aim was to explore gender differences in teaching, learning and working environment within the fraternity.

**Methods:** Pediatric surgeons (PS) worldwide were invited to anonymously fill-in an online-questionnaires. Data collected were personal data, training history and work experience, including exposure to inappropriate behavior by colleagues.

**Results:** 526 PS responded. Female:Male respondents were 57%:43%. Comparing Females:Males, 70%:82% had partners, and 44%:52% had underaged children. Similar distribution of women and men in the workplace and similar distribution of clinical and academic work among both genders was found. 59% of females and 67% of males respondents were given permanent contract posts. To perform their research work 63% of females and 30% of male did not receive extra pay.

Gender differences were felt differently by males and females: during training, 19% of females and 6% of males felt differences, in the exposure to surgery, 26% of females and 8% of males felt differences; in climbing hierarchies 27% of females and 6.9% of males felt differences.

Regarding gender preference to chair a scientific session 40% of all respondents felt that males were preferred. However, 59% did not think gender played any role in invitations as guest lectures.

46% of the females and 20% of the males had experienced some form of inappropriate behavior at work.

**Conclusion:** Female PS performed equal amounts of work as males, but suffered less opportunity to secure permanent posts. Female PS also faced more challenges from training days to climbing the ladder. It is alarming that female PS faced significantly higher inappropriate behavior at work.

## Challenges and limits of pediatric surgery and urology in Monrovia, Liberia, with Doctors Without Borders

**Jan Trachta** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** To present the first elective pediatric surgery project in the history of international humanitarian organization Doctors Without Borders or Médecins Sans Frontières (MSF).

**Methods:** Retrospective data analysis aiming at the history of the project, its capacity building and cooperation with the national staff, overview of numbers of treated patients, examples of frequent pathologies, and challenges and limits of everyday surgical care.

**Results:** There are an estimated 2 million children under 16 years of age in Liberia, and currently, no other pediatric facility provides specialized pediatric surgery services, besides the MSF Hospital, in Monrovia. The pediatric MSF Bardnesville Junction Hospital was opened in 2015 during the Ebola epidemic. Malnutrition, malaria, and lower respiratory tract infections have been some of the most common conditions treated. The 30% mortality rate of ICU patients has been caused by paracetamol intoxication and liver failure in a country with very poor primary care. Since 2018, there has been a pediatric surgery program with two operating theaters and a 25 bed surgical ward to provide general, urology, plastic and emergency surgeries. With a yearly budget of 6.1 million euros in 2020, there were 328 full-time employees, 4250 pediatric patients admitted in total and 1102 elective and emergency surgeries performed. Typhoid fever bowel perforation, multiple necrotic lesions in children with kwashiorkor or chronic renal failure due to undiagnosed posterior urethral valves, in addition to anorectal malformations and Hirschsprung disease, were some of the most frequent diagnoses managed.

**Conclusions:** Lack of primary care, referral possibilities, and trainees in pediatric surgery, as well as systematic long-life follow-up of surgical patients, are the biggest challenges in the country. The surgical needs of Liberian children stay largely unmet, and to our knowledge, besides MSF expats, there are so far no fully trained national pediatric surgeons that stay and work in Liberia.

## Assessment of the neonatal referral and transport system for patients with gastroschisis in Kenya

**Hetal Rajnikant Gohil** (Department of Pediatric Surgery, University of Nairobi, Nairobi, Kenya), **Timothy Jumbi** (Department of Pediatric Surgery, Kenyatta National Hospital, Nairobi, Kenya), **David Kihiko Kuria** (Department of Pediatric Surgery, University of Nairobi, Nairobi, Kenya), **Francis Osawa** (Department of Pediatric Surgery, University of Nairobi, Nairobi, Kenya)

**Aim:** To assess the neonatal referral and transport system for patients with gastroschisis referred to Kenyatta National Hospital(KNH).

**Methods:** A prospective cross-sectional study design was used. Using consecutive sampling approach, patients with gastroschisis received at KNH from peripheral facilities were recruited. Data was collected on referring hospital factors, pre- and intra-transit factors, time and distance covered. Assessment of the neonatal referral and transport system was done using pre and intra transit factors as per the standard transport protocols in literature.

**Results:** Twenty-nine patients presented with gastroschisis during the eight month study period. Mean age was 7.07 hours range 3–18 hours. There were 16(55.2%) males and 13(44.8%) females. Mean birthweight was 2020 grams, and a mean gestational age of 36.5 weeks. Mean duration of transit was 5 hours, median 5 hours and a range of 1–9 hours. Mean distance from referring facility to tertiary facility was 153.1 km, range 19 – 348.

Out of 10 pre-transit factors assessed, 27.6% of patients scored 7, 48.3% scored 6, 17.2% scored 5 and 6.9% of patients scored 4. Most affected factors in the pre-transit protocol were lack of monitoring chart(0%), comment on blood investigations(0%), gastric decompression(3.4%), and prenatal obstetric scan(44.8%). Only 2/13 cases with gastroschisis were picked by the prenatal ultrasound.

For intratransit scores, out of 14 parameters, 9 were only in 6.9%, 8 in 17.2%, 7 in 20.7%, 6 in 24.1% and 5 in 31%. Most affected were incubator use(0), availability of pulse oximetry(31%) or thermometer(55.2%) or blood pressure monitor(44.8%), neonatal resuscitation training(58.6%), functioning nasogastric tube(13.8%), bowel monitoring (0%), adequate bowel cover(34.5%), and parent content(48.3%).

**Conclusion:** This study demonstrates that pretransit and transit care of neonates with gastroschisis is inadequate in Kenya. Interventions to promote care of neonates with gastroschisis are advised to reduce mortality. Such interventions would target areas of need as identified by this study.

## The impact of multiple waves of COVID-19 pandemic on pediatric surgery workload: experience from a tertiary care center in north Africa

***Abeer Aboalazayem*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt), ***Mohamed Elbarbary*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt), ***Sherif Kaddah*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt)

**Aim of the Study:** To ascertain the impact of covid-19 pandemic on the workload of a busy pediatric surgical unit. To analyze the differences in the impact of each covid-19 wave on the workload.

**Methods:** Retrospective analysis of database of all operative pediatric surgery procedures done during covid-19 pandemic from April 2020 to June 2021 at a tertiary university children's hospital. These data were compared with the same period in 2019.

**Results:** During these 15 months of covid-19 pandemic, we operated upon 4585 patients with a reduction of 46% (51.4% in non-emergency cases and 25.5% in emergency cases) compared with cases performed during similar periods. When we looked at the impact of each wave separately, we found that the first wave had the greatest impact with a total reduction of 88.4% (96.7% in non-emergency and 32.3% in emergency cases). The second and the Third wave showed a reduction of 51.2%(60.9% in non-emergency and 6.8% in emergency cases) and 38.90%(39.90% in non-emergency cases and 35.70% in emergency cases) respectively.

**Conclusion:** The pandemic has a significant impact on the pediatric surgery workload on emergency and more on non-emergency procedures. These pending cases will need consideration to ensure they are completed within a timely period. Although the increased number of the cases of covid-19 and the associated mortality during the 2<sup>nd</sup> and the 3<sup>rd</sup> wave, we managed to decrease the reduction on the non-emergency cases operated upon. More work is required to explain the reduction in the number of emergency cases done even in the 'inter-wave' periods.

**Keywords:** pediatric surgery, workload, covid-19 waves

## GICS Children's Trauma Care Initiative: A Comprehensive approach to a global problem

**Abdelbasit E Ali** (Department of Pediatric Surgery, King Saud Medical City, Riyadh, Saudi Arabia), **Adesoji Ademuyiwa** (Pediatric Surgery Unit, Lagos University Teaching Hospital, Lagos, Nigeria), **Simone Abib** (Department of Pediatric Surgery, Federal University of São Paulo, Sao Paulo, Brazil), **Charles Carapinha** (Department of Pediatric Surgery, Johannesburg Academic Hospitals, Johannesburg, South Africa), **Fazal Nouman** (Department of Pediatric Surgery, King Saud Medical City, Riyadh, Saudi Arabia), **Kokila Lakhoo** (Department of Pediatric Surgery, Oxford University Hospitals, Oxford, UK)

**Introduction:** Trauma is a common problem globally with profound health and socioeconomic impact. Pediatric injuries are associated with high morbidity and mortality that concern general and subspecialized pediatric surgeons. It is a necessity to care for this often neglected major health threat.

**Aim:** Global Initiative for Children's Surgery (GICS) has proposed a Children's Trauma Care (CTC) initiative to address pediatric trauma management comprehensively, globally and in LMICs in particular.

**Method:** The initiative was designed to have a global cooperation and collaboration with sister organizations. A simplified approach was designed to address the following aspects: 1. Prevention 2. First Aid 3. Pre-hospital Care 4. Hospital Primary Trauma Care 5. Advanced Care and PICU 6. Diagnostic Facilities 7. OR Equipment 8. Specialized Surgical Services 9. Rehabilitation 10. Registry, Research, Auditing 11. Specialization in Pediatric Trauma 12. Capacity and Confidence Building in Pediatric Trauma.

**Results:** GICS Trauma Working Group has produced simplified trauma prevention leaflets available for translation to different languages and are uploaded in its website. A one day Children's Primary Trauma Course has been prepared. Exercising advocacy, the group addressed the following meetings: the 75<sup>th</sup> United Nations General Assembly (UNGA), Norwich (UK) Joint SPRINT Symposium on Pediatric Surgery for Pediatricians, GICS IV<sup>th</sup> meeting in Johannesburg, the 2<sup>nd</sup> online Pan African Pediatric Surgical Association (PAPSA) meeting, in addition to participation in preparation of a module for WHO and in preparation of a manuscript for publication of a joint paper on surgery in the first 8000 days of life.

**Conclusions:** GICS CTC initiative is proposed to comprehensively address Paediatric Trauma through a process of advocacy and collaboration with established organizations to achieve prevention, health education and training, support provision of facilities to health institutions and encouragement of specialization in paediatric trauma.

## Regulatory Frameworks and Quality Standards for Transplantation of Stem Cells: Summary of Standards on a Global Perspective

***Madhan Jeyaraman*** (Orthopaedics, Faculty of Medicine – Sri Lalithambigai Medical College and Hospital, Dr MGR Educational and Research Institute, Chennai, India), ***Shilpa Sharma*** (Paediatric Surgery, All India Institute of Medical Sciences, New Delhi, India)

**Background:** Regenerative medicine consists of Cell, Gene, and Tissue (CGT) therapies which are novel therapeutic technologies with the potential to treat and sometimes cure a wide variety of illnesses and ailments. Currently, there are many stem cell facilities and regenerative clinics operating in the United States and immeasurable more globally. Regulators of medicines, devices and therapies across the globe require producers of therapy products to meet several criteria and follow compliance with regulations before commercializing a cell-based treatment.

**Aim:** We aim to summarize the regulatory environment and industry compliance standards for regenerative therapies on a global scale for all the stakeholders involved in this process.

**Methods:** An independent and detailed search of electronic databases namely PubMed, Scopus, Embase, and the Web of Science along with the individual government regulatory body websites for policy documents, white papers, and press releases to identify the relevant articles upto August 2021 following Cochrane and PRISMA guidelines. We extracted data regarding the regulations governing the collection, manufacturing, processing, testing, storage, and shipping of the products of regenerative medicine and made a detailed narrative review of the guidelines governing their implementation and usage.

**Conclusion:** These scientifically rigorous regulatory products and procedures must substantiate any claims made regarding the safety, potency, and efficacy of stem cell therapy in compliance with the local regulations in effect before implantation of their utility for clinical usage. For safeguarding human health and controlling product quality and safety, national, regional, or worldwide regulatory frameworks need to be strengthened. The scientific community is confident that the risks associated can be mitigated by setting up appropriate controls for collecting, developing, producing, manufacturing, labeling, testing, infusing, and administering these new biological medicines.

**Keywords:** Regenerative Medicine, Stem Cell therapy, Good Manufacturing Practice, Good Clinical Practice, Global regulations

## ORAL PRESENTATION SESSION XIV

## Pediatric surgical training

## Analyzing the correlation between simulator training and clinical outcome of laparoscopic surgery for choledochal cysts

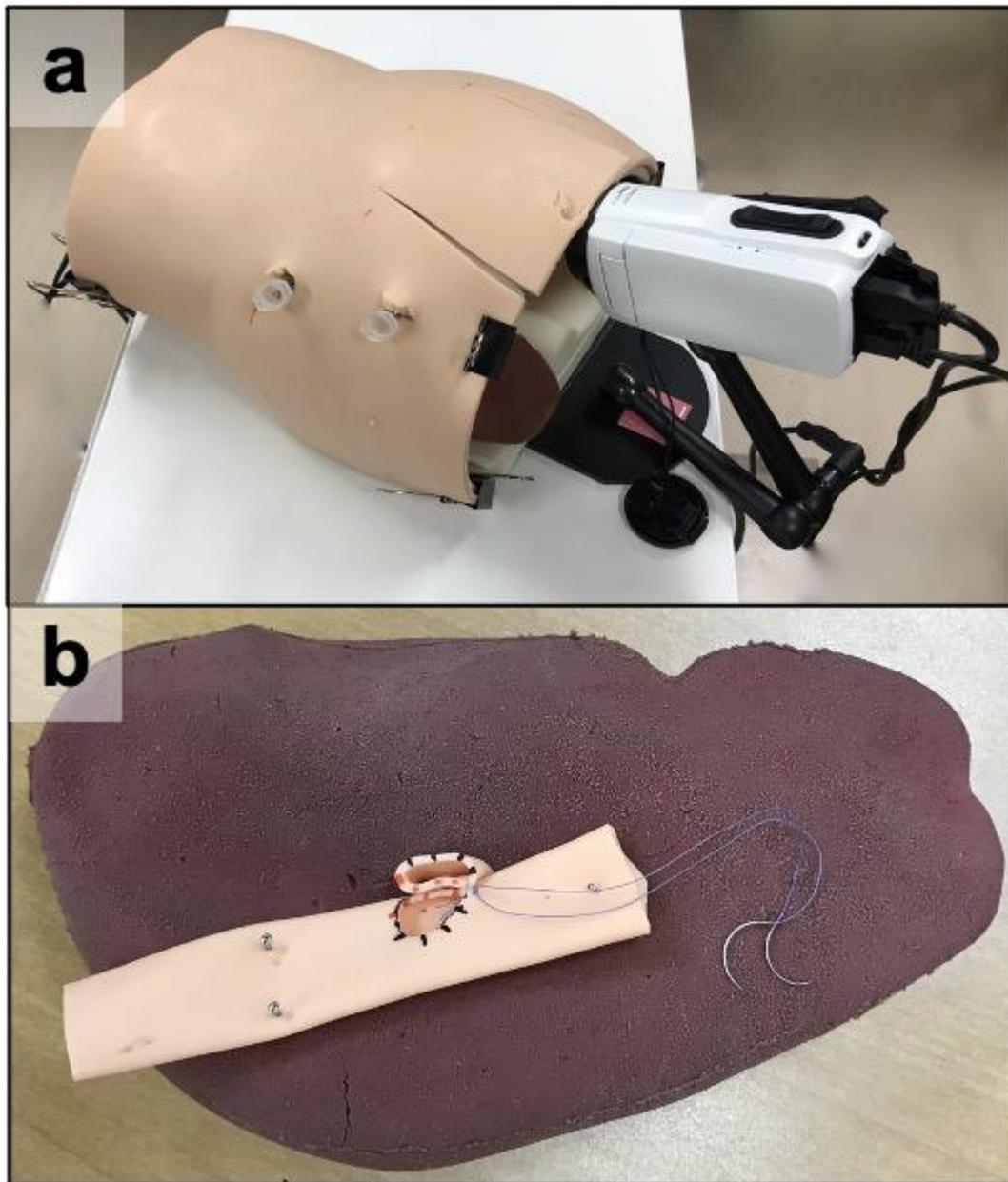
**Koji Yamada** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Mitsuru Muto** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Masakazu Murakami** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Nanako Nishida** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Ayako Nagano** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Masato Kawano** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Shun Onishi** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Koshiro Sugita** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Keisuke Yano** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan), **Satoshi Ieiri** (Pediatric Surgery, Research Field in Medicine and Health Sciences, Medical and Dental Sciences Area, Research and Education Assembly, Kagoshima University, Kagoshima, Japan)

**Aim:** Recently, laparoscopic surgery for choledochal cyst (CC) has become popular in the pediatric field. However, the number of cases performed per institution is limited. Therefore, the development of a simulator reproducing a disease-specific surgical procedure and training regimen using that system is essential. We aimed to clarify the correlation between the efficacy of repeating laparoscopic surgery training using a high-fidelity disease specific simulator and the clinical outcomes of laparoscopic surgery for CC in pediatric patients.

**Methods:** A high-fidelity laparoscopic hepaticojejunostomy simulator was used (Figure). Four pediatric surgeons practiced laparoscopic hepaticojejunostomy 3 times using the simulator. Forceps manipulation during the task was analyzed. The clinical outcomes of 13 CC cases who underwent laparoscopic surgery in our institution were also evaluated based on medical records.

**Results:** The practice results are shown in Table 1. The time required to complete the task was significantly shorter each time (sec, 1<sup>st</sup>: 1062.18±346.79 vs. 3<sup>rd</sup>: 717.44±260.80,  $p=0.039$ ). There were no significant differences in total path length of the right forceps (m, 1<sup>st</sup>: 55.56±23.21 vs. 3<sup>rd</sup>: 28.25±17.01,  $p=0.17$ ), total path length of the left forceps (m, 1<sup>st</sup>: 47.79±20.79 vs. 3<sup>rd</sup>: 31.83±17.62,  $p=0.17$ ), average velocity of the right forceps (mm/s, 1<sup>st</sup>: 58.78±21.29 mm/s vs. 44.98±10.25,  $p=0.47$ ), or average velocity of the left forceps (mm/s, 1<sup>st</sup>: 50.39±19.25 mm/s vs. 52.26±19.59 mm/s,  $p=0.78$ ). Regarding the clinical outcome, all CC patients underwent laparoscopic surgery that was performed by practiced pediatric surgeons with no experience. The operative time (min) was 545.53±91.01 and the blood loss (ml) was 91.77±84.16. There were no cases of open conversion, intraoperative adverse events, or anastomotic leakage.

**Conclusion:** Disease specific simulator training significantly decreased the time required to perform tasks by improving the economy of forceps manipulation. In addition, simulator training may improve the operative safety and quality of hepaticojejunostomy for CC in pediatric patients.



Table

	Number of trials			p value
	1	2	3	
Required time (s)	1062.18 ± 346.79	924.41 ± 398.08	717.44 ± 260.80	0.039*
Rt. total path length (m)	55.56 ± 23.21	42.29 ± 19.61	28.25 ± 17.01	0.17
Lt. total path length (m)	47.79 ± 20.79	40.92 ± 22.06	31.83 ± 17.62	0.17
Rt. average velocity (mm/s)	58.78 ± 21.29	49.45 ± 12.28	44.98 ± 10.25	0.47
Lt. average velocity (mm/s)	50.39 ± 19.25	46.79 ± 11.51	52.26 ± 19.59	0.78

\*Significant difference

## Is laparoscopic pyloromyotomy a safe procedure when performed by paediatric surgical trainees?

**Lee Smith** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **Tasnima Lipa Lucky** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **Hazem Mosa** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **N. El-Diaz** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **Richard England** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **Yew-wei Tan** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **Ravindar Anbarasan** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), **Milind Kulkarni** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK)

**Aim:** we sought to assess the safety and clinical outcomes of laparoscopic pyloromyotomy performed by junior paediatric surgical trainees.

**Materials and methods:** We retrospectively reviewed charts of infants who underwent laparoscopic pyloromyotomy at a tertiary paediatric surgical centre between January 2010 and December 2020. 89 patients were included in the study. The primary operator was either a consultant paediatric surgeon or a trainee assisted by a consultant. Operative time, length of stay, Time to full feeds and postoperative complications were recorded. Mann-Whitney U test was used to compare the 2 groups (consultant vs trainee).

**Results:** Median age was 39 days. Median weight was 3.79kg. Operative time was statistically longer in the trainee group (Trainee 57 minutes vs. Consultant 46 minutes) ( $P=0.046$ ). There was no statistically significant difference in the time to full feeds (Trainee 10.5 hours vs. Consultant 10 hours) ( $P=0.862$ ). (4/89) overall complications were recorded (4%). (2/41) duodenal perforations in the consultant group (4%) and (2/48) inadequate myotomies in the trainee group (4%).

**Conclusion:** Supervised junior trainees can safely perform laparoscopic pyloromyotomy in a longer time with no difference in time to full feeds and similar complication rates to consultants.

## Training in Pediatric Surgery Worldwide

**Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Saioa Santiago-Martínez** (Pediatric Surgery Department. Recerca I3PT. Institut d'Investigació i Innovació Parc Taulí., Parc Taulí University Hospital, Sabadell, Spain), **Ruta V Dagilyte** (Pediatric surgery department, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania), **Sarah Ellul** (Paediatric Surgery Department, Mater Dei Hospital, Swatar, Malta), **Paula J Arribas** (Pediatric Surgery Department, Parc Taulí University Hospital, Sabadell, Spain), **Gabriella Grech** (Department of Paediatric Surgery, Mater Dei Hospital, Msida, Malta), **Judith Lindert** (Great Ormond Street Hospital, London, UK), **Touabt Souhem** (Mother and child hospital Setif Algeria, Setif, Algeria), **Dayang A Abdul Aziz** (Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia), **WomenInPediatricSurgery** ([womeninpediatricsurgery.org](http://womeninpediatricsurgery.org))

**Aim:** Pediatric surgery (PS) is defined differently all over the world. There are no general training requirements, even in regions with the harmonization of training as in the European Union. This study aimed to compare different training requirements around the world.

**Methods:** An online questionnaire was sent to pediatric surgeons of 35 countries worldwide. The questionnaire comprised questions about the duration, type of training and exit examinations.

**Results:** Pediatric surgeons from 19 countries from 5 continents (10 Europe, 4 Asia, 3 Africa, 1 North-America, 1 South-America) answered the questionnaire. Application for training in PS had to be done centrally in 10/19 countries, directly at the hospital in 7/19 countries. The median duration of training in PS was 60 (24-96) months. In one country there was no specialized training in PS. In all but two countries part of the training had to be performed in general surgery (GS), in three countries only fully trained general surgeons could do PS. The median duration of training in general surgery was 12 (2-60) months. In 10/19 countries other subjects like pediatrics or intensive care were required. A surgical catalog to be fulfilled during training existed in 9/19 countries, it did not exist in 6/19 countries. Most countries had written and oral (11/19) or only oral exit (5/19) examinations. Two (2/19) countries did not have any exit examination. The level of examination answered by 17/19 was at the National : University : Regional : Other levels at 8:6:2:1. The European Board of Pediatric Surgery Exam was acknowledged in 4/19 countries, 3 from Europe and one from Africa, in 3/19 countries the acknowledgement was unknown.

**Conclusions:** Many aspects of the pediatric surgery training varies across the globe according to time, prerequisites, content and examinations. Most surgeons undergo general surgery training before pediatric surgery specialization.

## Improving care of children with Gastroschisis in Tanzania: A decentralization of a standardized care model

**Zaitun Mohamed Bokhary** (Surgery, Muhimbili, Dar es salaam, Tanzania), **Godfrey Sama** (Research and Publications, COSECSA, Arusha, Tanzania), **Judith Lindert** (Pediatric surgery, German society of tropical and global surgery, Bonn, Germany), **Antke Zuechner** (Pediatric surgery, German society of tropical and global surgery, Bonn, Germany)

**Aim of the Study:** Gastroschisis is one of the commonest congenital anomalies exhibiting a huge disparity in outcome globally with a mortality of as high as 100% in low- and middle-income countries (LMICs). In Tanzania, an established non-invasive Gastroschisis Care Bundle using the silo bag was implemented at Muhimbili National Hospital (MNH) and proved to be effective in reducing mortality. We aimed to decentralize this care by implementing and evaluating the training of providers on to standardize and improve care of children born with gastroschisis through Tanzania using simulation models.

**Methods:** We used stepped-wedge design to implement a Gastroschisis Care Bundle Training to an interdisciplinary team of paediatric and general surgeons, neonatal nurses, paediatricians, obstetricians and respective residents from major hospitals and from respective nearby referring hospitals. Four master trainers delivered the training which was divided into theory and simulations using standard protocols designed, covering care at referring and tertiary hospitals. Data were collected using a structured questionnaire. Trainees' scores on knowledge and confidence in caring children with gastroschisis were described and compared before and after the training using paired two sample t-test or Mann-Whitney U test to determine the effectiveness of the training.

**Results:** A total of 61 participants who received the training had the mean scores of 9.69 and 11.31 out of 12 before and after training respectively ( $p$ -value  $< 0.001$ ). The confidence of medical practitioners on caring for children with gastroschisis using a 5 point Likert scale showed statistically significant improvement with an average confidence of 3.41 and 4.47 before and after training respectively.

**Conclusion:** The improvement in knowledge and confidence among providers have a potential of improving outcomes of children born with gastroschisis. This project will bring care closer to patients and avoid poor outcomes related to existing challenges in referral systems.

## Career Choice in Pediatric Surgery: Affecting Factors and Status Assessment

**Ayşe Karagoz** (Pediatric Surgery, Istanbul University-Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey), **Gökçe Yavuz** (Pediatric Surgery, Istanbul University-Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey), **Serpil Cakmakaya** (Medical Education, Istanbul University-Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey), **Mehmet Elicevik** (Pediatric Surgery, Istanbul University-Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey), **Sinan Celayir** (Pediatric Surgery, Istanbul University-Cerrahpasa, Cerrahpasa Medical Faculty, Istanbul, Turkey)

**Aim:** In the last decade, surgical specialties have been less preferred by medical school graduates. This study aims to investigate factors affecting career choices of pediatric surgeons, both before and after medical school graduation, while evaluating current challenges.

**Materials and Method:** A Google survey was conducted and sent to pediatric surgeons of different generation (baby boomer, X and Y). It consisted of 42 questions involving multiple choice, check box, Likert scale and open ended. Results were investigated for branch recognition, factors affecting branch and program choice, job satisfaction and gender effect in relation to generational differences.

**Results:** 121 pediatric surgeons (72 male, 49 female) participated. The level of field acknowledgement during medical school was inadequate. Role models were effective in career choice. Main reasons for selecting pediatric surgery were; “aptitude for surgical skills” (60.3 %) and “compatibility with individual traits” (41.3 %) for all generations, “favoring a specific clinic” for baby boomers (53.6 %), “specialty exam score” (50 %) and “program in a favored city” (42.5 %) for millennials. Main reason for choosing a program was “a peaceful environment” (53 %). Average score for Job Satisfaction was 6,8 over 10. Main factors affecting job satisfaction were “hard working conditions”, “low income” and “malpractice”. Social life was poorly affected with an average score of 8,2. The ratio of female pediatric surgeons increased towards millennials, in reverse relation to academic level. Women were more active in pediatric surgery rotations and more determined in their career choices than men ( $p < 0,05$ ).

**Conclusion:** Recognition of pediatric surgery at medical school can be achieved by proper description of the field and ensuring active involvement of students. Although there weren't major differences among generations, it was noted that selection of pediatric surgery was based more on personal preferences rather than career planning. This was more pronounced for millennials. Solutions toward branch problems should be configured towards the newly coming generation Z.

## What Tunisian paediatric resident think about coelioscopy? A developing country Experience

**Yosra Ben Ahmed** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Hajer Drissi** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Intissar Chibani** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Tarek Boukesra** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Faouzi Nouira** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Awatef Charieg** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Said Jlidi** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia)

**Introduction:** The aim of this study is to describe the evolution in the coelioscopic surgical experience of a group of Tunisian pediatric surgery residents in their respective departments.

**Methods:** This is a survey consisting of 18 questions concerning coelioscopic training which was sent by e-mail to all Tunisian pediatric surgery residents in 5 different departments.

**Results:** In all, 27 residents answered the survey. 59,3% of them were in fifth year of residency, 11,1% were in fourth year, 11,1% in third year, and 18,5% in second year.

Eighteen respondents (66,7%) participated at least 1 time in laparoscopic surgery as first surgeons.

Five (18,5%) participated at least 5 times as first surgeons, and none participated at least 10 times as first surgeons.

Most of them participated at least 10 times as first or second assistants.

The most common coelioscopic procedures were appendicitis, cholecystectomy, adnexal torsion, and fowler stephens surgery.

18 respondents (66,6%) at least “agreed” that learning coelioscopy is a long and difficult process.

18 (66,6%) “strongly agreed” that they did not practice enough coelioscopy and most of them think that it is a matter of time and access to equipment.

21 (77,7%) “agreed” or “strongly agreed” that it is fundamental to start by simulation with trainers in order to get to practice.

24 (88,8%) think that coelioscopy in pediatric surgery is not developed enough in Tunisia, in particular neonatal surgery, and the main reason was lack of means.

**Conclusions:** Coelioscopy is available in all Tunisian pediatric surgery institutions, with residents playing an active role in the procedures. However, most of them consider their laparoscopic experience to be poor.

## Remote Learning During COVID-19: Lessons Learnt from a Global Paediatric Surgery Education Initiative

**Elizabeth Vincent** (East Kent Hospital University NHS Foundation Trust, Margate, UK), **Omar Nasher** (The Leeds Teaching Hospitals NHS Trust, Leeds, UK), **Kathryn Ford** (The Royal London Hospital – Barts Health NHS Trust, London, UK), **Tobi Aderotimi** (Alder Hey Children's Hospital, Liverpool, UK), **Bhanumathi Lakshminarayanan** (The Leeds Teaching Hospitals NHS Trust, Leeds, UK), **Precious Mutambanengwe** (Sally Mugabe Central Hospital, Harare, Zimbabwe)

**Aim:** COVID-19 has disrupted education in over 150 countries, the effects felt most in low resource settings due to a pre-existing lack of technology and education infrastructure. This study aimed to assess the feasibility and effectiveness of delivering Paediatric Surgery education to healthcare professionals in low and middle income countries (LMICs) via a virtual initiative.

**Methods:** The initiative was endorsed by the Global Anaesthesia, Surgery and Obstetric Collaboration (GASOC). It was advertised via GASOC, social media and word of mouth. Participants registered online free of charge via Eventbrite. Three lectures and multiple interactive case-based discussions were delivered per session by specialists on common paediatric, neonatal surgical conditions and paediatric radiology themes.

Feedback was collected at the end of each session via an online questionnaire that included 5-point Likert scales and open questions. The results were collated and analysed.

**Results:** Three virtual educational sessions were delivered between May 2021 and July 2021. The overall number of participants attending all sessions was 315 (range 100 – 111). 126 feedback forms were submitted. The responders represented 25 countries (5 continents) of which 21 were LMICs and 4 were high income countries (HICs).

80% were doctors and the remaining were students 13%, nurses 5%, allied healthcare professionals 1% and physician assistants 1%. Among the medical qualified participants, 41% were paediatric surgeons, 9% adult general surgeons, 9% paediatricians and 10% general practitioners.

Feedback results were stratified according to the income status and summarised in table 1.

### Conclusions:

#### Lessons learnt:

1. Virtual education can be delivered on a large scale globally to benefit health care professionals in LMICs
2. Successful remote teaching requires meaningful interaction between the learner and teacher
3. The learning experience could be enhanced by collaborating with the local medical and educational ecosystems

FEEDBACK CORE DOMAINS	LMICs (n=106)	HICs (n=20)
Relevance to own clinical practice	103/106 (97%)	18/20 (90%)
Knowledge acquisition	104/106 (98%)	20/20 (100%)
Future virtual educational sessions	105/106 (99%)	20/20 (100%)
Recommendation to other colleagues	105/106 (99%)	20/20 (100%)
Effectiveness of virtual platform	104/106 (98%)	20/20 (100%)
Time for questions and discussions	96/106 (91%)	20/20 (100%)
Faculty knowledge and level of engagement	104/106 (98%)	19/20 (95%)

## ORAL PRESENTATION SESSION XV

## Miscellaneous / general pediatric surgery I

## Role of multiple biomarkers in predicting the diagnosis and severity of acute appendicitis in children

**Mohit Kakar** (Department of Pediatric Surgery, Riga Stradins University & Children's Clinical University Hospital, Riga, Latvia), **Arnis Engelis** (Department of Pediatric Surgery, Riga Stradins University & Children's Clinical University Hospital, Riga, Latvia), **Juta Kroica** (Department of Biology & Microbiology, Riga Stradins University, Riga, Latvia), **Aigars Reinis** (Department of Biology & Microbiology, Riga Stradins University, Riga, Latvia), **Renars Broks** (Department of Biology & Microbiology, Riga Stradins University, Riga, Latvia), **Lasma Asare** (Department of Statistics, Riga Stradins University, Riga, Latvia), **Timurs Zurmutai** (Department of Postgraduate & Doctoral Studies, Riga Stradins University, Riga, Latvia), **Astra Zviedre** (Department of Pediatric Surgery, Riga Stradins University & Children's Clinical University Hospital, Riga, Latvia), **Amulya Saxena** (Department of Pediatric Surgery, Chelsea Children's Hospital, Chelsea & Westminster NHS Fdn Trust, Imperial College, London, UK), **Aigars Petersons** (Department of Pediatric Surgery, Riga Stradins University & Children's Clinical University Hospital, Riga, Latvia)

**Aim of the study:** Since acute appendicitis (AA) in children can be treated differently according to the severity of the disease, we investigated whether the combined diagnostic model of interleukin-6 (IL-6), leucine-rich alpha-2 glycoprotein 1 (LRG1), neutrophil gelatinase-associated lipocalin (NGAL) could distinguish between acute uncomplicated appendicitis (AuA) and acute complicated appendicitis (AcA) and a control group (Ctr).

**Materials and Methods:** In this prospective single-centered cohort study, IL-6, LRG1, NGAL in serum were assayed preoperatively. Children aged seven to 18 years old were divided into three groups: AcA, AuA, and Ctr. The Ctr included patients without any suspected inflammatory processes in the respiratory, renal, or gastrointestinal tract. The predictive values of biomarkers were evaluated by receiver operating characteristics curve (ROC) and binary logistic regression models. Two different models were analyzed – AA vs Ctr and AcA vs AuA.

**Results:** A total of 153 participants were enrolled, including AcA (n = 52), AuA (n = 45) and Ctr (n = 56). The combined diagnostic model of IL-6, LRG1, NGAL in serum was established by binary logistic regression analysis. The ROC curve showed that combined diagnostic model AA vs Ctr reached a sensitivity of 89.3 %, a specificity of 92.8 % and an area under the curve of 0.96 (95% CI 0.93-0.99, p<0.001). The ROC curve showed that combined diagnostic model AcA vs AuA reached a sensitivity of 67,3 %, a specificity of 77,8 % and an area under the curve of 0.74 (95% CI 0.63-0.84, p<0.001).

**Conclusion:** The combined diagnostic model of IL-6, LRG1, NGAL at the emergency department (ED) may provide a new approach for differentiating between AcA and AuA, and for the diagnoses of AA as opposed to other causes of abdominal pain.

## Negative appendicectomies may not represent a negative clinical outcome in the 21st century

**Mohamed Kamel** (Birmingham Children's Hospital, Birmingham, UK), **Hetal N Patel** (Birmingham Children's Hospital, Birmingham, UK), **Mumin Mohamed** (Birmingham Children's Hospital, Birmingham, UK), **Ingo Jester** (Birmingham Children's Hospital, Birmingham, UK)

**Aim:** Appendicitis remains a clinical diagnosis treated primarily surgically with histopathology being the gold standard for confirmation of appendicitis. International negative appendectomy (NA) rates are reported between 1-40% mainly influenced by the definition used for NA. We aimed to analyse NA in a paediatric cohort.

**Methods:** Prospective sub-group data analysis of patients who underwent appendectomy in a tertiary centre in the UK. The strictest definition of NA, an absence of transmural inflammation in the appendix, was used.

**Results:** From January 2015 to August 2021, 819 patients were treated for acute appendicitis with a NA rate of 10.1% (83 patients). On histology, 54 patients (65%) had a normal appendix, 11 patients (13.3%) had reactive lymphoid hyperplasia, 10 patients (12%) had pinworms, 3 patients (3.6%) had prominent infiltrates of eosinophils in the lamina propria, 2 patients (2.4%) had neoplasm, 1 patient (1.2%) had an isolated faecolith, 1 patient (1.2%) had fibrous obliteration of the lumen, and 1 patient (1.2%) had peri-appendiceal inflammation. A macroscopically normal appendix was removed in 2 patients with recurrent abdominal pain after conservatively managed acute appendicitis and in 12 patients undergoing diagnostic laparoscopy with 5 of those having cardiac or renal co-morbidities including organ transplants.

**Conclusion:** There is no accepted standard for NA with variations in reporting based on macroscopic or histological findings or both. As in our centre, a strict histological definition reveals a presumed higher negative appendectomy rate. Helminths, neoplasms, faecoliths and luminal obstruction represent abnormal pathology often diagnosed with appendectomy. The increase of children with complex cardiac, renal, or neurologic co-morbidities and role of diagnostic laparoscopy necessitates pre-operative discussion with the family about the removal of a macroscopically normal appendix. The isolated use of negative appendectomy rates is a flawed marker for quality and treatment success in management of appendicitis.

## Diagnostic accuracy of Appendicitis Inflammatory Response (AIR) score in acute appendicitis in pediatric population with histopathology as gold standard

**Ayesha Saleem** (Pediatric Surgery, Aga Khan University Hospital, Karachi, Pakistan), **Arif Mateen Khan** (Pediatric Surgery, Aga Khan University Hospital, Karachi, Pakistan), **Shiraz Hashmi** (Aga Khan University Hospital, Karachi, Pakistan), **Mir Ibrahim Sajid** (Aga Khan University Hospital, Karachi, Pakistan)

**Aim:** To assess the diagnostic accuracy of Appendicitis Inflammatory Response (AIR) score in diagnosis of acute appendicitis in pediatric population and compare it with histopathology of the appendix removed by surgery, as a gold standard.

**Methods:** During a 10-month period, a cross sectional validation study was carried at Aga Khan University Hospital. All children (1-15 years of age) who were admitted with suspected acute appendicitis were enrolled in the study. However, patients suffering from generalized peritonitis and a palpable lump were excluded.

**Results:** Mean age was  $9.70 \pm 3.31$  years. Out of 80 patients, 50 (62%) were male and 30 (38%) were females with a ratio of 1.7:1. Mean duration of symptoms was  $53.02 \pm 30.6$  hours. Mean weight was  $30.98 \pm 14.4$ kg. Appendicitis inflammatory response (AIR) supported the diagnosis of acute appendicitis in 63 (78.8%) patients and no acute appendicitis in 17 (21.2%) patients. Histopathology findings confirmed acute appendicitis in 75 (93.7%) cases where as 05 (6.3%) patients revealed no acute appendicitis. In AIR positive patients, 62 (True Positive) had acute appendicitis and 01 (False Positive) had no acute appendicitis on histopathology. Among 17, AIR negative patients, 13 (False Negative) had acute appendicitis on histopathology whereas 04 (True Negative) had no acute appendicitis on histopathology. Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of appendicitis inflammatory response in diagnosing acute appendicitis in children taking histopathology as gold standard was 82.7 %, 80 %, 98.4 %, 23.5 % and 82.5 % respectively.

**Conclusions:** This study concluded that diagnostic accuracy of appendicitis inflammatory response (AIR) in diagnosing acute appendicitis is high and has not only dramatically improved our ability of accurate diagnosis of acute appendicitis clinically but also improved patient care by timely and proper treatment and avoiding negative appendectomies.

## Classification systems of acute appendicitis as indicators for pediatric surgical consultation of children with acute abdominal pain

**Maria Florou** (Second Pediatric Surgery Department, Papageorgiou General Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Christos Kaselas** (Second Pediatric Surgery Department, Papageorgiou General Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Charikleia Demiri** (Second Pediatric Surgery Department, Papageorgiou General Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Kleanthis Anastasiadis** (Second Pediatric Surgery Department, Papageorgiou General Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Maria Tsopozidi** (Second Pediatric Surgery Department, Papageorgiou General Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioannis Spyridakis** (Second Pediatric Surgery Department, Papageorgiou General Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece)

**Aim:** To examine if classification systems for acute appendicitis (AA) could be applied in the emergency department (ED) as indicators for surgical consultation, in order to reduce unnecessary referrals and admissions in the pediatric surgery ED.

**Methods:** Children referred with abdominal pain suggestive of AA during 2017-2019 were included. Medical and demographic data, management and histopathology – if operated were recorded. The Alvarado score (ALS) and the Pediatric Appendicitis Score (PAS) were applied. The decision for hospitalization and surgical or conservative treatment were independent of the scores. We used a cut-off point of 7 and divided the patients into two groups: the group with score  $\geq 7$  was considered the positive ALS and/or positive PAS group, while the group with  $< 7$  points was considered negative accordingly. The joint probabilities were calculated. The diagnosis of appendicitis was confirmed by histopathology postoperatively.

**Results:** The records of 307 children with abdominal pain suggestive of AA, were included. The mean age was 9.6 years (range 1-15 years), males were 161 and females 146. The management was conservative for 178 (58%) children, while 129 (42%) of them underwent surgery. Joint probabilities were as follow:

Scores	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive value
ALS	84%	92%	83%	93%
PAS	85%	92%	84%	93%

**Conclusion:** The ALS and PAS provided acceptable PPV and sufficient NPV. We recommend their use in the ED, as an assistive tool to reduce unnecessary pediatric surgery referrals, consultations, admissions and treatment costs.

## The true negative appendicectomy rate

***Derrick R Tsang*** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), ***Hazem Mosa*** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK), ***Samantha Low*** (Radiology, Jenny Lind Children's Hospital, Norwich, UK), ***Richard England*** (Paediatric Surgery, Jenny Lind Children's Hospital, Norwich, UK)

**Aim:** Negative appendicectomy rate (NAR) is used as a metric for assessing competence in paediatric surgery. We sought to correlate cases of negative appendicectomy with clinical and histological features.

**Method:** Senior author's prospectively maintained database of consecutive appendicectomy histology reports was analysed (June 2013-Feb 2022). Appendicitis was defined as the presence of transmural acute inflammation on histopathological examination. Database was cross-referenced with a retrospective case-note review. Patient demographics and clinical outcomes were collected. Histological, ultrasonographic and clinical features of the non-inflamed appendices were scrutinised to determine True and False Negative Appendicectomy Rates (TNAR, FNAR). TNAR was defined as the finding of normal histology and / or non-resolution of pain. FNAR was defined as the finding of a histopathological abnormality and resolution of clinical symptoms following surgery. Illustrative examples will be presented.

**Results:** 123 appendicectomies were performed with a mean age of 9 years (1-16) and mean follow up of 4 years. 75.6% (93/123) were inflamed or perforated. 6.5% (8/123) were incidental including 4 cases of Amyand's hernia. 3.2% (4/123) were interval appendicectomies performed after primary antibiotic treatment.

The remaining 14.6% (18/123) of non-inflamed appendicectomy were recorded with a mean age of 11 years. 9.8% (12/123) had a histopathological abnormality and resolution of their clinical symptoms (FNAR). Pathological abnormalities identified included: faecolith (n=7), lymphoid hyperplasia (n=4), enterobiasis (n=3), intra luminal foreign body (n=1) and fibrous obliteration (n=1). 4.8% (6/123) had no histological abnormality and/or clinical signs of abdominal pain did not resolve (TNAR).

**Conclusions:** Review of clinical symptoms and histological assessment is key to define NAR. The presented study questions the use of NAR as a quality metric. National benchmarking exercises of paediatric surgery should use TNAR with access to patient level clinical and histological data.

## Analysis of a guideline for fast track discharge in complicated acute appendicitis in a tertiary-level hospital

***Cristina Perez Costoya*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Angela Gomez Farpon*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Cristina Granell Suarez*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Eva Maria Enriquez Zarabozo*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Nataliz Vega Mata*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Sonia Amat Valero*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Laura Johanna Sanchez Pulido*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Adrian Parada Barcia*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Clara Calvo Penin*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), ***Victor Alvarez Muñoz*** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain)

**Aim:** This study intends to analyze the impact, in terms of postoperative infectious complications, of a protocol to lead the treatment and fast track discharge of complicated acute appendicitis in a tertiary level hospital.

**Methods:** After a systematic review of the literature, a clinical guideline for the postoperative treatment of acute appendicitis was designed. For complicated appendicitis (gangrenous, perforated, appendiceal mass or peritonitis) the treatment was intravenous ceftriaxone and metronidazole for 48 hours. After this time, they could be discharged under the following criteria:  $<12.000$  leucocytes,  $<435.000$  platelets, afebrile, adequate oral tolerance and oral pain control. A retrospective study was performed comparing the incidence of postoperative intraabdominal abscesses (IAA) and surgical site infection (SSI) between patients after the protocol was implemented (Group A) and a historical cohort (Group B), for whom the treatment was 5 days of intravenous gentamicin and metronidazole. Patients with normal appendix on the histological exam were excluded.

**Results:** 210 patients under 14 years-old were included in Group A, with a mean age of 9.5 years-old; and 109 patients in Group B, with a mean age of 9.4 years-old. In Group A, 62.7% of the patients with complicated acute appendicitis accomplished the fast track criteria. The global mean hospital stay was 5.6 days in Group A and 6 days in Group B. For patients that fulfilled fast track criteria, the length of stay was 2.45 days. The percentage of IAA was 14.3% in Group A, among which 13.3% were fast track patients; versus 13.8% in Group B ( $p=0.83$ ). The incidence of SSI was 1.9% in Group A and 8.25% in Group B, being the difference statistically significant ( $p=0.008$ ).

**Conclusion:** Fast track discharge in acute complicated appendicitis is possible and secure under strict criteria. It reduces the hospital stay without increasing the rates of postoperative infectious complications.

## Ultrastructural changes in the terminal ileum after massive small bowel resection: an experimental study in rats

**Ahmet Biyikli** (Department of Pediatric Surgery, Akdeniz University School of Medicine, Antalya, Turkey), **Gungor Karaguzel** (Department of Pediatric Surgery, Akdeniz University School of Medicine, Antalya, Turkey), **Mehmet Dogan** (Department of Histology, Akdeniz University School of Medicine, Antalya, Turkey), **Ozlem Ozbey Unlu** (Department of Histology, Akdeniz University School of Medicine, Antalya, Turkey), **Gokhan Akkoyunlu** (Department of Histology, Akdeniz University School of Medicine, Antalya, Turkey), **Mustafa Melikoglu** (Department of Pediatric Surgery, Akdeniz University School of Medicine, Antalya, Turkey)

**Objective:** After massive small bowel resection (MSBR), adaptive ultrastructural changes related to absorptive capacity and cellular energy metabolism are unclear. To evaluate microvilli and mitochondria-specific ultrastructural changes in terminal ileum enterocytes after massive small bowel resection (MSBR) in rats.

**Materials and Methods:** 60 juvenile rats were included in the study. Group 1 (control, n=30) and Group 2 (MSBR, n=30) rats underwent sham surgery and MSBR, respectively. Re-laparotomies were performed on the 3rd, 9th, and 15th postoperative days to obtain tissue samples from terminal ileum. After light microscopic examination, the samples were evaluated both qualitatively (changes in cytosol, cytoplasmic organelles and nuclei) and quantitatively (microvilli height, microvilli width, mitochondrial area, and mitochondrial circumference) by transmission electron microscopy.

**Results:** The only significant finding in the light microscopic evaluation was the increase in crypt depth on the 9th and 15th days in group 2 ( $p < 0.001$ ). At the initial period (on the 3rd and 9th days) following MSBR, an electron-lucent layer and empty vesicles were observed due to degeneration in cytoplasmic organelles. The endoplasmic reticulum cisterns were dilated, and their continuity could not be distinguished. However, the cytoplasmic structures of group 2 gained similar characteristics with group 1 on the 15th day. In addition, the increase in mitochondrial cristae were remarkable. The nucleus preserved its euchromatin structure in all groups. No statistically significant difference was determined in the measurements of microvilli height, microvilli width, mitochondrial area, and mitochondrial circumference in quantitative evaluations ( $p > 0.05$ ).

**Conclusion:** Our electron microscopy findings supported that the qualitative ultrastructural degenerative changes detected in the cytoplasm on the 3rd day after MSBR were normalized on the 15th day. Absence of significant changes in the quantitative parameters related to adaptive absorptive capacity and cellular energy metabolism support that there could be other parameters which were not investigated in the present study.

## In-bed air-enema reduction under ultrasound control for intussusception in children

**Tran Ngoc Son** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Ha Van Quy** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Pham Duc Hiep** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** To present our procedure and results of in-bed air-enema reduction (AER) under ultrasound control for intussusception in children.

**Methods:** We reviewed medical records of all children with intussusception (IS) treated by AER at our center from August 2018 to January 2022. All the IS patients without contraindications for AER (such as peritonitis, shock, or pathologic lead point) underwent AER under ultrasound control in a procedural bed in the surgical ward. AER was performed by the pediatric surgeon and ultrasound control was performed by the radiologist after each air enema episode. The results of AER were assessed by clinical signs and ultrasound.

**Results:** 806 patients, 531 boys (65.9%) and 275 girls (34.1%), were enrolled with a mean age of 23.0 months (range: 5-months to 7 years). 91.1% of patients had primary IS, 8.9% – had recurrent IS. The median time from onset of symptoms to AER was 13.4 hours (range: 3-50 hours). 98.4% of patients had abdominal pain, 68.9% – vomiting, 6.1% – bloody stool, 27% – palpable mass. 100% of patients had typical ultrasound images of intussusception. AER was performed successfully in 99.1% of the patients without mortality. In 52 patients (6.5%) AER more than one time was needed: 34 patients (4.2%) – 2 times, 11 patients (1.4%) – 3 times. 7 patients (0.9%) underwent surgery after 3 times failed AER: manual reduction of IS was carried out successfully in 4 patients (0.5%) and intestinal resection was required in 3 patients (0.4%). The median hospital stay for the patients after successful AER was 1 day.

**Conclusions:** Our procedure of In-bed AER under ultrasound control for intussusception in children is safe and effective. This approach can be a good alternative to AER under fluoroscopic guidance since it can avoid radiation to the patient and medical personnel.

## Efficacy of Minimally Invasive Crystallized Phenol Application in the Treatment of Pilonidal Sinus in Children

**Sabriye Dayi** (Pediatric Surgery, University of Health Sciences, Bursa, Turkey), **Serpil Sancar** (Pediatric Surgery, University of Health Sciences, Bursa, Turkey), **Meryem Anayurt** (Pediatric Surgery, University of Health Sciences, Bursa, Turkey)

**Aim:** Pilonidal sinus disease occurs in children to a significant extent, especially during adolescence. The pilonidal sinus may present with infection, abscess, discharge, pain. The treatment of pilonidal disease is generally surgical excision or flap reconstruction. These patients may continue to have complicated pilonidal sinus diseases. We found very limited information about local phenol application in children in the literature. Our study aimed to present the results of the local crystallized phenol application in children that we have modified.

**Methods:** The patients were admitted to the hospital as an outpatient. After applying local anesthesia, an incision was made to pass through the pilonidal sinus openings. Antibiotic ointment was applied to the skin to prevent phenol-related skin irritation. The hairs in the sinus have been removed. Then crystallized phenol was applied to all pilonidal tracts. The incision was not sutured. The patients were given daily dressings and baths and discharged to come to their regular checkups.

**Results:** Crystallized phenol was applied to 50 patients with pilonidal sinus disease (18 girls; 32 boys, median age:15). Most of the patients had two sinus openings. There was no bleeding, no pain in the follow-up after crystallized phenol application. Two patients developed wound infections. These two patients, who were found not to have regular daily dressings, recovered without problems after regular dressing. Recurrence was not seen in follow-ups (3 months-2 years).

**Conclusions:** Surgical applications such as excision and flap reconstruction in pilonidal sinus disease may include many negative aspects such as long-term hospitalization, recurrence, cost. Crystallized phenol seems to be applicable in pilonidal sinus disease in children because it can be applied as an outpatient and does not contain the above disadvantages. The modified shape in which we incised all sinus tracts and applied crystallized phenol to all sinus tracts may have also reduced the recurrence.

## Single incision laparoscopic percutaneous extraperitoneal closure of processus vaginalis without hydrocelectomy in management of primary hydrocele in children

**Tran Ngoc Son** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Hoang Van Bao** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Nguyen Thi Hong Van** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** To present our surgical technique and the outcome of single incision laparoscopic percutaneous extraperitoneal closure (SILPEC) of patent processus vaginalis (PPV) without hydrocelectomy in management of primary hydrocele in children.

**Methods:** Prospective study was conducted on children with primary hydrocele treated at our center between June 2016 and December 2021. For our SILPEC procedure, 2 trocars (a 6 mm- one for the camera and a 4 mm one for a grasper) were placed at the same 10mm single umbilical incision. Under the laparoscopic vision and with the assistance of the grasper, PPV was closed extraperitoneally at the internal inguinal ring with 2.0 suture using a percutaneous needle with a wire lasso. No hydrocelectomy or fenestration of hydrocele was performed. The hydrocele fluid was pushed back to the peritoneal cavity via the internal ring before the closure of the PPV by external manual pressing, and when that was not possible – by percutaneous puncture and aspiration.

**Results:** 553 patients were enrolled, with a median age of 34 months (ranged 22 months to 13 years). 59.9% of hydroceles were on the right side, 35.4% – on the left side, and 4.7% – bilateral. A PPV on the side of hydrocele was present in all the cases. The median operative time was 17 minutes and 23 minutes for unilateral and bilateral procedures. In 28.7% of cases, percutaneous aspiration of the fluid was needed. There were no intraoperative complications, no conversion. At follow-up 4-68 months, recurrent hydrocele occurred in 0.4%. There was no case of testicular atrophy or iatrogenic cryptorchidism. Postoperative cosmesis was excellent as all patients were virtually scarless.

**Conclusions:** Ipsilateral PPV was present in all cases with primary hydrocele in our series. Our technique of SILPEC of PPV without hydrocelectomy is feasible, safe, with excellent postoperative cosmesis in the management of hydrocele in children.

## The decline of pyloric stenosis in England

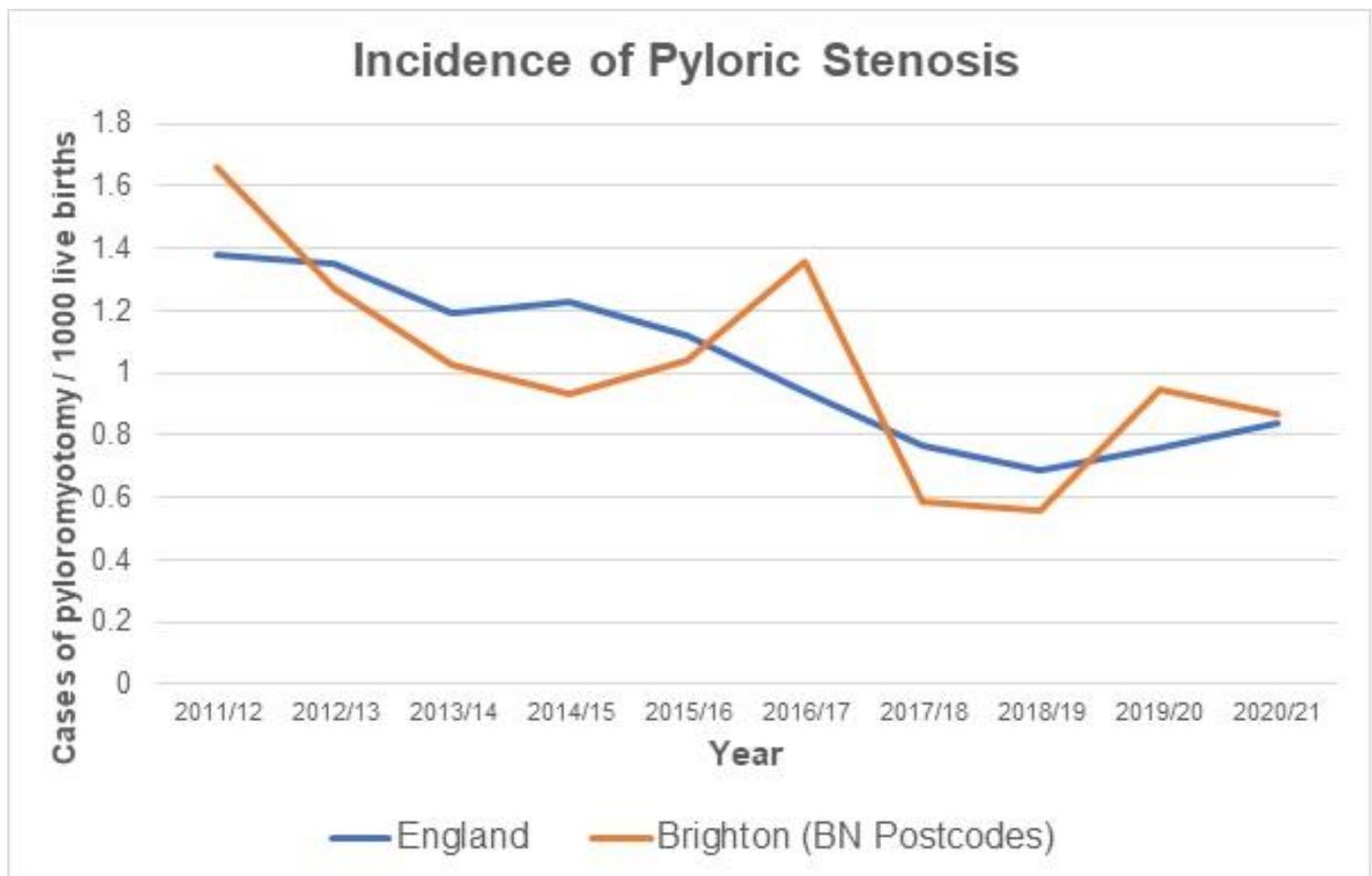
**Michael Edwards** (Royal Alexandra Children's Hospital, Brighton, UK), **Alyss V Robinson** (Royal Alexandra Children's Hospital, Brighton, UK), **Alexandra Robotin-Pal** (Royal Alexandra Children's Hospital, Brighton, UK), **Costa Healy** (Royal Alexandra Children's Hospital, Brighton, UK), **James Dale** (Royal Alexandra Children's Hospital, Brighton, UK)

**Aim:** We suspected the incidence of congenital hypertrophic pyloric stenosis to be decreasing. We sought to verify this assumption, initially at our own institution and subsequently determine if this represented a wider national trend.

**Methods:** We first investigated local theatres databases to determine case numbers of pyloromyotomy over the past decade. We discovered a marked reduction of cases and postulated whether this might reflect referral patterns, population trends or birth rate. We compared our initial data set with local birth rates from the Office of National Statistics (ONS). We also correlated our case numbers and incidence rates with national data obtained from Hospital Episode Statistics databases (NHS Digital) and ONS.

**Results:** Cases of pyloromyotomy have steadily declined at our unit from 36 cases in 2010/11 to 14 cases in 2021/22. This trend exists nationally with 949 cases in 2011, compared to 489 in 2021. We find that cases have declined from a rate of 1.66 per 1000 live births 2011/12, to 0.87 in 2020/21 in our area. The national rate fell from 1.38 to 0.84 per 1000 over the same period. (Fig. 1).

**Conclusions:** The cases of congenital hypertrophic pyloric stenosis requiring pyloromyotomy have almost halved in England over the past decade. Similar trends have been observed in other Western populations. Establishing the root cause of this change may lead to potential prevention strategies.



## ORAL PRESENTATION SESSION XVI

### Miscellaneous / general pediatric surgery II

#### Acute Pancreatitis in Childhood – A Comparative international Study and a Tale of Two Cities

**Ampaipan Boonthai** (Pediatric Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand), **Adeline Salim** (Paediatric Surgery, Alder Hey Children's Hospital NHS Foundation Trust, Liverpool, UK), **Pornthep Tanpowpong** (Paediatric Gastroenterology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand), **Paul Losty** (Institute of Life Course and Medical Sciences, University of Liverpool, Liverpool, UK)

**Aim:** To compare pertinent factor(s) contributing to aetiology, management and clinical outcome(s) of paediatric patients acquiring acute pancreatitis at two international pediatric surgery centres located in the UK and SE Asia

**Methods:** All patients (<18 years) with AP (ICD 10 coding) during 2006-2016 were studied.

**Results:** 121 patients included n= 79 (35%) in SE Asia vs n=42 (65%) in the UK centre with equivalent mean age(s) at 1<sup>st</sup> diagnosis – 10.4± 4.5 and 11.7 ±6 yrs ( $p=0.12$ ). Major aetiology(s) contributing to AP in SE Asia were medications (39%) followed by choledochal cyst disorders (8.9%). In the UK gall stone disease (21%), and medications (17%) were the identifiable risk factors ( $p < 0.01$ ). Pancreatitis was documented by cross sectional imaging in 68% SE Asia index cases and 63% UK patients ( $p = 0.47$ ) Ultrasonography was the 1<sup>st</sup> choice study modality more frequently deployed in the UK (74%) vs (49.1%) patients in SE Asia ( $p < 0.01$ ). Children treated at both international surgical centres had mild grade pancreatitis (95% SE Asia vs 91% UK ( $p = 0.28$ )). Thirteen percent (13%) of SE Asia index cases and 19% UK children developed severe grade pancreatitis related complications ( $p=0.37$ ). Overall mortality (%) in the study was higher in SE Asia patients 28% vs 10% UK ( $p=0.02$ ).

**Conclusions:** Ethnicity is shown to impact the aetiology of acute pediatric pancreatitis in the UK and SE Asia. Timely diagnosis and protocol driven health care pathways are defined by local patient related factor(s). The higher mortality (%) recorded in SE Asia vs UK in this comparative international study – 'A Tale Of Two Cities' – was linked ultimately to the prognosis of the underlying patients' medical health status rather than severity of pancreatitis.

## Pancreas damage associated with SARS-CoV-2 infection

**Petra Zahradníková** (Department of Paediatric Surgery, Medical Faculty Comenius University, National Institute of Children's Diseases, Bratislava, Slovakia, Bratislava, Slovakia, Bratislava, Slovakia), **Rene Jáger** (Department of Paediatric Surgery, Medical Faculty Comenius University, National Institute of Children's Diseases, Bratislava, Slovakia, Bratislava, Slovakia, Bratislava, Slovakia), **Dominika Barloková** (Department of Paediatric Surgery, Medical Faculty Comenius University, National Institute of Children's Diseases, Bratislava, Slovakia, Bratislava, Slovakia, Bratislava, Slovakia), **Lenka Fedorová** (Department of Paediatric Surgery, Medical Faculty Comenius University, National Institute of Children's Diseases, Bratislava, Slovakia, Bratislava, Slovakia, Bratislava, Slovakia), **Igor Béder** (Department of Paediatric Surgery, Medical Faculty Comenius University, National Institute of Children's Diseases, Bratislava, Slovakia, Bratislava, Slovakia, Bratislava, Slovakia), **Jozef Babala** (Department of Paediatric Surgery, Medical Faculty Comenius University, National Institute of Children's Diseases, Bratislava, Slovakia, Bratislava, Slovakia, Bratislava, Slovakia)

**Aim:** Various manifestations of coronavirus (SARS-CoV-2) have been reported since the pandemic began. Some articles have been reported acute pancreatitis in adult patients due to COVID-19 infection. To our knowledge this is the first report of acute necrotising pancreatitis in children associated with to SARS-CoV-2 infection.

**Case description:** A 7-year-old girl with congenital immunodeficiency was referred to the Paediatric Intensive Care Unit (PICU) with acute respiratory distress syndrome. She required mechanical ventilation (MV) due to pulmonary involvement of COVID-19 (chest CT with lower lung ground glass opacities) (Fig. 1c). SARS-CoV-2 infection was laboratory confirmed. Following a 49-day stay in the PICU, due to the clinical and radiological signs of acute abdomen and to the rapid deterioration in the clinical status, an indication was made to proceed with urgent surgery. Intra-operatively an adhesiolysis with blunt dissection of the of gastrocolic ligament was performed. Followed by debridement of the necrotic pancreas (more than 1/2 of the pancreas damaged) (Fig. 1a, b), continuous lavage and drainage placement. During the post-operative period, she required aggressive MV and insulin therapy for persistent hyperglycaemia. The CT scans showed necrosis of the pancreas (Fig. 1d) and elevations of amylase and lipase in the peritoneal lavage. Despite active intensive therapy, the patient's condition did not improve and she died 74 days after laparotomy as a result of multi-organ failure.

**Conclusions:** Acute pancreatitis should be suspected among patient infected with COVID-19 who shows signs of acute abdomen with no improvement with conservative treatment. The mechanism for the development of acute necrotising pancreatitis in the COVID-19 positive patients is unclear, perhaps due to a direct cytopathic effect from the COVID-19 virus, or due to the ACE2 expression in pancreas.

## Microscopic Surgical Repair of Cleft Palate with Intravelar Veloplasty: A Clinical and Radiological Study

**Ahmed Sh. Abdou** (Maxillofacial and Plastic Surgery Department, Faculty of Dentistry, Alexandria University, Alexandria, Egypt)

**Aim:** To evaluate the microscopic surgical repair of CP with IVVP on a clinical and radiological basis.

**Method:** A prospective quasi- experimental study design on 35 patients with primary or secondary cleft palate managed with intravelar veloplasty. Among these patients, 21 patients underwent primary intravelar veloplasty repair and 14 patients underwent palatal re-repair. Postoperative outcomes were assessed clinically as occurrence of complications, while the radiological measurements were assessed using lateral video fluoroscopy and nasopharyngoscopy.

**Results:** The study conducted on 35 patients; 54.3% females with a median age of 4.33. Sixty percent of patients had incomplete cleft palate prior to surgery and postoperative complications were seen among 14.3% of patients in the form of fistula and infection (11.4%) and hemorrhage (2.9%). The lateral video fluoroscopy and nasopharyngoscopy showed a significant difference after surgery in all parameters. Fresh and redo cases showed no significant difference in the parameters of nasopharyngoscopy except for closure ratio change and lateral video fluoroscopy except for resting and contracting gaps changes.

**Conclusion:** Intervelar veloplasty technique is a very useful procedure in repairing primary and re-repaired cleft palate with minimal complications. It had a significant effect on the morphological details of the palate and velopharyngeal valve.

## Cervical Oesophagostomy: a 20 year single centre paediatric experience

**Hetal N Patel** (Birmingham Children's Hospital, Birmingham, UK), **Snigdha Reddy** (Birmingham Children's Hospital, Birmingham, UK), **Azam Baig** (Birmingham Children's Hospital, Birmingham, UK), **Giampiero Soccorso** (Birmingham Children's Hospital, Birmingham, UK), **Ingo Jester** (Birmingham Children's Hospital, Birmingham, UK), **Michael Singh** (Birmingham Children's Hospital, Birmingham, UK), **Dakshesh Parikh** (Birmingham Children's Hospital, Birmingham, UK), **Anthony Lander** (Birmingham Children's Hospital, Birmingham, UK), **Max Pacht** (Birmingham Children's Hospital, Birmingham, UK)

**Aim:** Cervical oesophagostomy is a rare procedure used as an adjunct when primary oesophageal repair is not possible. Depending on the long-term management (preserving the native oesophagus or replacing it), a left or right sided fistula may be performed dependant on the position of the oesophagus and the laterality of the aorta. We describe our single centre tertiary paediatric surgery experience of the indications and complications of cervical oesophagostomy.

**Methods:** A 20 year retrospective analysis was performed.

**Results:** Between 2002-2022, a cervical oesophagostomy was fashioned 22 times on 19 patients with an age range of 10 days-4 years (12 on the right, 5 on the left, 5 unknown). The underlying diagnosis was oesophageal atresia (17 patients) or button battery ingestion (2 patients). The time to closure was 669 days (range 272-1813) with 2 having intact native oesophagus, 12 having an interposition and 5 patients with current oesophagostomy. Indications for creation included oesophageal failure (2 patients), inadequate length distal oesophagus for anastomosis (3 patients), failure of tension sutures (2 patients), aorto-enteric fistulas (3 patients), or recurrent PICU admission with chest infections and suspected oesophageal failure (3 patients). Extra-thoracic lengthening was performed in 6 of 19 patients with 1-3 serial lengthening. Nine oesophagostomies required revision, with other complications including unilateral recurrent laryngeal neuroparesis in 1 patient and stenosis (10 oesophagostomies received 106 dilatations with a range of 1-76 and 2 patients were on regular home dilatation). Antegrade balloon dilatation using facemask delivered anaesthesia was increasingly performed towards the end of the series (47 procedures in 4 patients).

**Conclusion:** Our single centre tertiary experience of cervical oesophagostomy describes a cohort of patients with oesophageal atresia and caustic oesophageal injury. The most common complication is oesophagostomy stenosis requiring either multiple dilatations or revision, with recurrent laryngeal nerve injury also possible.

## Comparative study of analgesic Effect of Midazolam and Fentanyl with bupivacaine in epidural analgesia for infra umbilical abdominal surgery in children

**Sarita Singh** (Anesthesiology, King George's Medical University Lucknow Utter Pradesh, Lucknow, India), **Vinita Singh** (Anesthesiology, King George's Medical University Lucknow Utter Pradesh, Lucknow, India), **Gyan Prakash Singh** (Anaesthesiology, King George's Medical University Lucknow Utter Pradesh, Lucknow, India), **Jiledar Rawat** (Pediatric Surgery, King George's Medical University Lucknow Utter Pradesh, Lucknow, India), **Prem Raj Singh** (Anesthesiology, King George's Medical University Lucknow Utter Pradesh, Lucknow, India)

**Aim:** To Study the analgesic effect of midazolam and fentanyl with intrathecal bupivacaine to reduce the occurrence of pain in infra umbilical surgery in children under general Anaesthesia.

**Methods:** All children (4-10 years) were randomized into two groups each of 25 patients with consent from parents. Group A- received 0.3 mg /kg of 0.5% Bupivacaine +0.5 mg of Midazolam and Group B -0.3- mg/kg of 0.5% bupivacaine + 0.2microgm/kg of fentanyl. Assessments included vitals, time to first analgesic request, postoperative pain score, total amount of rescue analgesics, motor and sensory blocks, sedation and side effects.

**Results:** The mean time to the first request for rescue analgesia was longer in group A (280 ±11.4 min) than in group B (210.9±20.2min). The post operative pain relief, low pain score and no adverse effects. The total analgesic consumption was higher in fentanyl groups (P= 0.021).

**Conclusions:** In our study, intrathecal midazolam (0.5mg) was better to intrathecal fentanyl (0.2µg.kg)in term of increasing the duration of postoperative pain relief with lower postoperative pain scores and less side effects.

## Intra-abdominal Mesenteric Lymphangioma – Case report

**Ahmed Mohamed** (Paediatric Surgery, Royal Belfast for Sick Children, Belfast, UK), **Lucy Vernon** (Paediatric Surgery, Royal Belfast for Sick Children, Belfast, UK), **Suzanne Lawther** (Paediatric Surgery, Royal Belfast for Sick Children, Belfast, UK)

**Aim:** Lymphangiomas are benign lesions characterized by proliferation of lymphatic vessels. 90% are diagnosed before the age of 2. They are frequently found in the neck (75%) and axilla (15%), while 10% are found in the mediastinum and abdomen.

Abdominal cystic lymphangioma (ACL) may occur anywhere along the course of the gastrointestinal tract and viscera. Approximately 80% of ACL occur in the small bowel mesentery, while retroperitoneal locations are less common.

Clinical presentation can vary from vague symptoms including vomiting or abdominal pain to volvulus and acute abdomen. Paediatric surgeons should consider ACL in their differential diagnosis of abdominal masses in children.

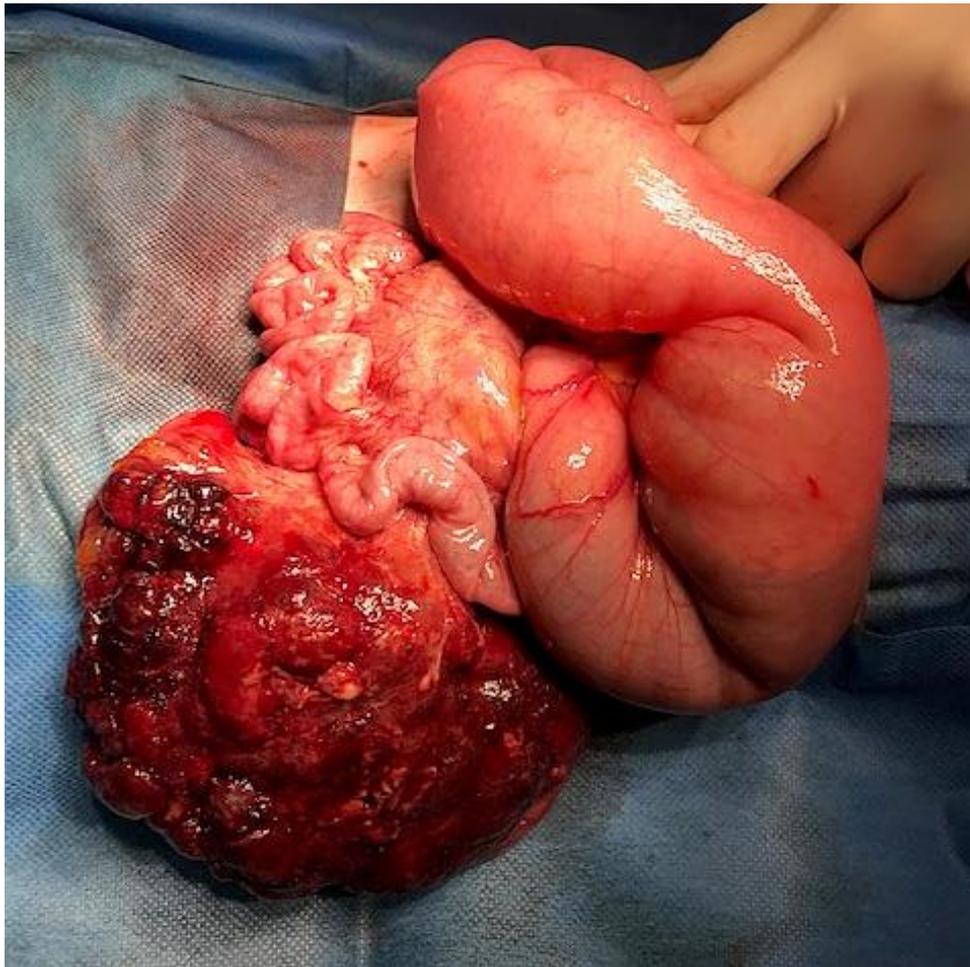
**Case Description:** A 2-year-old girl presented with a new abdominal mass associated with intermittent vomiting and weight loss. On examination, she had a distended abdomen with an obvious left iliac mass. Routine bloods and tumour markers were within normal ranges. Ultrasound abdomen revealed a large left sided pelvic mass with solid and cystic components. MRI pelvis suspected the mass to be in continuity with small bowel mesentery.

After Oncology MDT discussion, ultrasound guided biopsy was performed. However, following the biopsy, she developed small bowel obstruction necessitating an urgent operation.

At laparotomy, an 11cm mass was found arising from the small bowel mesentery causing obstruction (Figure 1). Smaller mesenteric lymphangiomas were seen throughout the small bowel. The mass was excised and resection-anastomosis was performed. She recovered well post-operatively and was discharged after tolerating feeds.

Histology of the mass was consistent with small bowel mesenteric lymphangioma with the cystic spaces predominantly filled with lymph and blood.

**Conclusion:** Although rare, mesenteric lymphangioma should be considered as a differential for abdominal masses in children. Surgical excision is the treatment of choice and USS surveillance is important to detect recurrence.



## The survival time of the VP-Shunt in children with hydrocephalus is dependent on the type of valve implanted

***Danielle S Wendling-Keim*** (Pediatric Surgery, Dr. von Hauner Children's Hospital, LMU, Munich, Germany), ***Elena Kren*** (Dr. von Haunersches Kinderspital, LMU, Munich, Germany), ***Oliver Muensterer*** (Pediatric Surgery, Dr. von Haunersches Kinderspital, LMU, Munich, Germany), ***Markus Lehner*** (Pediatric Surgery, Pediatric Neurosurgery, Lucerne Cantonal Spital, Children's Hospital, Lucerne, Switzerland)

**Aim:** Despite constantly improving developments in ventriculoperitoneal shunt systems, most patients with hydrocephalus require revision or replacement at some point of time. Therefore, this study aimed to analyse parameters that are associated with shunt dysfunction.

**Methods:** The study was carried out retrospectively. We included patients aged 0-17 who were treated at our institution. Demographic data, the aetiology of the hydrocephalus, the type of valve implanted, the reason for any revision procedures, any complications and the survival time of the ventriculo-peritoneal shunt were detected. Statistical analysis was carried out using SPSS. The significance level was set at  $p$  values  $\leq 0.05$ .

**Results:** We included 43 male and 38 female patients with a ventriculoperitoneal shunt. The mean observation time was 226 months. Over the study period, we analysed 226 valves subjected to 146 revisional operations. The most frequent cause of hydrocephalus was intracerebral haemorrhage ( $n=40$ ), 19 patients presented with hydrocephalus due to meningomyelocele and 16 patients with congenital idiopathic hydrocephalus. Infection ( $n=2$ ) and trauma ( $n=1$ ) were rare causes, in 2 patients the reason remained unknown. In 27.2% of cases ( $n=22$ ) no revision of the initial VP shunt was needed. There was no significant difference in shunt survival time between patients with different aetiologies of hydrocephalus ( $p=0.874$ ). Further, the age of the child at the time of VP shunt implantation did not have any impact on the survival time of the shunt ( $p=0.308$ ). The type of the valve significantly changed the survival time of the shunt ( $p=0.030$ ). Pressure differential valves (PS Medical Delta or Pro Medics Delta) presented with a longer survival time than gravitational valves (PaediGAV or ProGAV).

**Conclusion:** The majority of patients in this study needed at least one replacement of the initial shunt system. We identified pressure differential valves as beneficial for the survival time of the shunt system.

## Use of Synthetic Fabric patch in closure of large defects in children with lumbo sacral meningo-myelocele

**Advait Prakash** (Pediatric Surgery, Sri Aurobindo Medical College and Post Graduate Institute, Indore, Madhya Pradesh, India), **Sangram Singh** (Pediatric Surgery, Sri Aurobindo Medical College and Post Graduate Institute, Indore, Madhya Pradesh, India)

**Introduction:** The global prevalence of myelomeningocele (MMC) has been reported to be 0.8–1 per 1,000 live births. In patients with large MMC, inadequate closure after repair leads to persistent CSF leak. The patients are at greatly increased risk of infection and meningitis. Early closure of the defect is considered to be the standard of care. Various surgical methods have been reported, such as primary skin closure, local skin flaps, musculo-cutaneous flaps, and skin grafts. We are presenting use of Synthetic fabric patch as novel surgical technique to deal with this complicated problem. Our aim is to find a suitable treatment and assess the feasibility of dura patch in such difficult cases.

**Material& methods:** All patients of lumbo sacral MMC who have large defects (>5 cm) were selected. The study group comprised of 54 patients between 2 months to 3 years of age who underwent MMC repair between July 2015 to August 2021 at a tertiary care medical college hospital. After MMC repair of large dural defect was repaired with the help of dura patch which is a synthetic fabric impermeable patch and is readily available at a reasonable cost. Dura patch was placed over dorso-lumbar fascia and it was fixed circumferentially over the defect with prolene suture. Unlike other methods like flaps this does not require plastic surgical intervention.

**Observation and results:** All the patients withstood the procedure well. There was no CSF leak post operatively in 41 patients while 9 patients had minor leak which was treated conservatively. 2 patients required resuturing and the patch got extruded in 1 patient. Significant improvement in symptoms was noted after the procedure. No patient developed meningitis

**Conclusion:** Use of synthetic fabric patch is an excellent single step solution to the complex and recurrent problem of persistent CSF leak in large MMC.

## A Proposed Surgical Decision Tree for Pentalogy of Cantrell: A Simple 5-step Process based on a Case Report and Review of 20 years of Literature

**Gretchen Floan** (Division of Pediatric Surgery, Rady Children's Hospital San Diego, San Diego, USA), **Romeo C Ignacio** (Division of Pediatric Surgery, Rady Children's Hospital San Diego, San Diego, USA), **Megan Heflinger** (Division of Pediatric Surgery, Rady Children's Hospital San Diego, San Diego, USA), **Utsav Patwardhan** (Division of Pediatric Surgery, Rady Children's Hospital San Diego, San Diego, USA)

**Aims:** Pentalogy of Cantrell (POC) occurs in 1 in every 65,000 live births and consists of five congenital defects: omphalocele, lower sternal cleft, diaphragmatic defect, pericardial defect, and intracardiac anomaly. Due to the rarity of this syndrome, there are no clear guidelines on treatment for these various defects. The authors report a case of an infant born with POC undergoing complex surgical repair and propose a surgical decision tree based on an extensive review of 42 case reports consisting of 57 patients from the past twenty years, 52 of which had surgical intervention. Table 1 summarizes the patient demographics, spectrum of defects, and surgical options for these patients.

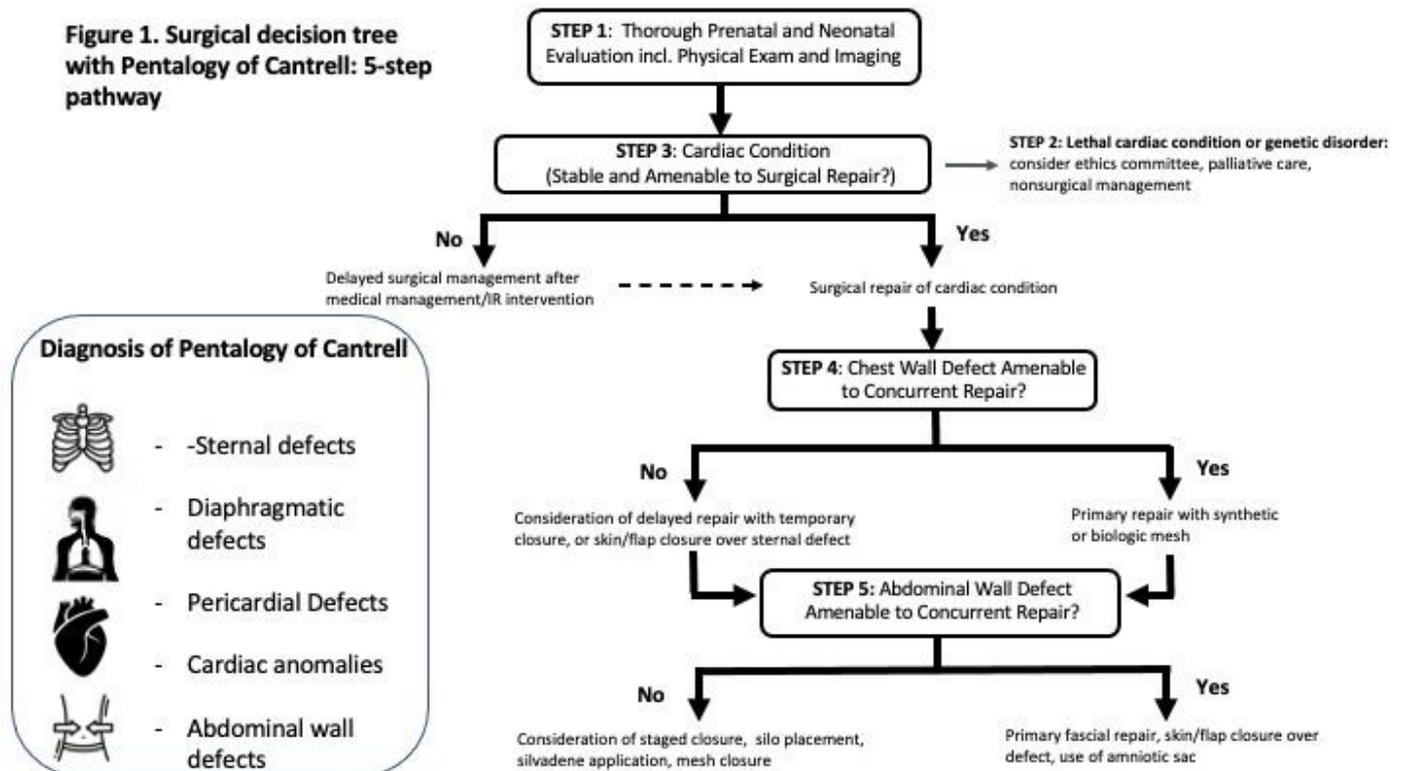
**Case description:** A 2.46 kg neonate was born at 38-weeks gestation with prenatally diagnosed POC and intrauterine growth restriction. Prenatal imaging demonstrated an absent sternum, upper abdominal wall defect, and apical protrusion of the cardiac apex. Upon delivery, these findings were confirmed, and an additional diagnosis of Tetralogy of Fallot with a left ventricular diverticulum was made.

At 7 weeks of age, the patient underwent complete repair of the intracardiac defects with a transannular patch and left ventricular diverticulopexy. The diaphragmatic hernia was repaired via advancement of the muscle to the subcostal margin. The abdominal wall was repaired using a transversus abdominis muscle release. The infant tolerated all procedures and is 8 months old, developmentally normal, requiring nasogastric tube feeds.

**Conclusions:** A detailed evaluation of the associated anomalies is required to determine the surgical management for POC. Although primary repair of all defects is associated with a higher survival rate, the anatomic complexity of the congenital defects and the physiologic status of the baby will determine the optimal pathway for patient management. We proposed a 5-step decision tree algorithm for the management of POC (Figure 1).

Demographics			Defects		Specific Defects	Surgical Treatment	
Gender	M	58%	Cardiac	ASD	56%	VSD repair	
				VSD	52%	Diverticulum repair, heart repositioning	
				Ectopia cordis	37%		
	F	37%		DORV, PDA, pulmonary stenosis, ventricular diverticulum	23-25%	ASD repair, shunt placement DORV repair, Glenn procedure	
	No specification	6%		Dextrocardia, pericardial effusion, PFO, PLSVC, TAPVR, TOF, tricuspid atresia	5-10%	Cardiac catheterization, ECMO, LVOT/RVOT repair, Norwood procedure, PAB, PDA repair, PFO repair, PLSVC repair, pulmonary stenosis repair, shunt take down, TOF correction	
				Aneurysm, aortic stenosis, atrium diverticulum, AVSD, bilateral SVC, IVC stenosis, LVOT, pulmonary atresia, right-to left shunt, RVOT, truncus arteriosus	1-4%	No repair/No specification	
Age at Birth	< 36 weeks	8%	Pericardial	Yes	48%	Tissue repair 20%	
	36-37 weeks	15%			No/No specification	52%	Drain, Gore-tex/PTFE mesh Hernia sac, Permacol
	38-39 weeks	31%					No repair/No specification
	40+ weeks	4%					
	No specification	42%					
Age at Presentation	Prenatal	33%	Sternal	Yes	65%	Tissue repair	
	Birth - 1 day	19%			No/No specification	35%	Cartilage repair Alcohol dressing
	2 days – 1 month	6%					Permacol, PLLA-PGA plate, rib repair, titanium plate
	1 month – 1 year	8%					No repair/No specification
	1+ year	6%					
	No specification	29%					

Figure 1. Surgical decision tree with Pentalogy of Cantrell: 5-step pathway



## Heterophagus (Parasitic) twins with varied presentations and approach to management: Study from a single tertiary centre

**Ashish Chhabra** (Paediatric surgery, Gurugobind Singh Medical College and Hospital, Faridkot, India), **Saalim Nazki** (Paediatric Surgery, Leicester Royal Infirmary, Leicester, UK), **Shipra Chhabra** (Gurugobind Singh Medical college and hospital, Faridkot, India), **Lubna Samad** (Government Medical college and Hospital, Srinagar, India)

**Aim:** Conjoined twins are rare, heterophagus conjoined twins are even rarer. Twins can be symmetric or asymmetric (heterophagus/parasitic twins) with high morbidity and mortality. Parasitic twins have an estimated incidence of 1 per 1 to 2 million live births. In this study we have compiled different anatomical aberrations, patho-embryology, management and outcomes of all heteropagus twins that were managed in a single tertiary care centre.

**Patient and methods:** Total of 5 cases were included in the study with predominance of 4 females. Antenatal scans were evaluated for all the patients. Postnatal radiology (USS/MRI) and ECHO was done prior to surgical procedure in all the cases. Surgery to separate the parasite was done as per the indication and anatomical location. Specimen were sent for histopathological confirmation post excision.

**Results:** All the heterophagus twins were less than one month old with a varied presentation. One case presented to us as myelomeningocele. It was a case of rachiphagus with intestinal contents within it and other case had extra limb with phallus and testis along with lipomeningocele. Third case had extra limb attached to the back without any communication to spine or cord and was managed by excision and disarticulation. Fourth and fifth cases had extra digits on the back and rudimentary parasitic tissue attached to the perineal region respectively. All the cases were managed surgically with good results. There was no mortality recorded in the study.

**Conclusion:** Parasitic twins have varied presentations. Antepartum diagnosis is an important part of prognostication of heterophagus twins. In addition, preoperative planning including radiology and cardiac evaluation is an important part of management. Surgical procedure to separate the parasitic twin can vary from simple to a complex approach. The separation should be carried out early and once the child is fit to undergo surgery.

## Systematic review with six new cases of parasitic (heteropagus) twins: management and outcome

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Praveen Mathur** (Pediatric Surgery, Sawai Man Singh Medical College and Hospital, Jaipur, India), **Priyanka Mittal** (Pediatric Surgery, Sawai Man Singh Medical College and Hospital, Jaipur, India), **Raj Kumar Yadav** (Pediatric Surgery, Sawai Man Singh Medical College and Hospital, Jaipur, India), **Dinesh Barolia** (Pediatric Surgery, Sawai Man Singh Medical College and Hospital, Jaipur, India)

**Introduction:** Heteropagus twinning (HT) is an extremely rare anomaly (less than 1 in 1 million births). 6 new cases are described along with detailed systematic review.

**Methods:** Six cases of HT managed at two tertiary care teaching hospitals from 1995-2021 are described. Medical records were reviewed for clinical data, investigations, associated anomalies, surgical procedures, post-operative complications and outcomes. A PubMed search with words: Heteropagus AND/ OR parasitic twins from 2001 to 2021 hit 183 articles. 36 were added from non-PubMed sources. Finally, 120 cases including 114 from 69 articles and 6 new cases were analysed.

**Results:** 2/6 new cases had antenatal diagnosis. The mode of delivery was Cesarean section: vaginal delivery in 3:3. All patients underwent surgery in the neonatal period. Five were males. 4 autosites had omphaloceles. Split notochord and 2 parasites attached to a single autosite was encountered. 5/6 autosites survived.

On systematic review, most common variant was rachipagus (n=50) followed by omphalopagus (n=46). Limbs were reported in 75 cases. Congenital heart disease was seen in 17/120(14.2%) autosites. Omphalocele and meningomyelocele were the most common extracardiac anomalies in autosites. Weight along with anatomy and position of heteropagus twins was a better determinant of mode of delivery than weight alone. Mortality was reported in 12 cases.

**Conclusion:** Autosites in HT generally carry a good prognosis. Final outcome depends on associated major cardiac anomalies. Meticulous antenatal assessment and preoperative planning are of paramount importance. Caesarean Section is mandatory when the parasite has a head. Mode of delivery in the rest may be decided based on anatomical structures and weight.

## Managing conjoint twins at an LMIC hospital: a case series from Uganda

**Phyllis Kisa** (Makerere University College of Health sciences, Kampala, Uganda), **John Sekabira** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Nasser Kakembo** (Makerere University College of health sciences, Kampala, Uganda), **Mary Nabukenya** (Makerere University College of Health Sciences, Kampala, Uganda), **Janat Tumukunde** (Makerere University College of Health Sciences, Kampala, Uganda), **Anne Wesonga** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Michael Oketcho** (Uganda Heart Institute, Kampala, Uganda), **Idris Kalanzi** (Kiruddu Hospital, Kampala, Uganda), **Peter Ssenyonga** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Sam Bugeza** (Makerere University College of Health Sciences, Kampala, Uganda)

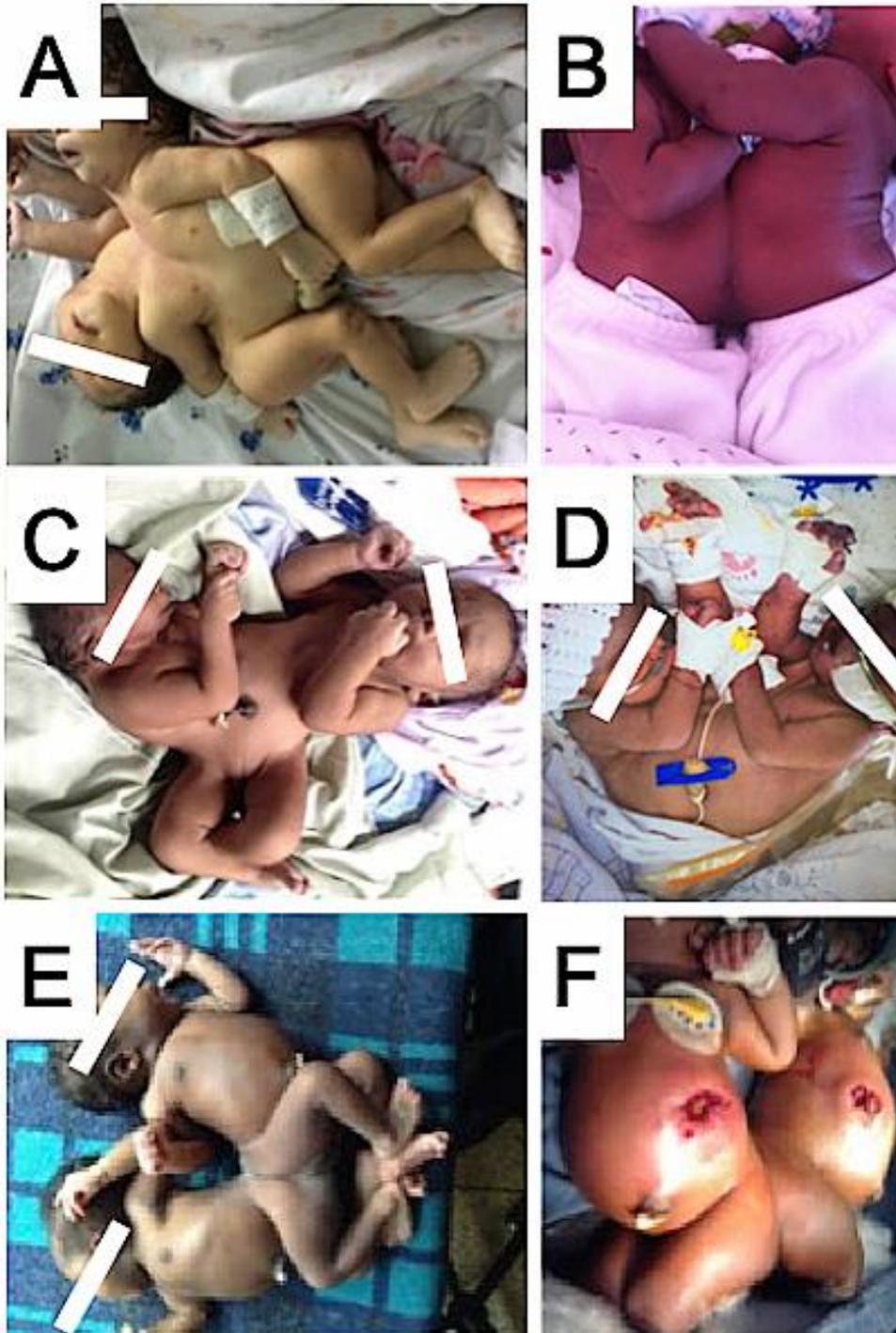
**Background:** Conjoint twins are some of the rarest and most exciting of paediatric surgical conditions. Their management requires a well coordinated team and lots of resources to safely separate them. There are a few case series in English literature but no single paediatric surgeon could claim to be an expert in their management. Careful planning of timing of separation and what to do at separation are of great import.

**Aim:** This paper aims to describe cases of conjoint twins as seen and managed at Mulago National referral hospital between 2011 and 2022.

**Case descriptions:** This paper describes sixteen sets of conjoint twins that have been admitted to the paediatric surgical unit at Mulago National referral hospital over the years. It includes descriptions of patient characteristics, their anatomy, team organisation, management and outcome. It will also entail some innovations in for their care to improve outcomes.

It will characterise the progression in care in two phases: detailing where the team at Mulago has come from to a point where we can safely separate babies of such complexity in a resource limited setting.

**Conclusions:** With specific considerations in place, conjoint twins of various types can be safely managed and separated in resource limited settings.



## Considerations for safe separation of conjoint twins in resource limited settings

**Phyllis Kisa** (Makerere University College of Health Sciences, Kampala, Uganda), **John Sekabira** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Nasser Kakembo** (Makerere University College of Health Sciences, Kampala, Uganda), **Mary Nabukenya** (Makerere University College of Health Sciences, Kampala, Uganda), **Janat Tumukunde** (Makerere University College of Health Sciences, Kampala, Uganda), **Anne Wesonga** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Stella Nimanya** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Rovine Naluyimbazi** (Mulago National Referral and Teaching Hospital, Kampala, Uganda), **Michael Oketcho** (Uganda Heart Institute, Kampala, Uganda), **Innocent Okello** (Mulago National Referral and Teaching Hospital, Kampala, Uganda)

**Background:** managing conjoint twins is a complex and resource heavy undertaking requiring proper planning and team management. most case reports are from high income countries and the few from low income countries mainly discuss a given case and how the care was provided. there is a need to detail the considerations that should be in place before embarking on successful separation of conjoint twins in a resource limited setting due to the possible inability to refer patients to other centres or countries.

**Aim:** to describe the considerations for managing conjoint twins in resource limited settings based on the Uganda experience.

**Methods:** a descriptions of things to consider when caring for conjoint twins in resource poor settings based on the experience from Mulago National Referral and Teaching Hospital in Uganda. it will detail the initial infant care including plans for emergent separation, nutritional considerations, resource mobilisation for families, imaging, constituting a team with leadership and effective coordination, multidisciplinary team meeting, surgery and post-operative intensive care planning, decision on timing of surgery, preliminary surgical procedures, plans for complex wound care, considerations for day of surgery (anaesthesia, nursing, surgery) and the actual separation. lessons learned will also be outlined.

**Conclusions:** safe and successful management of conjoint twins is possible in resource limited setting with some considerations in place.

## Our experience in the management of 15 consecutive cases of conjoined twins in Yaoundé, Cameroon

**Gacelle Fossi Kamga** (Paediatric Surgery, Yaounde Gynaecoobstetric and Paediatric Hospital, Yaoundé, Cameroon), **Caroline E Dikongue Dikongue** (Yaoundé Gynaecoobstetric and Paediatric Hospital, Yaoundé, Cameroon), **Patricia E Mengue Foe** (Yaoundé Gyneco-Obstetric and Pediatric Hospital, Yaoundé, Cameroon), **Flor-ence Ornella Obono Ebo** (Yaoundé Gynecoobstetric and Pediatric Hospital, Yaoundé, Cameroon), **Faustin Félicien Mouafo Tambo** (Pediatric Surgery, Yaoundé Gynecoobstetric and Pediatric Hospital, University Of Yaoundé I, Yaoundé, Cameroon)

**Aim:** The aim of this study was to highlight the epidemio-clinical and therapeutic particularities of the management of these conditions in the context of a country with limited resources.

**Methods:** This was an observational, retrospective, descriptive and analytic study over 17 years (April 2005-April 2021) at the pediatric surgery department of the Yaoundé gynaeco-obstetric and pediatric hospital (YGOPH). We included all files of conjoined twins (CT) admitted and managed in our institution during the study period. Miscarriages, stillbirths, asymmetrical or incomplete CT, and CT in which termination of pregnancy was performed were excluded. Data collected was epidemiologic (age at presentation, gender, term at delivery, combined birthweight, socio-economic status of parents, region of origin), diagnostic (prenatal ultrasound diagnosis, time to diagnosis, type of twinning, imaging studies used, associated malformations, shared organs) and therapeutic (age at separation surgery, operative time, surgical techniques, morbidity, mortality, follow-up, prognosis)

**Results:** Fifteen sets of conjoined twins were recorded. The female predominance was remarkable (sex ratio: 0.15.) The mean birth weight of the twin pair was  $5050 \pm 2510$  g, and mean age at presentation  $15 \pm 10.11$  hours. In 11 cases, the parents' geographic region of origin was the northwest. Only five cases were prenatally diagnosed. The mean time to accurate postnatal diagnosis was 7 months. Ten sets were thoraco-omphalopagi, 1 craniopagus, 1 tripus tetrabrachius parapagus, 1 omphalopagus, 1 ischiopagus and 1 pygopagus. Only 5 underwent elective separation surgery at a mean age of 13.3 months. Mortality was 73.3%, 66.7 % of which was before any separation surgery. With a follow-up of 6.5 years, 4 cases survived. Thoracopagus twinning and sharing of vital organs (heart, lungs, liver) were significantly associated with death.

**Conclusion:** Female thoracoomphalopagus CT is the commonest, and their mortality is high in our setting. Elective separation performed by multidisciplinary experienced teams has favorable results.



## ORAL PRESENTATION SESSION XVII

### Innovations (techniques/concepts/instruments)

#### Assessment of Gastric Motility in Preterm Neonates Using Magnet Tracking System (MTS): a Feasibility Study

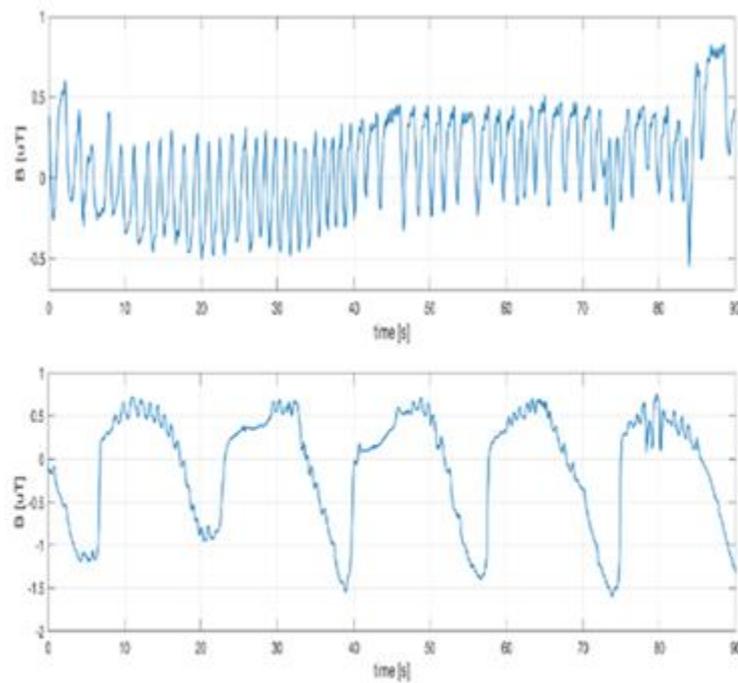
**Eleuthere Stathopoulos** (Pediatric Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland), **Vincent Muehlethaler** (Neonatology, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland), **Blaise Julien Meyrat** (Pediatric Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland), **Sabine Vasseur Maurer** (Pediatric Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland), **Pavel Kucera** (Physiology Institute, University of Lausanne, Lausanne, Switzerland), **Vincent Schlageter** (Motilis Medica SA, Lausanne, Switzerland)

**Aim:** Measure gastric motility patterns using Magnet Tracking System (MTS, Motilis Medica, Lausanne, Switzerland) in preterm neonates.

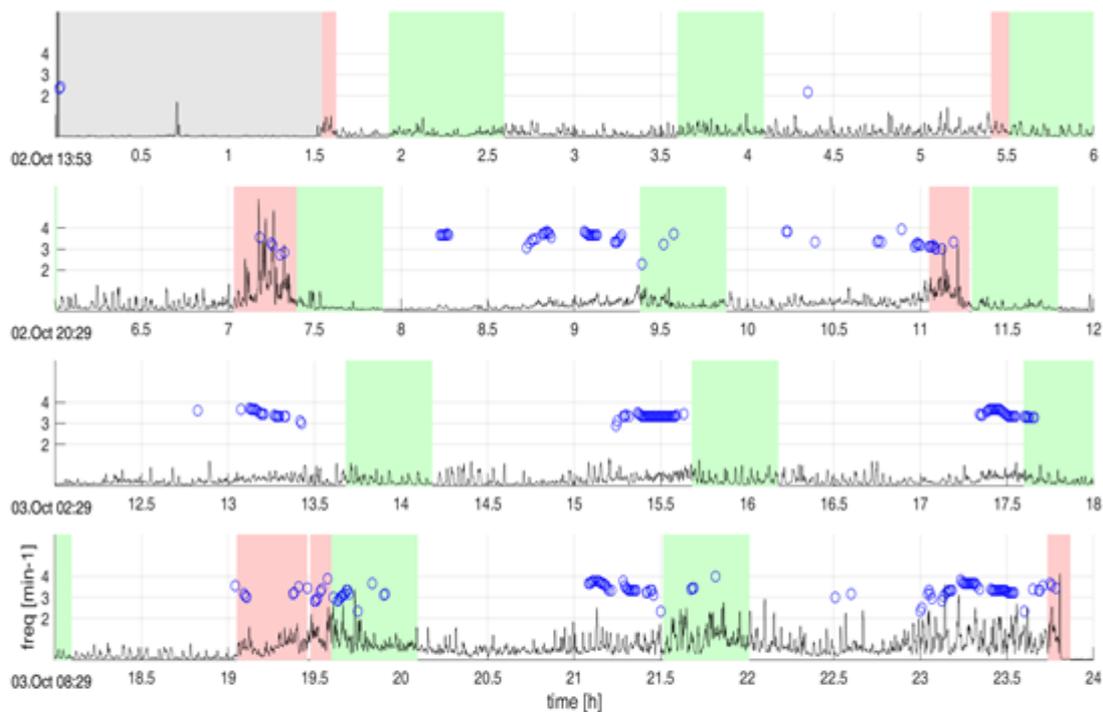
**Methods:** A permanent magnet was fixed to the tip of a nasogastric tube used to feed the neonate. Variations of magnetic fields induced by movements of the magnet were recorded by a matrix of magnetic field sensors (MTS) placed underneath the mattress in the incubator. Pressure sensors were added to the detector to assess presence or absence of the neonate in the detection field. Ad hoc developed software allowed displaying and analysing magnet movements. Inclusion criteria were the need of a nasogastric tube for feeding; neonates with facial or digestive malformation, neonatal asphyxia, intrauterine growth restriction or a cerebral anomaly were excluded.

**Results:** Seven consecutive days of recording were measured in six preterm neonates (age (mean, range) 29<sup>6</sup>/<sub>7</sub> (28-32<sup>2</sup>/<sub>7</sub>) GA; weight (mean, range) 1442 (815-1790) g). The modified nasogastric tube was well tolerated. Medical management was not altered because of the study. There was no noticeable interference with other medical devices. Three types of regular oscillations of magnetic fields were measured: 1-10·min<sup>-1</sup>, 20-60·min<sup>-1</sup>, 100-200·min<sup>-1</sup>. Oscillations of 20-60·min<sup>-1</sup> and 100-200·min<sup>-1</sup> correlated well with respiratory and cardiac frequencies measured by monitoring devices. A recurrent pattern of 3-4·min<sup>-1</sup> was measured every day, in all newborns; it showed a correlation with feeding time. Its rhythmicity corresponds to known gastric motility pattern. There was no correlation of regular gastric patterns with gastrointestinal symptoms such as reflux. More complex regular patterns (burst of 2-3 contractions), not described so far, were also visible, which will require further studies.

**Conclusion:** We were able to demonstrate known gastric motility patterns, including correlation with feeding periods. MTS offers the possibility to study the early maturation and disorders of infant gastric motility rhythms.



Raw signal. Top: 36 min<sup>-1</sup> (breathing);  
Bottom: 3.5 min<sup>-1</sup> (gastric contractions).



24-hour recording. Areas: grey=neonate not in incubator,  
green=meals, pink=care (pressure sensors). Circles: blue=  
3-4 min<sup>-1</sup>. Black line=amplitude of magnet movements.

## Experimental study of risk factors for development of necrotizing enterocolitis

**Tatiana Zebrova** (The Chair of Surgical Diseases of Children and Adults, Samara State Medical University, Samara, Russian Federation), **Margarita Barskaya** (The Chair of Surgical Diseases of Children and Adults, Samara State Medical University, Samara, Russian Federation), **Elizaveta Kargina** (Samara State Medical University, Samara, Russian Federation), **Yana Mihaylova** (Medical University of Sofia, Sofia, Bulgaria), **Igor Kozin** (Cardiovascular Surgery, Clinics of Samara State Medical University, Samara, Russian Federation)

**Aim:** The goal of the research is to perform the experimental study of risk factors as well as pathogenic mechanisms of necrotizing enterocolitis (NEC) via modeling of the disease in rat pups in order to further optimize its prevention and treatment.

**Methods:** 28 rat pups (breed: Wistar) 21 days gestation age were investigated. The experiment was held in 2 stages. Stage A – without a microbial factor – 19 animals, stage B – with the presence of microbial factor – 9 animals. The animals were divided into 2 groups: 17 rats – main group (1), 11 rats – comparison group (2). The animals were subjected to risk factors in order to induce necrotizing enterocolitis. After 96 hours of observation the animals underwent surgeries. The following criteria were considered for the results evaluation: clinical symptoms, intraoperative findings, bacterial spectrum represented, and histological outcomes.

**Results:** NEC clinical signs were present in both subgroup 1 A (only subjected to hypoxia and inadequate formula feeding) and in subgroup 1B (subjected additionally to bacterial factor). Subgroup 1B showed way more significant clinical and morphological findings. Histological findings represented the following results: in subgroup 1A the histological picture resembled that of the 1A-2A stage, in subgroup 1B – 2B-3B stage of NEC (according to Walsh and Kliegmann). An interesting addition was the unusual massive intestinal colonization in subgroup 1B.

**Conclusions:** The risk factors of NEC can be limited to just hypoxia and inadequate formula feeding, since they alone can cause its development already. However, the additional presence of bacterial aggression aggravates significantly the course of NEC as well as worsens its prognosis. The possibility of NEC development in newborns thereafter should not be ruled out by the lack of bacterial component in pathogenesis.

## Endoscopic transgastric lumen-apposing metal stents for the treatment of traumatic pancreatic pseudocyst in children

**Mark Malota** (Pediatric Surgery, München Klinik Schwabing, Munich, Germany), **Stuart Hosie** (Pediatric Surgery, München Klinik Schwabing, Munich, Germany), **Mark Malota** (München Klinik Schwabing, München, Germany)

**Aim:** One common complication from injuries to the pancreatic duct after blunt abdominal trauma is the occurrence of a posttraumatic pancreatic pseudocyst (PPC), which can be treated either with surgery, percutaneous drainage, or with the more recently in adults established endoscopic ultrasound (EUS)-guided drainage using plastic or metal stents.

We report two cases of children with a posttraumatic PPC to summarize and evaluate the clinical and technical effectiveness of EUS-guided placement of a lumen-apposing self-expandable metallic stent (LAMS).

**Case Description:** Two children, aged 5 and 11 years, sustained major ductal injuries from blunt abdominal trauma. Both patients underwent an ERCP with papillotomy and stenting of the pancreatic duct. In the first case, the stent was threaded across the disruption into the distal part of the duct. In case 2, the stent could only be placed through the ampulla in the proximal duct but not be guided into the distal part. Both children showed initial clinical improvement after the intervention but soon developed a PPC. After putting an EUS guided lumen-apposing self-expandable metallic stent transgastrically into the PPC, the situation improved. The ductal stents were removed at 20 and 21 days post injury and both children have remained well. Follow-up ERCP and CT scans show complete healing of the ducts and no evidence of stenosis, so far 3 month after the injury, the metallic stents were removed as well. In both cases, one year after the intervention there is neither evidence of a remaining PPC nor any other pathological findings indicating an insufficiency of the pancreas.

**Conclusions:** Acute ERCP with the option to place an intrapancreatic ductal stent should be in the portfolio of a hepatobiliary pediatric surgery. PPC may occur, but can be treated safely by EUS-guided application of a lumen-apposing self-expandable metallic stent.

## Technical evolution in fetoscopic three-miniport technique for prenatal myelomeningocele repair after 60 cases

**Jose L. Peiro** (Fetal Care Center – Pediatric Surgery Division, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA), **Charles B Stevenson** (Fetal Care Center, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA), **Mounira A Habli** (CCHMC Fetal Care center / Cincinnati, Cincinnati, USA), **Braxton Forde** (CCHMC Fetal Care center / Cincinnati, Cincinnati, USA), **Foong-Yen Lim** (Fetal Care Center – Pediatric Surgery Division, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA)

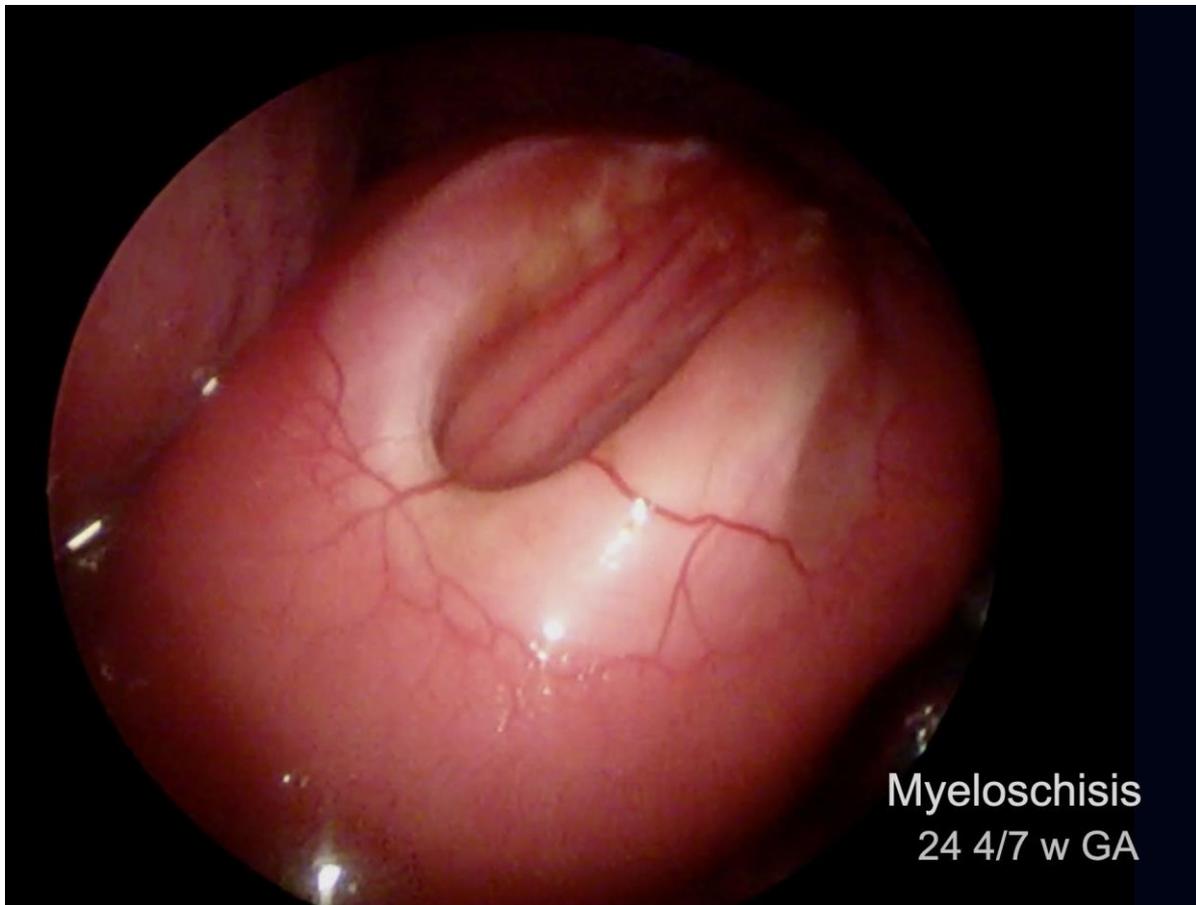
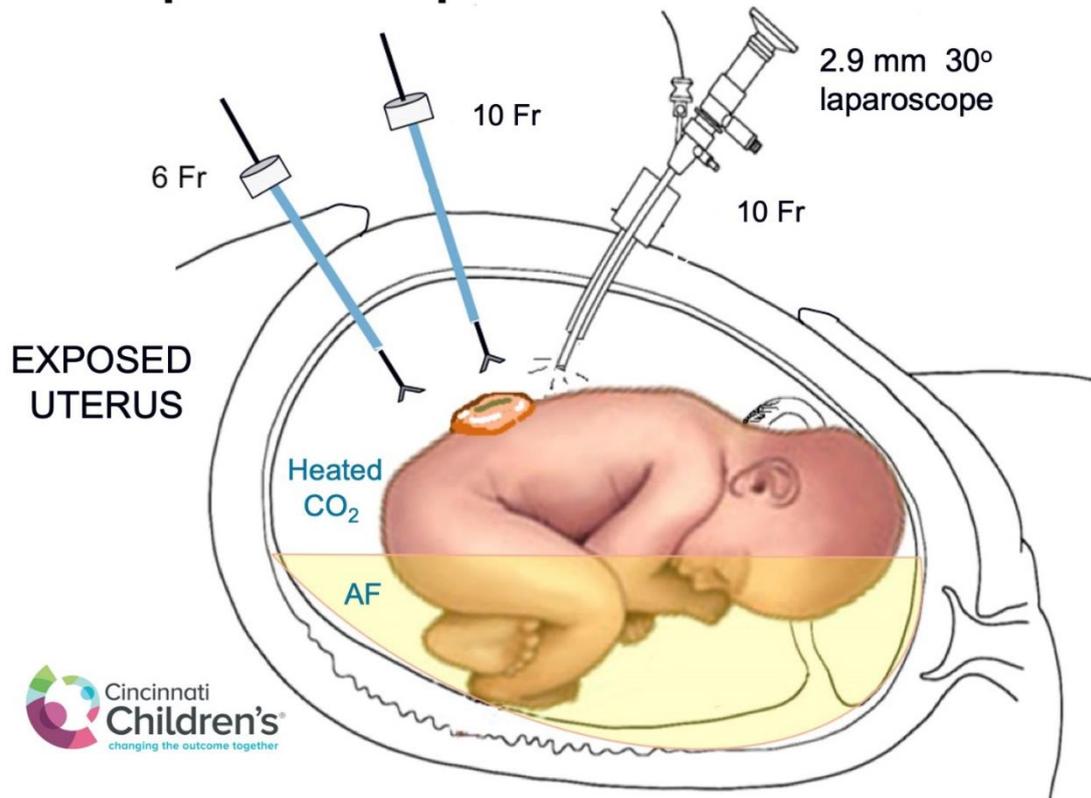
**Aim:** We sought to describe the technical changes and evolution of a novel fetal surgery technique providing a high-integrity watertight closure for prenatal fetoscopic myelomeningocele (MMC) repair over the last 6 years.

**Methods:** This is an IRB-approved descriptive study of the technique used for the first 60 consecutive fetoscopic MMC repairs (35 myelomeningoceles, 25 myeloschisis) performed prenatally at our Center from 11/2015 to 02/2022. We review the technical details that we maintained while providing good results and the changes implemented overtime to improve outcomes.

**Results:** Midline maternal limited laparotomy is performed under a combination of general and epidural anesthesia. After uterine identification, volatile inhaled anesthetic and intravenous sulfate-magnesium are used for uterine relaxation. The placenta is marked on the uterine surface by ultrasounds guidance. Three fetoscopic ports (6/10/10 Fr) are placed under US-guidance and direct visualization via sharp trocar or Seldinger technique. Low-pressure warmed and humidified CO<sub>2</sub> is used for uterine amniodistention. The MMC sac is excised, and the neural placode accurately released from its natural tethering. Duraplasty is performed by overlying two umbilical-cord-matrix patches sequentially. The skin is then closed primarily. If this could not be achieved, a skin-substitute patch is utilized (16/60, 26%). Even patients are consented for it, no cases required conversion to open surgery. There were no significant intraoperative complications. A watertight seal was achieved in all cases, with no evidence of CSF leak at birth. Mean operative time was 261 minutes, with mean fetoscopic time of 194 minutes.

**Conclusion:** Laparotomy-assisted three-port fetoscopic approach using dural and skin patches is a feasible technique that offers optimal access and magnification for a good watertight neural defect closure in prenatal spina bifida repair. After learning curve, the optimization of the technical details provides a better standardized technique using this minimally invasive fetoscopic approach.

## Fetoscopic MMC Repair



## Prenatal myelomeningocele repair reduced intensification of inflammatory changes in the dura mater and the skin

**Agnieszka Pastuszka** (Medical University of Silesia, Katowice, Poland), **Anita Olejek** (Medical University of Silesia, Katowice, Poland), **Jacek Zamłyński** (Medical University of Silesia, Katowice, Poland), **Tomasz Koszutski** (Medical University of Silesia, Katowice, Poland), **Tomasz Horzelski** (Medical University of Silesia, Katowice, Poland), **Janusz Bohosiewicz** (Medical University of Silesia, Katowice, Poland)

**Aim:** Chemical and mechanical injuries of spinal cord and spinal nerves in myelomeningocele (MMC) during the fetal life lead to functional disorders of multiple organs.

The aim of the study was to find out whether prenatal MMC repair can reduce consequences of the failure.

**Methods:** During the intrauterine MMC repair procedures (45 cases – Group I) and during the postnatal surgeries (42 cases – Group II) specimens of the skin and of the dura mater adjacent directly to the everted section of the spinal cord were collected for investigations. The specimens were histopathologically evaluated to assess severity of the inflammatory changes.

Intensity of inflammatory lesions in all specimens of the skin and the dura mater was assessed with the use of a three-stage scheme:

Stage I-small lymphocytic and/or granulocytic infiltration (0-15 lymphocytes or granulocytes /high power field (HPF))

Stage II- medium lymphocytic and/or granulocytic infiltration (16- 30 lymphocytes or granulocytes /HPF)

Stage III- large lymphocytic and/or granulocytic infiltration (> 30 lymphocytes or granulocytes/HPF)

**Results:** Lymphocytic and granulocytic infiltration in the skin and the dura mater were statistically significantly more prevalent in children who underwent postnatal surgery compared to the prenatally operated group ( $p < 0.000003$ ).

The analysis of the severity of inflammatory changes in the skin and the dura mater showed only small lymphocytic infiltration in 5 fetuses (Group I). Medium and large infiltration in the skin and the dura mater was found in all children who underwent postnatal surgery (Group II).

**Conclusions:** Prenatal MMC repair statistically reduces the risk of inflammatory changes in the spinal cord. Prenatal closure of spina bifida at 24 week of gestation decreases the risk of inflammatory changes in the spinal cord.

Lesser injury of the spinal cord is a chance to preserve better functions of the locomotor, alimentary and urinary systems.

## Prenatal myelomeningocele repair improves social urine continence, reduces the risk of urinary tract infections and constipations

**Agnieszka Pastuszka** (Medical University of Silesia, Katowice, Poland), **Anita Olejek** (Medical University of Silesia, Katowice, Poland), **Tomasz Koszutski** (Medical University of Silesia, Katowice, Poland), **Tomasz Horzelski** (Medical University of Silesia, Katowice, Poland), **Janusz Bohosiewicz** (Medical University of Silesia, Katowice, Poland)

**Aim:** Prenatal myelomeningocele (MMC) closure significantly reduces the need for hydrocephalus shunting and improves lower extremity motor function.

The aim of study was to evaluate the influence of the timing of MMC repair (before or after birth) on neurogenic bladder and bowel function.

**Methods:** Clinical data were prospectively collected for all patients who underwent fetal or postnatal MMC repair. Assessments include renal and bladder Ultrasound, Voiding Cystoethrogram, Urodynamic Study, need for CIC, occurrence of urinary tract infections (UTI), degree of social urinary continence and constipations. From the group of 135 patients after prenatally MMC closure from 2006 to 2019, 51 patients with a postnatal follow-up of at least 3 years were included in this study and compared with 51 patients after postnatal MMC repair in the same age. The level of the spina bifida was similar in both groups. All children, regardless the time of operation (pre or postnatal), were managed according to the same protocol.

**Results:** Urodynamic and imaging studies showed no differences between the test groups.

The incidence of neurogenic bladder dysfunction was similar. Children from the prenatally group showed statistically significant lower number of UTI's in all age groups and had a statistically significant better urine continence in age above 3 year and less frequent constipation when compared to postnatally operated patients ( $p=0.005$ ).

**Conclusions:** Prenatal MMC repair improved the clinical condition of the urinary tract, therefore improving significantly the social urinary continence and reducing the risk of constipation.

The children after prenatally MMC operation in the future can achieve better quality of life, self-esteem and independence.

## Chick embryo fetoscopy model – a novel advancement for the study of cancer biology and fetal therapy

**Chun-Sui Kwok** (University of Liverpool, Liverpool, UK), **Wan Teng Lee** (Institute of Life Course and Medical Sciences, University of Liverpool, Liverpool, UK), **Sonia Rocha** (Institute of Systems, Molecular and Integrative Biology, University of Liverpool, Liverpool, UK), **Paul D Losty** (Institute of Life Course and Medical Sciences, University of Liverpool, Liverpool, UK)

**Aims:** The chick embryo has been classically employed as a versatile high-throughput and cost-effective model in various fields of research including cancer biology and embryology. We herein describe chick fetoscopy as a novel technique to further study embryo development and as a method to administer treatment(s) and other interventions.

**Methods:** Fertilised white leghorn eggs were incubated at 37.8°C and 40% humidity to begin embryonic development. On embryonic day 3 (E3), the base was punctured and 5ml of albumen removed using a 19G needle. A rectangular window was cut in the eggshell giving access to the chorioallantoic membrane (CAM). Between E10 and E14, fetoscopy may then be performed via the windowed fenestration with a small incision in the CAM followed by a subsequent opening created into the amniotic cavity. A commercially available 5.5mm endoscope allowed for fetoscopic visualisation. 10-15mL of warm normal saline was injected to supplement the amniotic fluid in order to increase the operator working space. All experimental studies were completed on E14 in full accordance with UK home office regulations.

**Results:** Six eggs in pilot work studies were prepared for fetoscopy on E14 (Figure 1). Fetoscopic visualisation was a viable approach for selected targeted intervention(s) to the chick embryo. Working space remains challenging despite amniotic cavity insufflation subject to modifications.

**Conclusion:** This novel technique greatly advances the versatility of the chick embryo model. Precision targeted xenograft implantation of neuroblastoma cells to mechanistically study embryonic cancer biology and fetoscopic intervention of congenital defects are all possible.

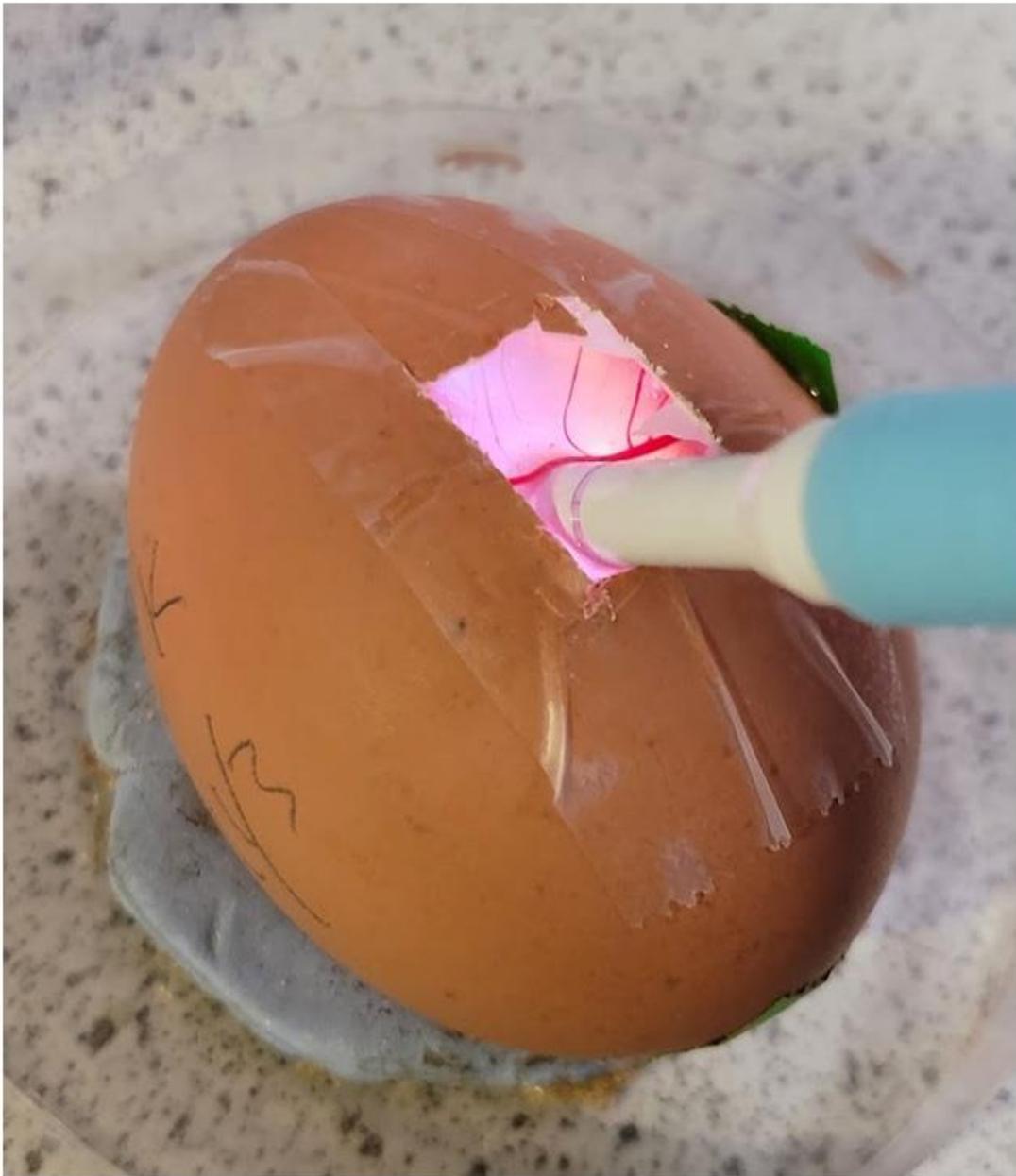


Figure 1: 5.5mm endoscope within amniotic cavity

## Spatulated umbilical cord technique containing Wharton's jelly mesenchymal stem cells for a scar-less primary repair of gastroschisis, a multicenter experience

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Sherif M Mansour** (Pediatric Surgery, Ain Shams University hospital, Egypt, Egypt), **Thomas T Tsang** (Pediatric Surgery, Norfolk and Norwich University Hospital, Norwich, UK)

**Introduction:** The goal of the surgical management of gastroschisis is to return the bowel into the abdomen without jeopardizing the viscera. We aimed to prospectively analyse the outcomes of primary closure of gastroschisis using Spatulated Umbilical Cord technique (SUCT).

**Methods:** This pilot interventional study was conducted prospectively at 3 centres from February 2017 to February 2019 with follow up till March 2022. Inclusion criteria included those cases where primary fascial closure had risk of compartment syndrome (CS). Exclusion included those with intestinal atresia. Outcome measures were success rates (no CS), post-operative ventilation, days of parenteral nutrition (PN), time to full enteral feeds and complications. The SUCT involved opening the amnion layer from the base at 9 O'clock position, exposing the Wharton's jelly and 'spatulating' using longitudinal incision and then securing as a patch over the defect.

**Results:** The SUCT was conducted in 9 patients. It was successful in 77.8% (7/9). The median duration of mechanical ventilation was 3 days (range 2-6). There was one patient operated on the bedside who was not ventilated. Median time-to-start enteral feeds (n=8): 8 (7-11) days. Median time to achieve goal enteral feeding (n=8): was 20 (14-48) days while partial PN was given for 17 (10-46) days. Regarding complications, 2 patients needed re-laparotomy after development of CS. Application of silo with delayed closure was done in one of them and the other one died on the operating table during the re-laparotomy. Other complications included wound infection (2), intestinal obstruction (1), persistent umbilical hernia (1) and sepsis associated mortality (1). At median follow up of 41 (30-54) months, 7/9 were healthy.

**Conclusion:** Primary closure of gastroschisis using SUCT is safe, feasible, cost-effective and with comparable outcomes to other techniques. Mesenchymal stromal cells from Wharton's jelly have wound healing properties through paracrine signaling and enhanced migration of fibroblasts.

## Tissue Engineered Vaginal Graft for Single-Stage Reconstructive Surgery

**Oliver Willacy** (Laboratory of Tissue Engineering, Department of Surgery and Transplantation, Division of Pediatric Surgery,, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark), **Nikolai Juul** (Laboratory of Tissue Engineering, Department of Surgery and Transplantation, Division of Pediatric Surgery,, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark), **Clara I. Chamorro** (Laboratory of Tissue Engineering, Department of Women's and Children's Health, Bioclinicum, Karolinska Institutet, Stockholm, Sweden), **Carmen P. Montano** (Laboratory of Tissue Engineering, Department of Surgery and Transplantation, Division of Pediatric Surgery,, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark), **Fatemeh Ajallouiean** (DTU Health Tech, Department of Health Technology, Technical University of Denmark, DTU, Kongens Lyngby, Denmark), **Magdalena Fossum** (Laboratory of Tissue Engineering, Department of Surgery and Transplantation, Division of Pediatric Surgery,, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark)

**Aim:** In complex malformations of the vagina such as vaginal atresia, sinus urogenitale or in complex anorectal malformations, the undersupply of suitable grafting tissue sometimes poses a problem in the surgical management. Here we created a vaginal graft with autologous tissue for tissue expansion intended to be constructed and implanted directly in the operating theater and without the need for in vitro culturing.

**Methods:** Bi-layered grafts were created by compressing collagen type I gel and Vicryl® mesh together with minced porcine vaginal epithelium and smooth muscle on either side at a 1:6 expansion rate. We also tested the method using leftover vaginal tissue from two patients undergoing vaginal reconstructive surgery. Grafts were tissue cultured for 1-3 weeks, and were processed for histology assessment, uniaxial tensile tests at a strain speed of 10 mm/minute until rupture, or permeability assays using Franz diffusion cells to quantify the flux of albumin particles over the graft.

**Results:** At three weeks, the grafts were covered by a multilayered vaginal epithelium complete with a continuous basement membrane and proliferative cells, and smooth muscle cells were present on the opposite side of the grafts. The results were validated with the two human samples. Biomechanically, the grafts maintained high stress and strain tolerances during the first two weeks of culture (8 MPa and 58% strain), which was reduced at three weeks due to Vicryl hydrolysis (0,4 MPa and 25% strain). Graft permeability was significantly reduced after three weeks versus one week (0,24 vs 0,91 mg/hr/cm<sup>2</sup>).

**Conclusions:** The vaginal grafts showed promising tissue regeneration after three weeks, and the Vicryl mesh ensured good surgical handling and early biomechanical support. The gradual permeability reduction indicated that the grafts formed a barrier toward pathogens. The method has the potential to allow for autologous tissue expansion and reconstruction as a single-surgery procedure.

## Tissue engineering of the esophagus after 35 days: a porcine model of esophageal replacement

**Anders Sandin** (Pediatric Department, Pediatric Surgery Clinic, Queen Silvia Children's Hospital, Gothenburg, Sweden), **Linus Jönsson** (Pediatric Department, Pediatric Surgery Clinic, Queen Silvia Children's Hospital, Gothenburg, Sweden), **Michalela Dellenmark-Blom** (Pediatric Department, Pediatric Surgery Clinic, Queen Silvia Children's Hospital, Gothenburg, Sweden), **Vladimir Gatzinsky** (Pediatric Department, Pediatric Surgery Clinic, Queen Silvia Children's Hospital, Gothenburg, Sweden), **Kate Abrahamsson** (Pediatric Department, Pediatric Surgery Clinic, Queen Silvia Children's Hospital, Gothenburg, Sweden)

**Background:** In previous articles, a porcine model for bridging circumferential defects in the intrathoracic esophagus was developed. The aims of this present study were to evaluate the continued healing response after 35 days, avoid stent migration, and to investigate whether it would be beneficial to add new ECM (Extra Cellular Matrix) to the healing area after 20 days.

**Methods:** Surgery was performed in 12 piglets, and 4 different types of stents were used. In two piglets, new ECM was added by endoscope to the area of healing after 20 days. After the animals were euthanized, the esophageal tissue was examined.

**Results:** Histologic examination after 35 days showed clusters of desmin-positive smooth muscle cells and the sprouting of nerves in the area which was healing. Generally, we found less M1 classically activated macrophages in specimens after 35 days when we compared them with the 20-days study.

Four piglets did not survive to the end of the study period because of adverse events. Only in two piglets, who had large rilled stents, the stents remained in place throughout the study period.

Adding new biomatrix by re-stenting endoscopically after 20 days, was performed on two pigs, but due to unexpected limb pain in the animals, they had to be euthanized prior to plan

**Conclusion:** After 35-days, the area of healing did not show more signs of regenerative healing than the 20-days study. The hypothesis that the healing response could be enhanced by adding ECM to the remodelling tissue, could not be investigated as we expected due to the adverse effect of limb pain. In future studies this hypothesis needs to be investigated while avoiding lameness.

We believe that the regenerative healing that was started, needs to be further orchestrated in other ways to produce a more functional outcome with time.

## Innovative left-sided thoracoscopic approach to redo tracheoesophageal surgery

**Dariusz Patkowski** (Department of Paediatric Surgery and Urology, Wrocław Medical University, Wrocław, Poland), **Krzysztof Toczewski** (Department of Paediatric Surgery and Urology, Wrocław Medical University, Wrocław, Poland), **Ergun Ergun** (Department of Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey)

**Aim:** Recurrent tracheoesophageal fistula (RTEF) is usually a consequence of leakage or other complications after the esophageal atresia repair. These result in intrapleural extensive adhesions, and open redo surgery poses a challenge. On the other hand, endoscopic endotracheal treatment usually requires repetitive procedures, and its success rate varies significantly between centers. We aim to present an innovative left-sided thoracoscopic approach to tracheoesophageal redo surgery.

**Methods:** It is a retrospective presentation of a new operative technique based on a series of 5 cases operated on at our department since 2016.

**Results:** 3 patients with RTEF and 2 with tracheal diverticula after esophageal atresia repair were successfully treated with left-sided thoracoscopy. One patient required rethoracoscopy for chylothorax. There were no conversions, major complications, or re-recurrences.

**Conclusions:** We believe that this approach is worth further exploration as it combines minimal invasiveness with high effectiveness without all the consequences of a thoracotomy.

## The use of a plastic laparoscopic port for extraction of magnetic foreign bodies from the bladder

**Jan Trachta** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** To present the practical use of a 10 mm plastic laparoscopic port for extraction of magnetic foreign bodies from the urinary bladder.

**Case description:** We present two cases of boys, 15 and 16 years old, who were admitted to the hospital for severe dysuria due to self-insertion of magnetic balls into the bladder. In both cases, it was a chain of several dozen small magnetic balls with a diameter of 5 mm. After the initial X-ray, they were scheduled for extraction under general anesthesia. An attempt to extract the balls one by one through the urethra in the first patient led to severe swelling of the urethral mucosa and minor bleeding obscuring the operating field. Finally, we inserted a 10 mm plastic laparoscopic port under cystoscopic visual control via a short suprapubic incision into the bladder. In this way, we found it relatively easy to grasp the string of balls under visual control and extract them all at once via the port. Finally, a suprapubic tube was inserted into the bladder through the laparoscopic port incision and a 16F permanent Foley catheter was inserted via the urethra to drain the bladder sufficiently and prevent intravesical hematoma. Both patients healed after transient hematuria with no complications, and spontaneous micturition was fully restored with no further lower urinary tract symptoms.

**Conclusions:** The 10 mm plastic laparoscopic port is suitable for removing magnetic foreign bodies that do not adhere to it and enables their safe extraction without unnecessary injury to the urethra or a larger cystotomy incision.

## Pediatric medial humeral epicondyle fracture in children: are biodegradable pins with tension band absorbable sutures efficient?

**Gergő Józsa** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology, Pécs, Hungary), **Marcell Varga** (Department of Pediatric Traumatology, Péterfy Hospital, Manninger Jenő National Trauma Center, Budapest, Hungary), **Tamás Kassai** (Department of Pediatric Traumatology, Péterfy Hospital, Manninger Jenő National Trauma Center, Budapest, Hungary), **Gergő Józsa** (PTE, Pécs, Hungary)

**Aim:** Medial humeral epicondyle fractures account for 10 to 20 per cent of elbow injuries in children. We hypothesised, that in the fixation of medial humeral epicondyle fractures, bioabsorbable poly-L-lactide-glycolic acid (PLGA) implant's safety and efficiency are comparable to traditional metallic and other novel approaches.

**Methods:** A retrospective cohort study was performed between 2016 and 2019, analyzing 24 children who had medial humeral epicondyle fractures. Every fracture was stabilized with biodegradable PLGA implants (Bioretec® ActivaPin®) and tension band polydioxanone sutures. Indications for surgery included closed fractures with more than 1 cm dislocation and incarcerated fractures. The degree of anatomic reduction and the presence or absence of non-union or fragmentation were confirmed with X-rays, postoperatively. In this clinical study, we evaluated the operation time, age and gender distribution.

**Results:** Mean age at the time of injury was 12.3 (8-16 years). On the fourth week, every children's X-ray showed callus formation, and the range of motion of the elbow after six months of the operation was almost complete in all children. Transient ulnar nerve palsy was developed in one patient which was spontaneously resolved at the fourth postoperative month. No other complications were observed during the average follow-up period of 34 months (16-60 months).

**Conclusions:** Bioabsorbable pins with absorbable sutures are a good alternative treatment of medial epicondyle humeral fracture. No permanent complications were noted while using this technique. We suggest this method because it does not require a secondary (metal removal) operation.

## Difficulties and preliminary results of Biodegradable Intramedullary Nailing of Forearm Fractures in children

**Gergő Józsa** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology. Hungary, Pécs, Hungary), **Weinberg Annelie** (Department of Orthopedic and Orthopedic Surgery, Medical University Graz, Austria, Graz, Austria), **Lutz Nicolas** (Department of Pediatric surgery and orthopedics, Lausanne University Medical Center, Switzerland, Lausanne, Switzerland), **Christoph Roeder** (Department of Orthopedics and Trauma Surgery, Landeskrankenhaus Baden/Moedling, Lower Austria, Baden, Austria), **Louise Klingenberg** (Department of Orthopedics, Hvidovre Hospital, Hvidovre, Denmark, Hvidovre, Denmark), **Marcell Varga** (Department of Pediatric Trauma Surgery, Péterfy Hospital, Budapest, Hungary, Budapest, Hungary), **Tamás Kassai** (Department of Pediatric Trauma Surgery, Péterfy Hospital, Budapest, Hungary, Budapest, Hungary), **Ludger Tüshaus** (Department of Pediatric Surgery, University Medical Center Schleswig-Holstein, Campus Lübeck, Lübeck, 19 Germany, Lübeck, Germany), **Cristina Alves** (Department of Pediatric Orthopaedics, Hospital Pediátrico, Coimbra, Portugal, Coimbra, Portugal)

**Aim:** We aim to present the intraoperative difficulties and complications related our initial experience in treating forearm fractures in children with Resorbable Stable Intramedullary Nailing (ReSIN).

**Methods:** A prospective multicenter study started in 9/2020, including 8 centers from 7 countries (some ethical approval are still in progress). Inclusion criteria are children aged 3-12 years with a closed diaphyseal forearm fracture needing reduction and osteosynthesis. Exclusion criteria are comminuted or wedge fractures and associated bone diseases. Analysis of intraoperative difficulties and complications during the operative procedure are identified and discussed during regular study meetings. The data was recorded via eCRF and intraoperative description. A critical descriptive analysis was performed.

**Results:** 76 patients were included. 46 boys, 30 girls, mean age 9,0 years (+/-2,7) Complications included 1 nerve lesion (superficial branch of Radial nerve), 1 migration of an implant fragment, 3 secondary malalignment <15 degrees (with 2mm diameter nails), 2 superficial wound infections. Technical difficulties included intraoperative corticalis penetration with the dilatator in two patients, requiring change of strategy, in two patients transient difficulty in advancing the nail. The material – regarding his nature- is more stable after the first 7-10 days in respect to the increasing volume by the fluid around the material, which has to be confirmed by more patients

**Conclusion:** ReSIN complications were not different from those encountered with ESIN. Technical difficulties can be avoided by meticulous preoperative planning, analysis of the fracture type, shape of the medullary canal, and choice of nail diameter. But at least 7-10 days of cast is mandatory in respect to the material behaviour. A learning curve phenomenon was noticeable in all participating centers.

## POSTERS

### POSTER WALK 1

#### Lower Gastrointestinal 1

##### Bowel management program for idiopathic constipation in children

***Mansur Nasirov*** (Minimally invasive surgery, National Children's Medical Center, Tashkent, Uzbekistan), ***Ikrom Bobokulov*** (Minimally Invasive surgery, National Children's Medical Center, Tashkent, Uzbekistan), ***Murod Abdulazizov*** (Minimally invasive surgery, National Children's Medical Center, Tashkent, Uzbekistan)

**The aim of this study** was to evaluate the effectiveness of a bowel management program for idiopathic constipation (IC) in children.

**Methods:** patients with IC were reviewed retrospectively. Patients with Hirschsprung's disease, anorectal malformations, and other surgical causes of constipation were excluded. Our bowel management program for IC consists of the initial examination, assessment of growth chart, abdominal X-ray, and further disimpaction protocol with enema solutions (normal saline+fleet, normal saline+glycerin) X-ray control after 3 days, and interpretation of data and prescription of stimulant laxatives (if colon disimpacted) based on Senna on an individual basis.

**Results:** During the beginning of the activity of our center from September 2020 to September 2021, surgeons of the minimally invasive surgery department consulted and examined 241 patients with complaints of constipation. 173 (72%) patients were examined primarily during the outpatient examination. 68 (28%) patients were examined at the Department of Nephrology, Urology, Gastroenterology. All 68 patients were admitted with complaints of urinary tract infection and abdominal pain. 178 (74%) patients were previously examined and treated with lactulose-based laxatives (151 patients) in low doses and PEG 4000 (27 patients). All patients followed the bowel management program protocol. Voluntary bowel movement in the first 24 hours after administration of the stimulant laxative based on Senna was observed in 224 (92%) patients. The maximum daily dosage was 3 tablets (210 mg) per day. Long-term remission was observed in patients with urinary tract infections after constipation resolved.

**Conclusion:** The use of a bowel management program developed for anorectal malformations and Spina Bifida is an effective treatment for IC in children.

## What could be the management approach for delayed presenting cases of High ARM?

**Nitin Sharma** (Pediatric Surgery, Pt JNM Medical College and Associated DKSPGI, Raipur, Chhattishgarh, India, Raipur, India), **Shipra Sharma** (Pediatric Surgery, Pt JNM Medical College and Associated DKSPGI, Raipur, Chhattishgarh, India, Raipur, India), **M Amin Memon** (Pediatric Surgery, Pt JNM Medical College and Associated DKSPGI, Raipur, Chhattishgarh, India, Raipur, India), **Mini Sharma** (Pt JNM Medical College, Raipur, Chhattishgarh, India, Raipur, India)

**Aims:** To analyze the outcome in High ARM cases presenting after 72 hours of birth.

**Methods:** This is a retrospective analysis of the cases operated between June 2014 to May 2021. Those presenting after 3 days of life were included. Those with incomplete data or follow up and pouch colon were excluded. Group I included cases managed with Primary PSARP, group II with sigmoid colostomy and group III with transverse colostomy. Outcome was analyzed in terms of duration of surgery, duration of post operative stay; infection, dehiscence and local excoriation.

**Result:** 147 of 169 cases were included. 47, 78 and 22 cases were in group I, II and III respectively. Mean duration of surgery was 64, 62 and 50 minutes in group 1, II and III respectively ( $P = 0.09$ ). Mean duration of hospital stay was 7, 8 and 7 days in group 1, II and III respectively. Wound infection was seen in 7(14.9%), 48(61.5%) and 3(13%) cases in group 1, II and III respectively ( $p=0.03$ ). Dehiscence of the wound was seen in 7(14.9%), 48(61.5%) and 0(0%) cases in group 1, II and III respectively ( $p=0.01$ ). Local excoriation was seen in 6(12.7%), 18(23%) and 3(13.6%) cases in group 1, II and III respectively ( $p=0.06$ ). Rectourethral fistula was present in 40 cases of group I while it could not be assessed in others. Dilated sigmoid colon mimicking type 4 pouch colon was seen in 32(68%), 56(71.8%) and 14(63.6%) cases in group 1, II and III respectively ( $P = 0.09$ ). Mortality was seen in 4(8.5%), 8(10.2%) and 1(4.5%) case in group 1, II and III respectively ( $p=0.06$ ).

**Conclusion:** Management of HARM presenting late is a challenge. It is difficult to decide the type of surgery to be done. Primary PSARP can be offered if possible while transverse colostomy is better when colostomy is planned.



## Resection of recto urinary fistula under direct vision during PSARP: Experience with a modified technique

**Md Samiul Hasan** (Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh), **Nazmul Islam** (Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh), **Ashrarur Rahman Mitul** (Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh)

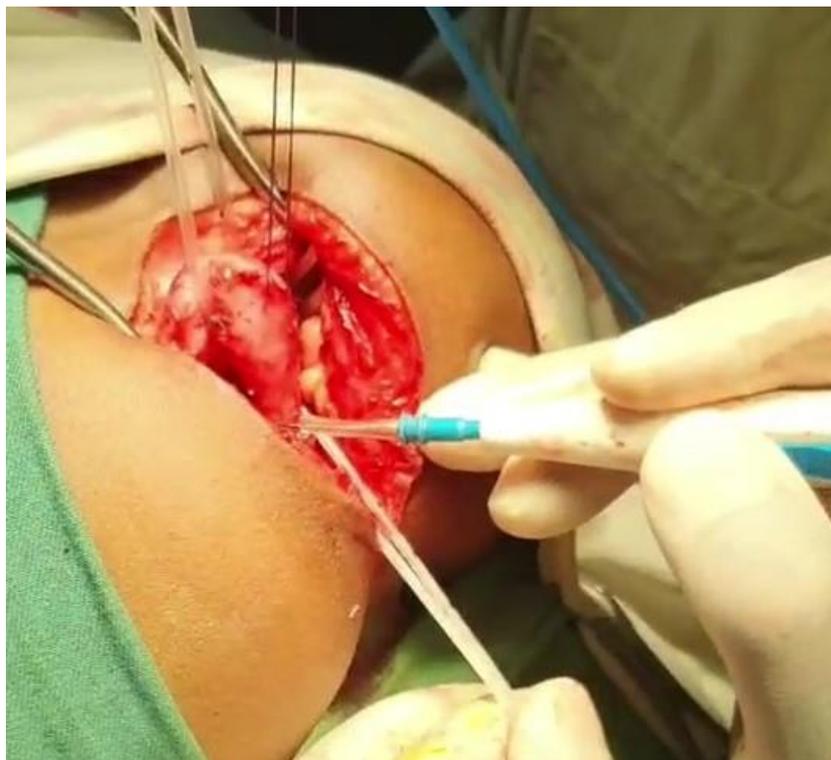
**Aim:** During classical Pena PSARP, one must remain at a submucous level for some distance where the rectum & urinary tract share a common wall. This very delicate dissection requires expertise. In our modified technique, the fistula is divided after the shared wall is completely separated, which is expected almost to eliminate the possibility of urethral injury. We aim to present the outcome of our technique for resection of fistula during PSARP.

**Methods:** We retrospectively reviewed the medical records of patients who underwent PSARP for ARM with recto urethral fistula (Prostatic, membranous and bulbar) between March 2021 to February 2022. The minimum follow-up was three months. Demographic and clinical data were recorded in a pre-designed form and analyzed using SPSS version 26. Ethical permission was taken from the hospital ethical committee. Surgical technique: After identifying the rectal pouch, we continued the dissection laterally and proximally. The plane between the rectum and bladder was then identified and separated. The rectum was lifted, and the urethra was pulled down using two loops. It allowed a clear distinction between the rectum and the urethra. The rectum was then separated from the urethra under direct vision (video).

**Results:** We operated on nine patients during the study period using this technique. The mean age at operation was  $17\pm 9$  months. The mean operation time was  $65\pm 5$  minutes. No patient developed urinary complications. One patient developed neo anal stricture, managed with Heineke Mikulicz anoplasty.

**Conclusion:** The modified technique is safe and easy to perform, requiring less time. It is beneficial for young surgeons or surgeons with a low caseload to avoid urinary complications.

**Keywords:** PSARP, Recto urinary fistula, Anorectal malformation



## Acute appendicitis during the COVID-19 pandemic versus before pandemic period in Republic of North Macedonia

**Toni Risteski** (University Clinic for Pediatric Surgery, Skopje, Macedonia), **Biljana Andonovska** (University Clinic for Pediatric Surgery, Skopje, Macedonia), **Monika Ardjanova** (Phi University Clinic for Surgical Disease “St.Naum Ohridski”, Skopje, Macedonia)

**Background:** The Coronavirus Disease 2019 (COVID-19) pandemic has impacted the outcomes of acute appendicitis.

**Aim:** The aim of the study was to compare the characteristics of acute appendicitis (AA) in children before and during the COVID-19 pandemic.

**Methods:** A cross sectional study was conducted at the University Clinic for pediatric surgery in Skopje, Republic of North Macedonia, between January 2019 and September 2020. We elaborated children aged  $\leq 14$  years diagnosed with AA and treated at our clinic before / during COVID-19 period. The time from the first symptoms to hospitalization, incidence of complications, type of intervention, duration of hospital stay, and postoperative use of antibiotics were compared between the two groups.

**Results:** A total of 328 children with appendectomies were included in the study – 197 (60,1%) before (Group 1) and 131 (39,9%) during COVID 19 pandemic (Group 2). No significant differences was found between the groups related to gender ( $p=0,341$ ) and age ( $p=0,475$ ). The time from the first symptoms to hospitalization ( $p=0,031$ ), complications ( $p=0,044$ ) and use of antibiotic treatment ( $p=0,028$ ) were significantly associated with Group 2. No association between the groups and AA type of intervention was found ( $p=0,191$ ).

**Conclusion:** Even with lower incidence, appendectomies in children during Covid 19 pandemic had increased rate of complications, prolonged hospitalization, and higher antibiotic use. Reason for these findings is important to be investigating, as pandemic conditions should be taken into account in children health interventions.

**Keywords:** children, acute appendicitis, appendectomy, Coronavirus Disease 2019, COVID-19

## Comparison of 5% phenol in almond oil, 15% hypertonic saline and 50% dextrose water for sclerotherapy treatment of rectal prolapse in children

**Hafiz Muhammad Arif** (King Edward Medical University, Lahore, Pakistan), **Muhammad Sharif** (King Edward medical university, Lahore, Pakistan), **Muhammad Azam** (King Edward Medical university, Lahore, Pakistan), **Ahmad Hassan** (King Edward medical university, Lahore, Pakistan)

**Aims:** To compare the outcome of injection sclerotherapy using 5% phenol in almond oil, 15% hypertonic saline and 50% dextrose water in the treatment of rectal prolapse.

**Methods:** Study design: Randomized control trial Setting: Mayo hospital Lahore Pakistan Duration: September 2020 to August 2021 Data collection procedure: After ethical approval, all the patients with rectal prolapse fulfilling inclusion criteria admitted Routine history, thorough clinical examination and routine preoperative investigation done Patients were randomly allocated to group A, B and C using the lottery method Group A patients were given injection sclerotherapy with 5% phenol in almond oil; Group B 15% hypertonic saline and Group C with 50% dextrose water solution. Under general anesthesia and patient in lithotomy position, 2-3ml of sclerosing agent was injected into sub of rectal prolapse, fecal incontinence, perianal abscess and anal stenosis according to the operational definition.

**Results:** in our study recurrence rate was higher for patients treated with 5% phenol in almond oil (16.13%) followed by 15% hypertonic saline (9.68%) and 50% dextrose water (6.45%) at 3 m follow up. (p-value=0.456). After 3 months anal stenosis was significantly higher among patients which were treated with phenol in almond oil (9.68%). However, none of the patient other group had anal stenosis at 3 month follow up i.e. 15% hypertonic saline (0%) and 50% dextrose water (0%). None of the patients in all other groups presented with fecal incon and perianal abscess at 3 month follow up.

**Conclusion:** Results of our study demonstrate that 50% dextrose water was the most effective modality to treat rectal prolapse in children in terms of low recurrence rate anal stenosis fecal incontinence and perianal abscess.

## Outcomes of surgical treatment of Hirschsprung disease in children: A single institution experience

**Avaz Dekhqonboev** (Pediatric surgery, Republican specialized scientific practical medical center of pediatrics, Tashkent, Uzbekistan), **Makhmud Aliev** (Pediatric surgery, Tashkent pediatric medical institute, Tashkent, Uzbekistan), **Rustam Yuldashev** (Pediatric surgery, Tashkent pediatric medical institute, Tashkent, Uzbekistan), **Akmal Akhmadjonov** (Pediatric surgery, Republican specialized scientific practical medical center of pediatrics, Tashkent, Uzbekistan)

We **aimed** to compare long-term outcomes of various surgical treatment methods in children with Hirschsprung disease (HD)

**Methods.** We conducted a retrospective review of 85 charts of children with HD operated between 2014 and 2021. We compared surgical outcomes after Soave (n=48), Soave-Boley (n=24), Transanal endorectal pull-through (TEPT) (n=10) and Swenson (n=3) procedures. We assessed postoperative complications including Hirschsprung associated enterocolitis (HAEC), soiling and obstructive symptoms (stricture or aganglionosis)

**Results.** Our postoperative complication rate was 29.4% (n=25). There was a significant difference in the age of children with and without postoperative complications ( $50.36 \pm 6.49$  vs  $30.3 \pm 4.23$  months,  $p=0.05$ ). In the postoperative period obstructive symptoms were observed in 11 (12.9%) children, of them 10 (11.7%) had anastomotic stricture and one (1.2%) had persistent aganglionosis. The HAEC episodes observed in 8 (9.4%) children and soiling in 4 (4.7%). Retraction of the descended colon (n=1; 1.2%) were also observed. The incidence of postoperative HAEC did not differ significantly between groups (Soave: 5.9%; Soave-Boley: 2.3% and TEPT 1.2%). The anastomotic stricture developed after Soave (n=7; 8.2%) and Soave-Boley (n=3; 3.6%) procedures. Furthermore, postoperative soiling was observed after these procedures and the incidence was 3.5% and 1.2% accordingly. It was noted that frequency of postoperative soiling directly correlated with the age of children at the time of surgery ( $r=0.33$ ,  $p=0.002$ ). While the development of anastomotic stricture and HAEC episodes did not correlated with age of children and type of the procedure.

**Conclusion.** The frequency of postoperative complications such as anastomotic stricture and episodes of HAEC did not correlated with the type of procedure. Nevertheless, older children are prone to have soiling following Soave and Soave-Boley procedures.

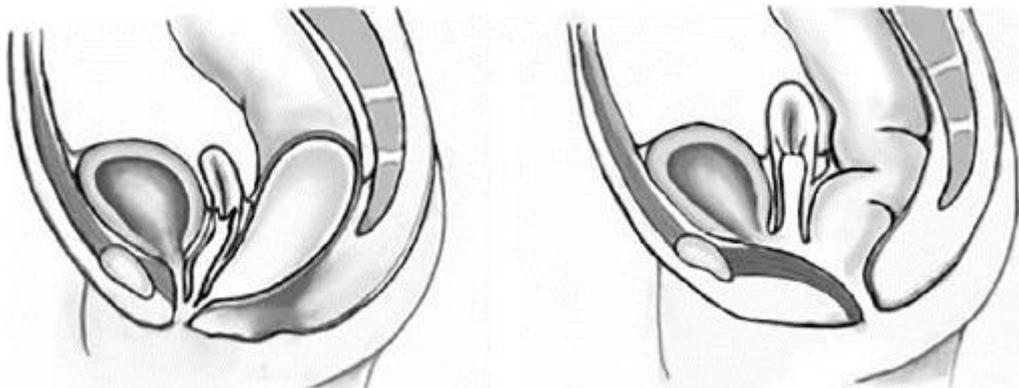
## Posterior cloaca: A rare subtype of a complex anorectal malformation

**Ahmed Eshiba** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Samar Eshiba** (Radiology, Alexandria Faculty of Medicine, Alexandria, Egypt), **Mostafa Kotb** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Ahmed Khairi** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Hebatallah Hassan** (Radiology, Alexandria Faculty of Medicine, Alexandria, Egypt)

**Aim:** Cloaca is a complex malformation that affects the rectum and urogenital tract of females. Those girls have a single perineal opening, where the urethra, vagina, and rectum are fused together inside the pelvis, creating a common channel that opens into a solitary orifice in the site where the urethra normally opens. Posterior cloaca is a unique subtype in which vagina and urethra are fused together to form a urogenital sinus (UGS) that deviates posteriorly to open in the anterior rectal wall at the anus or just anterior to it. In this condition, the rectum is essentially normal or may be minimally anteriorly mislocated. In this report, we describe a girl who presented with this unique subtype and highlight the tools for its diagnosis.

**Case description:** A 6-year-old girl was referred for the first time with suspicion of ambiguous genitalia. On examination, she had a small phallus showing a tiny meatus with urine dripping and normal anal opening. These features were suggestive of congenital adrenal hyperplasia, Prader V; however, karyotyping and laboratory tests were unremarkable. Ultrasonography showed normal female internal genitalia associated with hydrocolpus. MRI showed that the vagina and anal canal converging posteriorly to form a common channel below the pubococcygeal line (low type of cloaca). Furthermore, uterine and sacrococcygeal anomalies were noted. Transverse colostomy was done followed by definitive repair using anterior sagittal transrectal approach 3 months later. Total UGS mobilization was enough to mobilize the urethra and vagina to the surface of the perineum after dissection from symphysis pubis. The vaginal septum was completely resected using followed by clitoroplasty using Kogan repair (subtunical dissection), and lastly labioplasty was done.

**Conclusion:** This report describes a unique subtype of a complex malformation and highlights the importance of MRI to delineate the anatomy in managing difficult anorectal malformations.



## Diagnostic Criteria for the Treatment of Pediatric Acute Appendicitis Using Clinical Recommendations in Latvia

**Zane Liepina** (Department of Anesthesiology and Reanimatology, Riga East University Hospital, Riga, Latvia), **Liene Taurina** (Department of Laboratory, Riga East University Hospital, Riga, Latvia), **Lasma Asare** (Riga Stradins University, Riga, Latvia), **Astra Zviedre** (Department of Pediatric Surgery, Children's Clinical University Hospital, Riga, Latvia), **Mohit Kakar** (Department of Pediatric Surgery, Children's Clinical University Hospital, Riga, Latvia), **Arnīs Engelis** (Department of Pediatric Surgery, Children's Clinical University Hospital, Riga, Latvia), **Aigars Petersons** (Department of Pediatric Surgery, Children's Clinical University Hospital, Riga, Latvia)

**Aim.** To evaluate the defined diagnostic criteria from the clinical recommendations for patients with acute appendicitis (AA) depending on the received treatment.

**Methods.** Patients (7-18 years) with AA were selected in retrospective study (January 2017-December 2018). Patients were divided into 3 groups according to received treatment: group A – successful antibacterial treatment (AB) with amoxicillin and metronidazole, group B – initially received AB, but underwent appendectomy, group C – initially underwent appendectomy. Groups were compared based on the recommendation criteria: ALVARADO score (AS)  $\geq 7$ , white blood count (WBC)  $\geq 10.7 \times 10^9/L$ , C-reactive protein (CRP)  $\leq 8.4$  mg/L, interleukin-6 (IL-6)  $\leq 39.2$  pg/mL, appendix diameter (AD) in ultrasound  $\geq 7$  mm, negative rebound tenderness. Statistical analysis was performed using SPSS 27 ( $p < 0.05$ ). The study was approved by the Institutional Ethics Review Board.

**Results.** A total of 383 patients (55.6% boys) with mean age of 12 (IQR=10-14) years were assessed. 57% ( $n=221$ ) patients were in group A, 14.6% ( $n=96$ ) – in group B and 27.7% ( $n=106$ ) – in group C. Duration of symptoms – 17 (IQR=9-30) hours. AS was 8 (IQR=7-9). 62.5% phlegmonous and 29.4% gangrenous AA were confirmed by histopathological examination. A difference was observed between groups A and C in values of CRP and AD: CRP – 5.47 vs. 14.06 mg/L and AD – 9 vs. 10 mm. There was higher value of WBC in group B compared to group A ( $15.79 \times 10^9/L$  (SD $\pm 3.77$ ) vs.  $14.02 \times 10^9/L$  (SD $\pm 4.43$ ),  $t=-4.0$ ;  $p < 0.001$ ). A significant difference was observed between groups A and B in the distribution of CRP, AS and AD ( $z=-.83$ ;  $z=-3.16$ ;  $z=1.4$ ;  $p < 0.001$ ).

**Conclusions.** The defined higher cut-off values of AS, WBC, CRP and AD in US at admission increases the risk of complicated AA and necessity for appendectomy. Predicting factor for safe AB treatment is CRP  $\leq 8.4$  mg/L.

## What should be done surgically in carcinoid-like appendicitis with discordant radiological, surgical and pathological findings?

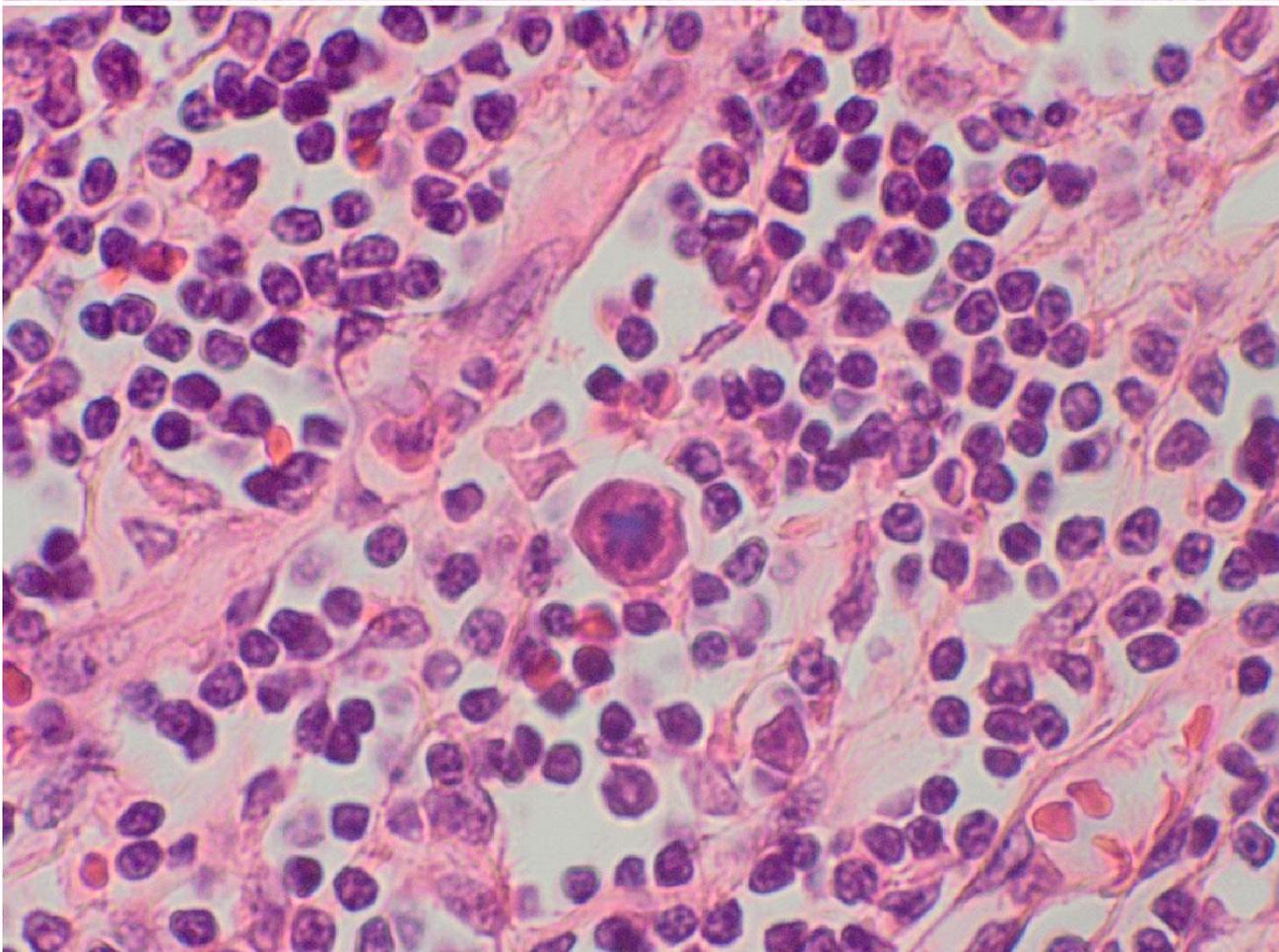
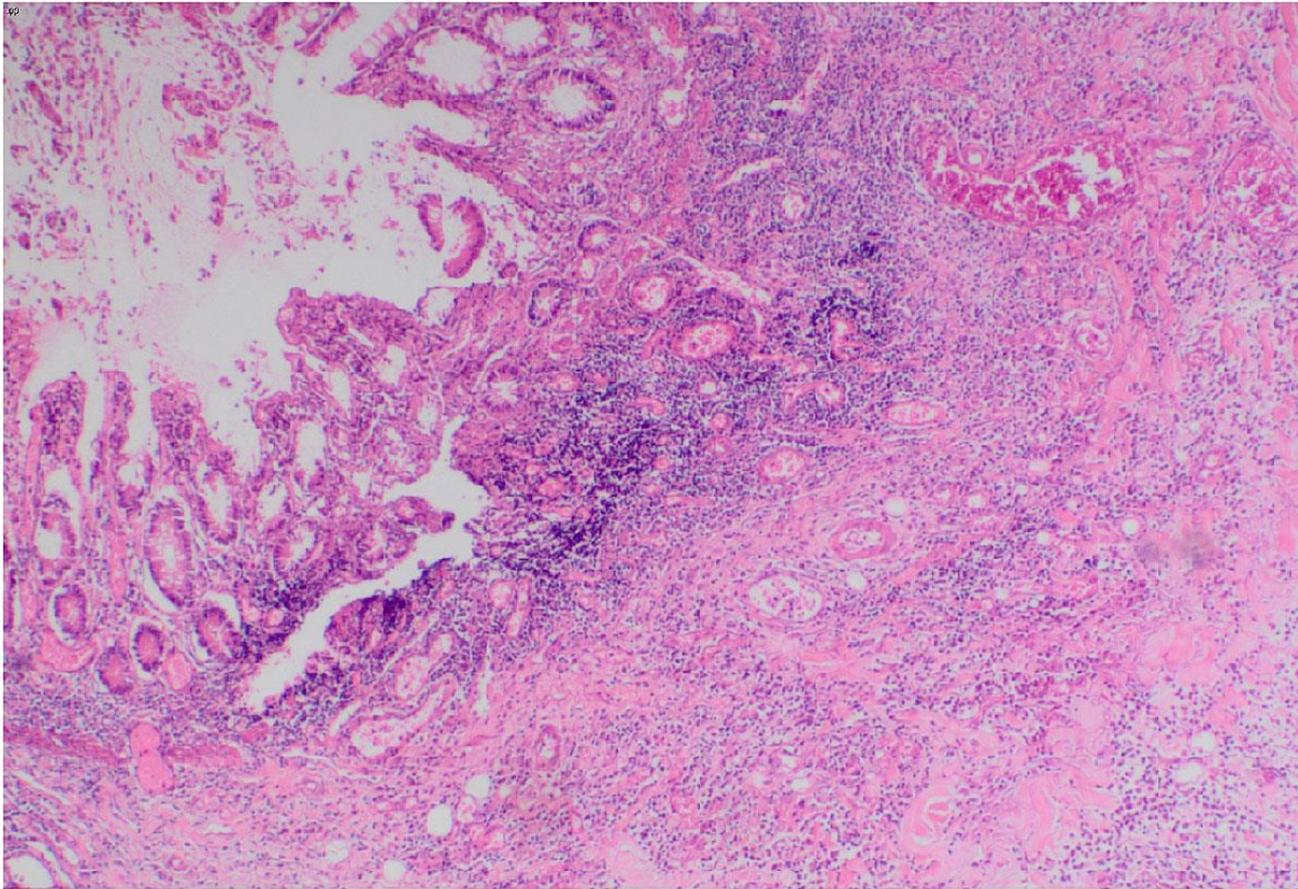
**Ozkan Cesur** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Asli Nur Abay** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Emine Dogan** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Mujde Karadeniz Kucuk** (Pathology, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Ayşe Karaman** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey)

**Aim:** Appendiceal carcinoid tumors are usually diagnosed by pathology examination after appendectomy, which generally results after the patient is discharged. How much resection should be performed in case of intraoperative carcinoid suspicion is still controversial. We aimed to discuss the decision of surgical approach with a case of appendicitis with different preoperative, intraoperative and pathological findings.

**Case Description:** A 14-year-old female patient presented with abdominal pain and tenderness. On ultrasound, an intra appendicular mass compatible with carcinoid tumor was observed. At laparotomy, 2.5 x 2 cm appendiceal mass with indistinguishable borders was seen at the tip of the cecum. In order to provide a clean surgical margin considering the size of the mass and the suspicion of carcinoid tumor, the mass was excised with 10 cm intestinal segment proximal and distal, ileocolic resection-anastomosis was performed. The pathology was reported as appendicitis with viral cytopathic effects and large pleomorphic cells prominent eosinophilic nucleoli.

**Conclusions:** Classification of appendicitis begins with the surgeon's intraoperative evaluation and is then confirmed by pathology. The pathological classification of appendicitis may not be compatible with the intraoperative opinion of the surgeon, but since it is determined later, it does not affect the surgical intervention, treatment approach and follow-up. All of these decisions are made according to the intraoperative findings of the surgeon. Additionally preoperative imaging methods can help only if they are compatible with intraoperative findings. Appendiceal carcinoid tumors are usually diagnosed incidentally with the result of pathology after appendectomy, and there are contradictory opinions about the surgical approach. In conclusion, large studies are needed to show whether the resection should be extended in order to provide a clean surgical margin in intraoperatively suspected carcinoid tumors.





## Association between anal position index and associated anomalies in anorectal malformation neonates

**Dewi Novitasari Arifin** (Pediatric Surgery Division, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta, Indonesia), **Ririd Tripitaka** (Pediatric Surgery Division, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta, Indonesia), **Aditya Rifqi Fauzi** (Pediatric Surgery Division, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta, Indonesia), **Akhmad Makhmudi** (Pediatric Surgery Division, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta, Indonesia), **Gunadi Gunadi** (Pediatric Surgery Division, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr. Sardjito Hospital, Yogyakarta, Indonesia)

**Aim:** To determine the association between anal position index (API) and associated anomalies in anorectal malformation (ARM) patients.

**Methods:** We analysed the medical records of ARM neonates and controls at our institution from November 2018 to April 2021.

**Results:** Sixty-eight neonates were involved: 35 ARM patients and 33 controls. Most ARM patients showed congenital heart disorder (63.6%), Down syndrome (54.5%), vertebral anomaly (27.3%), trachea-oesophageal anomaly (27.3%), and limb anomaly (18.2%). API in males was higher than in female neonates in both controls ( $p < 0.0001$ ) and ARM group ( $p = 0.0068$ ). There was a significant difference in API between controls ( $0.42 \pm 0.08$ ) and ARM neonates without associated anomalies ( $0.48 \pm 0.06$ ) ( $p = 0.007$ ). In addition, the API in ARM males with associated anomalies ( $0.42 \pm 0.07$ ) was lower than males in the control group ( $0.48 \pm 0.02$ ) ( $p = 0.005$ ). Subgroup analysis showed that the API of ARM neonates with vertebral anomalies ( $0.35 \pm 0.04$ ) was lower than ARM neonates without vertebral anomalies ( $0.47 \pm 0.07$ ) ( $p = 0.021$ ).

**Conclusions:** The API in ARM neonates might be affected by associated anomalies and sex, implying that this critical information should be explained to the parents related to the prognosis of ARM neonates.

**Keywords:** anal position index; anorectal malformation; associated anomalies; neonates; sex

## Early feeding versus 5- day fasting after elective distal bowel stoma closure surgery in children

**Tahir Muhammad Yaseen** (Paediatric surgery, Liaquat National Hospital, Karachi, Pakistan), **Shabbir Hussain** (Paediatric surgery, Liaquat National Hospital, Karachi, Pakistan), **Taimoor Qureshi** (The Indus Hospital, Karachi, Pakistan)

**Aim:** To determine the safety of enhanced recovery (ERAS) in children following Distal Elective Bowel Stoma Closure (DEBA)

**Methods:** A Prospective Randomized controlled trial done over a period of 2 years between January 2018 to June 2020, in Paediatric Surgery department, Liaquat National Hospital, Karachi. All the patients with HD and ARM, with a covering colostomy were included in the study. Patient were managed by pre-set Performa and results were filled prospectively. Early feeding post distal bowel stoma closure was compared with 5 day conventional fasting group and safety of early enteral feed initiation was assessed. Primary outcome measures were hospital stay and time to reach full enteral feed while secondary outcome measures included immediate post-operative complications.

**Results:** There were total 31 patients who underwent distal elective bowel anastomosis. Primary disease spectrum included 21 cases of ARM, 10 cases of HD. Mean age in CASE group was 10.9 months and of CONTROL group 12.6 months. Patients in CASE group started feed on 1<sup>st</sup> post-operative day and mean time to reach complete enteral feed was 4<sup>th</sup> post-operative day. In CONTROL group enteral feed was started on 5<sup>th</sup> post-operative day and mean time to reach full enteral feed was 7.5<sup>th</sup> day post-surgery ( $p$  value 0.02). CASE group children were discharged home early as compare to CONTROL group ( $p$  value 0.05).

**Conclusion:** We conclude that it is safe to start feed early after elective distal bowel anastomosis for patient with HD and ARM as it allows early discharge from the hospital.

## Factors affecting the quality of life of patients with anorectal malformation in adulthood

**Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Can Ihsan Öztörün** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Vildan Selin Şahin** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Sarper Müftüoğulları** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Ahmet A Ertürk** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Sabri A Demir** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Doğuş I Güney** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Mujdem Nur Azili** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey)

**Aim:** In this study, we aimed to reveal the factors affecting bowel functions and quality of life in patients who were operated for anorectal malformation and transitioned to adulthood.

**Methods:** Forty-six patients aged 18-37 years, who were followed up and treated in our clinic between 1985 and 2004, were evaluated in terms of demographic characteristics, anorectal malformation type, fecal continence, urinary pathologies, sacral and spinal anomalies, and quality of life. The Krickenbeck scoring was used. A questionnaire containing age-appropriate questions, known as the pediatric general quality of life scale (PedsQL), was administered to the patients.

**Results:** The mean age ( $\pm$ SD) of the patients was  $21.21 \pm 3.85$  years, 27 (58.6%) were male. Rectobulbar and rectoprostatic fistula were most common in boys (77.7%), and rectovestibular fistulas were most common in girls (76.4%). 21 (45.6%) of the patients were working in a job, 7 (15.2%) were not working at any job, and 18 (39.2%) were students. There were 7 patients (4 male, 3 female) who were married. Five of them had children. Two female patients don't have children. The mean age of patients to become fully continent was 8.11.

In the Krickenbeck scoring, there were 36 patients in Stage 1, 7 patients in Stage 2, and 3 patients in Stage 3. It was observed that there was a significant decrease in PedsQL from Stage 1 to Stage 3. PedsQL values of 9 patients with severe uropathy were lower than the others. PedsQL values of 11 patients with sacral and spinal cord pathology were lower than the others.

**Conclusion:** In our study, we determined that approximately three-quarters of patients had a good Krickenbeck continence score. It was observed that fecal continence, serious urinary system pathologies, sacral and spinal cord anomalies adversely affected the quality of life in adulthood.

## Hirschsprung disease: shall we move forward? A retrospective cohort study

**Tahir Muhammad Yaseen** (Paediatric surgery, Liaquat National Hospital, Karachi, Pakistan), **Shabbir Hussain** (Paediatric surgery, Liaquat National Hospital, Karachi, Pakistan), **Taimoor Qureshi** (The Indus Hospital, Karachi, Pakistan)

**Aim:** To determine the safety and effectiveness of single stage corrective surgery in Hirschsprung disease (HD)

**Methods:** A retrospective review of data of all the cases operated for biopsy proven Hirschsprung disease that had not undergone any definitive corrective procedure. Children were divided into 2 groups, GROUP 2 ((STAGED ERPT) included children who had undergone staged repair while GROUP 1 (PRIMARY ERPT) included children who had a single stage endorectal pull through (ERPT) corrective procedure. Primary outcomes were total hospital stay and QOL scoring on follow-up. Secondary outcome variables included immediate post procedure complications such as surgical site infection, anastomotic dehiscence, anastomotic stricture formation, perianal excoriation and post-operative ileus.

**Results:** A total of 47 patients were included between January 2007 till June 2020. 18 underwent primary single stage ERPT, while 29 had staged ERPT. Both groups had male predominant sex distribution. A comparative review revealed that patient who underwent Primary ERPT had a shorter mean hospital stay of 5.3 days. There were clearly greater post operative complications and admissions in patients who underwent staged ERPT. 17.24 % of children who underwent staged ERPT 17 % developed SSI in comparison to none in Primary ERPT group. Incidence of post operative ileus was also higher in Staged ERPT (20.96%) group versus Primary group (5.56%). Post-operative enterocolitis was the most common cause of hospital re-admission postoperatively and the incidence was comparable in between the 2 groups. Overall morbidity post procedure was Grade 1 as per Clavien Dindo classification system. 2 patients in Staged ERPT group required re operation hence falling in GRADE 3 of Clavien Dindo grading system, but insignificant statistically.

**Conclusion:** Primary ERPT is a safe procedure for patients with Hirschsprung disease as there is avoidance of stoma formation, there is better continence and low incidence of post operative complications.

## Prognostic factors for clinical deterioration of neonates with necrotizing enterocolitis

**Maharani Febrianti** (Pediatric Surgery Division, Department of Surgery, Gadjah Mada University, Yogyakarta, Indonesia), **Ibnu Sina Ibrohim** (Pediatric Surgery Division, Department of Surgery, Gadjah Mada University, Yogyakarta, Indonesia), **Henggar Allest Pratama** (Pediatric Surgery Division, Department of Surgery, Gadjah Mada University, Yogyakarta, Indonesia), **Aditya Rifqi Fauzi** (Pediatric Surgery Division, Department of Surgery, Gadjah Mada University, Yogyakarta, Indonesia), **Nunik Agustriani** (Pediatric Surgery Division, Department of Surgery, Gadjah Mada University, Yogyakarta, Indonesia), **Gunadi Gunadi** (Pediatric Surgery Division, Department of Surgery, Gadjah Mada University, Yogyakarta, Indonesia)

**Aim:** To determine the prognostic factors for clinical deterioration of neonates with necrotizing enterocolitis (NEC).

**Methods:** A retrospective study was conducted using medical records of neonates with NEC at our institution from January 2016 to June 2021. The log-rank test was used to determine the correlation between clinical deterioration of premature neonates with NEC.

**Results:** Our study involved 214 neonates with NEC. It showed an overall clinical deterioration of 22.9%. The following prognostic factors were strongly associated with the clinical deterioration of neonates with NEC: late-onset ( $p < 0.001$ ), history of blood transfusion ( $p = 0.017$ ), thrombocytopenia ( $p = 0.025$ ), and elevated C-reactive protein ( $p < 0.001$ ). Multivariate analysis revealed that late-onset and elevated CRP were strongly associated with the clinical deterioration of premature neonates with NEC with a p-value of 0.003 (OR=3.16 [95% CI=1.49 – 6.73]) and 0.003 (OR=3.31 [95% CI=1.52 – 7.20]), respectively.

**Conclusions:** Our study shows that late-onset and elevated CRP might affect the clinical deterioration of premature neonates with NEC.

## POSTER WALK 2

## Urology 1

## Evaluation of VURx Symptom Score and Ureteral Diameter Ratio Results in Primary Vesicoureteral Reflux

**Yusuf Atakan Baltrak** (Pediatric Urology, Cukurova University, Urology Clinic, Adana, Turkey), **Mutlu Değer** (Cukurova University, Urology Clinic, Adana, Turkey), **Nebil Akdoğan** (Cukurova University, Urology Clinic, Adana, Turkey), **Nihat Satar** (Cukurova University, Urology Clinic, Adana, Turkey)

**Objective:** The aim of this study was to evaluate the results of patients who underwent ureteroneocystostomy (UNC) and subureteric injection (STING) for primary vesicoureteral reflux in pediatric patients with VURx symptom score and ureteral diameter ratio (UDO).

**Patients and Methods:** Patients whose voiding cystourethrogram could not be registered in the hospital information management system and who were treated for duplicated system, solitary kidney, ureterovesical stenosis and secondary vesicoureteral reflux were excluded from the study. The reflux staging of the cases in both groups was performed by voiding cystourethrogram before treatment. The patients in the UNC and STING groups were evaluated as stage 1-3 and stage 4-5 as two groups. Demographic data, VURx symptom score and ureteral diameter ratio (UDO) results of the patients who underwent UNC and STING were compared. The results were analyzed with parametric and non-parametric tests.

**Results:** 257 patients were included in the study. Among the subjects in the STING group, the UDR value in the patients with UNC was  $0.25 \pm 0.12$ , while the UDR value in the patients in the STING group without UNC was  $0.15 \pm 0.09$  ( $p=0.01$ ). The difference between the VURx symptom score and the UDO value was statistically significant between the stage 1-3 and stage 4-5 patient groups ( $P<0,005$ ). In the STING group, the VURx symptom score was  $4.31 \pm 0.79$  in patients with UNC during follow-up, and  $2.67 \pm 0.63$  in patients without UNC in the same group ( $p=0.01$ ). The difference between the VURx symptom scores and the UDO values of the patients with and without UNC in the follow-up of the patients who underwent STING was statistically significant ( $p< 0.05$ ).

**Conclusion:** It is thought that high VURx symptom score and increased ureteral diameter ratio (UDO) can be used to evaluate the follow-up and treatment options of primary vesicoureteral reflux.

## Pediatric robot assisted laparoscopic urethral reimplantations (RALUR) – Our Initial experience with 18 ureteric units

**Arvind Sinha** (All India Institute of Medical Sciences (AIIMS), Jodhpur, India), **Mahaveer Singh Rodha** (All India Institute of Medical Sciences (AIIMS), Jodhpur, India), **Kirtikumar Rathod** (All India Institute of Medical Sciences (AIIMS), Jodhpur, India), **Rahul Saxena** (All India Institute of Medical Sciences (AIIMS), Jodhpur, India), **Manish S Pathak** (All India Institute of Medical Sciences (AIIMS), Jodhpur, India), **TK Jayakumar** (All India Institute of Medical Sciences (AIIMS), Jodhpur, India)

**Aim:** To describe out initial experience with RALUR.

**Methods and Results:** Open urethral reimplantation is the prevailing gold standard for the management of vesicoureteric reflux (VUR). However, minimally invasive approaches based on open-extravesical Lich-Gregoir procedure is rapidly gaining traction. From Mar2018 to Nov2021, we have performed RALUR on 12 patients (18 Ureteral Units with six patients having bilateral pathologies). The age of the patients managed ranged from 3 years to 17 years with average of 7.75 years. Six patients had bilateral VUR with another six having a unilateral VUR (Left–5, Right–1). One unilateral VUR was also complicated by a periureteral diverticulum necessitating a ureteral disconnection and resuturing. Follow up period varies from 3 years to 3 months. We aimed to create at least a 4cms long tunnel and utilized a top-down detrusor suturing technique. No ureteric stent was used apart for the child with diverticulum. Perurethral catheter was removed after 48hours and a postoperative MCU was done at 3 months post-procedure. Two patients required perurethral recatheterisation (due to voiding difficulties which was successfully managed by a further period of catheterization for 48 hours). 5 patients complained of flank/abdominal pain and fever in the initial post-operative period. Two patients required re-admission in the post-operative period within 10days after discharge.

Three patients had recurrence of reflux with two patients with bilateral reflux demonstrating a residual unilateral reflux with a decrease in the severity of reflux. The child with peri-ureteric diverticulum had a recurrent secondary diverticulum with recurrent grade 5 reflux.

**Conclusions:** RALUR is a complex urological procedure where the results are improving with experience and the procedure is still evolving and improving with time. Due to higher recurrences, we believe that the bilateral VUR or complicated VUR including previous use of bulking agents or diverticulum may be deferred to a later stage in learning curve.

## Polyorchidism in a prepubertal boy – a rare case

**Eva Faltusová** (Urology, Thomayer Hospital and Charles University 3st Faculty of Medicine, Pediatric Surgery and Traumatology, General Teaching Hospital and Charles University 1st Faculty of Medicine, Urology, Prague, Czech Republic), **Marcel Drlík** (Paediatric Urology, General Teaching Hospital and Charles University 1st Faculty of Medicine, Urology, Prague, Czech Republic), **Aleš Přeč** (Thomayer Hospital and Charles University 3st Faculty of Medicine, Pediatric Surgery and Traumatology, Prague, Czech Republic), **Tomáš Pešl** (Thomayer Hospital and Charles University 3st Faculty of Medicine, Pediatric Surgery and Traumatology, Prague, Czech Republic)

**Aim:** Polyorchidism, the presence of a supernumerary testis, is rare. Its oncological risks and management still remain a matter of debate. We present a case of left-sided testicular duplication.

**Case Description:** An 11-year-old boy was examined on the recommendation of his general practitioner, who found a marked left testicle hypotrophy on examination following a smallpox. The boy reported no history of trauma. On clinical examination we found one testis in each hemiscrotum. Both testicles were normal in consistency, the left one was significantly smaller. In addition, palpation revealed a mass located in the groin above the external anulus of the inguinal canal. On ultrasound, we found the third cryptorchidic testicle. All three testes of the patient were normal in echotexture. No persistent Müllerian structures were found. We referred the patient for revision of the left groin, during which we confirmed two testicles joined by a common epididymis. The vas deferens and vascular supply departed from the cranially located testis (type Kumar A3) We performed an orchidopexy of both testicles without any biopsy. 25 months after surgery, there is no testicular atrophy, hydrocele or recurrence of cryptorchidism. Parents and patient were instructed on the necessity of periodic self-examination of testicles.

**Conclusions:** Clinician must be aware of this rare pathology. If the supernumerary testicle is not atrophic and can be placed in the scrotum where it can be monitored, an organ sparing management is a method of choice.



## Caudal duplication syndrome – a case report and new classification based management approach in females

**Vishal Vishnu Sawant** (Pediatric Surgery, Healthway Hospitals, Old Goa, India), **Bossuet Afonso** (General and Laparoscopic Surgery, Healthway Hospitals, Old Goa, India), **Bharati Sawant** (Anesthesiology, Healthway Hospitals, Old Goa, India), **Shivanand Gauns** (Pediatrics and Neonatology, Gauns Child Care Hospital, Mapusa, India)

**Aim:** Caudal Duplication syndrome is a rare anomaly. The literature mostly comprises of case reports. The treatment varies from no or partial treatment to multiple staged reconstruction. Based on our experience of a case and the available literature, we propose a new classification based treatment for this anomaly in females.

**Case description:** A female neonate presented with duplication of external genitalia, double ani (right of which was ante posed), lower back swelling and an orthopedic deformity. Basic imaging were done and she was discharged after adequate observation for obstructive symptoms. At 3 months, imaging confirmed complete duplication of bladder, urethra, vagina, uterus, anorectum, colon till splenic flexure. she also had a sacral lipo-meningocele with pelvic and sacral anomaly. At 9 months, cysto-genitoscopy with lipo-meningocele repair was done successfully. At 20 months, by combined abdominoperineal approach, right sided duplicated genitourinary organs, anorectum and colon up to splenic flexure were removed with re-implantation of the right ureter into the left bladder. Bowel continuity was re-established. Perineal reconstruction was done. She was followed up for 2 years. She was continent, free from urinary infections and had a satisfactory cosmetic appearance (File 1). VCUG done showed a low grade reflux in the reimplanted ureter.

Literature that described the anomaly in females with complete anatomical detail was reviewed. 8 case reports met the selection criteria. The information available was used to classify the anomaly in females into four broad categories. Treatment guidelines were formulated based on this classification.

**Conclusions:** Early, comprehensive reconstruction is possible and safe in carefully selected females with Caudal Duplication Syndrome. Our classification-based management protocol should help in providing uniform standard of care in these cohort of patients.

## Outcome analysis of infantile pyeloplasty versus paediatric pyeloplasty in antenatally detected pelvi-ureteric junction obstruction – retrospective study over 4 years

**Muneer Abas** (PGIMER Chandigarh, Chandigarh, India), **Ram Samujh** (PGIMER Chandigarh, Chandigarh, India), **Khyati Kiran Janapareddy** (PGIMER Chandigarh, Chandigarh, India), **Nitin J Peters** (PGIMER Chandigarh, Chandigarh, India), **Muneer A Malik** (PGIMER Chandigarh, Chandigarh, India), **Anish Bhattacharya** (PGIMER Chandigarh, Chandigarh, India)

**Aim:** Pelvi-Ureteric Junction Obstruction (PUJO), a common cause of antenatal hydronephrosis. The aim of the study was to compare the outcomes of performing pyeloplasty for antenatally diagnosed Pelvi-ureteric Junction Obstruction (PUJO) before and after 1 year age.

**Methods:** All patient who underwent pyeloplasty for antenatally suspected, postnatally diagnosed PUJO from January 2017 to December 2020 were included for a retrospective analysis. All patients with evidence of antenatal diagnosis were included. Exclusion criteria included patients with bilateral PUJO. The cases were divided into Infantile group (pyeloplasty before the age of 1 year) and Pediatric group (pyeloplasty after age of 1 year) and preoperative and postoperative parameters were analyzed and compared. All children underwent standard open or laparoscopic dismembered pyeloplasty performed by a team of surgeons.

**Results:** Children were sorted into Infantile group (n=58) and Pediatric group (n= 31) and compared. Hydronephrosis improved in 80% of infantile group and 100% of pediatric group patients. Differential renal function (DRF) improved by 3.6% in infantile group and deteriorated by 4.1% in pediatric group. Improvement in DRF and T1/2 reached statistical significance was statistically significant. Weight percentile improved significantly following pyeloplasty in Infantile group. Comparison of improvement of DRF between both groups neared statistical significance (p=0.055).

**Conclusion:** The study showed significant improvement in renal function following pyeloplasty in the Infantile group. Regular follow up for deterioration of renal function is more important to determine the timing of surgery rather than a specific age group as evidenced by our study. Infants in particular need close monitoring to identify surgically correctable PUJO as they show significant improvement in renal function and catch-up growth as compared to older children.

## Hemiscrotal agenesis: a novel phenotype of a rare malformation

**Mohamed Mamdouh Mansy** (Faculty of Medicine Port Said University, Alexandria, Egypt)

**Aim:** Hemiscrotal agenesis (HSA) is an exceedingly rare congenital anomaly in scrotal development. It is characterized by unilateral absence of scrotal skin with intact midline raphe. In the English literature, only seven patients were diagnosed with HSA. Herein, we report a 14-month-old boy with HSA, unilateral cryptorchidism and a perineal skin tag. Additionally, the patient had a monodactylous limb, unilateral cerebellar hypoplasia, and a cardiac septal defect.

**Case presentation:** A 14-month-old boy presented with right HSA and ectopic scrotal skin in the right perineal region. Extra-genital examination showed right monodactylous lower limb, without dysmorphic facial features or any other skeletal anomalies. His karyotype was 46, XY, while his hormonal profile showed prepubertal LH and FSH. Skeletal survey showed right monodactylous lower limb (with only a big toe which had 2 phalanges) and normal spine alignment. A previous echocardiography was done and showed a small muscular ventricular septal defect (VSD) that closed on follow-up. Magnetic resonance imaging of the brain showed posterior fossa malformation. The patient had his right testis fixed in the right scrotum. The pathological examination of the perineal lesion showed fibro-epithelial polyp (skin tag), with no testicular tissue or atypia.

**Conclusion:** We believe that this is the first case to be reported with hemiscrotal agenesis and ipsilateral cryptorchidism, associated with a perineal skin tag, unilateral monodactylous lower limb on the same side, unilateral cerebellar hypoplasia, and VSD. Interestingly, further genetic analysis is required to reach a final diagnosis. However, regrettably, advanced molecular diagnostic studies for this patient is not available in our country.





## Laparoscopic rectal and vaginal pull through in the same setting in cases of cloaca with common channel more than 3 cm

**Ahmed Arafa** (Cairo University, Giza, Egypt)

**Aim of the Study:** This study aims at evaluating the feasibility and outcome of a laparoscopically assisted rectal and vaginal pull-through procedure in the same setting for cases of long common channel in a cloaca >3 cm in length.

**Methods:** I have 4 cases with a cloaca with long common channel >3 cm in length diagnosed by cloacogram and cystoscopy. As for the ages of our cases, two of them were 1 year old, and the other 2 cases were 2 years old. Laparoscopic rectal and vaginal pull-through in the same setting was performed in all cases. The operative time was 3 hours. A tension-free anastomosis of the rectum in anal complex was carried out; also anastomosis of vagina to the perineum was realized after laparoscopic mobilization of the vagina, separation from the bladder neck at the confluence and pull-through. This is to avoid perineal or perirectal dissection.

**Results:** Frequent anal and vaginal dilation after 2 weeks from operation was carried out. Our cases have not demonstrated any stricture, or urethrovaginal fistula. This procedure resulted in a good cosmetic and unimpaired functional outcome. It has been conducted also to avoid excessive perineal dissection, and reduce risk of urinary incontinence by evading the occurrence of urethral sphincter damage.

**Conclusion:** Laparoscopic-assisted rectal and vaginal pull-through is a new approach for long common channel cloaca that avoids perineal dissection, reducing dissection, and risk of urinary incontinence. This technique should be used and implemented on a wide scale.

## Unusual upper moiety ureteric duplication with lower moiety PUJ obstruction

***Kai Chi Chan*** (Paediatric Surgery, Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Mohammad Bader*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Khaled Ashour*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK)

**Aim:** We describe a unique urological anatomical variation discovered at laparoscopy that has not been previously documented in English literature. We also hypothesise the embryological pathway as to how this may have occurred.

**Case description:** A 5-year-old girl who presented with recurrent urinary tract infection. Her investigations revealed a simplex obstructed system. She underwent an elective left laparoscopic pyeloplasty for PUJO. However, this was not the anatomy discovered at operation.

We saw a ureteric triplication with a single ureter draining a lower moiety duplex system which was obstructed by a crossing vessel. However, we also found a bifid ureter draining both the upper and lower moieties.

This specific case demonstrates an anatomical variation that differs from the Smith's Type II criteria of ureteric triplication set out in 1946. Specifically, in a Smith's type II there are two ureters with one of these ureters being bifid, however they all usually drain into a single hilum. Our case is therefore different in that it is seen within a duplex system, and that the bifid ureter drains both an upper and lower moiety.

We hypothesise the embryological pathways may have involved the patient having two ureteric buds originating from the mesonephros. One bud formed a single ureter, with the other one undergoing incomplete duplication, thereby resulting in 3 ureters. One of the duplicated ureters formed the upper moiety, whilst the other traveled with the single ureter to join the lower moiety.

**Conclusions:** This case reminds us that despite extensive pre-operative imaging, it is of paramount importance to define the anatomy intraoperatively to reduce the risk of harm to less defined ureters. However, the bifid ureters are attached to the obstructed moieties but they might not provide adequate drainage.

## Operative management of PUJO caused by ventral crossing hilus vessels

**Gabriel Nonnenmacher** (Pediatric Surgery, Olgahospital, Stuttgart, Germany), **Ammar Alazki** (Pediatric Surgery, Olgahospital, Stuttgart, Germany), **Steffan Loff** (Pediatric Surgery, Olgahospital, Stuttgart, Germany)

**Aim:** Pelvi-ureteric junction obstruction (PUJO) is defined as the impairment of urinary transport across the pelvi-ureteric junction leading to loss of renal function if not treated effectively. Obstruction can be caused by intrinsic stenosis, external compression or combined factors.

The most commonly reported causes of extrinsic compression are lower pole crossing vessels.

Extrinsic PUJO caused, not by lower pole vessels, but by ventral renal hilus vessels have not been described in literature to the best of our knowledge.

We aim to demonstrate laparoscopic surgical management of extrinsic PUJO caused by ventral crossing hilus vessels.

**Case description:** We report a case series of 3 patients presenting with one-sided hydronephrosis in ultrasound imaging. Diuretic renogram showed unimpaired split renal function with values between 44% and 56%. Clearance of MAG3 20 minutes after furosemide injection ranged from 0% to 25%.

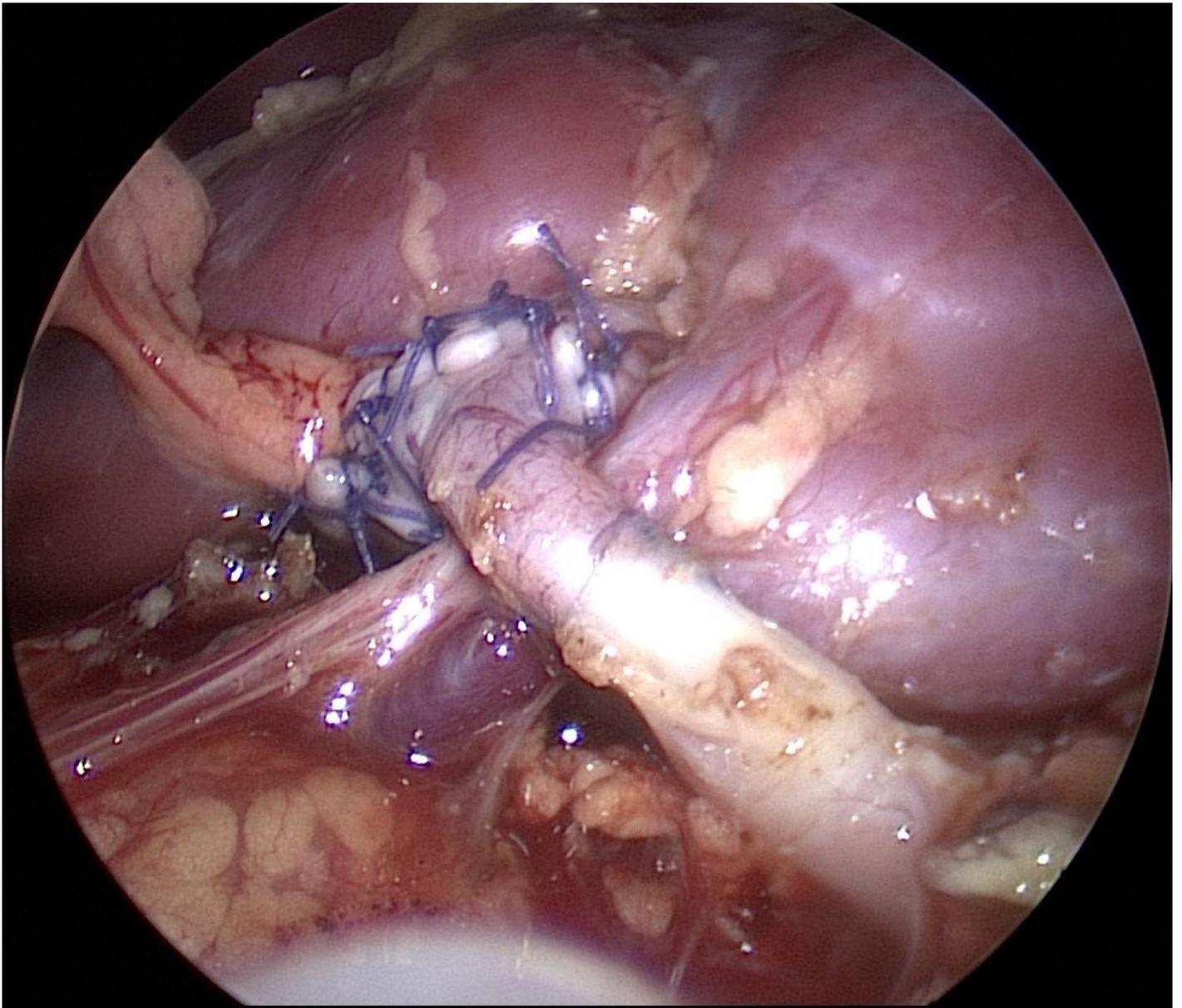
With a median age of 7 months at the time of surgery, laparoscopic findings showed extrinsic pelvi-ureteric junction obstruction caused by ventral crossing hilus vessels. Dismemberment of the ureter did not reveal additional intrinsic stenosis. Anastomosis ventral of the crossing vessels was performed and a DJ-stent was placed in each case. The DJ-stent was removed after 2-3 months.

Follow-up at least 4 months after surgery showed improvement of the mean AP diameter of the renal pelvis from 17mm to 6mm.

**Conclusions:** Surgical management of extrinsic PUJO caused by lower pole vessels is extensively discussed in literature. Besides dismembered pyeloplasty, a vascular-hitch around the lower pole vessels is possible, if an additional intrinsic stenosis can be ruled out.

Since extrinsic PUJO caused by ventral crossing hilus vessels has not been described yet, ideal management is unclear.

We demonstrated successful management in 3 cases by laparoscopic dismembered pyeloplasty with anastomosis ventral of the crossing hilus vessels.



## Is the Nigella Sativa Reduce the Level of Kidney Function Tests: A Meta Analysis

**Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Sena İnal Azizoğlu** (Pediatrics, Başakşehir Çam and Sakura Hospital, İstanbul, Turkey), **Ayten Ceren Bakır** (Pediatric Surgery, Marmara University Medical School, İstanbul, Turkey), **Sergey Klyuev** (Pediatric Surgery, Saratov State Medical University, Saratov, Russian Federation), **Diego Falchi** (General Medicine, Sassari University, Sassari, Italy)

**Aim:** The extract of Nigella sativa (NSE), Nigella sativa oil (NSO), and the main active ingredient of Nigella sativa named Thymoquinone(TQ) has been used in a few clinical trials and experimental rat models. In this meta-analysis, we aimed to investigate the effectiveness of NS on kidney functions.

**Methods:** We performed a systematic review and meta-analysis. We searched PubMed from inception until 2020 using keywords "nigella sativa, nigella sativa oil, nigella sativa extract, and thymoquinone". Only experimental animal studies that are created by using nephrotoxic medications were included in this study. The election was obtained based on abstracts. The reviews and irrelevant studies were excluded.

**Results:** We identified 9 of 20 experimental studies that focused on the effects of the Nigella sativa on kidney functions. The excluded studies were due to reviews (n=4), ischemia/reperfusion models (n=5), and unclear biochemical results (n=2). There were 486 animals, 9,8% (n=48) were Balb/c mice, 10,2% (n=50) were Sprague Dawley rats, and 79,9% (n=388) were Wistar rats. Nephrotoxicity was induced by Gentamicin (n=2), Lipopolysaccharide (n=1), Cisplatin (n=4), Tramadol (n=1), Morphine (n=1). NSO and/or NSE and/or TQ were used as a protective treatment. The results of urea, creatinine, or BUN have been noted. According to the results of the all included study, NS ameliorates the markers and significantly reduces the elevated levels due to induced nephrotoxicity ( $p < 0,05$ , separately for each study).

**Conclusions:** The results of this meta-analysis show that NS and its extract significantly reduce the elevated blood level of the kidney function tests. Further study is needed to prove the effectiveness and safety of the NS on the kidney.

## Sonographic Follow-up after Pyeloplasty: Making Sense of Tools and Values and Defining Success and Failure

***Nipun Wickramasekara*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka), ***Jenosha Ignatius*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka), ***Methmal Mallawarachchi*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka), ***Ananda K Lamahewage*** (Lady Ridgeway Hospital for Children, Colombo, Sri Lanka)

**Aim:** Routine nuclear scintigraphy and pyelograms after surgery for UPJO is discouraged due to conflicting results and radiation concerns making ultrasound the preferred option. Yet, interpretation of sonographic parameters is rarely straightforward. We analyzed our own data of Lady Ridgeway Hospital to identify useful patterns and trends.

**Methodology:** We reviewed 111 cases performed for UPJO, including 97 pyeloplasties: (52 open, 45 laparoscopic) and 14 pyelopexies, during a 7 year period. Pre-operative pelvic AP diameter (RP-APD), Cortical thickness (CT) and Pelvic/Cortex ratio (PCR) was measured and compared with values at 6 weeks, 3, 6 and 12 months post-operatively. Primary endpoints of success were total relief of symptoms and complete resolution of hydronephrosis.

**Results:** Out of 70 who were symptomatic, 85% were free of symptoms by 1 year. Conversely only 11% had complete resolution of hydronephrosis. Eleven (10.4%) needed a redo procedure. Mean reduction in RP-APD was 32.59%, 45.75%, and 51.7% at 6 weeks, 3 and 6 months respectively. CT increased by an average 55.9%, 75.6% and 107.62% while CPR reduced by 6.85, 7.99 and 8.82 at given intervals. Mann–Whitney U-test comparison of open and laparoscopic procedures showed no significant difference of any parameter at any given point. Separate subgroup review of failed pyeloplasties (defined by need for a redo procedure) showed non-significant changes in CT up to 6 months (paired t-test for means) and failure of clearance of hydronephrosis by at least 20% at any given interval.

**Conclusion:** Degree of hydronephrosis resolution and early CT changes are useful indicators of unsatisfactory drainage and predictive for need for a salvage procedure. While PCR is the earliest marker to identify success it has limited value in recognizing future failures. Laparoscopic procedures are non inferior to open surgery and should be considered as firstline considering its early post operative benefits.

Fig 2 : Changes of APPD, CT and P/C Ratio after Laparoscopic and Open Surgeries

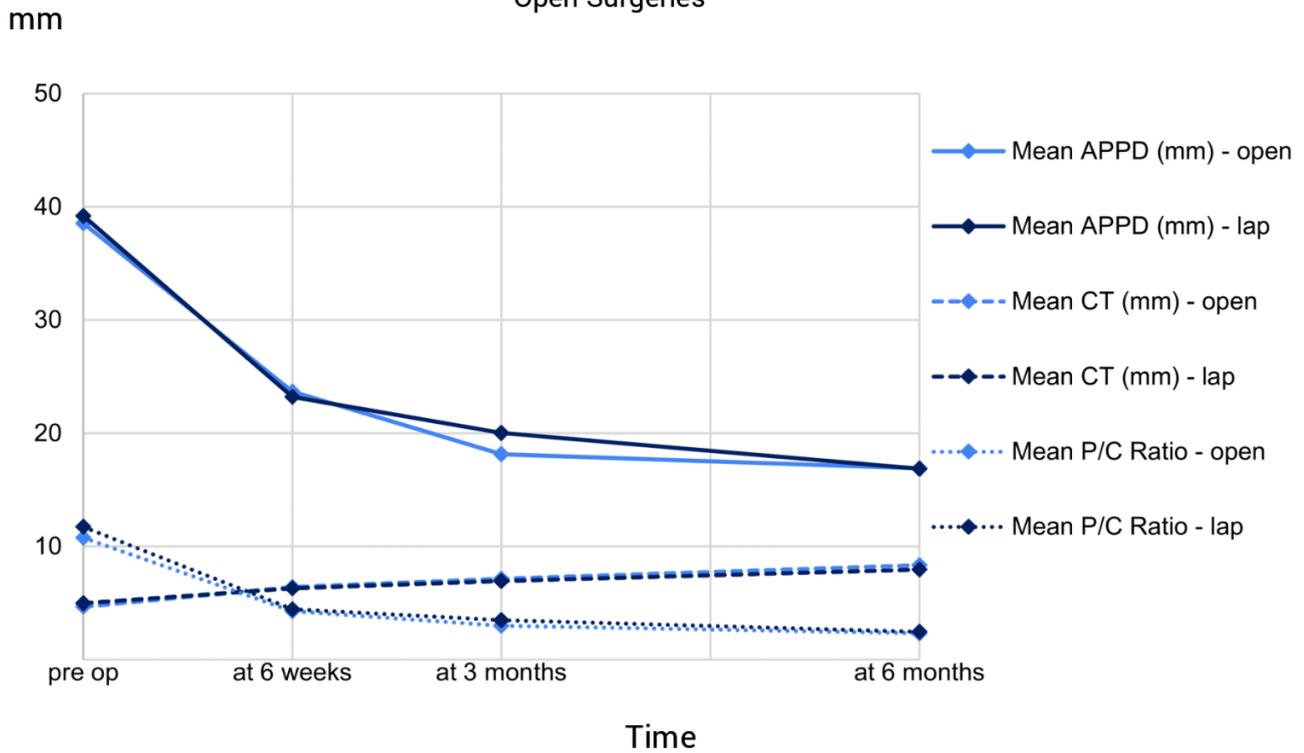
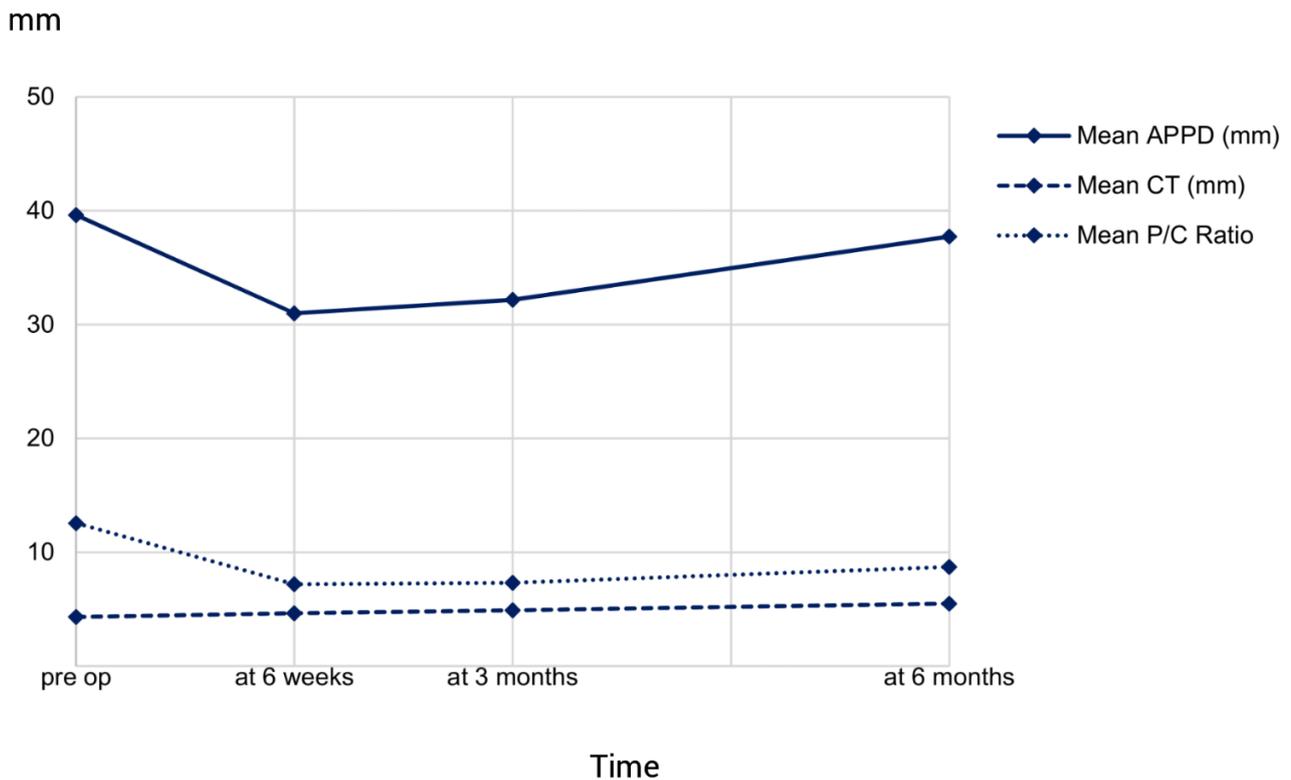


Fig 1: Changes of APD, CT and P/C Ratio in Failed Primary Surgery



## Disorder of Sexual Development and Non-Palpable Testis

**Tomáš Merkl** (Pediatric Surgery, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Antonín Šafus** (Pediatric Surgery, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **David Neumann** (Pediatrics, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Ivo Novák** (Pediatric Urology, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Vladana Skutilová** (Genetics, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Jan Laco** (Pathology, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Radek Štichauer** (Pediatric Surgery, University Hospital Hradec Králové, Hradec Králové, Czech Republic)

**Aim:** Disorders of sexual development (DSD) are a heterogeneous group of diseases characterized by different genetic, gonadal, and phenotype manifestations. These include also ovotesticular disorders. Surgery should not be delayed because of the risk for malignant transformation of germ cells and hormonal production. Currently, the treatment of DSD is interwoven with the treatment of non-palpable or undescended testicles in otherwise healthy boys.

**Case description:** Our case refers to a 15-year-old boy with a diagnosed Klinefelter's syndrome, who was examined by a pediatrician for gynecomastia, which became apparent at puberty.

According to medical history, the boy was operated on at the age of 15 months for a non-palpable testicle on the right side. Tissue that seemed to be testicular rudiment was removed and diagnostic laparoscopy was not performed. The histological finding of this tissue was unclear. Unfortunately, the patient did not show up for follow-ups after the surgery. At the age of 15, the patient had fully developed male genitalia and a left testicle present in the scrotum that was normal in size. There was a palpable resistance in the right groin, which grew in time, but it did not have the consistency of a testicle. Revision of the right groin was performed and an ovary with an enlarged fallopian tube was found. Resection of these organs was performed, followed by bilateral mastectomy. Histological examination revealed the presence of fully formed ovarian tissue on the right side and testicular tissue on the left side. Therefore, this is a case of true hermaphroditism.

**Conclusion:** True hermaphroditism is a rare type of ovotesticular DSD. In our case, it manifested at puberty with gynecomastia. This case also supports the necessity of clarification and long-term follow-up of patients with unclear findings during surgery of the non-palpable testis. In all these cases, diagnostic laparoscopy is recommended.



## Borderline testicular disease in children: what is the preferred surgical management?

**Ornella Betzabe Grijalva Estrada** (Pediatric Surgery, Hospital Universitario Reina Sofía, Cordoba, Spain), **Veronica Vargas Cruz** (Pediatric Urology, Hospital Universitario Reina Sofía, Cordoba, Spain), **Alvaro Escassi Gil** (Pediatric Urology, Hospital Universitario Reina Sofía, Cordoba, Spain), **María Camila Suarez Arbelaez** (Pediatric Urology, Nicklaus Children's Hospital, Miami, USA), **Rosa María Paredes Esteban** (Pediatric Urology, Hospital Universitario Reina Sofía, Cordoba, Spain), **Alberto Parente Hernandez** (Pediatric Urology, Hospital Universitario Reina Sofía, Cordoba, Spain)

**Aim:** The objective of this study was to identify the physicians' preferred management in different pediatric scenarios, and whether if the treatment of choice was determined by the specialty of the physician.

**Methods:** A survey with 5 clinically relevant pediatric cases was distributed by social-media and e-mail to urologists and pediatric-surgeons, including in-training-residents. The participants should have regular practice in pediatric-urology. Chi-square-test was performed to compare the chosen management between urologist and pediatric-surgeons, p-value was considered significant if  $<0.05$ .

**Results:** A total of 150 surgeons from 14 countries answered the survey, from which 67.3% were pediatric urologists, 22.7% pediatric surgeons, 8.7% pediatric surgery residents, and 1.3% adult urologists.

Table-1. Shows the cases and preferred management.

Clinical case	Preferred management(%)
#1:Preschool with no antecedents and a very small testicle found during exploration	No resection or contralateral orchiopexy:64.7%
#2:Inguinal examination after intraoperative finding of the vas-deferens and hypoplastic-vessels in a laparoscopy for a non-palpable testicle	Inguinal exploration without contralateral orchiopexy:52.7%
#3:Fixation of the contralateral testicle after orchiectomy of an atrophic cryptorchid testicle	No orchiopexy:59.3%
#4:Adolescent with small testicle secondary to testicular torsion one year after orchidopexy	Orchiectomy:32.7%
#5:Adolescent with no antecedents, with a small testicle in the inguinal canal	Orchiopexy:58.7%

A significant difference was observed in case#4, in which 43% of pediatric-surgeons would do an orchiectomy while only 25% of urologist would follow this management( $p=0.007$ ). In the rest of cases no significant difference was observed.

**Conclusions:** Treatment of borderline testicular disease varies depending on the professional. We cannot give a single answer option as correct, since each surgeon and urologist surveyed can justify their answer. It is always important to individualize the handling in each case.

## Bilateral mature ovarian teratoma with torsion in a premenarchal girl

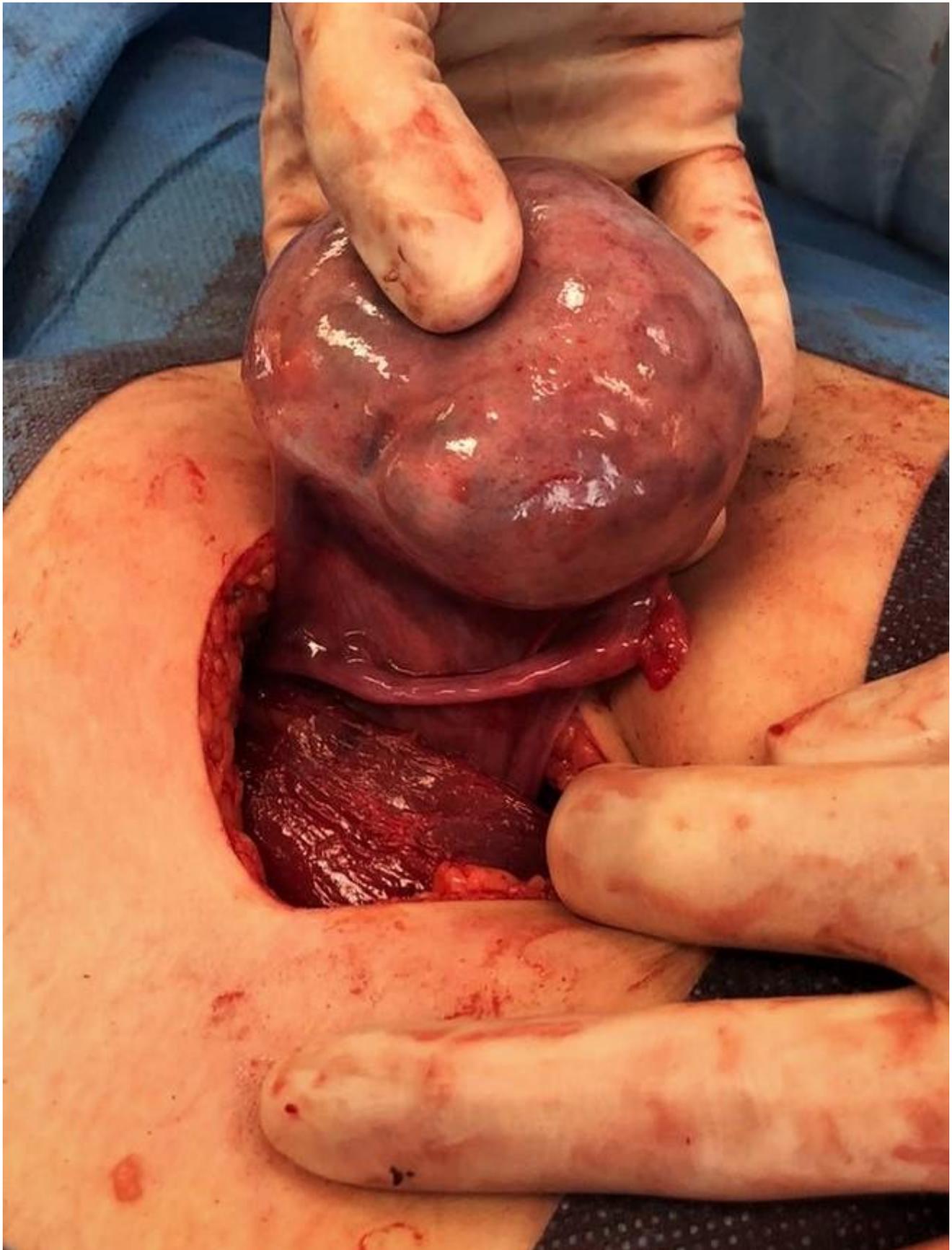
**Jana Lešková** (Department of Pediatric Surgery and Traumatology, Charles University, Faculty of Medicine and University Hospital, Hradec Kralove, Hradec Králové, Czech Republic), **Radek Štichhauer** (Department of Pediatric Surgery and Traumatology, Charles University, Faculty of Medicine and University Hospital, Hradec Kralove, Hradec Králové, Czech Republic), **Jaroslav Thierry Kříž** (Department of Obstetrics and Gynecology, Charles University, Faculty of Medicine and University Hospital, Hradec Kralove, Hradec Králové, Czech Republic)

**Aim:** Mature cystic teratoma is the most common type of ovarian tumors in children. Adnexal torsion is the main complications of mature ovarian teratoma. The synchronous bilateral incidence of mature cystic teratoma in premenarchal girls is known to be rare. However the incidence of adnexal torsion is higher in young girls.

**Case description:** A 10-year-old girl presenting with acute abdomen was managed by emergency laparotomy. Bilateral mature ovarian teratoma with adnexal torsion of the right ovary was found. Right ovarian tissue was not salvaged with detorsion, but oophorectomy was necessary. Cystectomy with preservation of the ovarian tissue of the left ovary was performed. Histopathological diagnosis was bilateral synchronous mature teratoma with necrosis of the right adnexa.

**Conclusions:** Although the overall rate of malignancy in torsed ovaries is low and mature teratomas in premenarchal girls are rarely malignant, their removal may be performed to prevent adnexal torsion. Decision between ovarian tissue sparing surgery or oophorectomy depends on the risk of malignancy, fertility preservation and the avoidance of early menopause.





## POSTER WALK 3

## Urology 2

## Robot-assisted versus open appendicovesicostomy for pediatric urinary diversion: a systematic review and single-center case series

**Nikolai Juul** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark), **Emma Persad** (Department of Evidence-based Medicine and Evaluation, Danube University Krems, Krems, Austria), **Oliver Willacy** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark), **Jørgen Thorup** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark), **Magdalena Fossum** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark), **Susanne Reinhardt** (Division of Pediatric Surgery, Department of Surgery and Transplantation, Rigshospitalet Copenhagen University Hospital, Copenhagen, Denmark)

**Introduction:** Appendicovesicostomy (APV) is the preferred choice for long-term urinary diversion in pediatric urology. The introduction of robot-assisted laparoscopic techniques has been correlated to superior cosmesis and convalescence and is now increasingly implemented for APV procedures. We aimed to evaluate our own initial experiences with robotic APV compared to our previous open procedures, and further to systematically review the literature comparing open and robotic APV regarding differences in postoperative outcomes.

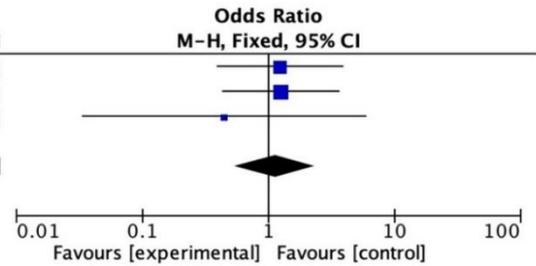
**Methods:** We evaluated the first five patients undergoing robotic APV at our institution and compared one-year outcomes with a consecutive series of 12 patients undergoing open APV. In a systematic literature review, we screened publications from PubMed, EMBASE and CENTRAL comparing open versus robotic APV in pediatric urology (current to December 2021) in a meta-analysis on postoperative outcomes and evaluated the grade of evidence.

**Results:** We found significantly shortened postoperative length of stay in the robotic group ( $p=0.001$ ) and comparable one-year complication rates in robotic and open APV patients in our case series. We systematically screened 3204 studies, assessed 21 full length studies for eligibility and ultimately included three non-randomized studies comparing postoperative outcomes of robotic and open APV for quantitative analysis. The open and robotic approaches performed equally well regarding overall postoperative complications, surgical reintervention, and stomal stenosis. Two of the included studies reported comparable stomal continence rates and shortened postoperative length of stay in the robotic group, in agreement with the findings in our own series.

**Conclusion:** Robotic APV is equally safe to the conventional open approach with additional advantages in reduced postoperative hospitalization length.

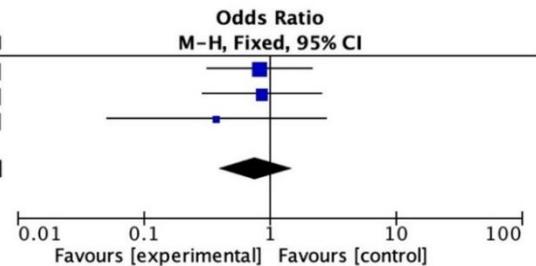
## Overall complications

Study or Subgroup	Robotic		Open		Weight	Odds Ratio M-H, Fixed, 95% CI
	Events	Total	Events	Total		
Galansky 2021	8	34	7	35	39.7%	1.23 [0.39, 3.87]
Grimsby 2015	13	39	8	28	46.7%	1.25 [0.43, 3.59]
Nguyen 2009	1	10	2	10	13.5%	0.44 [0.03, 5.88]
<b>Total (95% CI)</b>		<b>83</b>		<b>73</b>	<b>100.0%</b>	<b>1.13 [0.54, 2.37]</b>
Total events	22		17			
Heterogeneity: Chi <sup>2</sup> = 0.56, df = 2 (P = 0.76); I <sup>2</sup> = 0%						
Test for overall effect: Z = 0.33 (P = 0.74)						



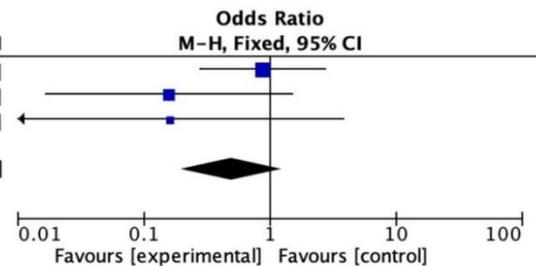
## Surgical reinterventions

Study or Subgroup	Robotic		Open		Weight	Odds Ratio M-H, Fixed, 95% CI
	Events	Total	Events	Total		
Galansky 2021	13	34	15	35	47.4%	0.83 [0.32, 2.16]
Grimsby 2015	10	39	8	28	36.0%	0.86 [0.29, 2.56]
Nguyen 2009	2	10	4	10	16.6%	0.38 [0.05, 2.77]
<b>Total (95% CI)</b>		<b>83</b>		<b>73</b>	<b>100.0%</b>	<b>0.76 [0.39, 1.50]</b>
Total events	25		27			
Heterogeneity: Chi <sup>2</sup> = 0.56, df = 2 (P = 0.76); I <sup>2</sup> = 0%						
Test for overall effect: Z = 0.78 (P = 0.43)						



## Stomal stenosis

Study or Subgroup	Robotic		Open		Weight	Odds Ratio M-H, Fixed, 95% CI
	Events	Total	Events	Total		
Galansky 2021	7	34	8	35	47.5%	0.88 [0.28, 2.75]
Grimsby 2015	1	39	4	28	34.4%	0.16 [0.02, 1.50]
Nguyen 2009	0	10	2	10	18.1%	0.16 [0.01, 3.85]
<b>Total (95% CI)</b>		<b>83</b>		<b>73</b>	<b>100.0%</b>	<b>0.50 [0.20, 1.25]</b>
Total events	8		14			
Heterogeneity: Chi <sup>2</sup> = 2.41, df = 2 (P = 0.30); I <sup>2</sup> = 17%						
Test for overall effect: Z = 1.48 (P = 0.14)						



## Spongioplasty with Buck's fascia cover the dorsal inlay graft urethroplasty for primary distal hypospadias repair

**Ting Zhang** (Department of Urology, Children's hospital of Soochow University, Suzhou, China), **Xu Cao** (Department of Urology, Children's hospital of Soochow University, Suzhou, China), **Xiangming Yan** (Department of Urology, Children's hospital of Soochow University, Suzhou, China), **Yun Zhou** (Department of Urology, Children's hospital of Soochow University, Suzhou, China)

**Aim:** The aim of this study is to compare the short-term outcome of spongioplasty with Buck's fascia as coverage of the dorsal inlay graft urethroplasty to the short-term outcome of the single-layer dartos fascia as coverage of the tubularized incised plate urethroplasty retrospectively.

**Methods:** From December 2018 to December 2020, there were 100 primary distal hypospadias patients had been involved (mean age at surgery 36.1 months, range 1–12 years), and been divided in 2 groups equally. Group A: spongioplasty with Buck's fascia cover the dorsal inlay graft urethroplasty (DIGU). Group B: single-layer dartos fascia cover the tubularized incised plate urethroplasty (TIPU). All operations were performed by a single surgeon. All patients were followed up for a minimum of 12 months, the complications were noted, and uroflowmetry at the post operation one year follow-up time was evaluated.

**Results:** The penis length, glans width and urethral plate width of two groups were compared, and there was no statistical difference. In group A, 3 have coronal fistular and none glans dehiscence (3/50), the mean±SD  $Q_{max}$  was 8.1±3.8 ml/s. In group B, 9 have coronal fistular and 3 glans dehiscence (12/50), the mean±SD  $Q_{max}$  was 6.5±3.4 ml/s. There were statistically difference of complication rate and  $Q_{max}$  between two groups ( $p<0.05$ ).

**Conclusions:** Saving the corpus spongiosum with the Buck's fascia as the coverage of the dorsal inlay graft urethroplasty is an effectual procedure to decrease the complication rate in primary distal hypospadias repair.

Summary Table: short-term outcome of two different coverage of urethroplasty

Parameters	DIGU	TIPU	P value
Patients	50	50	
Age at surgery (months)	37.5±33.4	34.8±30.1	0.879
Length of Penis(mm)	48.6±8.4	48.4±9.2	0.972
Width of glans (mm)	12.92±1.86	12.90±2.68	0.574
Width of urethral plate (mm)	4.98±1.07	5.64±1.76	0.058
Complications after 12 months	3 fistula (3/50)	9 fistula, 3 dehiscence (12/50)	0.012*
Qmax after 12 months (ml/s)	8.13±3.83	6.49±3.39	0.008*

\* $p<0.05$

## Endoscopic visual evaluation of bulking agents position in patients with failure of endoscopic treatment of vesicoureteral reflux

**Gökhan Demirtaş** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey), **Derya Yayla** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey), **Süleyman Tağcı** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey), **Doğus Güney** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Bilge Karabulut** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey), **Hüseyin Tuğrul Tiryaki** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey)

**Purpose:** Success rates of bulking agent for vesicoureteral reflux range from 50-100%. Various factors predict outcome after endoscopic injection. One of the most important factor for failure is bulking agents location. We aimed to compare endoscopic images in patients come back with failure.

**Material and Methods:** In 2020, peroperative images were taken and archived in cases where STING was applied due to VUR. The localization of the bulking agent was evaluated during the redo procedure in 8 patients who were re-admitted due to the failure of the injection procedure and 15 patients who were referred to our clinic due to the persistence of VUR after STING application in other centers.

**Results:** Our repeat endoscopic injection rate was 8/90 (8.8%). Local migration of material caudal or cranial to the ureteral orifice was seen in all eighteen patients at the time of reinjection Dx/HA after initial treatment failure.

**Conclusions:** Based on the above findings, we think that the location of the injected material and the experience with the technique are the most important factors related to the outcome of the STING procedure. For this reason, we recommend performing cystoscopy in all cases with recurrence to evaluate the location of the bulking agent. If the bulking agent has moved away from the ureter orifice, we recommend re-injection, and if there is a recurrence without migration of bulking agent, we recommend open surgery.

## Rare findings in laparoscopic inguinal hernia repair in children

**Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Slywester Gerus** (Department of Pediatric Surgery and Urology, Wroclaw Medical University, Wroclaw, Poland), **Kutay Bahadir** (Department of Pediatric Surgery, Kirikkale Yuksek Ihtisas Hospital, Kirikkale, Turkey), **Dariusz Patkowski** (Department of Pediatric Surgery and Urology, Wroclaw Medical University, Wroclaw, Poland), **Sumeyye Sozduyar** (Department of Pediatric Surgery, Elazig City Hospital, Elazig, Turkey), **Ufuk Ates** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Meltem Bingol-Kologlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Murat Cakmak** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Aydin Yagmurlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** The aim of this study is to present rare findings in laparoscopic inguinal hernia repair in children.

**Methods:** Children who underwent laparoscopic surgery due to inguinal hernia (IH) were included to the study. Unexpected findings rather than inguinal hernia were evaluated and presented. Direct and femoral hernias, different hernia variations and rare presentations were considered as unusual findings.

**Results:** There were a total of 790 children. In 22 of them unexpected laparoscopic findings were observed. The mean age of the children was 33 months (1-168 months) and the mean weight of the children was 12.5 kgs (2-46 kg). In seven children there were direct hernias, in four children there were an incarcerated appendix in the hernia sac; in which one of them required appendectomy, in three children there were omental incarceration, in two children there were no inguinal hernias. Femoral hernia, Spigelian hernia, hernia en pantolon, intraabdominal spermatic cord cyst, incarcerated uterus and ovary and suspicious gonadal structure were observed in one of each child. Except three direct hernias all of the children were able to managed via PIRS procedure successfully. Three children with direct hernias were operated via open method. There were not any intraoperative or postoperative complications.

**Conclusions:** Laparoscopic approach to inguinal hernia has the advantage of full exposure of intraabdominal cavity. Thus unusual and rare findings may be diagnosed easily in contrary of open approach. Some situations which may cause diagnostic problems during open rapair may easily and safely be seen and treated laparoscopically.

## Preliminary results of postoperative ultrasonoscopic outcomes of hydronephrosis in a relationship with fibrosis related gene expression in congenital ureteral obstruction tissue

**Ramune Zilinskaite-Tamasauske** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania), **Vytis Kazlauskas** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania), **Povilas Barasa** (Institute of Biochemistry, Vilnius, Lithuania, Vilnius University Life Sciences Center, Vilnius, Lithuania), **Natalija Kretnikova** (Institute of Biochemistry, Vilnius, Lithuania, Vilnius University Life Sciences Center, Vilnius, Lithuania), **Darius Dasevicius** (Hospital Santaros Clinics, Centre of Pathology, Vilnius, Lithuania, Vilnius University, Vilnius, Lithuania), **Vytautas Bilius** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania), **Gilvydas Verkauskas** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania)

**Aim:** to investigate the expression of fibrosis related genes in obstructed ureteral tissue and find its relationship with postoperative ultrasonoscopic outcomes.

**Methods:** Stenotic uteteral tissue specimens were frozen in a liquid nitrogen upon harvesting. RNA was extracted from the samples applying Trizol reagent. cDNA synthesis was performed using Maxima H Minus First Strand cDNA Synthesis Kit. qPCR was performed using Luminaris Color HiGreen qPCR Master Mix (Thermo Fisher) with the Eppendorf realplex4 quantative PCR device. Relative expression of Tgfb1, Mmp1, Timp1, Pai1, Ctgf and Vegfa was calculated in stenotic ureteral tissue. Expression levels of Gapdh and Gpi genes (geometric average) were used to calculate the relative expression. We have also recorded the ultrasonoscopic parameters of hydronephrotic kidney preoperatively and postoperatively. Spearman correlation rank test has been used to calculate correlation between the relative expression of the fibrosis related factors and the change of SFU and pelvis anterior-posterior diameter and parenchymal ratio postoperatively.

**Results:** 10 Pyeloureteral and 2 vesicoureteral junctions of 12 patients were harvested at the time of dismembered pyeloplasty and ureteroneocystostomy. Median age at the time of operation was 14.7 [8.25;34.7] months, the median duration of follow-up was 12.3 [5.3;14.3]. In all cases the ultrasonoscopic view of hydronephrosis improved. There was no significant correlation between the relative expression of fibrosis-related factors and the change of SFU grade. The relative expression of Tgfb1 in the stenotic ureteral tissue correlated with the relative change of anterior-posterior diameter and parenchymal thickness ratio postoperatively ( $\rho = -0.6339765$  p-value = 0.02684)

**Conclusions:** Our findings suggest that there was a strong negative correlation between Tgfb1 relative expression in obstructed ureteral tissue and anterior-posterior diameter and parenchymal thickness ratio decrease postoperatively. More intensive Tgfb1 expression may refer to more significant mechanical obstruction. This could explain better postoperative ultrasonoscopic result upon surgical intervention.

## Transverse testicular ectopia associated with persistent mullerian duct syndrome (TTE-PMDS) – Diagnosis and management

**Rashid Abdul Kumar** (Paediatric Surgery, Government Superspeciality Hospital, Srinagar, India), **Saalim Nazki** (Paediatric Surgery, Leicester Royal Infirmary, Leicester, UK), **Nisar A Bhat** (Paediatric Surgery, Sher-I-Kashmir Institute of Medical Sciences, Srinagar, India), **Madhavi Kakade** (Paediatric Surgery, Leicester Royal Infirmary, Leicester, UK), **Ashok Rajimwale** (Paediatric Surgery, Leicester Royal Infirmary, Leicester, UK)

**Aim:** Transverse Testicular Ectopia (TTE) is a rare condition in which both testes migrate along the same inguinal canal towards the same hemiscrotum, while the opposite inguinal canal and hemiscrotum are empty. TTE can be associated with rare type of pseudohermaphroditism called as Persistent Mullerian Duct Syndrome (PMDS). The study was aimed to evaluate clinical and surgical presentation in nine patients of transverse testicular ectopia (TTE) with persistent mullerian duct syndrome (PMDS). This investigation was conducted to stress upon the importance of abdominal exploration with excision of the mullerian structures.

**Patient and methods:** This retrospective study over a period of 10 years comprised of nine patients from which the data was evaluated in terms of age, clinical and radiological features, intra-operative findings, and histopathology. All the postoperative patients were followed-up.

**Results:** The nine patients examined in the study ranged between 3 months to 4 years of age. Right sided TTE with PMDS was predominant in 8 cases, among which two patients were siblings who were operated at 1 and 2.5 years, respectively. In addition, six of nine cases were surgical surprise that were diagnosed intra-operatively, one patient was diagnosed preoperatively and two cases were referred with radiological diagnosis who were being evaluated for undescended testis. Overall, seven patients were corrected surgically while two patients are awaiting karyotyping and imaging for further management.

**Conclusion:** The rare entity of TTE with PMDS should always be considered as a differential diagnosis in patients who present with undescended testis and inguinal hernia. Surgical correction is treatment of choice and the patients should be evaluated genetically and radiologically prior to any surgical intervention. Moreover, diagnostic laparoscopy should be contemplated in these patients prior to exploration.

## Outcome of laparoscopic orchidopexy at soba university hospital

**Sami Mohamed Taha** (General surgery, Sidra medicine, Doha, Qatar)

**Aim:** To evaluate patients with undescended testes (UDT), their age presentation, diagnosis and outcome of laparoscopy as a mode of treatment in a low income setting.

**Methods:** Retrospective study performed in 50 patients with UDT at Soba University Hospital, from January 2012 to April 2016. Data tabulated included personal data, age at presentation, age at time of operation, investigations, treatment and outcome of laparoscopy.

**Results:** 80% of our patients underwent orchidopexy above 6 years. Size of the testes was normal in 68.0%, small in 20.0%, atrophied in 12.0% which was documented during the follow up (urinary catheter ballon simulating Prader orchimeter). Post operative complications included acute urinary retention in one patient (2.0%) and chest infection in 2 patients (4.0%). Forty patients (80%) came for follow up after two weeks of surgery. The results of this study demonstrate that outcome of laparoscopic orchidopexy for managing patients with impalpable testis was safe, feasible and effective.

**Conclusion:** UDT present late in our country, with more than two-third of patients presenting between 3-10 years of age. The treatment outcome through laparoscopic orchidopexy was safe, feasible and effective.

## Single double J stent in pediatric bilateral Cohens cross trigonal ureteric reimplantation: modification to reduce complications

**Saalim Nazki** (Paediatric Surgery, Leicester Royal Infirmary, Leicester, UK), **Rashid Kumar** (Paediatric Surgery, Government Superspeciality Hospital, Srinagar, India)

**Aim:** Placement of single Double-J Stent is a modification done by placing only one DJ stent when dealing with open bilateral Cohen's reimplantation. It has an advantage of minimising stent related complications like bladder irritation, discomfort and UTI.

**Methods:** A prospective study done in the patients who underwent bilateral Cohens reimplatation. After completing reimplatation a single stent was inserted and placed appropriate for age of child. Both the ends of stent are patent and cannulated via neoorifice upto bilateral renal pelvis with mid part having fenestrations remain in bladder for urinary drainage.

**Results:** Over a period of 4 years a total of 22 patients were included in the study with 14(64%) being female. All the patients had bilateral VUR as primary diagnosis for which bilateral Cohen's reimplantation was done. Mean age of patients was  $2.75 \pm 0.31$ years (Mean  $\pm$ SE). Common presenting symptom was pain abdomen (46%) followed by UTI and fever. Mean discharge period was  $5.5 \pm 0.23$  days (Mean  $\pm$ SE). VUR was relieved in 95% of patients on followup MCUG at 3 months. cystoscopic guidance. There were no stent related complications in any of the patients. Mean followup of the patients is  $3.05 \pm 0.26$  years.

**Conclusion:** Single double-J stent for bilateral ureteric reimplantation obviate most of the stent related symptoms and complications caused due to bladder irritation. It is a simple and cost effective technique that can potentially be helpful in the reflux surgeries.

## A mortal complication in a case of high-risk neuroblastoma: intractable hemorrhagic cystitis due to vinorelbine

**Selin Ural** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Gungor Karaguzel** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Cem Boneval** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Mustafa Melikoglu** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey)

**Introduction:** Various chemotherapeutic agents used in neuroblastoma (NBL) treatment may cause hemorrhagic cystitis. We aimed to present a patient with high-risk NBL (HR-NBL) who presented with complicated hemorrhagic cystitis following vinorelbine treatment.

**Case description:** A 7-year-old female was admitted with fever, joint pain, weight loss and loss of appetite. Diagnostic studies showed normal urine VMA level, a solid retroperitoneal mass (IDRF +) on the left side, paraaortic lymphadenopathies and bone metastases. NBL infiltration was determined in bone marrow biopsy. Percutaneous biopsy showed poorly differentiated NBL with high mitotic index. Patient was considered to have an unresectable, high-risk NBL (age:  $\geq 18$  months, stage: M) and received chemotherapy according to our national NBL protocol. After 6 courses of chemotherapy, complete resection with minimal residue was performed. Histopathological examination showed positive surgical margin with regional lymph nodes metastasis. Postoperative chemotherapy/ radiotherapy induced bone marrow aplasia and bone marrow transplantation was not possible due to refractory disease. Chemotherapy protocol was revised with the addition of vinorelbine. Patient developed massive hematuria after the initiation of vinorelbine treatment. Bladder irrigations, hyperbaric oxygenation therapy and bladder instillation with sodium hyaluronate/chondroitin sulphate failed to control the bleeding. Multiple cystoscopies for hematoma evacuations and electrocauterizations were ineffective also. Superselective left and right sided pelvic angioembolization was performed with 1 month apart, followed by bilateral nephrostomy. These procedures provided only short-term clinical improvement. Massive hematuria persisted despite palliative blood transfusions and the patient died 3.5 years after diagnosis due to multiorgan failure.

**Conclusions:** It should be kept in mind that vinorelbine, used in the treatment of neuroblastoma, might initiate a persistent and mortal hemorrhagic cystitis. Non-operative management can fail in such cases. Therefore, indications for mutilative but life-saving surgical techniques (cystectomy with urinary diversion) should be discussed in detail.

## POSTER WALK 4

## Urology 3

## Augmentation cystoplasty in children: indications and outcomes

**Hajer Drissi** (Pediatric surgery B, Children hospital, Tunis, Tunisia), **Maryem Marzouki** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Intissar Chibani** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Yosra Ben Ahmed** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Tarek Boukesra** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Awatef Charieg** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Faouzi Nouira** (Pediatric Surgery B, Children hospital of Tunis, Tunisia), **Said Jlidi** (Pediatric surgery B, Children hospital of Tunis, Tunisia)

**Background:** Augmentation cystoplasty may be prescribed in children in the treatment of neurogenic bladder or bladder exstrophy. This study aims to identify its indications, to assess its short and long-term complications and to compare the patches used.

**Methods:** We conducted a descriptive and retrospective cross-sectional study of a case series collected from the pediatric surgery department B of the Tunis children's hospital (2008-2018).

**Results:** There were 18 patients and the sex ratio was 1,25. Ten patients had neurogenic bladder and 8 had bladder exstrophy. The average age at time of the enterocystoplasty was 10.3 years.

In most patients, the indications for enterocystoplasty were a hypocompliant bladder with reduced capacity. It was performed by an ileal patch in 12 patients and by sigmoid patch in the 8 others. A continent urinary diversion was performed in all patients. Post-operatively, a significant increase of bladder capacity as well as an improvement in compliance were noted.

Six patients had short-term complications : vesico-cutaneous fistula (n=3), patch-bladder anastomosis leakage (n=2), patch perforation (n=1), parietal abscess (n=3) and urinary tract infection (n = 1). Furthermore, 14 patients had long-term complications: vesico-cutaneous fistula (n=5), bladder stone (n=3), graft exclusion (n=1), stenosis of the continent urinary diversion (n=7), urinary infection (n=8) and orchiepididymitis (n=1). Eleven patients were dry, 1 had some leakage between catheterizations and 6 were incontinent.

We were unable to establish a statistical link between the nature of the patch and the occurrence of bladder stone or graft exclusion. Bladder fistulas were more common in patients who had a sigmoid patch (p=0.005).

**Conclusion:** Our study has shown that while continent enterocystoplasty is the main treatment for children with reduced bladder capacity and compliance, its risks are non-negligible requiring long-term follow-up.

## Pyeloplasty in low functioning kidneys with ureteropelvic junction obstruction: is it a safe technique?

**Meriem Oumaya** (Department of Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Intissar Chibani** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Oumayma Beji** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Yosra Ben Ahmed** (Pediatric Surgery B, Children Hospital Of Tunis, Tunis, Tunisia), **Faouzi Nouira** (Pediatric Surgery B, Children Hospital Of Tunis, Tunis, Tunisia), **Awatef Charieg** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Said Jlidi** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia)

**Aim:** Management of poorly functioning kidneys with ureteropelvic junction obstruction (UPJO) is controversial. This study was conducted to assess the post pyeloplasty outcomes in renal units with preoperative differential renal function (DRF) less than 20%, to determine whether it allows for functional recovery.

**Methods:** A retrospective review of 15 patients undergoing surgery for UPJO associated with a differential renal function (DRF) < 20% between January 2005 and December 2019 was conducted. Only Patients with unilateral UPJO were included. An increase in DRF >5% was considered significant.

**Results:** Fifteen patients were included. In 53%, the diagnosis was made antenatally. Two patients with damaged kidneys underwent nephrectomy. A temporary urinary diversion was performed in 4 infants with a major hydronephrosis in 2 cases and associated with pyonephrosis in one case. 13 patients had pyeloplasty with a median pre-operative anteroposterior diameter (APD) of the pelvis was 33.6 mm, and a median pre-operative DRF was 10.4%. The mean follow up period was 60 months. There was significant improvement in DRF in 8 patients. The difference in mean preoperative DRF and 3 month-postoperative-DRF was statistically significant (10.4 % vs 20.8%;  $p < 0.001$ ). There was a significant decrease in APD (mean preoperative APD=40.5mm vs mean postoperative APD=13mm,  $p=0.01$ ). No patient required re-do pyeloplasty or developed hypertension.

**Conclusions:** Pyeloplasty in patients with UPJO and poor function kidneys is an effective and safe procedure. It allows for functional recovery with no long term complications.

## Ischemic pediatric priapism due to leukocytoclastic vasculitis associated with COVID-19 infection: case report

**Nikica Lesjak** (Department of pediatric surgery, Division of pediatric urology, Children's Hospital Zagreb, Zagreb, Croatia), **Zoran Bahtijarević** (Department of pediatric surgery, Division of pediatric urology, Children's Hospital Zagreb, Zagreb, Croatia), **Fran Štampalija** (Department of pediatric surgery, Division of pediatric urology, Children's Hospital Zagreb, Zagreb, Croatia), **Diana Stipić** (Department of pediatric surgery, Division of pediatric urology, Children's Hospital Zagreb, Zagreb, Croatia)

**Aim:** Medical professionals around the globe are dealing with the various manifestations of COVID-19. Vasculitis is among the rarest clinical presentations in the pediatric population. In combination with priapism being an extremely rare presentation in pediatric urology by itself, this combination makes up for a truly peculiar case.

**Methods:** In this study we report the case of a 10-year old boy presenting with ischemic priapism who tested positive for an asymptomatic COVID-19 infection the day before.

**Results:** Priapism is defined as a prolonged complete or partial erection of the penis lasting more than 4 hours without sexual stimulus. It is an emergent condition in pediatric urology, but no widely accepted guidelines on the management of pediatric priapism exist. In this case the priapism was eventually successfully treated with a T-shunt after failed attempts at detumescence with venopuncture and epinephrine instillation. Pathohistological analysis revealed small-vessel vasculitis around the penile circulation. After other possible etiologies of small-vessel vasculitis were excluded, the diagnosis of leukocytoclastic vasculitis with COVID-19 infection was confirmed. This is the 2<sup>nd</sup> case of leukocytoclastic vasculitis with COVID-19 infection in the pediatric population, but the first to describe ischemic priapism due to leukocytoclastic vasculitis in literature, in the pediatric and adult population.

**Conclusions:** Since ischemic priapism is a serious and urgent medical condition, medical professionals should be acquainted with the treatment options for this condition in today's world of the COVID-19 pandemics.

## Endocrine disruptors and hypospadias in Canary Islands (2002–2020)

**Patricia Bugada Gómez** (Pediatric Surgery, Hospital Materno Infantil, Las Palmas de Gran Canaria, Spain), **Micaela Germani** (Pediatric Surgery, Hospital Materno Infantil, Las Palmas de Gran Canaria, Spain), **Diana Carolina Lara Cárdenas** (Pediatric Surgery, Hospital Materno Infantil, Las Palmas de Gran Canaria, Spain), **Santiago Guindos Rúa** (Pediatric Surgery, Hospital Materno Infantil, Las Palmas de Gran Canaria, Spain), **Ignacio Miró Rubio** (Pediatric Surgery, Hospital Materno Infantil, Las Palmas de Gran Canaria, Spain), **Luis Fernando Sanchis Solera** (Pediatric Surgery, Hospital Materno Infantil, Las Palmas de Gran Canaria, Spain)

**Aim:** Hypospadias has a prevalence of 1 in 250 alive new born males. There are environmental factors which predispose to this pathology acting as endocrine disruptors.

The aim of the present study is to estimate the prevalence of hypospadias in the Canary Islands during the years 2002-2020 and to evaluate the environmental issues involved in the development of this pathology, in patients treated in “Hospital Materno Infantil” of Las Palmas of Gran Canaria island between 2012 and 2019.

**Methods:** A retrospective analysis of the hypospadias cases reported in the Canary Islands during 2002-2020 was carried out. Patients from birth up to fourteen years old were included in the study. SPSS program version 15.0 was chosen to perform the statistic analysis of database. Statistical significance level was established for a  $\alpha=0.05$ . Chi squared and Fisher Test were applied to check the association between qualitative variables.

**Results:** 1623 hospital discharges of pediatric patients with hypospadias were registered in the Canary Islands, having a prevalence of 48 in 10.000 alive new borns. 257 patients were treated in “Hospital Materno Infantil” in Las Palmas; 48,3% of those patients had familiar history of exposition to pesticides.

**Conclusion:** There have been a high number of registrations of pediatric patients with hypospadias in the Canary Islands in the last twenty years. Almost half of the patients who received treatment in “Hospital Materno Infantil” had familiar history of exposition to pesticides.

Due to the serious long-term adverse health effects that can produce the exposition to endocrine disruptors, important measures destined to the general population should be taken to raise awareness and prevent exposure to these harmful agents in the social and work environments.

**Keywords:** Endocrine disruptors. Hypospadias. Pediatric. Pesticids

## Urethral duplication in males – a series from a pediatric tertiary surgical center

**Ines Teixeira** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Joana Mafalda Monteiro** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Sara Fernandes** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Leonor Carmo** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal), **Carlos Mariz** (Pediatric Surgery, São João's Hospital Center, Porto, Portugal)

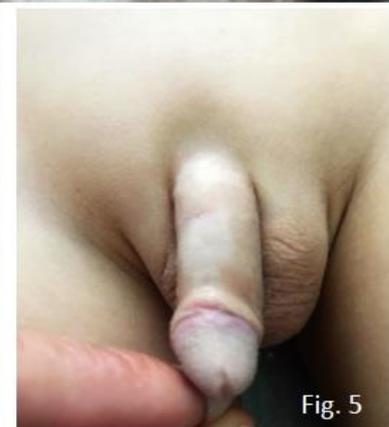
**Introduction:** Male urethral duplication is a rare condition with wide presentation and usually associated to other urinary and genital malformations. It can be classified as complete or incomplete and commonly presents as a dorsal preputial fistula.

**Methods:** A retrospective cohort of male pediatric patients submitted to repair of duplicated urethra between 2018 and 2021 were identified. Data from medical records was collected and clinical presentation, surgical repair and outcomes described

**Results:** We found 3 male patients, from 2 to 6 years old, submitted to duplicated urethra repair.

Case A: A dorsal urethra was identified at the base of penis with associated urinary dripping and a normal ventral urethra. Case B and C: A dorsal urethra at the preputial groove with dorsal chordee and normal ventral urethra. Sonographic renovesical study was conducted in all patients, for exclusion of other urinary anomalies. Retrograde cystourethrogram identified an incomplete non-communicating duplicated urethra (type I of Effmann classification) in all cases. All patients were submitted to surgical repair with excision of accessory urethra, glanduloplasty and preputioplasty. Anatomopathological studies confirmed urethral duplication in all cases. There were no complications in postoperative period.

**Conclusion:** Diagnose of urethral duplication dictates radiological study for anatomic definition and exclusion of other urinary malformations. Surgical treatment allowed for functional improvement and genital aesthetics.



## Difficulties with DJ stent insertion during laparoscopic pyeloplasty in children and how we tackled them – Initial experience from a center in North India

**Vijai Datta Upadhyaya** (SGPGIMS, Lucknow, India), **Basant Kumar** (SGPGIMS, Lucknow, India), **Anju Verma** (SGPGIMS, Lucknow, India), **Rohit Kapoor** (SGPGIMS, Lucknow, India)

**Aim:** We aim to various complication and difficulties we faced with DJ stenting in our cases and how we tackled them.

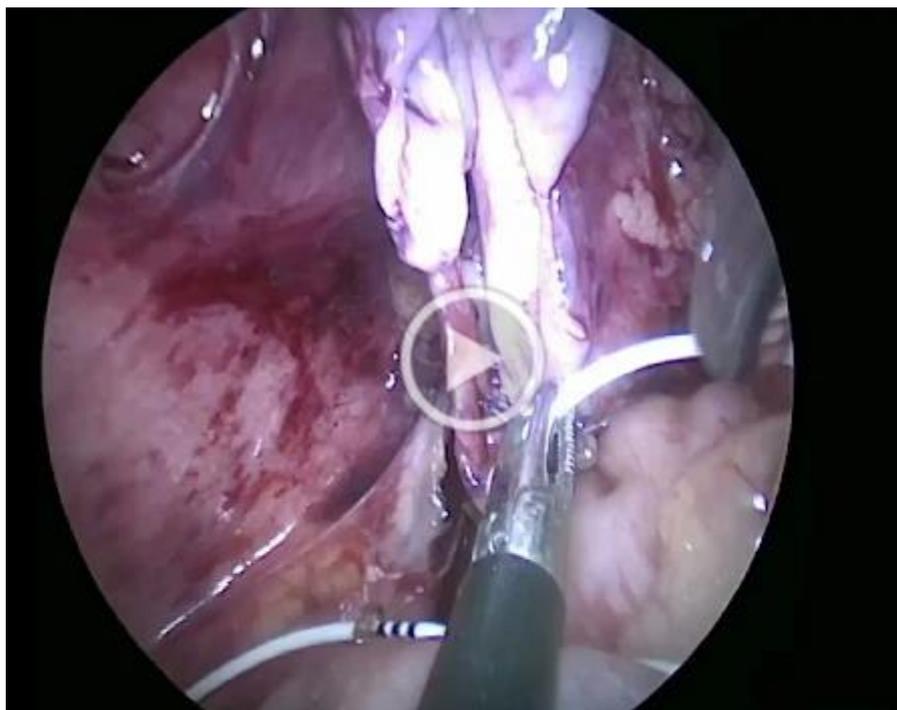
**Methods:** This was a retrospective study in which 5 patients who underwent transperitoneal Laparoscopic pyeloplasty between July 2021 and December 2021 in a single unit at our institute were included. Data on operative records including operative time, time taken in insertion of DJ stent, any intraoperative complication or difficulty in insertion of DJ stent, postoperative course and complication was collected retrospectively and analyzed. The stents were removed 4–6 weeks later via cystoscopy if visualized in bladder on followup X-Ray KUB else help of intervention radiologist was taken. Follow-up studies were performed with ultrasonography at 3 and 12 months postoperatively.

**Results:** Of 5 patients operated in our unit in study duration, Dj stent was placed successfully inserted without using guidewire in 1 case. In 3 patients, DJ insertion was not possible with or without use of guidewire as it was not passing beyond VUJ. In two of these three cases, a malecot catheter as nephrostomy was inserted via one of calyces and laparoscopic pyeloplasty was completed and one case was converted to open, DJ stent was inserted and pyeloplasty was completed. In one other case, stent was inserted during surgery but was found to be coiled in ureter in postoperative x ray KUB. For this case help of intervention radiologist was taken to remove the stent after 4 weeks.

**Conclusions:** Failure to pass DJ stent distal to VUJ is a possibility in antegrade insertion of DJ stent during pyeloplasty and whole ureter should be inspected to check of coiling of stent/guidewire suggesting a possible VUJ obstruction and prompt steps such as described above should be taken.

VIDEO 1: [https://drive.google.com/file/d/1B64sZwyqpbQsGjuAWSfhqQKcbb3IP\\_bP/view?usp=sharing](https://drive.google.com/file/d/1B64sZwyqpbQsGjuAWSfhqQKcbb3IP_bP/view?usp=sharing)

VIDEO 2: [https://drive.google.com/file/d/1yDkQISGcv-ttt9HW4p\\_4mLd7me530cxZ/view?usp=sharing](https://drive.google.com/file/d/1yDkQISGcv-ttt9HW4p_4mLd7me530cxZ/view?usp=sharing)



## Rare lesions of the urinary tract in children

***Debasish B Banerjee*** (Paediatric Surgery, Leicester Royal Infirmary Hospital, Leicester, UK), ***Ashok D Rajimwale*** (Paediatric Surgery, Leicester Royal Infirmary Hospital, Leicester, UK)

**Aim:** We present our experience of successful management of 3 children who had rare lesions of the urinary tract. Histopathological diagnoses ranged over a wide spectrum such as – benign posterior urethral fibroepithelial polyp, urothelial papilloma and idiopathic calcinosis cutis of the penis. Literature has been reviewed.

### **Methods:**

*Patient 1* – Five months-old previously healthy boy presented with urinary tract infection which was treated successfully with antibiotics. Ultrasound scan showed normal kidneys and a lesion in the base of the bladder. MCUG revealed smooth surfaced polypoid filling defect in the posterior urethra. Cystourethroscopy showed wide based pedunculated lesion arising from just above the verumontanum. The lesion was held with grasper through the cystoscope and pushed into the bladder. By suprapubic approach, the lesion cauterised at the base and removed. Histopathology-*benign fibroepithelial polyp of the urethra*.

*Patient 2* – Fifteen years-old girl presented with intermittent painless macroscopic haematuria. FBC, serum creatinine and blood urea nitrogen were normal. US – normal kidneys and a growth in the bladder. Cystoscopy showed fimbriated and pedunculated lesion in the bladder arising from just above the left ureteric orifice (UO). UOs and rest of the bladder was normal. Lesion was excised with 13 Fr resectoscope. Histopathology-*benign urothelial papilloma*.

*Patient 3* – Fourteen years-old boy presented with tiny lesion on the dorsum of penis which was slowing growing since 6 months. It was completely excised and sent for histopathology which reported as *idiopathic calcinosis cutis of the penis*. Lobules of calcified material surrounded by macrophages was found.

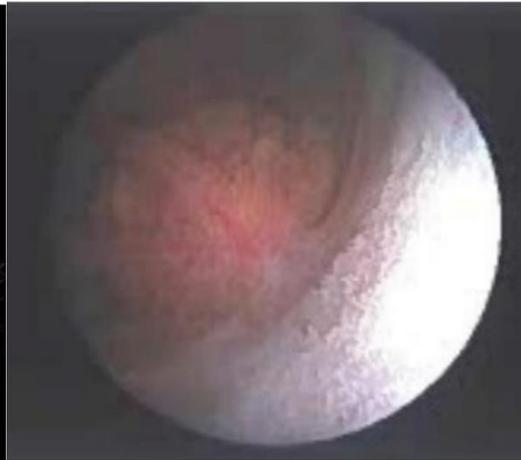
**Results:** At 6-12 months follow up, all of them were asymptomatic and there was no recurrence.

**Conclusion:** It can be challenging to diagnose such lesions of the urinary tract due to their rarity. One should be aware of them as they can present with common urological symptoms.

**BENIGN FIBROEPITHELIAL POLYP OF THE URETHRA**



Wide based pedunculated polyp arising above the verumontanum



**BENIGN PAPILOMA JUST ABOVE LEFT URETERIC ORIFICE**

## Assessment of quality of therapeutic education in children practicing clean intermittent catheterization: A Tunisian survey

**Nesrine Chebil** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yasmine Houas** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Islem Latifa Hadj Khalifa** (Urology, Charles Nicolle hospital of Tunis, Tunis, Tunisia), **Rym Baati** (Urology, Charles Nicolle hospital of Tunis, Tunis, Tunisia), **Marouen Chakroun** (Urology, Charles Nicolle hospital of Tunis, Tunis, Tunisia), **Mohamed Chebil** (Urology, Charles Nicolle hospital of Tunis, Tunis, Tunisia)

**Aim:** Clean intermittent catheterization (CIC) is considered the gold standard for the management of voiding dysfunction. It requires therapeutic patient education (TPE). Many countries use standardized TPE programs for CIC. In Tunisia there is no such programs dedicated to children. We aimed to assess quality of TPE in children who perform CIC in order to evaluate the need for a standardized program.

**Methods:** Using a trans-sectional study, an online questionnaire created on Google Forms was distributed to pediatricians and pediatric surgeons via mail addresses during November 2021 to record: overall patient information, educational material and doctors' willingness for training about TPE.

**Results:** Forty-three replies were analyzed (11 pediatricians and 32 pediatric surgeons). The majority of respondents (70%) always explained condition to their patients. As part of the therapeutic education, 15 (35%) doctors used pictures, 6 (14%) used videos, 2 (5%) used anatomic models and 6 (14%) used CIC guide while 18 (42%) participants didn't use any educational material. Thirty-one respondents (72%) rarely referred their patient to a psychologist whereas only one doctor always recommended a consultation with a psychologist. Twenty-seven (63%) participants informed their patients about common complications of CIC (79% for urethral injury, 86% for hematuria and 98% for urinary infection) and 95% explained how to manage complications. Whereas only one doctor informed his patients of the risk of bladder cancer. Thirty-six doctors (84%) recommended a progressive transition from third-party intermittent catheterization to self-catheterization through a period of third-party intermittent catheterization and self-catheterization overlapping. Twenty-six participants (60%) didn't increase follow-up frequency in adolescents. The majority (93%) of respondents were willing to attend a training about CIC therapeutic education.

**Conclusions:** The online survey showed some weaknesses of TPE. Our data suggest the need to develop a standardized CIC TPE program specific to children.

## Prospective randomized study comparing results of snodgrass versus urethral & spongiosal advancement for coronal hypospadias

**Tahir Muhammad Yaseen** (Paediatric surgery, Liaquat National Hospital, Karachi, Pakistan), **Shabbir Hussain** (Paediatric surgery, Liaquat National Hospital, Karachi, Pakistan)

**Objective:** The distal penile hypospadias is the most common variety of hypospadias. Children with distal hypospadias do not have significant functional defect. Therefore, outcome of any corrective surgery needs to be as close to perfect as possible. The rationale of this study is to prospectively analyse the outcome of urethral advancement technique for coronal hypospadias and compare it with snodgrass technique in terms of urethrocutaneous fistula, meatal stenosis and glandular dehiscence.

**Methods:** A total of 25 patients with coronal or subcoronal hypospadias were divided into snodgrass group assigned A (n=11) and urethral advancement group assigned group B(n=14) via balloting. Silicon catheter was removed on day 7 postoperatively. Patients were followed up at 2 weeks, 1 month and 6 months interval.

**Results:** Snodgrass group (A) included 11 patients and urethral advancement group included 14 patients. The mode of admission in 84% (n=21) was via daycare. 36% patients presented between 2-5 years. 76% (n=19) of patient population was uncircumcised at the time of presentation. We did not find any significant associated anomalies. The operative time for snodgrass repair was 45 minutes on average versus 30 minutes for urethral advancement technique. The fistula rate in Group A was 36% (n=4) versus 0% (n=0) in Group B. Glandular dehiscence did not occur in either of the groups. Meatal stenosis was found in 9% (n=1) in group A versus 14%(n=2) in group B. Good cosmetic appearance of the glans was achieved in both techniques.

**Conclusion:** Coronal hypospadias can be repaired using either of the techniques successfully but urethral & spongiosal advancement technique appears to be a good choice due to its short operative time and less fistula rate with good cosmetic results. This is an ongoing study.

Outcome measures	Group A	Group B
Fistula	4(36%)	0
Glandular dehiscence	0	0
Meatal stenosis	1 (9%)	2(14%)

## POSTER WALK 5

## Urology 4

## Preliminary results of postoperative ultrasonoscopic outcomes of hydronephrosis in a relationship with fibrosis related gene expression in congenital ureteral obstruction tissue

**Ramune Zilinskaite – Tamasauske** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania., Vilnius, Lithuania), **Vytis Kazlauskas** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania., Vilnius, Lithuania), **Povilas Barasa** (Vilnius University Life Sciences Center, Institute of Biochemistry, Vilnius, Lithuania, Vilnius, Lithuania), **Natalija Krestnikova** (Vilnius University Life Sciences Center, Institute of Biochemistry, Vilnius, Lithuania, Vilnius, Lithuania), **Darius Dasevicius** (Vilnius University Hospital Santaros Clinics, Centre of Pathology, Vilnius, Vilnius, Lithuania), **Vytautas Bilius** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania, Vilnius, Lithuania), **Gilvydas Verkauskas** (Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania, Vilnius, Lithuania)

**Aim:** to investigate the expression of fibrosis related genes in obstructed ureteral tissue and find its relationship with postoperative ultrasonoscopic outcomes.

**Methods:** Stenotic uteteral tissue specimens were frozen in a liquid nitrogen upon harvesting. RNA was extracted from the samples applying Trizol reagent. cDNA synthesis was performed using Maxima H Minus First Strand cDNA Synthesis Kit. qPCR was performed using Luminaris Color HiGreen qPCR Master Mix (Thermo Fisher) with the Eppendorf realplex4 quantative PCR device. Relative expression of Tgfb1, Mmp1, Timp1, Pai1, Ctgf and Vegfa was calculated in stenotic ureteral tissue. Expression levels of Gapdh and Gpi genes (geometric average) were used to calculate the relative expression. We have also recorded the ultrasonoscopic parameters of hydronephrotic kidney preoperatively and postoperatively. Spearman correlation rank test has been used to calculate correlation between the relative expression of the fibrosis related factors and the change of SFU and pelvis anterior-posterior diameter and parenchymal ratio postoperatively.

**Results:** 10 Pyeloureteral and 2 vesicoureteral junctions of 12 patients were harvested at the time of dismembered pyeloplasty and ureteroneocystostomy. Median age at the time of operation was 14.7 [8.25;34.7] months, the median duration of follow-up was 12.3 [5.3;14.3]. In all cases the ultrasonoscopic view of hydronephrosis improved. There was no significant correlation between the relative expression of fibrosis-related factors and the change of SFU grade. The relative expression of Tgfb1 in the stenotic ureteral tissue correlated with the relative change of anterior-posterior diameter and parenchymal thickness ratio postoperatively ( $\rho = -0.6339765$  p-value = 0.02684)

**Conclusions:** Our findings suggest that there was a strong negative correlation between Tgfb1 relative expression in obstructed ureteral tissue and anterior-posterior diameter and parenchymal thickness ratio decrease postoperatively. More intensive Tgfb1 expression may refer to more significant mechanical obstruction. This could explain better postoperative ultrasonoscopic result upon surgical intervention.

## Endoscopic division of longitudinal vaginal septum in a 2-year-old girl with OHVIRA syndrome, case presentation

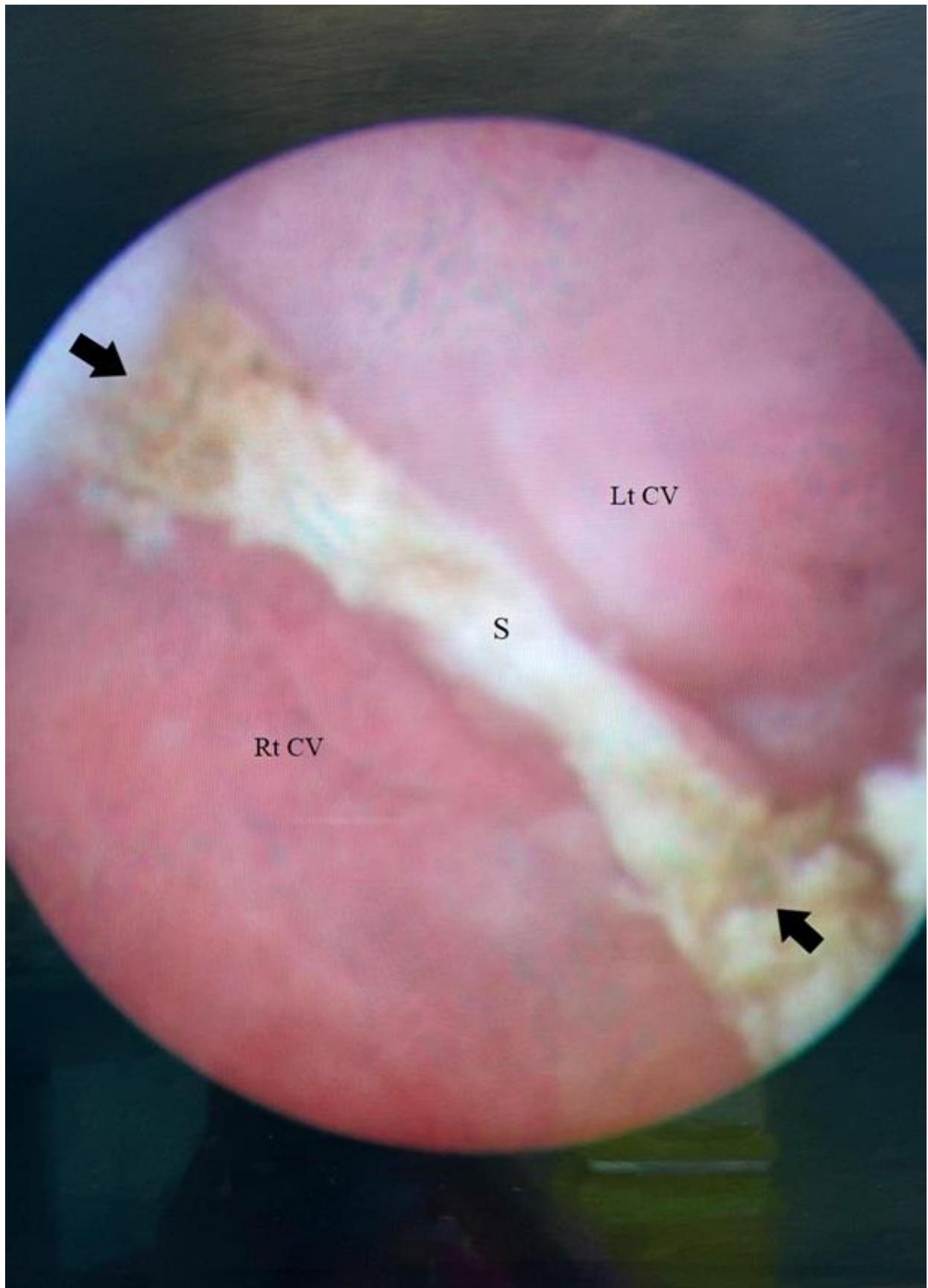
**Jamila Almaary** (Pediatric Surgery, King Abdullah Specialized Children's Hospital, Riyadh, Saudi Arabia), **Fayez Medhen** (Pediatric Urology, King Abdullah Specialized Children's Hospital, Riyadh, Saudi Arabia)

**Aim:** Obstructed hemi-vagina and ipsilateral renal anomaly syndrome (OHVIRA) is a rare form of Müllerian duct anomalies characterized by uterine didelphys, obstructed hemivagina, and ipsilateral renal agenesis. Currently, endoscopic vaginoscopic septum division is feasible and appealing compared to the classic trans-vaginal septal resection. Early pre-obstruction management of the longitudinal vaginal septum should prevent future complications related to endometriosis, hematosalpinx, pyosalpinx, pelvic adhesions and later infertility. However, timing of intervention remains controversial.

**Case presentation:** A 24-month-old girl presented with pelvic cystic mass seen during routine postnatal follow-up imaging for left renal agenesis. Patient was asymptomatic, never had urinary tract infection and cystourethrogram showed no reflux. Despite complete resolution of mild hydronephrosis at age of four months, progressive enlargement of the pelvic cyst was noticed during the following repeated one. A pelvic MRI demonstrated a fluid-filled vagina (hydrocolpos). Diagnostic cystovaginoscopy demonstrated a longitudinal vaginal septum obstructing a left hemivagina. She was managed with endoscopic division of the longitudinal vaginal septum using a pediatric resectoscope. Follow-up vaginoscopy after 6 weeks revealed no vaginal stenosis nor reformation of vaginal septum. Biannual renal US and peri-pubertal pelvic US is planned as part of her follow up and subjected to any evolving symptoms around that age.

**Conclusion:** OHVIRA syndrome should be suspected in girls born with ipsilateral renal agenesis and/or pelvic cyst. Endoscopic division of longitudinal vaginal septum is feasible, minimally invasive, and effective in treating vaginal septum in pre-pubertal girls with OHVIRA syndrome regardless of their age. This technique provides optimal visualization without stretching vaginal wall, preserves hymen integrity with unremarkable post-operative pain. Future potential complications can be prevented and psychological impact and stresses can be eliminated early on. Long-term follow-up is recommended.





## Pediatric Spinal Dysraphism management: the state of care in a tertiary centre

**Sara Fernandes** (Department of Pediatric Surgery, Centro Hospitalar Universitário de São João, Porto, Portugal), **Carlos Mariz** (Department of Pediatric Surgery, Centro Hospitalar Universitário de São João, Porto, Portugal), **Joana Jardim** (Department of Pediatrics, Centro Hospitalar Universitário de São João, Porto, Portugal), **João Luís Barreira** (Department of Pediatrics, Centro Hospitalar Universitário de São João, Porto, Portugal), **Helena Pinto** (Department of Pediatrics, Centro Hospitalar Universitário de São João, Porto, Portugal)

**Introduction:** Spinal dysraphism (SD) is one of the most common causes of congenital neurogenic bladder. Owing to advances in diagnostic and therapeutic modalities, we have lately seen an improvement of SD long-term morbidity. Herein we present a review of pediatric SD and of its associated comorbidities, namely, neurogenic bladder (NB).

**Methods:** Patients followed at our centre with the diagnosis of SD established between 1998 and 2018 were selected. Clinical and demographic data were collected. Hoffer's scale (HS) was used to assess motor function.

**Main results:** Fifty-one patients with SD were included (26 males), 39 OSD and 12 CSD. Most of the patients are community-walkers (n=36, 71%). Radiologic features of tethered cord (TC) were seen on follow-up MRI in 30 patients. A significant correlation between TC and NB was shown ( $p=.004$ ) however, no significant correlation was seen with ambulation score. Forty-three patients (84%) had neurogenic bladder and the most common urodynamic pattern was low compliance bladder (n=23). Most of these patients were managed conservatively, with 72% (n=31) of them requiring intermittent vesical catheterization; surgical treatment was only needed in 5 NB patients: 3 augmentation cystoplasties with continent conduit, 1 augmentation cystoplasty and 1 continent conduit. Overall, there were twenty-three NB patients (45%) with records of "not always dry" and one was even submitted to bladder neck injection of bulking agent. Only 3 cases of renal impairment were reported overall (5.9%).

**Conclusions:** Considering what is lately advocated for the management of SD and, with the therapeutic and diagnostic tools available, the primary goals are being satisfactory accomplished: preserved renal function, acceptable urinary continence and a good motor function in the majority of patients. The quality of life needs to be evaluated in order to understand if these efforts have a positive impact on the subjects.

## Telehealth does not accurately assess paediatric cryptorchidism

**Craig A McBride** (Department of Paediatric Surgery, Surgical Team: Infants, Toddlers, Children (STITCh), Queensland Children's Hospital, Brisbane, Australia), **Eileen Xu** (Department of Paediatric Surgery, Surgical Team: Infants, Toddlers, Children (STITCh), Queensland Children's Hospital, Brisbane, Australia), **Anjana Bairagi** (Department of Paediatric Surgery, Surgical Team: Infants, Toddlers, Children (STITCh), Queensland Children's Hospital, Brisbane, Australia), **Bhaveshkumar Patel** (Department of Paediatric Surgery, Surgical Team: Infants, Toddlers, Children (STITCh), Queensland Children's Hospital, Brisbane, Australia)

**Aim:** Publications regarding paediatric surgical telemedicine cohorts have few cryptorchid patients, despite undescended testis being a common referral diagnosis. We wished to determine the accuracy of telemedicine for diagnosing cryptorchidism, and to explore predictors that may increase accuracy.

**Methods:** Retrospective analysis of a cohort from November 2009 to December 2021. Non-parametric tests were used for both continuous and categorical variables, as data were not expected to be normally distributed. Medians and interquartile ranges are presented for continuous variables. Two-tailed tests were used throughout, with  $p < 0.05$  deemed significant.

**Results:** There were 248 consecutive bookings for orchidopexy with median age 20 months (IQR 11-53). Operations were cancelled for 15% ( $n=37$ ) patients following face-to-face review. Operations were frequently upgraded (from open to laparoscopic, 10.3%) or downgraded (26.1%). Patients with 'bilateral cryptorchidism' were significantly less likely to require surgery ( $p < 0.001$  Pearson Chi-square), as were younger patients ( $p < 0.001$  Pearson Chi-square). Referral source did not significantly predict operation vs no operation ( $p=0.308$ ).

**Conclusions:** Telehealth consultations cannot confidently be used to determine descent of the testis. There are no referral predictors that can confidently be used to assess the need for operation vs reassurance, but there are indicators that may be used to modify conversations with families or the nature of list bookings. Older patients, and those with unilateral cryptorchidism, are more likely to have an operation performed than younger patients or patients referred with bilateral cryptorchidism. Telehealth may still be used as a first assessment to discuss with the family and inform them of the possible course of their presentation. We recommend face to face review of all patients prior to operation, preferably the day before, to enable late cancellations to be replaced.

## Manual detorsion of a torsed testis: a rescue skill of primary care

**Ioanna Gkalonaki** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Michail Anastasakis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Christina Panteli** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioannis Patoulis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece)

**Aim of the study:** The aim of the present study is to highlight the importance of the proper application of manual detorsion (MD) in cases of intravaginal testicular torsion (ITT), to reduce the effects of ischemia-reperfusion injury and testicular compartment syndrome.

**Methods:** From 2017 to 2021, 21 boys, between 3-16 years underwent surgical treatment for ITT. Diagnosis was made upon clinical criteria (Table 1). 4/21 cases represented a neglected scrotum, leading to inability to evaluate the intrascrotal structures. Major ultrasonographic findings were absence of perfusion, heterogeneity of the parenchyma and identification of the Whirlpool sign. Therefore, our study group consisted of 7/21 cases, in which the initial assessment at the ER occurred within 3-7 hours after the onset of ITT. Based on high clinical suspicion and ultrasonographic documentation of the ITT, MD was performed. Pain alleviation followed immediately, along with significant clinical improvement of the suffering scrotum. Successful detorsion was documented via ultrasonography, and bilateral orchiopexy followed.

**Results:** All patients had an uneventful postoperative course and were discharged home on postoperative day 2, subjected to a follow-up examination on a 6-month basis.

**Conclusions:** In conclusion, we hereby document that MD is a safe, non-invasive method, easy to learn for every clinician. It can be applied immediately after the diagnosis of the ITT, converting a highly urgent surgery into an eclectic one. Of course, surgical exploration of the intrascrotal structures constitutes a crucial final step.

Clinical sign or symptom	Number of patients
Sudden onset of pain	21
Nausea or/and vomiting	18
Abdominal pain	2
High position of the suffering testicle	17
Absence of cremasteric muscle reflux	21
Harshness of the affected testicle	19
Change in the axis or orientation of the affected testicle	15
Painful palpation of the affected testicle	21
Earlier episodes of testicular pain	6

Table 1: Signs and symptoms of the affected patients

## The evaluation of the Prehn sign in the diagnostic process of the neglected acute scrotum

**Michail Anastasakis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioanna Gkalonaki** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Christina Panteli** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioannis Patoulis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece)

**Aim of the study:** In the present prospective study, we refer to the possibility of utilizing the Prehn sign, to make a safe differential diagnosis among acute epididymitis and the expansion of the inflammatory to the epididymis due to torsion of the testicular appendix

**Methods:** Twenty- four male patients with acute scrotum, presented at the emergency department of our clinic, 48 hours after the symptoms of intense local inflammation had appeared.

**Main Results:** Ten of the patients suffered from torsion of the testicular appendix (group A) and fourteen suffered from epididymitis (group B). The Prehn’s sign was positive in all patients in group B (14/14) and negative in 9/10 patients in group A. This finding was cross-checked with the corresponding surgical findings.

**Conclusions:** We believe that the performance of the Prehn's sign in any child with a neglected acute scrotum may help reduce surgical interventions. The use of the Prehn's sign as a diagnostic criteria for primary acute epididymitis in school-aged or older boys, suffering from a neglected acute scrotum seems to be essential.

## Tuberculosis of the scrotum – a rare case report

**Jiří Trčka** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Karolina Doležalová** (Department of Pediatrics, First Faculty of Medicine, Charles University and Thomayer University Hospital, Prague, Czech Republic), **Natalie Polívka** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Jan Kříž** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Marcela Pýchová** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

The main population of the Czech Republic is thanks to its past vaccination plan up till the year 2010 still protected against tuberculosis (TBC). Only solitary cases of TBC in kids 5-15 years old are recorded every year. Most of these cases are intrapulmonary. We present a rare case of intrascrotal TBC in an otherwise healthy young boy.

A 13-year-old boy presented to our department with a self-discovered small palpable unpainful mass in the left testis. He had no history of scrotal trauma and no other symptoms were supporting the diagnosis of acute scrotum. Given the small size (3x3 mm) of the mass on the initial ultrasound, we've decided on a conservative approach with early ultrasound control. However, within the 4 weeks between the sonographic evaluation, there was a substantial growth of the mass. A further investigation including bloodwork, oncomarkers, and imaging took place, but no further pathology was found with these examinations. Per the oncologist's recommendation, the next step was radical orchiectomy due to a suspected tumor with intraoperative frozen biopsy on clamped vessels. The biopsy resulted in a surprising finding of nonmalignant Langhans cells. Based on this we removed as much of the tumorous mass, as possible without compromising the integrity of epididymal ducts, to limit the possible loss of fertility. Samples were sent for cultivation and pan-bacterial PCR (both negative). After a brief recovery, the patient was promptly referred to the national center for TBC, receiving drug treatment (isoniazid, rifampicin, ethambutol, pyrazinamide). Regular ultrasound screening on a monthly basis revealed complete remission of disease after 3 months.

Tuberculosis, even with rare extrapulmonary manifestations, can become an emerging diagnosis in our population, given the cease of vaccination and a population flux in modern society.

## Primitive obstructive megaureter (POM) in children: when to intervene?

**Bohra Aziza** (Pediatric surgery A, children hospital Bechir Hamza, Tunis, Tunisia), **Yasmine Houas** (Pediatric surgery A, children hospital Bechir hamza, Tunis, Tunisia), **Ghada Habbachi** (Pediatric surgery A, children Hospital Bechir Hamza, Tunis, Tunisia), **Sabrina Ben Ammar** (Pediatric surgery A, Children Hospital Bechir Hamza, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children Hospital Bechir Hamza, Tunis, Tunisia)

**Aim:** At present, there is no clear consensus on the management of the primitive obstructive megaureter (POM) in children. Despite the widespread use of conservative treatment over the last 15 years, surgery finds always its indisputable indications. The aim of the study was to review the predictive factors for surgery in children affected by POM.

**Methods:** We retrospectively reviewed all the patients operated on for a POM between the 1<sup>st</sup> January 2000 and 31<sup>st</sup> of December 2020. Their clinical presentation, radiologic data, renal function, treatment, and follow-up were studied.

**Results:** Eleven patients met the inclusion criteria including 4 males (36%) and 7 females (63%). Fourteen ureters were treated. Median age at presentation was 4.2 years (2 days – 9 years). Only two patients (18%) were diagnosed prenatally. At baseline, the mean pre-vesical ureteral dilation was 13.7±2 mm and 19.2±2mm after 24 months of careful monitoring. Thickness of renal tissue was of 3.4±2mm. Median renal function of the affected side at scintigraphy was 32% (19%-43%). Median age at surgery was 4.6 (2–12 years). All the operated children were hospitalized at least for one urinary tract infection (UTI). The indication for surgery was in the majority of cases (81,8%) the drop of the renal function more than 5% during the observation. All the patients had a vesico-ureteral reimplantation with tapering in 36,36% of cases. At follow-up, all the children were asymptomatic. There was not a statistically significant difference before and after intervention for renal function.

**Conclusions:** Non-surgical management of asymptomatic POM is highly effective and safe. The predictive factors of surgical approach are still controversial and not well-established. It is admitted that renal function (DRF)< 40%, especially when associated with massive hydroureteronephrosis, and failure of conservative management (breakthrough febrile UTIs, pain, worsening dilatation, or deteriorating DRF) are key indicators for surgery.

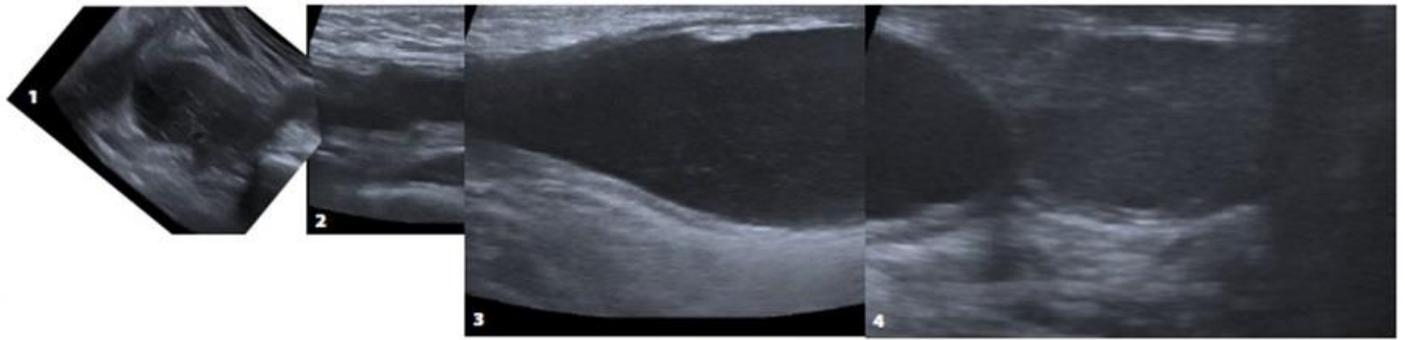
## Abdominoscrotal hydrocele in children

**Peter Kuliáček** (Department of Pediatric Surgery and Traumatology, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Antonín Šafus** (Department of Pediatric Surgery and Traumatology, University Hospital Hradec Králové, Faculty of Medicine in Hradec Králové, Charles University, Hradec Králové, Czech Republic), **Jan Kopřiva** (Department of Diagnostic Radiology, University Hospital Hradec Králové, Hradec Králové, Czech Republic), **Radek Štichhauer** (Department of Pediatric Surgery and Traumatology, University Hospital Hradec Králové, Faculty of Medicine in Hradec Králové, Charles University, Hradec Králové, Czech Republic)

**Aim:** Abdominoscrotal hydrocele (ASH) is a rare condition in boys. It is characterized by a fluid –filled mass with an inguinoscrotal and abdominal component that communicates in an hourglass fashion. Reported incidence is between 0.4 % and 3.1 % of pediatric hydroceles. Several theories have been proposed in the literature but the aetiology of ASH remains unknown. Spontaneous resolution is possible.

**Case description:** A 21-months-old male infant presented in our hospital with a large left cystic inguinoscrotal mass that had been increasing in size since birth. An ultrasound study confirmed a left-sided ASH measuring 70x35x36 mm and extending through the inguinal canal. Abdominal portion measured 36 x 22 x 25 mm. The patient underwent surgical repair through an inguinal approach. We identified a dilated cystic dumbbell-shaped mass which extended from the scrotum to the abdominal cavity above the internal ring. Once the vessels and vas deferens were identified and carefully separated from the thick wall of the sac, the preperitoneal and scrotal component was excised. Laparoscopic exploration confirmed the diagnosis and adequate peritoneal closure at the level of the internal ring. Postoperative course was uneventful.

**Conclusions:** In our experience, an inguinal approach through a small incision in the inguinal skin provides excellent exposure and access for both the abdominal and scrotal components. Optimal time for surgery is unknown. On average, after 17 months of observation, 60% of patients had full resolution of ASH and another 20% had resolution of the abdominal component without intervention. The remaining 20% required operative management of ASH. We recommend observation as the first step in the management of uncomplicated ASH. This approach can lead to surgery avoidance and lower the risk of possible surgical complications.



## The Beneficial effects of the Hydrogen-Rich Saline on the Kidney Ischemia-reperfusion Injury: A Meta-Analysis

**Sena İnal Azizoğlu** (Pediatrics, Başakşehir Çam and Sakura Hospital, İstanbul, Turkey), **Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Ayten Ceren Bakır** (Pediatric Surgery, Marmara University Medical School, İstanbul, Turkey), **Sergey Klyuev** (Pediatric Surgery, Saratov State Medical University, Saratov, Turkey)

**Aim:** Many animals studies, reported the beneficial effects of the hydrogen-rich saline solution (HRSS) on ischemia-reperfusion injury. In this meta-analysis, we aimed to investigate the effectiveness of the hydrogen-rich saline solution (HRSS) on kidney functions.

**Methods:** We performed a systematic review and meta-analysis. We searched PubMed until 2022 using keywords "hydrogen-rich saline solution (HRSS), kidney, ischemia-reperfusion injury". The election was obtained based on abstracts. The reviews and irrelevant studies were excluded.

**Results:** After screening 216 articles, the results of the 4 studies (n=200 animals) which tested the BUN and creatinine levels after treatment with the HRSS were analyzed. The treatment dosage with HRSS were 1, 1, 8, 1 ml/kg, respectively. The ischemia and ischemia-reperfusion injury duration were 35 min, 45 min, 45 min, 60 min, and 28 days, 108 h, 24 h, 24 h, respectively. Detailed data were summarized in table 1. The results of creatinine and BUN have been noted. According to the results of the all included study, HRSS ameliorates the markers and significantly reduces levels which is elevated due to ischemia-reperfusion injury ( $p < 0,05$ , separately for each study).

**Conclusions:** The results of this meta-analysis show that HRSS significantly reduce the elevated blood level of the kidney function tests. Further study is needed to prove the effectiveness of HRSS.

## Comparison between outcomes of inguinal herniotomy by Mitchell-bank and Gross & Ferguson technique for pediatric inguinal hernia repair

**Moezah Moezah** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Muhammad Saleem** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Mehboob Ahmed** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Nudrat Seemab** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Fatima Majeed** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamaal Butt** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan)

**Objective:** Inguinal hernia in children is the result of failure of closure of the processus vaginalis. Surgery is the only treatment modality. Several repairing techniques have been in place. The objective of the study is to compare the outcomes of Mitchell-Bank herniotomy versus modified Ferguson herniotomy in children from 3 months up to 6 years of age.

**Material and Methods:** It was a randomized controlled trial, conducted at CH&UCH from October 2020 till September 2021. 190 children were included. Non-probability, consecutive sampling technique was used. Patients were randomly divided in two groups. In Group-A, patients underwent FGT & in group B, patients underwent MBT. Follow up done in OPD for hernia recurrence, wound infection, hydrocele, surgical hematoma, and testicular atrophy after 1 week, then one month and then after 3 months and 6 months. Data was collected through questionnaire which was entered and analysed using SPSS version 25.0. Quantitative variables like age was presented as mean and standard deviation and data was analysed using t-test. Qualitative variables like recurrence, wound infection, scrotal oedema, hematoma, and testicular atrophy were presented as frequency and percentage and data were analysed by applying Chi-square test. P-value of  $\leq 0.05$  was considered statistically significant. Data was stratified for age (3 months up to 2 years and 2–6 years of age). Post-stratification, both groups were compared.

**Results:** Among 95 patients of MBT Group 89.5% were male and the mean age was  $3.224 \pm 1.5384$  years. 46.3% patients had right-sided inguinal hernia. Likewise in FGT Group, 88.4% were male with mean age of  $2.856 \pm 1.6394$  years. 45.3% patients had right-sided inguinal hernia. In MBT group, zero patient while in FGT group 3.1% patients had recurrence at one month.

## POSTER WALK 6

## Thoracic Surgery 1

## Challenges after a blunt tracheal trauma by the jockey helmet: a case report

**Inga Dekeryte** (Department of Pediatric surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania), **Ausra Lukosiute Urboniene** (Department of Pediatric surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania), **Arturas Kilda** (Department of Pediatric surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania), **Vidmantas Barauskas** (Department of Pediatric surgery, Lithuanian University of Health Sciences, Kaunas, Lithuania)

**Aim:** to present an unusual case of blunt tracheal trauma, its management and challenges in the long term.

**Case description:** A 13 years old girl was admitted to emergency department due to severe head trauma after falling from a horse. She was intubated because of posttraumatic shock with acute respiratory insufficiency. Decompressive craniectomy was performed due to traumatic diffuse cerebral oedema. Even though, her condition improved and after 2 weeks she was extubated, the air-way obstruction was still present. Neck MRI revealed middle part tracheal rupture. Its height was the same as the mark of jockey helmet strap on the neck. Bronchoscopy specified middle part tracheal stenosis of 70% and tracheostomy was formed. A series of bronchoscopies with tracheal dilatation were performed. During rehabilitation, girl state improved, she started to speak, therefore tracheostomy tube was removed. However, after a month she had tracheo-bronchitis. Following the infection, tracheal stenosis with severe air-way obstruction symptoms as stridor re-occurred. After conservative treatment failure, tracheal resection with primary anastomosis was performed. About 5cm stenotic tracheal fragment was resected. A few months after surgery, stridor presented again. Bronchoscopy revealed granulations and tracheomalacia below the anastomosis. Bronchoscopies with dilations and granulations removals improved the condition only for 1 months and the symptoms reappeared. MRI revealed 1,5cm length, 1,8mm diameter tracheal stricture. A decision was made to try biodegradable stenting, however it degraded in only 3,5 months and the condition got the same. Finally, silicone 12mm diameter tracheal stent improved her condition fully in the last 3 years. Even though, she needs the change of stent every year, now she is singing in the choir and riding a horse again.

**Conclusions:** tracheal trauma in children is rare and challenging condition. It requires considerate and wide spectrum management and close follow up for the growing individual.

## Video-Assisted Thoracoscopic Sympathectomy (VATS) for Primary Palmar Hyperhidrosis (PHH) in Children

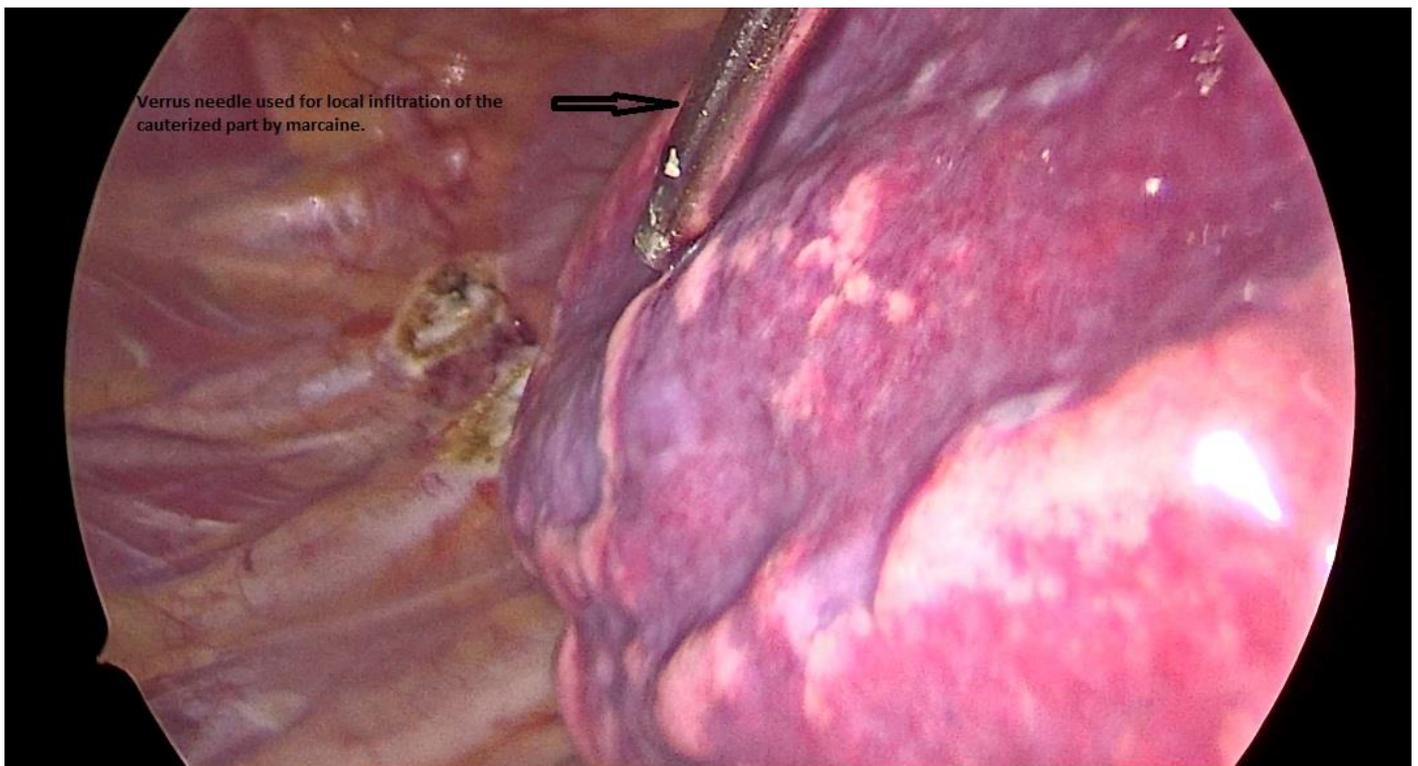
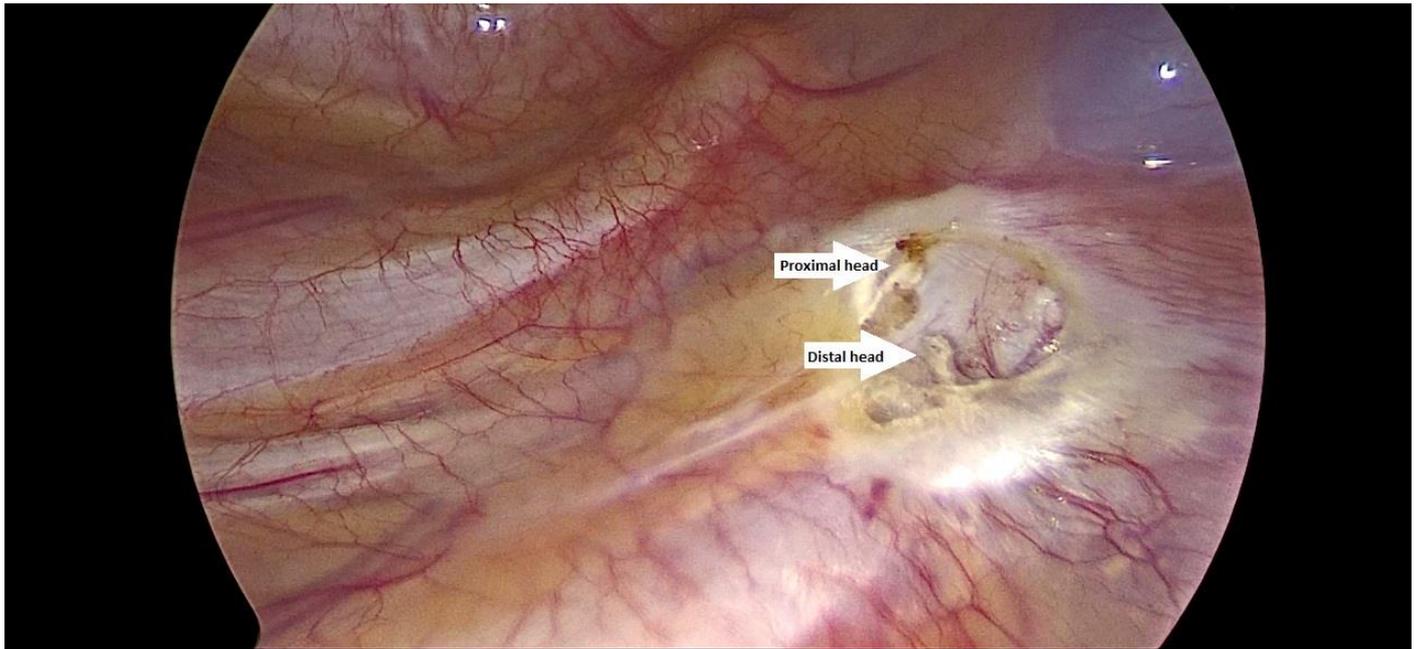
**Mohamed A S Abouheba** (Pediatric Surgery, Alexandria University Children's Hospital, Alexandria, Egypt), **Hazem Hassan** (Pediatric Surgery, Alexandria University Children's Hospital, Alexandria, Egypt), **Mostafa R Kotb** (Pediatric Surgery, Alexandria University Children's Hospital, Alexandria, Egypt), **Ahmed M Khairi** (Pediatric Surgery, Alexandria University Children's Hospital, Alexandria, Egypt)

**Aim:** To assess the safety, efficacy, and feasibility of Video-Assisted Thoracoscopic Sympathectomy (VATS) in the management of primary focal PHH in children.

**Methods:** A prospective study was done on 30 consecutive children with primary PHH referred to our service from May 2020 till November 2021 (18 months). All patients fulfilled inclusion criteria of primary PHH according to the Multi-specialty Working Group on Hyperhidrosis (MSWGH). Exclusion criteria were secondary HH, comorbidity, and previous thoracotomy/lumbar sympathectomy. VATS with thermal cautery at T3 and T4 levels in all cases and intercostal tube drainage were inserted for lung inflation at completion, connected under water-seal, and chest X-ray after recovery. Clinical follow-up was done at 1 week and 1 month post-operatively and phone interview at 3 and 6 months.

**Results:** A total of 13 boys and 17 girls were included. The mean age was  $9.7 \pm 2.8$  years (range 5-15 years). The severity of PHH was 9 (30%) and 21 (70%) patients with grades 3 and 4 respectively (HDSS scale). Of which, 87% took <30 min for completion bilateral T3/4 VATS (our chosen level) in the semi-sitting (our chosen position) without conversions, while the remaining 13% took >30min in the lateral decubitus position, a well-observed timing-position correlation. Only 5 patients (16%) reported minimal transient postoperative pain. Postoperative compensatory trunk hyperhidrosis was observed in 20 patients (67%) and postoperative paradoxical palmar dryness in 8 patients (27%). Subjective patient satisfaction as judged by questionnaire was recorded as 93% full and 7% partial improvements of their life quality.

**Conclusion:** Bilateral VATS is safe, effective, and feasible in controlling primary palmar/axillary hyperhidrosis in children. It is essentially easy to learn and practice within a basic cost-effective hospital setup. We propose a combined T3/T4 level thermal cautery in the semi-sitting position as our chosen procedure for minimal complications and sustained patient satisfaction.



## Unilateral sequential video-assisted thoracoscopic sympathetic chain clamping for treatment of primary palmar hyperhidrosis in children

**Ottavio Adorisio** (Pediatric Surgery, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy), **Enrico Davoli** (Surgery, Campus Biomedico, Rome, Italy), **Francesco De Peppo** (Pediatric Surgery, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy)

**Aim:** Primary palmar hyperhidrosis (PPH) is a severely debilitating condition that can affect social, scholarly and other daily activities at any age. Thoracoscopic sympathectomy provides definitive treatment for PPH. This study aims to investigate the effectiveness of unilateral sequential video-assisted thoracic sympathetic chain clamping (VATSCC) by clips application in the pediatric population.

**Methods:** From August 2017 to June 2021, 58 patients (male:female ratio 32:26), mean age 16.5 years (range 14-19), affected by severe PPH underwent unilateral sequential VATSCC by clips application, starting on the dominant hand. The contralateral side was operated on two months after. Resolution of symptoms, complications, recurrence rate, onset and duration of compensatory hyperhidrosis (CH) and QOL (based on a multifunctional self-assessment questionnaire) were analyzed.

**Results:** The surgical procedure was performed in the semi-sitting position, under general anesthesia with OT intubation. The mean operation time was 23±6 minutes (range 12-45). Two 5 mm ports were inserted at the level of the middle axillary line in the second and fourth intercostal space respectively. The sympathetic chain was identified, and two clips were applied above and under the third rib. No chest tube was left in place. All patients except one (transient pneumothorax) were discharged on the first post-op day. No immediate or late complications have been recorded. The mean follow-up was 28 months (range 8-48). All patients except one (1.7%), affected by Raynaud's disease, showed a complete resolution of the symptom. Seven patients (12%) developed transient moderate CH that spontaneously disappeared a few weeks after the procedure. The mean preoperative *quality of life score* was 31/100. After the operation, it was 94/100. All patients were satisfied with the final result.

**Conclusions:** Unilateral sequential thoracoscopic sympathetic chain clamping for pediatric patients with PPH is safe and very effective in terms of CH and QOL, with a very low complication rate.

## Is thoracic CT useful for the management of foreign body aspirations?

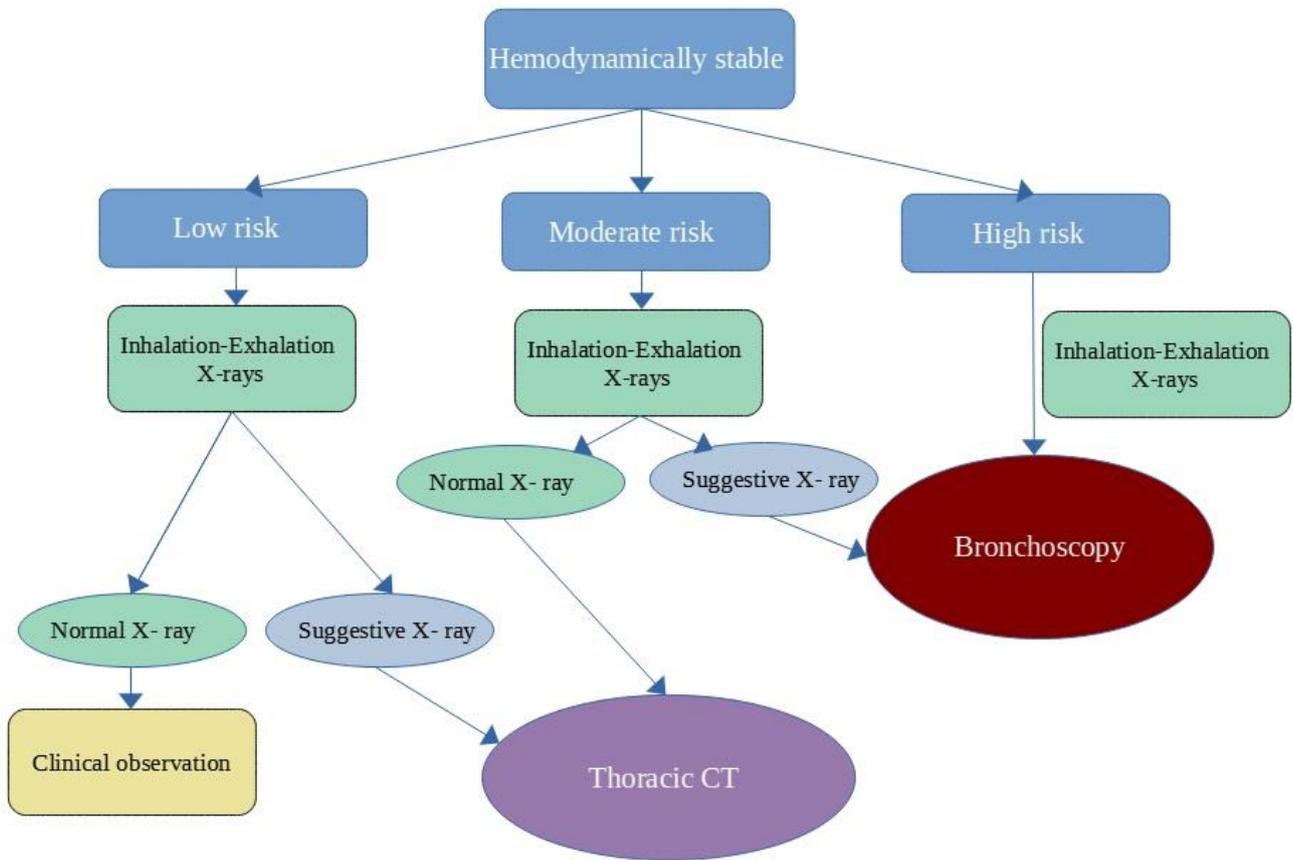
**Cristina Perez Costoya** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Victor Alvarez Muñoz** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Sonia Amat Valero** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Eva Maria Enriquez Zarabozo** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Nataliz Vega Mata** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Cristina Granell Suarez** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Laura Johanna Sanchez Pulido** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Adrian Parada Barcia** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Clara Calvo Penin** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Angela Gomez Farpon** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain)

**Aim:** To analyze the impact on the number of bronchoscopies performed after the implementation of a clinical guideline to manage foreign body aspirations that includes thoracic CT for the diagnosis.

**Methods:** After a systematic review, a clinical guideline to define the risk of bronchoaspiration and its management was developed. Thoracic CT was recommended in case of low risk with suggestive signs on the x-ray; and for patients with moderate risk but normal radiographic images. Patients under 14 years-old that required an urgent bronchoscopy because of suspicion of foreign body aspiration were included. Between April 2017 and April 2019 for the pre-guideline cohort (Group A) and from April 2019 to April 2021 for the post-guideline cohort (Group B). The number of performed bronchoscopies as well as the characteristics of the patients and postoperative complications were analyzed.

**Results:** In total, 24 patients were included in Group A (mean age 3.17 years-old), and 14 in Group B (mean age 3.32 years-old). The rate of performed bronchoscopies decreased a 41.6% after the implementation of the guidelines. The presence of foreign bodies was confirmed in 8.3% of the patients who underwent a bronchoscopy in Group A, and in 21.4% in Group B ( $p=0.24$ ). Among all the patients that underwent a CT, 2 required a bronchoscopy. The number of postoperative complications was the same in both groups ( $n=3$ ). The mean hospital stay was 1.8 days in Group A and 1.5 days in Group B.

**Conclusions:** The use of a clinical guideline that includes thoracic CT for the diagnosis of foreign body aspirations decreases the number of performed bronchoscopies. Along with all the potential complications derived from the manipulation of the airways and general anaesthesia. Data from this study shows that the percentage of therapeutic bronchoscopies increases after the establishment of the guidelines.



## Caliper index for follow-up of patients after MIRPE with modified Nuss bar

**Daniel Kardos** (Department of Pediatrics, University of Pecs, Pecs, Hungary), **Ede Biro** (Department of Pediatrics, University of Pecs, Pecs, Hungary), **Peter Etlinger** (Department of Pediatrics, University of Szeged, Szeged, Hungary), **Andrew Farkas** (Department of Pediatrics, University of Pecs, Pecs, Hungary)

**Aim:** To determine the feasibility of the caliper index (CI) before and after minimal invasive repair of pectus excavatum (MIRPE) using „saddle-shaped bar”, as well as following bar removal.

**Methods:** CI is calculated similarly to the Haller index (horizontal/sagittal diameter at the level of the deepest point of the deformity, in an exhaled status). Normal CI is previously proved to be  $1.37 \pm 0.26$  in pediatric population. Measurements were registered before and 2 weeks after the surgery, followed by controls at 3 months, 1, 2 and 3 years postoperatively. One week and a year after bar removal CI was also measured. For statistical analysis, Wilcoxon signed-rank test was used.

**Results:** Between 2005 and 2020, 106 patients (93 boys, 13 girls, mean age at operation 14.25 years) were operated. Bar removal was done in 73/106 patients,  $3.22 \pm 0.74$  years after the reconstruction. Mean CI before pectus reconstruction was  $1.94 \pm 0.22$ . CI was significantly decreased and became within normal range 2 weeks after the operation ( $1.56 \pm 0.1$ ,  $p < 0.001$ ). CI also showed significant decrease 3 months after ( $1.52 \pm 0.13$ ,  $p = 0.002$ ), compared to the early postoperative measurements. During the annual follow-up, no significant changes were noted, however, 3 years after the operation, CI showed significant difference ( $1.49 \pm 0.14$ ,  $p = 0.002$ ) compared to CI measured in the early postoperative period. After bar removal, CI has indicated a moderate but significant increase ( $1.61 \pm 0.16$ ,  $p < 0,001$ ), which was not changed after 1 year.

**Conclusion:** Serial measurement of CI showed significant improvement in the geometry of the chest wall after MIRPE, using the “saddle-shaped” bar. After bar removal, a slight depression may occur, but it won't get worse in the following year. Measurement of pectus excavatum with caliper is a non-invasive, inexpensive, radiation free and effective method to evaluate the final result of MIRPE.

## Congenital diaphragmatic hernia in neonates. Is thoracoscopic approach safe and effective?

***Mansur Nasirov*** (Minimally invasive surgery, National Children's Medical Center, Tashkent, Uzbekistan), ***Ikrom Bobokulov*** (Minimally Invasive surgery, National Children's Medical Center, Tashkent, Uzbekistan), ***Mansur Nasirov*** (National Children's Medical Center, Samarkand, Uzbekistan)

**The aim of this study** was to determine the effectiveness of thoracoscopic repair of CDH and to determine the degree of risk of recurrence.

**Methods:** during the beginning of the work of our center (March 2020), 6 patients (2 girls) were admitted to us with CDH. The diagnosis was confirmed by frontal and lateral chest x-rays and chest CT to determine the size of the diaphragm defect. In 1 patient, the contents of the hernial sac were the spleen, stomach, small intestine, and colon. In the rest of the patients, the contents were the colon and small intestines. Birth weight averaged 2900 g (2800 to 3300 g). 1 patient had a CDH hernia in the sac.

**Results:** All patients underwent thoracoscopic surgery. No conversion to open. The average operating time was 240 minutes (from 180 minutes to 300 minutes). The sliding knot technique was applied using Ethibond 2/0 sutures. 5 patients were on prolonged mechanical ventilation and were extubated on average 3 (2-4 days) postoperative days. In 1 patient with the contents of a hernia in the stomach, spleen, large and small intestine, oliguria was observed from the first postoperative day, which developed into anuria and the patient died on the 6th postoperative day. X-ray control of the chest remained at all times without pathology. All patients were successfully discharged and were monitored for 6 months. During the monitoring period, no recurrence was noted.

**Conclusion:** Thoracoscopic treatment of CDH is technically difficult but safe and highly effective in terms of early recovery, LOS decreasing, and cosmetic effects. When performing an operation in specialized centers by surgeons experienced in MIS, it is safe in terms of recurrence.

## Surgical interventions of a rare case of hepatopulmonary fusion associated with Right congenital diaphragmatic hernia

**Zeinab Badri Faris** (Pediatric Surgery Department, Ribat University Hospital, Khartoum, Sudan), **Isam Ahmed Abdel Jaleel** (Pediatric Surgery Department, Ribat University Hospital, Khartoum, Sudan)

**Aim:** Surgical intervention of hepatopulmonary fusion malformation associated with the right congenital diaphragmatic hernia (CDH). Hepatopulmonary fusion is a rare condition and only discovered during surgical exploration of CDH only 23 cases were reported in the literature. We present a case of a term female of 3 days old Who was referred to our institution with signs and symptoms of respiratory distress, diagnostic workup including abdominal U/S and CT chest with angiography found a hepatopulmonary fusion and lung hypoplasia Preoperative intubation was mandatory. Open right thoracotomy was done Intraoperative findings were: herniated liver, transverse colon, and an atretic remnant of lung tissues with the right main bronchus attached to it. Reduction of the liver and large bowel to the peritoneal cavity with the closure of the diaphragm with some remnant leaves by interrupted nonabsorbable suture. And ligation of the bronchus.

**Conclusion:** hepatoplummary fusion can be discovered preoperatively by various methods including Ct with angiography and abdominal U/S which can help for preoperative management and appropriate surgical interventional approaches.



## Congenital intrathoracic stomach: 22 Years of Experience

**Vojtech Dotlacil** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Barbora Kucerova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Jiri Snajdauf** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** Congenital intrathoracic stomach (CIS) is a rare pathology in pediatric patients. Clinical signs may be asymptomatic or may present with a variety of symptoms or dramatic complications.

The aim of the study is to evaluate an experience with CIS in pediatric patients at our department.

**Methods:** A retrospective review of consecutive patients with CIS who underwent operation between 1999 and 2021 was performed.

Measured outcomes included patients' demographics, clinical characteristics, surgery, duration of hospitalization, postoperative complications and follow-up. Complications were classified according to the Clavien-Dindo classification (CDc).

**Results:** Fourteen patients (6 females, 42.9%) were included in the analysis. The median age at the time of surgery was 1 year (IQR 0.15–1.75). The most common presentations were vomiting (7, 50%) and second were respiratory symptoms (5, 35.7%). Seven patients were asymptomatic, and their diagnosis was established when they were investigated for something else. Laparotomy was done in 13 (93%) patients. The median duration of the surgery was 95 minutes (IQR 73–120). Operations comprised of reduction of the stomach, resection of the hernial sac, tightening of the hiatus and a fundoplication in 13 patients. One patient (7.1 %) experienced postoperative complication according to CDc and did require reoperation. The median length of hospitalization was 8 days (IQR 7–13,5). The median length of follow-up was 44 months (IQR 14.8–76).

**Conclusions:** CIS is a rare entity and is most likely caused by a congenital defect. Clinical symptoms may presents with respiratory tract symptoms and vomiting or may be totally asymptomatic.

Operation with the repair of hiatus combined with antireflux surgery seems to have satisfactory results.

## Congenital diaphragmatic hernia in neonates: A single center experience in a developing country

***Oumaya Mariem*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Hajer Drissi*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Yosra Ben Ahmed*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Intissar Chibani*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Tarek Boukesra*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Faouzi Nouira*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Awatef Charieg*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), ***Said Jlidi*** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia)

**Aim:** Despite advances in neonatal critical care and ventilation strategies, Congenital diaphragmatic hernia (CDH) remains a significant cause of mortality and morbidity in newborns.

The Aim of our study was to review our experience with congenital diaphragmatic hernia in neonates emphasizing diagnosis, management, and outcomes.

**Methods:** Over a period of 22 years (2010-2021), 64 newborns with CDH have been managed in the Department of Pediatric Surgery “B” at the Children’s Hospital of Tunis.

**Results:** Thirty four boys and 28 girls were included with a sex ratio of 1,2. Fifty-nine patients were born at term, and 5 were premature with an average term of 33 weeks. The mean birth weight was 3 kg (1800 – 4100 g).

The diagnosis was established on prenatal obstetrical ultrasound in 23.4% of cases. In the remaining cases the diagnosis was made at birth during a respiratory distress in the first day in 50 cases, or in the first week of life in five cases. Intubation with mechanical ventilation was indicated in 42% of cases. Surgery was performed after a median stabilization period of 2 days. The diaphragmatic defect was sitting in the posterolateral left in 44 cases. Two cases of agenesis of the cupola were seen and required the placement of gortex prosthesis. The remaining cases are treated by direct closure of defect. Postoperative course was marked by an early death in context of respiratory distress in six cases and later with sepsis in two cases. Sepsis occurred in 12.5%, evisceration occurs in two cases. 5 premature neonates died, two died in preoperative period and three in postoperative period.

**Conclusions:** CDH continues to be one of the most challenging problems in pediatric surgery. Newborn with CDH have high risks of morbidity and mortality and for preterm ones those risks are amplified.

## In the era of COVID-19: emergence of a differential diagnosis of complicated acute appendicitis

**Senda Houidi** (Pediatric Surgery A, Children's Hospital of Tunis, Ariana, Tunisia), **Yosra Kerkeni** (pediatric surgery A, Children 's Hospital of Tunis, Tunis, Tunisia), **Fatma Thamri** (Pediatric Surgery A, children's Hospital of Tunis, Tunis, Tunisia), **Ben Ammar Sabrine** (pediatric surgery A, Children's Hospital of Tunis, Ariana, Tunisia), **Jouini Riadh** (Pediatric Surgery A, Children's Hospital of Tunis, Tunis, Tunisia)

**Introduction:** Multisystem inflammatory syndrome (MIS-C) is a life-threatening condition occurring in children. It is most frequently post-infectious, related to acute SARS-CoV-2 infection. Gastrointestinal symptoms are the most common clinical manifestations. Some patients were wrongly treated for appendicular peritonitis when they presented MIS-C syndrome. The most challenging situation is to differentiate between acute peritonitis versus MIS-C.

**Methods:** We carried out a retrospective, descriptive and analytic study that summarized the clinical presentation, complications, and outcomes of patients who met the definition for MIS-C between January 2021 and January 2022.

**Results:** Seven cases of children aged between 7 and 12 years old were collected. They were presenting to our emergency with a history of fever, abdominal pain and vomiting appeared in chronological order every day. Evolution was between 4 and 7 days before admission. On physical examination patients had diffuse abdominal sensitivity without contracture or defense. The symptomatology was also made up of cutaneous rash (2), bilateral conjunctivitis (3), and diarrhea (4). One patient developed a cardiogenic choc during surveillance. All patients were exposed to SARS-CoV-2/COVID-19 at 1 month before the onset of disease. CRP was elevated in all patients with a normal white blood cells number in 4 patients. Cardiac markers were elevated in two patients. D-Dimere and fibrinogen were elevated in all patients. Ultrasound examination revealed the presence of intra-abdominal fluid (7) and thickening of the cecum wall (2). Appendix was not identified (7). Real-time PCR testing of a nasopharyngeal swab was negative for SARS-CoV-2 (7). Three patients were mistaken for appendicular peritonitis and were operated on. Exploration had revealed an appendix macroscopically normal, and a significant serous peritoneal fluid. Altered hemodynamic status was noted in two patients. They were transferred to intensive unit care. Intravenous infusions of human immunoglobulin were administrated. All our patients recovered after MIS-C without complications.

**Conclusion:** In the era of Covid 19, MIS-C syndrome should be considered as a differential diagnosis of acute abdominal symptoms, especially in atypical presentations. Surgery may delay establishing an appropriate medical treatment.

## POSTER WALK 7

## Thoracic Surgery 2

## Infra-diaphragmatic bronchopulmonary sequestration: differential diagnosis of neuroblastoma

**Sara Fernandes** (Department of Pediatric Surgery, Centro Hospitalar Universitário de São João, Porto, Portugal), **José Estevão-Costa** (Department of Pediatric Surgery, Centro Hospitalar Universitário de São João, Porto, Portugal), **Ana Catarina Fragoso** (Department of Pediatric Surgery, Centro Hospitalar Universitário de São João, Porto, Portugal)

**Introduction:** Extralobar bronchopulmonary sequestration (BPS) is a congenital anomaly characterized by nonfunctioning lung tissue, completely separated from the normal lung, and surrounded by its own pleural covering. Usually, it does not communicate with the tracheobronchial tree and is supplied by an anomalous systemic artery. The abdominal location is extremely rare and raises diagnostic challenges, namely its differentiation from other abdominal masses.

**Case report:** A 19-month-old boy with a prenatal diagnosis of a paravertebral mass, with cystic and solid components, suggestive of neuroblastoma was referred. Computed tomographic scanning raised the suspicion of a BPS. Attending to the heterogeneous characteristics of the mass, surgical removal was decided for further clarification of diagnosis. Laparoscopic excision was decided as shown in the video. Postoperative recovery underwent uneventfully, and the patient was discharged on the day after surgery. BPS diagnosis was established on histological analysis.

**Conclusion:** Considering the case presented, intrabdominal heterogeneous masses with no confirmed diagnosis are best managed with minimally invasive removal.

## The Impact of Position and Number of Stabilizers used on Bar Dislocation in Nuss procedure

**Stephan Rohleder** (Department of Pediatric Surgery, University Medical Center Mainz, Mainz, Germany), **Christina Oetzmann von Sochaczewsk** (Sektion Kinderchirurgie der Klinik und Poliklinik für Allgemein-, Viszeral-, Thorax- und Gefäßchirurgie, Universitätsklinikum Bonn, Bonn, Germany), **Martin Schwind** (Department of Pediatric Surgery, University Medical Center Mainz, Mainz, Germany), **Tatjana Koenig** (Department of Pediatric Surgery, University Medical Center Mainz, Mainz, Germany)

**Aim:** Bar dislocation is the most common complication of the minimally invasive technique for repair of pectus excavatum. Localization and use of bilateral stabilizers is supposed to improve stability, but also impair metal removal. We aimed to evaluate position and number of stabilizers to assess their influence on bar dislocations.

**Methods:** In this retrospective study over 10 years (2011- 2021), all patients with minimally invasive pectus excavatum repair were included. Age, sex, number and position (lateral versus medial) of stabilizers and bar displacement were recorded. Displacement was defined as a bar rotation of more than 45° in lateral X-rays at follow-up. Medial position of stabilizers was present if the stabilizer was medial of the anterior axillary line in antero-posterior X-rays. The effects of the stabilizers were assessed via logistic regression.

**Results:** We included 137 patients, whose median age was 18.3 (95% confidence interval (CI) 17.4–19.2) years. Their Haller-Index was 5.4 (95% CI 4.9-5.7). Post-operative complications occurred in 49 cases, including 38 bar dislocations. The odds for bar dislocation did not differ between unilateral and bilateral stabilizers with 1.04 ( $p > 0.05$ , 95% CI 0.36-2.96). However, the odds for bar dislocations increased by 10.25 ( $p < 0.05$ , 95% CI 1.33-79.22) if lateral stabilizers were implanted.

**Conclusion:** Medial placement of stabilizers is of high relevance in preventing bar dislocations. Using bilateral stabilizers increases the bar fairly stability, but removal of implants is more intricate and we did not see a difference in bar dislocations compared to unilateral stabilizers.

## Chemical pleurodesis with povidone-iodine in two neonatal cases of congenital chylothorax

**Jiří Náhlavský** (Department of Pediatrics, University Hospital Hradec Králové and Charles University, Faculty of Medicine in Hradec Králové, Hradec Králové, Czech Republic), **Jan Malý** (Department of Pediatrics, University Hospital Hradec Králové and Charles University, Faculty of Medicine in Hradec Králové, Hradec Králové, Czech Republic), **Tomáš Matějka** (Department of Pediatrics, University Hospital Hradec Králové and Charles University, Faculty of Medicine in Hradec Králové, Hradec Králové, Czech Republic), **Radek Štichhauer** (Department of Pediatric Surgery and Traumatology, University Hospital Hradec Králové and Charles University, Faculty of Medicine in Hradec Králové, Hradec Králové, Czech Republic)

**Aim:** To demonstrate the clinical efficacy and safety of povidone-iodine chemical pleurodesis as a treatment of congenital chylothorax in neonates which may limit the need for surgical management.

**Case description:** The first patient (a female born at 34 weeks of gestation, birth weight 2840 g) was prenatally diagnosed with bilateral pleural effusion. She required bilateral thoracentesis immediately after birth. After one month of conservative treatment (including drainage, total parenteral nutrition, octreotide, fluid restriction, albumin replacement), the pleural effusion persisted with a chyleous production of 100-150 ml/kg/day. Chemical pleurodesis with povidone-iodine was then attempted sequentially (left-sided once, right-sided twice) as a last option before surgical procedure. The intervention was well tolerated and led to complete resolution with no relapse after 18 months of uneventful follow-up.

Second patient (a male born at 36 weeks of gestation with a weight of 3420 grams) was prenatally diagnosed with a trisomy of the 21<sup>st</sup> chromosome with bilateral fluidothorax and a congenital heart anomaly (ventricular septal defect). Bilateral pleural drainage was necessary with chyle volume amounting to 80-100 ml/kg/day. The patient rapidly developed anasarca. Repeated chemical pleurodesis with povidone-iodine (right side three times, left side twice; within the 5<sup>th</sup> and 28<sup>th</sup> day) led to almost complete resolution of chylothorax with no need for further drainage after day 16. The patient's condition gradually worsened in the second month of life with hepatopathy, progressive pulmonary deterioration and repeated pulmonary bleeding. Multi-organ failure led to demise at two months of age, autopsy findings suggested a global lymphatic vessel dysfunction.

**Conclusions:** Based on our experience and the limited number of cases published so far, chemical pleurodesis with povidone-iodine seems an efficient and safe treatment option in neonates with congenital chylothorax. Our patients have not shown signs of side effects or complications attributable to povidone-iodine chemical pleurodesis.

## Treatment of peristomal obstructive complications in children with tracheostomy: surgical decannulation. Cases serie

**Rogelio Sancho Hernández** (Pediatric Surgery Department, Instituto Nacional de Pediatría, Mexico City, Mexico), **Alba Rocío Barraza Leon** (Pediatric Surgery Department, Instituto Nacional de Pediatría, Mexico City, Mexico), **Lizbeth Solorio Rodríguez** (Pediatría Integral y Terapia Respiratoria, Metepec, Mexico), **Rosy Quimbert Montes** (Pediatric Surgery Department, Instituto Nacional de Pediatría, Mexico City, Mexico)

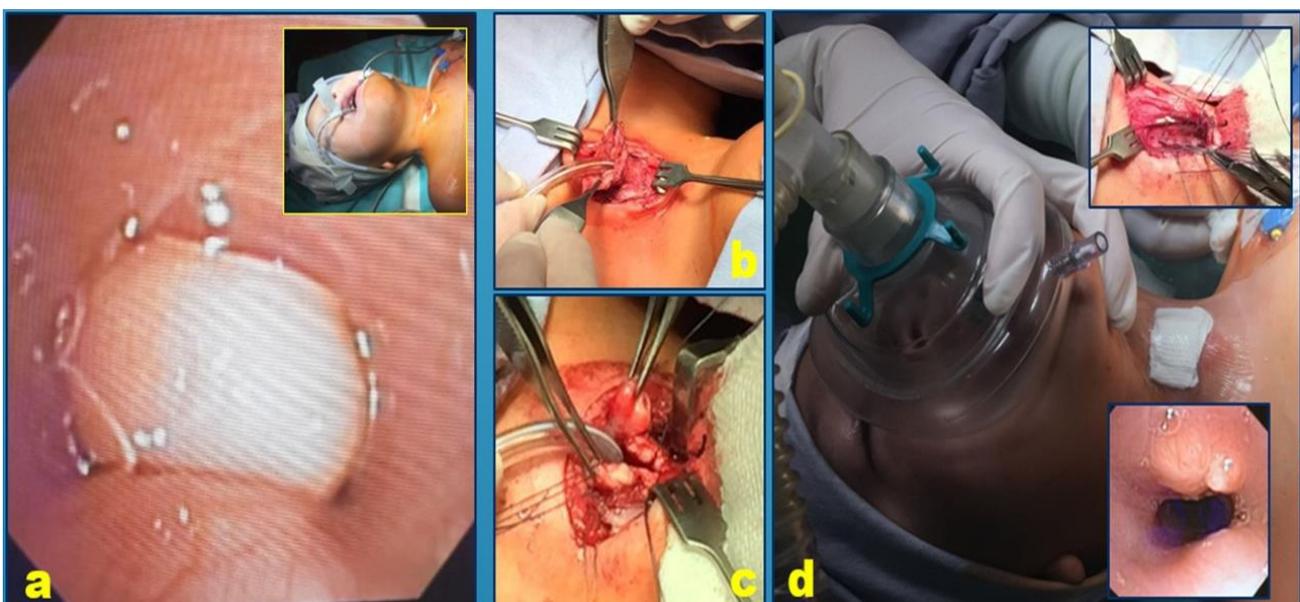
**Objective:** To determine the effectiveness and prognosis of surgical resection of obstructive suprastomal granuloma with anterior wall collapse and tracheal stenosis by tracheoplasty in patients with complicated tracheostomy during simultaneous surgical decannulation.

**Material and Methods:** Retrospective study of 6 cases from 2016 to 2021 of patients with obstructive granuloma of 90% of the tracheal lumen with failed endoscopic resection and decannulation.

**Intervention:** Under endotracheal and stoma intubation (a), the fistula was resected (b), the anterior trachea was incised, the orotracheal cannula was advanced and the obstructive granuloma was removed (c), the anterior tracheoplasty was performed with or without tracheal stenosis resection, postoperative bronchoscopic evaluation and extubation with indirect oxygen support and inhaled anti-inflammatory therapy (d)

**Results:** 2 infants with subglottic stenosis II and III respectively, late decannulation due to obstructive granuloma: one bleeding and the other with dynamic collapse of the trachea, with surgical decannulation by granuloma resection, anterior tracheoplasty, immediate extubation; 3 with sequelae of prolonged ventilation, accidental decannulation with stridor and cyanosis, with giant granuloma and anterior malacia that required granuloma resection and anterior tracheoplasty, immediate extubation in 2 and another in 24 hours; 1 schoolboy with ventilation sequelae does not tolerate decannulation, bronchoscopy with suprastomal granuloma and 90% infrastomal fibrous tracheal stenosis, with resection of granuloma and peristomal stenosis of 4 rings with end-to-end tracheal anastomosis with extubation in 72 hours, the 6 without complications or recurrences.

**Discussion:** Suprastomal granuloma and infrastomal tracheal stenosis after tracheostomy cause obstruction and death with accidental decannulation, surgical decannulation has great efficacy and good prognosis with a success rate of 78% that allows resection of obstructive lesions with decannulation and immediate extubation. simultaneously, in patients with chronic lung damage early extubation is acceptable



## A serious complication of pulmonary hydatid cysts in children: Cyst rupture

**Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Sabri Demir** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Can İhsan Öztoran** (Pediatric Surgery, Ankara Yildirim Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Ankara Yildirim Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Vildan Selin Çayhan** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **İrem Akbaş** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Müjdem Nur Azili** (Pediatric Surgery, Ankara Yildirim Beyazıt University, Faculty of Medicine, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Ankara Yildirim Beyazıt University, Faculty of Medicine, Ankara, Turkey)

**Aim:** Rupture is a serious complication of pulmonary hydatid cyst (PHC) and requires urgent surgical intervention. We aimed to share our clinical data and experience with PHC ruptures in pediatric patients who were treated in our clinic.

**Methods:** Data of children who were treated for PHC between 2011 and 2021 were evaluated retrospectively. Age, gender, presenting complaint, number and localization of cysts, diameters, and other accompanying organ involvement were evaluated. Patients were divided into two groups according to the presence of cyst rupture or not. Groups were compared and the differences were investigated. Statistical analysis was performed using the SPSS 21.0 program, and  $P < 0.005$  was considered significant for all variables.

**Results:** Total 47 patients included in the study. Of these 28 (59.6%) were male. The mean age of the patients was 10.79 ( $\pm 3.84$ ) years. The rupture was observed in 44.6% (21/47) of the patients. The most common presenting complaint was cough (48.9%) in both rupture group (RG) and non-rupture groups (NRG). Hydatidop-tysis and hemoptysis complaints were only detected in the rupture group. There was no difference between the groups in terms of gender, age, number of cysts, cyst size, and other accompanying organ involvements. Cysts were most frequently located in the right hemithorax in RG, and most frequently in the left hemithorax in NRG ( $P = 0.001$ ). While the cysts in RG were most commonly located in the right lower lobe, in NRG, the cysts were most frequently located in the left lower lobe ( $P = 0.031$ ). The mean-diameter of the cysts in RG (84.9 mm) was larger than the diameter of the cysts in NRG (73.34 mm). However, no differences was found between groups ( $P = 0.242$ ).

**Conclusion:** The rupture rate is high in PHC. Our results showed that rupture risk is higher in cysts located in the lower lobe of the right hemithorax.

## Our experience in the management of caustic oesophageal strictures in children in Yaoundé, Cameroon

***Dikonque Dikonque Eugenie Caroline*** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), ***Fossi Kamga Gacelle*** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), ***Obono Ebo Florence Ornella*** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), ***Mouafo Tambo Faustin Felicien*** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon)

**Aim:** This study was aimed at describing the epidemiological, diagnostic and therapeutic aspects of caustic oesophageal strictures in children in our context.

**Methods:** A retro-prospective descriptive study over the period running from the March 2015 to March 2022 was conducted in three tertiary hospitals of the town of Yaoundé: the Yaoundé Gynaeco-Obstetric and Paediatric Hospital, the Yaoundé Teaching Hospital and the Yaoundé Central Hospital. Were included files of children from 0 to 15 years of age diagnosed of caustic oesophageal strictures by an oesophagoscopy and/or a barium meal and managed in one of the three hospitals. Emphasis was laid on the following parameters: age gender, caustic agent, characteristics of the strictures, type of treatment, morbidity, mortality and length of follow-up.

**Results:** Twenty-four cases were included in this study. The mean age was 4.2 years and the sex ratio was 1. The most common caustic agent was sulphuric acid contained in pedicure lotions in 15 cases, followed by caustic soda in 6 cases, hydrochloric acid in 3 cases and unknown in one case. The strictures were mostly single, long, thoracic and tight. The treatment consisted in a feeding gastrostomy in 14 patients and oesophageal dilatation in 10 cases. Complications were observed in 10 cases and included defects in the gastrostomy tube after prolonged use, peristomitis and iatrogenic oesophageal perforation. Death occurred in 24% of patients (6 children). Three children died of mediastinitis from iatrogenic oesophageal perforation while three others died of malnutrition coupled to dehydration.

**Conclusions:** Caustic oesophageal strictures in our context occur in preschoolers who ingest sulphuric acid contained in cosmetic products. The significant morbidity and mortality cannot be dissociated from the limited technical platform: limited availability of oesophageal dilators, precarious peri-operative environment, limited availability of paediatric parenteral nutrition. Emphasis should be laid on the prevention of caustic ingestions.



## Transhiatal esophageal replacement using gastric conduit: minimally invasive option

**Walter Romero** (Pediatric surgery, Hospital Infantil San Vicente Fundación, Medellín, Colombia), **Angelo Loochkartt** (Pediatric surgery, Hospital Infantil San Vicente Fundación, Medellín, Colombia), **Cristian Morales** (Pediatric surgery, Universidad de Antioquia, Medellín, Colombia), **Daniela Moreno** (Pediatric surgery, Universidad Nacional de Colombia, Bogotá, Colombia), **Maria Jose Neira** (Medicine, Universidad El Bosque, Bogotá, Colombia), **Mauricio Pedraza** (General surgery, Universidad El Bosque, Bogotá, Colombia)

**Aim:** To present the experience of four pediatric patients who underwent a minimally invasive esophageal replacement in a hospital in Medellín, Colombia.

**Methods:** A descriptive case series study of pediatric patients in whom an esophageal replacement was performed due to refractory esophageal stricture. Two were achieved with gastric transposition, the other two with gastric tube. The four patients were treated in Hospital Infantil San Vicente Fundación in Medellín, Colombia from 2018 to 2022.

**Results:** In this study four pediatric patients were included. Three men and one woman in an age range from 1 to 8 years. Two of the patients presented refractory esophageal stricture due to history of caustic ingestion. The other two patients presented stenosis of the anastomosis secondary to the correction of type I esophageal atresia. All of the patients underwent an esophageal replacement, two with a gastric transposition technique and two with a gastric tube placement. All of them required a preoperative open gastrostomy. The average hospital stay was 58 days. As complications, the four patients presented cervical esophageal fistula with average appearance at five days postoperative. One of the patients presented bilateral pleural empyema due to leakage of the cervical esophagogastric anastomosis into the pleural cavity five days after surgery; it required thoracoscopic drainage. Two of the patients developed Staphylococcus Aureus bacteremia and one patient presented candida fungemia with ocular involvement. There was no mortality. The patients followed-up with pediatric surgery for two years. An average of four esophageal endoscopic dilations were performed. Currently the four patients tolerate oral route and have not developed further complications.

**Conclusions:** Transhiatal minimally invasive esophageal replacement using gastric conduit, could be a management option for patients with type I esophageal atresia and esophageal injury due to caustic ingestion. It allows an adequate visualization, mediastinal dissection and low mortality.

## Stormy Management of Congenital Sternal clefts with Associated Ectopia cordis, during the COVID-19 Pandemic

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Mehak Sehgal** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Ramesh P Menon** (Pediatrics, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Akshay K Bisoi** (Cardiothoracic Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Sandeep Chauhan** (Cardiac Anaesthesia, All India Institute of Medical Sciences, New Delhi, New Delhi, India)

**Aim:** Sternal clefts (SC) are extremely rare deformities; seldom encountered in a lifetime. The aim is to describe the challenges in their management.

**Method:** Two cases of SC managed during Covid Pandemic from September 2020 to February 2021 are described.

### Results:

**Case 1:** A 2 day old female presented with abnormal movement and bulging of chest and neck in midline. There was a defect in upper chest, parchment skin lined with visible cardiac movements suggestive of ectopia cordis with complete SC. Child was managed conservatively with chest binder and local wound care. At 50 days of life, primary closure of pericardium, anterior chest wall with rib grafting was done with back up for cardiac surgery. She developed wound dehiscence with tear in pericardium that was managed with meticulous dressings including amniotic membrane patches. She was successfully extubated, and discharged at 84 days of life. She was healthy at a follow up of 18 months.

**Case 2:** A 6 day old male born to HIV and covid positive parents presented with bulge in anterior chest and abdominal wall. There was a partial lower SC with an omphalocele, defect in pericardium and diaphragm, confirming to Pentology of Cantrell. Echocardiography revealed an acynotic ASD and VSD. He was given prophylactic ART therapy. Child eventually required mechanical ventilation; had difficult extubation; requiring a tracheostomy. Omphalocele was managed conservatively. Chest binder support was given. He was gradually weaned to CPAP, but succumbed to severe Acinetobacter pneumonia with ARDS and cardiac failure requiring inotropic support awaiting surgical correction after intensive care nursing of 4 months.

**Conclusion:** SC may pose surgical and cardio physiological challenges. A chest binder may provide support to the defective thoracic wall. SC need to be treated aggressively, preferably in the neonatal period to avoid the physiological complications of the anatomical defects.

## Catamenial pneumothorax – a rare entity in a pubertal girl

**Dominika Stevkova** (Department of Paediatric Surgery, National Institute of Children's Diseases, Bratislava, Slovakia), **Pavol Omanik** (Department of Paediatric Surgery, National Institute of Children's Diseases, Bratislava, Slovakia), **Igor Beder** (Department of Paediatric Surgery, National Institute of Children's Diseases, Bratislava, Slovakia), **Zuzana Niznanska** (1st Department of Gynaecology and Obstetrics, St. Cyril and Method's Hospital, Bratislava, Slovakia)

**Aim:** Catamenial pneumothorax (CP) is a rare type of recurrent pneumothorax affecting women in reproductive age in synchrony with menstruation cycle. Authors describe a remarkable case of CP in a pubertal girl and analyse possible causes.

**Case description:** A 14-year-old girl attended emergency department with acute respiratory symptoms when left-sided pneumothorax (PNO) with complete lung collapse was found on X-ray. CT revealed emphysematous bullae in apex of left lung and smaller blebs in apical segment of right lung. VATS resection of apical dystrophic parenchyma of left lung with mechanical pleurodesis was performed. Metachronous pneumothorax on right side appeared 6 months later, with identical treatment via VATS. Patient was asymptomatic for almost two years with subsequent 4 recurrences in five months – 2 right-sided and 2 left-sided pneumothoraxes. After thorough study of patient's history it was uncovered that all the episodes of PNO appeared in first three days of menstruation. Gynaecological examination and ultrasound found cystic lesions on both ovaries with suspicion of endometriosis.

**Conclusions:** A few theories concerning etiology of catamenial pneumothorax were postulated, considering porous diaphragm, high levels of F2-alpha prostaglandines, fluctuating levels of hormones affecting subpleural blebs or intrathoracic endometriosis. Asymptomatic pelvic endometriosis was also often observed in patients with CP. Intensive cooperation with gynaecologist might help with finding the solution for this frustrating diagnosis.

## Variations in the level of termination and characteristics of tracheoesophageal fistula in the patients of type c esophageal atresia

**Charu Yadav** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Subhasis Roy Choudhary** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Rajiv Chadha** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Partap Singh Yadav** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Vikram Khanna** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India)

**Aim:** To study the level of termination of the tracheoesophageal fistula and the characteristics of lower esophagus in cases of Esophageal atresia (EA) type C.

**Method:** This was a Prospective observational study of all neonates of type C EA who underwent thoracotomy over a period of 2 years. The distance between the Azygos vein and tracheoesophageal (TE) fistula was measured by Vernier calipers. Similarly, the gap between the azygous vein and upper pouch and the total gap between the ends were measured. The patients were divided in to 3 groups based on total gap lengths, group A ( $\leq 1$ cm), B (1.1- 2cm), C( $\geq 2.1$ cm). The characteristics of the lower esophagus (thin/thick and narrow/wide) were also noted.

**Results:** Out of a total number of 50 patients; group A, B, and C had 19(38%), 18 (36%) and 13 (26%) respectively. Position of TE fistula varied from 15mm above to 11mm below the azygos vein. TE fistula terminated above, at and below the azygos vein in 14(28%), 6(12%) and 30(60%) patients respectively. Majority 21(42%) of patients had termination at 5 mm below the azygos vein. The patients with TE fistula above and at the level of azygous vein were predominantly in group A i.e., 17(84.2%) and those below were predominantly in group B and C i.e., 28 (90.3%) and this association was found to be statistically significant ( $p < 0.01$ ). Significant no of patients, 12( $p$  value=0.001) and 9( $p$  value= 0.003) of group C had narrow and thin wall lower esophagus respectively.

**Conclusion:** The level of termination of the TE fistula is inconsistent commonest site being 5 mm below the azygous vein. Lower the opening of the TE fistula from the azygous, higher the total gap length. TE fistula becomes thinner and narrower as it terminates lower down.

## Congenital midline cervical cleft

**Mahdi Parvizi Mashhadi** (Pediatric Surgery, Mashhad Medical University of Sciences, Mashhad, Iran)

**Aim: Midline:** Cervical cleft is an extremely rare congenital anomaly of the anterior neck, which accounts for 1.7–2% of congenital neck malformations. It is more common in Caucasian girls and seems to be sporadic. The exact etiology is still unknown, but embryologically, it results from abnormal development of branchial arches for fusion in the midline. The most common clinical presentation of midline cervical cleft at birth shows a midline ventral reddened strip of atrophic skin that extends anywhere between the sternal notch and the submental region with a subcutaneous fibrous cord. A nipple-like skin tag at the superior portion of the lesion with a sinus or fistulous tract could be found at the caudal end of the defect.

**Case description:** An 18-month-old boy presented to the Surgery Department of Hospital (Mashhad, Iran) with a history of midline reddish skin defect in the center of his neck since birth. According to the parents, the lesion was slowly increasing in size, and there was no mucoid discharge. Also, there was no history of bleeding or trauma. On physical examination, a 4 cm long and 1.5 cm wide lesion was located in the neck's anterior midline, which was extended from the hyoid bone to the suprasternal notch. Ultrasound examination of the neck showed that the trachea was not involved and the lesion was medial to the carotid sheath. The patient was diagnosed with midline cervical cleft and planned for elective surgical excision. A mucosal lesion containing fibrous bandage with the sinus tract and associated underlying tissue were completely removed. Then, the defect closure was done using multiple Z plasties.

**Conclusions:** In conclusion, midline cervical cleft is an infrequent congenital defect that required prompt diagnosis and should be treated as early as two years of age to prevent complications. Surgical intervention is the best option for treatment. Skin defect closure should be tension-free to obtain the optimal result, which can be done with single or serial Z plasty reconstruction.

## POSTER WALK 8

### Oncology 1

#### Clinical presentation and outcome of paediatric non-Wilms' malignant renal tumours

**Ajay Verma** (Paediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Devendra Kumar Yadav** (Paediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Shilpa Sharma** (Paediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India)

**Background/Objectives:** To evaluate the clinical presentation and outcome of non-Wilms' malignant renal tumours in children.

**Design/Methods:** Patients registered in Paediatric Surgery Tumour Clinic from Jan 2015 to Jan 2018 who were diagnosed as non-Wilms' malignant renal tumours were studied prospectively for their clinical presentation and outcome.

**Results:** Out of 47 cases of renal tumors 12 had non-Wilms tumors. Three cases had congenital mesoblastic nephroma (CMN), presented with lump, M:F::1:2 and mean age of presentation was 1.5 Month. All doing well over a follow up period (FUP) of 24 months. Three patients had clear cell sarcoma of kidney (CCSK), presented with lump, both male and mean age of presentation was 48 months. One patient is well, and another died (multiple site recurrence) over a FUP of 30 months. One patient had Intra Renal Neuroblastoma (NB), presented with lump but died during adjuvant chemotherapy. One patient had renal peripheral neuroectodermal tumor (PNET), presented with lump at 9 years of age, received adjuvant chemotherapy and doing well over a FUP of 30 months. Four patients had Xp11 Translocation renal cell carcinoma (RCC), two presented with haematuria, one with lump, M:F::1:2, mean age of presentation was 100 months. One patient of translocation RCC developed local recurrence and lung metastasis for which metastasectomy was done, doing well over a FUP of 24 months. Second patient of translocation RCC developed local recurrence, vertebral metastasis, B/L multiple lung metastasis and was advised palliative therapy. Third patient is doing well. Nine patients were treated with nephrectomy alone. Four patients required chemotherapy including neo-adjuvant chemotherapy (CCSK, NB) and adjuvant chemotherapy for PNET.

**Conclusions:** Though the clinical presentation of non-Wilms malignant renal tumour is like Wilms tumour, but the outcome varies depending up on the histopathology.

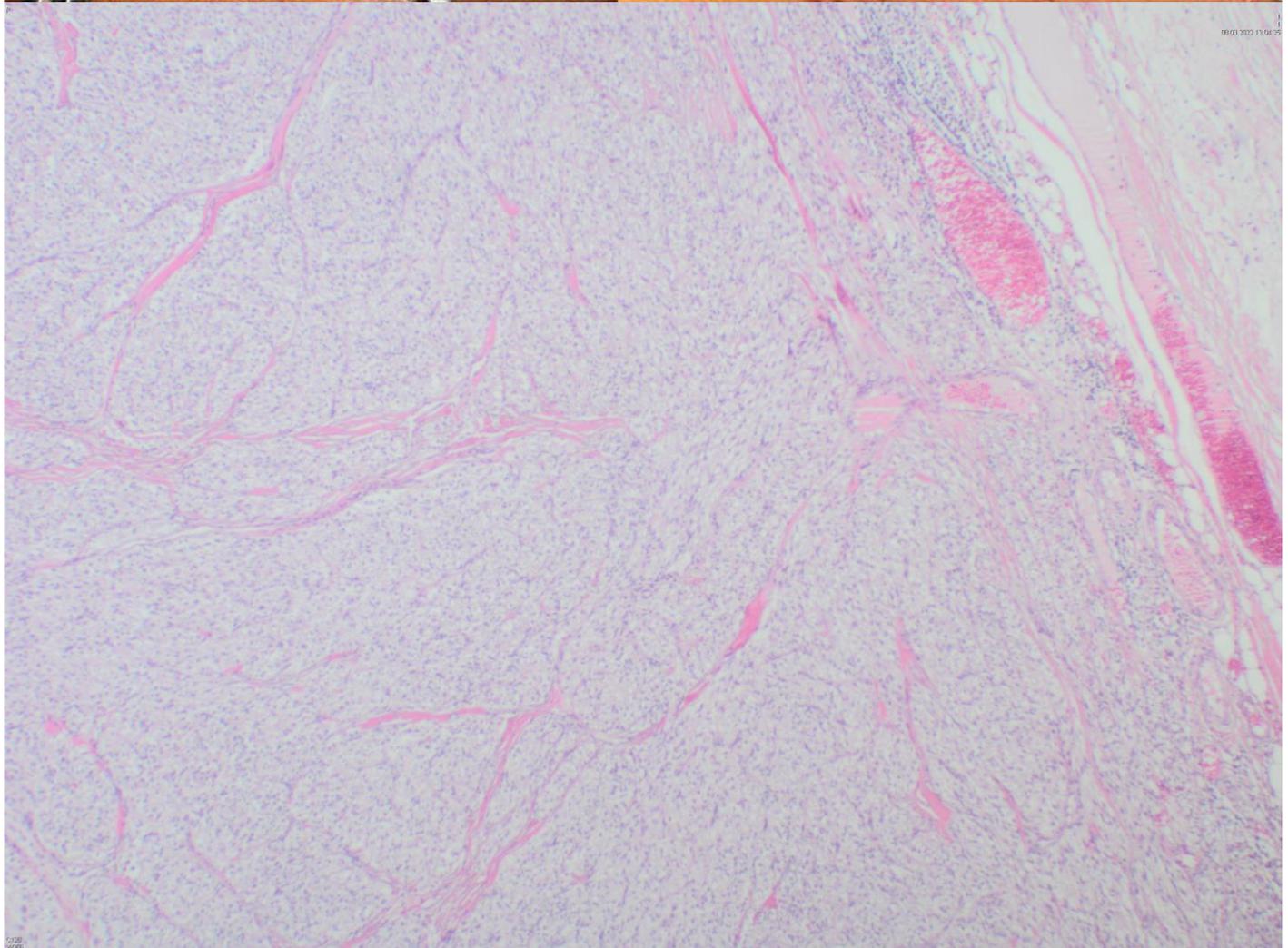
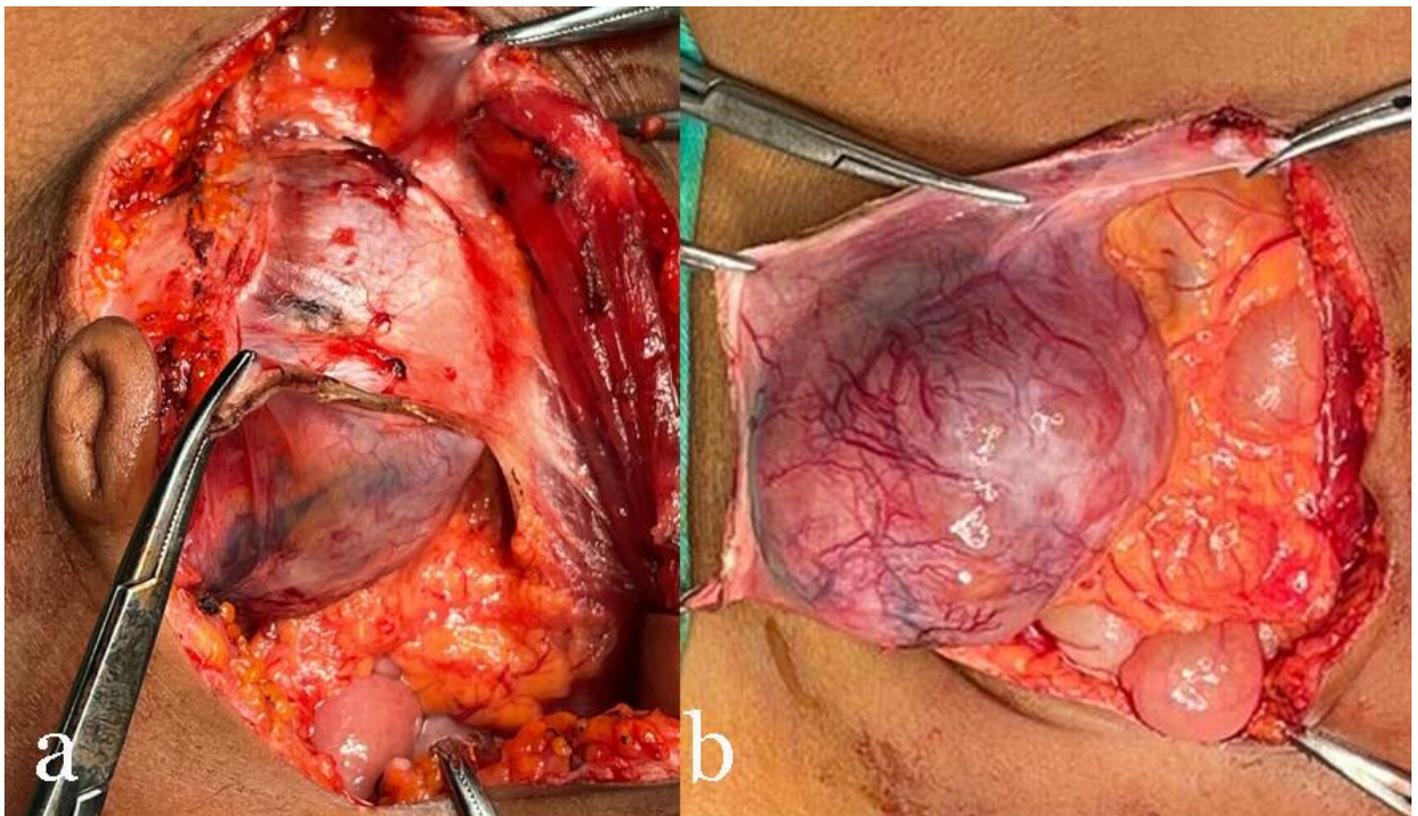
## A case of PEComa arising from the ligamentum teres hepatis of a 6-year-old girl

**Ozkan Cesur** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Asli Nur Abay** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Mujde Karadeniz Kucuk** (Pathology, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Emine Dogan** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey), **Ayse Karaman** (Pediatric Surgery, University of Health Sciences Turkey, Ankara Dr Sami Ulus Maternity and Children Health and Research Application Center, Ankara, Turkey)

**Aim:** Perivascular epithelial cell tumors (PEComa) are rare mesenchymal neoplasms. Here, we presented a case of clear cell myomelanocytic tumor of the falciform ligament/ligamentum teres, a member of the PEComa family, presenting as an incarcerated umbilical hernia is presented with clinical and histopathological findings.

**Case Presentation:** A 6-year-old female patient was admitted to our hospital with the complaints of intermittent abdominal pain and irreducible umbilical hernia. On examination, the patient had an umbilical hernia and a firm mass was felt in the abdomen, otherwise she was healthy. Abdominal ultrasound has shown a hypoechoic solid abdominal mass. Abdominal magnetic resonance imaging revealed an intra-abdominal mass originating from the anterior abdominal wall, extending from the umbilicus to the epigastric region, 4.6 x 4.9 x 3.9 cm in size, containing cystic and necrotic areas, and marked diffusion restriction. The decision of the operation was taken for the patient who was thought to have a desmoid tumor with imaging results. During the operation, a solid mass of 6 x 5 cm was found in the anterior abdominal wall, extending from the umbilical hernia defect to the subcutaneous tissue. The mass originating from the ligamentum teres and containing many congested blood vessels was totally excised with clean surgical margins. Histopathological examination of tumour has been reported as PEComa. There were no problems with the patient during post-operative follow-up.

**Conclusion:** PEComa is a rare tumour generally observed in the middle age group, there are few cases reported in the paediatric age group and especially in the pre-pubertal period. Although PEComa tends to have benign features, it can be malignant as well. Therefore, it is important to perform a detailed histopathological examination and closely follow the patients.



## Recurrence and tumor progression in nephroblastoma, How far is surgery involved?

**Hajer Drissi** (Pediatric surgery B, Children hospital, Tunis, Tunisia), **Intissar Chibani** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Awatef Charieg** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Yosra Ben Ahmed** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Mariem Marzouki** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Tarek Boukesra** (Pediatric surgery B, Children hospital of Tunis, Tunisia), **Faouzi Nouira** (Pediatric Surgery B, Children hospital of Tunis, Tunisia), **Said Jlidi** (Pediatric surgery B, Children hospital of Tunis, Tunisia)

**Objective:** The aim of the study is to identify the main factors involved in postoperative relapse, tumor progression and remnants in Wilm's Tumor.

**Material and methods:** We included in this study 10 children with recurrent nephroblastoma, held in the unit of pediatric oncology and the department of pediatric surgery of Tunis Children's hospital, during a 13 years period between January 2004 and December 2016.

**Results:** The mean age of our patients was 5 years. Four of them had metastasis, 1 liver and 3 pulmonary localisation. Among these, we notified one postoperative tumor progression with bone metastasis, 2 local recurrence and 1 pulmonary relapse after free interval treatment.

All of our patients had primary chemotherapy according to SIOP. The average of tumor's reduction after chemotherapy was 58,44%. Three children had low tumor response to chemotherapy. Among these, 2 patients received actinomycin and vincristin. Doxorubicin was added in only one case. Two patients were intermediate risk on histology. No nephrogenic rests have been stated.

Surgery consisted in total nephrectomy in 9 cases. One patient had nephron sparing surgery for bilateral tumor. He had local postoperative tumor progression with bone metastasis.

Tumor's rupture was found in 2 cases on histological examination. It was notified as accidental in only one case during surgery. One of these 2 patients had local recurrence, the second had tumor progression with metastasis.

Suspected lymph nodes were removed in all cases. Two patients had only local lymph nodes removal. They were negative on histological examination. Four patients had only remote lymph node removal with no local removal. 3 of them were negative on histology. They were probably understaged.

**Conclusion:** The role of the surgeon in the prevention of tumor recurrence is to avoid intraoperative tumor rupture and to remove the locoregional lymph nodes in order to avoid understaging.

## Pancreatic neoplasm in children: a case of Frantz tumor

**Arije Zouaoui** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yosra Kerkeni** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Senda Houdi** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Fatma Thamri** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia)

**Aim:** The aim of this rare case is to precise the clinical, radiological and therapeutic aspects of Frantz tumor in a girl.

**Case description:** A 9-year-old girl presented in the emergency room for exacerbation of a chronic abdominal pain along with vomiting. There was no history of abdominal trauma. The physical examination showed an epigastric tenderness and of the right upper quadrant of the abdomen. Biology showed increased amylase. An abdominal ultrasound and CT-scan concluded to a 15-cm tissular heterogenous well limited mass of pancreas head, surrounded by a discontinued fibrous capsule. The tumor had areas of low-attenuation necrosis. There was a mass effect over the stomach and the upper mesenteric vein. There were no evidence of secondary location. A solid pseudopapillary tumor or Frantz tumor was suspected. The girl underwent a cephalic duodenopancreatectomy allowing a complete resection of the tumor. The immediate postoperative course was uneventful. Histological examination confirmed the diagnosis with healthy margins. Three month post-operatively, the patients presented with an acute stitching epigastric pain. Biology concluded to a pancreatitis and CT-Scan showed a stage B pancreatitis with no sign of tumor recurrence. A 2-year follow-up showed no local nor distant recurrence.

**Conclusion:** Solid pseudopapillary tumor or Frantz tumor is a rare exocrine pancreatic tumor of low malignancy. It typically have the form of a well-encapsulated mass with solid and cystic components. Surgical resection, when well done, offers an excellent chance for longterm survival, even in the presence of distant metastasis. Although surgical resection is generally curative, a close follow-up is mandatory to diagnose a local recurrence or distant metastasis.

## Clinical experience of thoracoplasty with absorbable rib substitutes: case series of primary chest wall tumors

**Juliana Mancera** (Pediatric Surgical Oncology, Hospital Militar Central, Bogota, Colombia), **Viviana Echeverri** (Pediatric Surgical Oncology, Hospital Militar Central, Bogota, Colombia), **Ana M Castillo** (Pediatric Surgery, Clínica Pediátrica Colsanitas, Bogota, Colombia), **Luis F Rodriguez** (Pediatric Surgery, Hospital Infantil Los Angeles, Pasto, Colombia), **Ricardo Zamara** (Pediatric Surgery, Hospital Infantil Los Angeles, Pasto, Colombia), **Carlos Villamil** (Pediatric Surgery, Hospital Infantil Los Angeles, Pasto, Colombia), **Juan P Luengas** (Pediatric Surgical Oncology, Hospital Militar Central / Clínica Pediátrica Colsanitas, Bogota, Colombia)

**Aim:** Chest wall tumors are rare in pediatrics, with an incidence of 1 per 1 million children; most are malignant and located in the rib cage. They usually require multimodal oncological treatment and local surgical control. Resections are extensive, therefore primary reconstruction should be planned to protect underlying organs, prevent herniation, future deformities, preserve ventilatory dynamics, and enable radiotherapy.

**Case description:** This is a case series of 3 prepuberal adolescents between 10 and 14 years, with malignant chest wall tumors (Ewing sarcoma, synovial sarcoma and osteosarcoma). We present our surgical experience in chest wall reconstruction with absorbable rib substitutes (BioBridge®) after local surgical control. Resection margins were negative, without recurrence at follow-up. We achieved a successful chest wall reconstruction with good cosmetic and functional results, and no postoperative complications.

**Conclusions:** Malignant chest wall tumors require local surgical control, with wide resections and 1cm margins. Thoracoplasty planning should consider skeletal and soft tissue reconstruction; the first can be achieved using rigid materials such as titanium or methylmethacrylate; and flexible materials such as absorbable rib substitutes. Rigid materials limit the prepubertal patient's growth and relate to deformity; furthermore they can compromise ventilatory mechanics and produce artifacts that affect control images interpretation, and increase the toxicity of radiotherapy. Alternative reconstruction techniques such as absorbable rib substitutes provide protection, guarantee flexibility of the chest wall and are radiolucent without interfering in adjuvant radiotherapy, being useful in prepubertal patients.

Currently, there are no surgical management protocols in thoracoplasty. This reconstruction option represents an excellent alternative, since it avoids the deformity associated with the use of rigid materials, protects thoracic organs, and might not require new interventions to achieve an adequate functional and cosmetic result. Knowledge of different surgical approaches and reconstructive principles is essential to offer children the best option that suits their cancer treatment.

## Thyroid cancer in pediatric population- our 2 years experience

**Anna Waleza-Widuch** (Department of Pediatric Surgery and Urology, John Paul II Upper Silesian Child Health Center, Katowice, Poland)

**Aim:** In world population thyroid cancer is one of the neoplasms with growing tendency of incidence and morbidity. It is also noticeable in pediatric population especially for papillary thyroid cancer.

Thyroid cancer is the main endocrine tumor in pediatric population. Several studies suggest that papillary thyroid cancer at the time of diagnosis is more advanced in children and adolescents comparing to adults. On the other side a common availability for ultrasound imaging and first diagnostic step which in thyroid cancer is fine needle biopsy, should let us to recognize these neoplasms earlier.

Risk factors for thyroid neoplasms include thyroid disease for example autoimmune thyroid disorders for follicular cancer, iodine deficiency, previous radiation exposure, obesity and of course genetic like MEN syndrome.

The basic imaging method in thyroid gland diagnostic process is ultrasound with gland and lymph node assessment. The second step is fine needle biopsy of thyroid tumor and obligatory classification the histopathological result to Bethesda system. Following adult population fine needle biopsy is characterized up to 99% accuracy and sensitivity and up to 94% specificity.

**Methods:** A review of 30 cases between 2020–2022 conducted surgical treatment because of thyroid pathology with comparison pre- and postoperative diagnosis.

**Results:** Among 30 cases we diagnosed 8 thyroid cancers. All these cases were classified as BTH III to VI. All tumors were max 1cm diameter in ultrasound. None of these patients required neck lymphadenectomy (lateral nodes), because of low stage of disease.

Remaining 22 cases were in postoperative histopathology diagnosed as benign.

**Conclusion:** Thyroid cancer in pediatric population is still rare tumor but in recent years its incidence grows. Among pediatric patients suffers from thyroid disorders even in small nodules less than 1cm fine needle biopsy should be done.

## Free flaps for lower and upper limb reconstruction in children

**Łukasz Krakowczyk** (Oncological Surgery and Reconstructive surgery, National Research Institute of Oncology, Gliwice, Poland), **Bartosz Pachuta** (Dept of Oncology and Surgical Oncology for Children and Youth, Institute of Mother and Child in Warszawa, Warszawa, Poland), **Dominika Krakowczyk Krakowczyk** (Pediatric Surgery and Urology, Upper Silesian Child Health Center, Katowice, Poland), **Jakub Opyrchał Opyrchał** (Oncological and Reconstructive Surgery, National Research Institute of Oncology, Gliwice, Poland), **Tomasz Koszutski** (Pediatric Surgery and Urology, Upper Silesian Child Health Center, Katowice, Poland), **Dominika Smyczek** (Pani, Gliwice, Poland)

**Aim:** In the past amputations have been the standard of treatment for extremities bone and soft-tissue sarcomas. However, over the last few decades, this mode of treatment has been increasingly replaced by limb-sparing procedures. Our goal is to report the clinical outcomes of upper and lower extremity reconstructions in patients with a history of bone and soft-tissue sarcoma.

**Methods:** A retrospective review of 8 patients with the history of bone and soft-tissue sarcoma who underwent upper or lower extremity reconstruction was conducted. Demographics, tumor characteristics, type of flap utilized, functional outcomes, and postoperative donor and recipient site complications were analyzed.

**Results:** Over the past 4 years, 8 patients were treated for sarcomas of the lower and upper extremity in which soft-tissue and bone reconstruction was needed for complete limb salvage. The mean age of these patients was 11 y.o. (range, 8 to 18 y.o.); there were 4 male and 4 female patients. Out of the 8 sarcomas, 6 cases involved the lower extremity and 2 cases were in the upper one. Reconstruction was performed in all patients secondarily because of the wound complications after initial extirpation or infection of the expandable prosthesis. Adjuvant radiation therapy was administered either preoperatively or postoperatively in all cases. From these particular reconstructive procedures there were performed 3 fibula free flaps and 5 involved anterolateral thigh free flaps. All patients achieved initial limb salvage after the reconstructive procedure(s). Mean follow-up was 38 months.

**Conclusion:** Reconstructive surgery procedures play an increasingly important role in growing childrens' extremity sarcoma treatment and functional limb salvage. Limb-preserving reconstruction using free flaps is a reliable and safe option after sarcoma resection. In addition, long-term outcomes are promising and reassure the adequate functionality of the limb.

## Neuroendocrine tumor of appendix: A case series in pediatric surgery center

**Girts Aleksejevs** (Pediatric Surgery, Children's University Hospital, Riga, Latvia), **Zane Ābola** (Pediatric Surgery, Children's University Hospital, Riga, Latvia), **Astra Zviedre** (Pediatric Surgery, Children's University Hospital, Riga, Latvia), **Ksenija Soldatenkova** (Pediatric Surgery, Children's University Hospital, Riga, Latvia)

**Aim:** Appendiceal neuroendocrine tumor (NET) is believed to be most common neoplasm of appendix. We present a four cases series of pediatric patients that had appendectomy and confirmed NET in years 2015 to 2021 and collate incidence of NET compared to that described in literature.

**Description of case series:** All patients underwent laparoscopic appendectomy due to acute appendicitis  
*Case 1:* 10 year old boy had histology with well differentiated neuroendocrine tumor of appendix 1,5 cm in size, Grade 1. Tumor board advised yearly follow up with MRI due to size of NET. *Case 2:* 15 year old boy had histology with neuroendocrine tumor of appendix 0.3 cm in size, Grade 1 *Case 3:* 11 year old girl had histology with well differentiated neuroendocrine submucosal tumor of appendix 0,4 cm in size, Grade 1. *Case 4:* 17year old girl had had histology with well differentiated neuroendocrine tumor of appendix 1 cm in size, Grade 1. All the patients are considered cured by appendectomy alone. Case 1

**Conclusions:** Appendix neoplasms are rare, mostly diagnosed by accident upon suspicion of acute appendicitis. Our incidence is 0.27 % compared to 0,3 – 0,9 % worldwide. Unified follow-up guidelines after resection of NET are not established. In our series appendectomy warranted good prognosis without a need for extensive surgery. More randomized trials should be encouraged in order to develop evidence based guidelines.

## Mature ovarian teratoma – a case report

**Marco Antonio Calla Ayala** (Pediatric surgery second year resident, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Jose Francisco Leon Arze** (Pediatric surgery chief of service, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Lourdes Carolina Nogales Hiza** (Pediatric surgery staff surgeon, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Jose Miguel Leon Moreno** (Pediatric surgery staff surgeon, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Mayra Atila Lujan** (Pediatric surgery fourth year resident, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Guisela Sucet Acuña Esposito** (Pediatric surgery second year resident, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Rodolfo Pacheco Llerena** (Pediatric surgery staff surgeon, Caja Petrolera de Salud, Santa Cruz, Bolivia), **Ernesto Yucra Falon** (Pediatric surgery staff surgeon, Caja Petrolera de Salud, Santa Cruz, Bolivia)

**Aim:** Most teratomas are cystic and composed of mature differentiated elements (mature); they are better known as dermoid cysts. The mature cystic teratoma accounts for more than 95 percent of all ovarian teratomas and is almost invariably benign. Dermoid cysts are the most common ovarian tumor in women in the second and third decade of life. The present case is a mature teratoma, which has a surgical resolution.

**Case:** A 14-year-old female, gynecological history of menarche at 10 years of age, regular menses, lasting 4 to 5 days. History of ultrasound with bilateral poly cystic ovaries, abdominal pain of 4 months of evolution that is accompanied by menorrhagia. Last month with increased volume in the abdomen, an abdominal-pelvic tomography with contrast was performed with the following report: Solid, heterogeneous mass that extends from L1 to S2, encompasses the abdomen and pelvis, measures 19 x 16 x 8 cm longitudinally, transverse and anteroposterior. Laboratories with: AFP – 120 IU/ml LDH – 415 IU/L (200-400) HCG < 1. Physical examination of the abdomen, hypo active air-fluid noises, a giant mass with regular edges was palpated occupying the right hemiabdomen with an abdominal perimeter of 93 cm. Preoperative diagnosis was; abdominal tumor, right ovarian teratoma to rule out. Surgery was performed with an exploratory laparotomy, lumpectomy and left ovarian oophorectomy, leading to a post-surgical diagnosis of left ovarian tumor. Intraoperative findings with lesion of +/- 20 cm, weight of 1400 gr.

**Conclusions:** A pediatric female patient with a history of bleeding and a growing abdominal mass must be ruled out with imaging and laboratory tests if there is a relationship with alterations of adnexal, a possible teratoma needs to be descart and have a prompt surgical conduct.



## POSTER WALK 9

## Oncology 2

## Inflammatory myofibroblastic tumor of the lung – recurrence or not, that is the question

**Natalie Polivka** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic), **Barbora Kucerova** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic), **Jiri Snajdauf** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, 2nd Faculty of Medicine, Charles University, Motol University Hospital, Prague, Czech Republic)

**Aim:** How to rule out misdiagnosis of inflammatory myofibroblastic tumor (IMT) recurrence.

**Case description:** A 9-year-old girl with pain in the right hemithorax and sensation of bubble burst underwent chest X-ray in May 2019 showing 2 masses in the right lung. CT scan confirmed 2 heterogeneous lung masses with microcalcifications in the right middle (28 x 24 x 21 mm) and lower lobes (33 x 29 x 29 mm). In July 2019 right posterolateral thoracotomy was performed and showed 3 masses; one in the middle, one in the lower lobe and one attached to the diaphragm. Lower lobectomy, wedge resection of the middle lobe and resection of the mass attached to the diaphragm followed. Histology confirmed IMT in all samples. Follow-up imaging showed only postoperative changes. Two months after surgery the patient started to suffer from back pain. X-ray and CT scan detected a mass of 25 x 20 x 23 mm in the right middle lobe. Whole-body FDG PET/MRI showed a suspected recurrence. Molecular genetics of the primary tumors was performed with no Anaplastic Lymphoma Kinase (ALK) gene mutation, but TFG/ROS1 fusion and EGFR gene mutation were detected. A multidisciplinary team meeting indicated a 3-month biological treatment with Crizotinib. Follow-up CT showed no change in the tumor size, and therefore reoperation was indicated. Tumor excision was performed, and histopathology showed no IMT, but found instead a benign hyalinizing granuloma.

**Conclusions:** Our case report shows that rarely multiple IMTs can be found. FDG PET/MRI is a very sensitive, but non specific method to diagnose recurrent IMT. In the case of suspected recurrence, a secondary tumor must be considered in the differential diagnosis. In doubt, biopsy should be considered.

## A 6-Days-Old Newborn with a Giant Sacrococcygeal Teratoma

**Sulmiati Sulmiati** (Pediatric Surgery, Rsup Dr Wahidin Sudirohusodo Makassar, Makassar, Indonesia), **Deo Prasetyo** (General Surgery, Universitas Hasanuddin Makassar, Makassar, Indonesia)

**Aim:** Sacrococcygeal teratoma (SCT) is a relatively rare sacral tumor with an overall incidence of approximately 1 in 35,000. Female-dominated in a 4:1 ratio. Survival rate was reported to be 95% at 1 to 5 years of follow-up after surgical resection without or with chemotherapy. We report a case of a female infant with SCT.

**Case:** A 6-days-old term baby girl with a complaint of a firm lump with irregular surface since birth on the buttocks measuring 40x20x18cm, increasing in size. The baby was born by cesarean section due to a suspected sacrococcygeal teratoma, the baby was born crying immediately with a birth weight of 4.375 grams, a birth length of 45 cm with a head circumference of 33 cm. There is no history of fever, seizures, vomiting nor jaundice after birth, with normal bowel movements and urination. On physical examination, a solid tumor was found on the buttocks with reddish color compared to the surroundings, no ulcers and no bleeding, with a firm consistency measuring 40x20x18cm, irregular surface, immobile. The patient underwent tumor resection surgery with cytologic results: suppurative inflammatory lesions, no malignant cells, considering hemorrhagic cysts + dermoid cysts. Anatomical pathology results impression of Immature Sacrococcygeal Teratoma.

**Conclusion:** Definitive treatment of immature Sacrococcygeal Teratoma is tumor excision in conjunction with chemotherapy.





## Autologous Bone Marrow Aspirate Concentrate (BMAC) for Keratocystic Odontogenic Tumour (KCOT) – A Case Report

**Madhan Jeyaraman** (Faculty of Medicine – Sri Lalithambigai Medical College and Hospital, Dr MGR Educational and Research Institute, Chennai, India), **Ravi VR** (Orthopaedics, Mother Cell Regeneration Center, Trichy, India)

**Introduction:** Management of keratocystic odontogenic tumor (KCOT) has always remained a conundrum due to its aggressive behavior, indicating wide resection. Achieving an esthetically and functionally acceptable reconstruction remains a challenge. Herein, we present a novel and less invasive technique for the treatment of KCOT.

**Case Report:** A 17-year-old female presenting with pain in the lower jaw for the past 3 months was diagnosed with a large KCOT extending from 35 to 47 region. CT images revealed buccal and lingual cortical bone erosion. Management was done in two stages: cyst curettage and chemical cauterization, followed by application of Bone Marrow Aspirate Concentrate (BMAC) with a delay of two months, to increase the thickness of eroded cortical bone. On follow-up at one year, ossification of the defect was observed.

**Discussion:** BMAC is a cocktail of mesenchymal stromal cells, hematopoietic stem cells, fibroblasts, mononuclear cells, macrophages, endothelial cells, progenitor cells, growth factors and cytokines. BMAC cocktail provide an anti-inflammatory, anti-fibrotic, anti-apoptotic, and immunomodulatory environment. Autologous platelet rich plasma provides various growth factors (TGF- $\beta$ , PDGF, EGF, HGF, NGF, IGF-1) and cytokines. Addition of PRP in BMAC cocktail enhance the regeneration of tissues, where PRP act as a functional regenerative scaffold for cell integration, proliferation, and differentiation that can expedite macroscale musculoskeletal tissue healing.

**Conclusion:** Autologous BMAC with corticocancellous bone acts as an osteoconductive scaffold capable of regenerating the large bone defect created by the curettage of KCOT.

**Keywords:** Autologous Bone Marrow Aspirate Concentrate, Keratocystic Odontogenic tumor, Mandibular regeneration

## Factors associated with unfavorable outcome in pediatric hepatoblastoma

**Piriyaporn Pongchaikul** (Surgery, Faculty of medicine, Ramathibodi hospital, Mahidol University, Bangkok, Thailand), **Chawintee Puttanapitak** (Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Samut Prakan, Thailand & Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand), **Pongpak Pongpithcha** (Pediatrics, Faculty of Medicine, Ramathibodi hospital, Mahidol University, Bangkok, Thailand)

**Introduction:** Hepatoblastoma is the most common malignant liver tumor and the third common intra-abdominal solid tumor in children. Currently, there are various strategies for hepatoblastoma treatment, including the chemotherapy, liver resection and liver transplantation, which result in an excellent outcome

**Objective:** The aims of this study are to investigate the treatment outcome of hepatoblastoma in Ramathibodi hospital which is the largest center of pediatric liver transplantation center in Thailand, and to identify the association of determining factors that affect the treatment outcome of hepatoblastoma.

**Method:** Twenty-two patients who diagnosed with hepatoblastoma between January 2014 and September 2020 were recruited. Three patients were excluded due to incomplete medical record. A total number of 19 patients were included in this study. Retrospective and prospective chart review was designed in single center. The demographic data, pre-treatment data, treatment strategies, post-operative outcome, 1-year-survival rate and 5-year-survival rate were collected and analyzed. The survival rate is calculated using Cox's regression analysis.

**Result:** Of 19 patients, 9 patients were male (47.4%). The mean age at diagnosis was 27 months (interquartile range 9.5, 33.5). There was no immediate post-operative mortality, whereas the immediate post-operative complication rate was 36.8% (7/19): bile duct injury (4), intestinal obstruction (2) and hemoperitoneum (1). The 1-year-survival rate was 95.2% The 5-year-survival rate was 85.7% The overall death was 4 patients (21%), including from recurrent tumor (1), sepsis (1), upper gastrointestinal bleeding (1), and palliative care(1). There was no factor that is significantly associated with post-operative complication. However, length of stay after the surgery was significantly associated with survival rate (both 1- and 5-year survival rate).

**Conclusion:** The overall treatment outcome of pediatric hepatoblastoma is excellent in immediate post-operation, 1-and 5-year survival rate. There was no factor indicating post-operative outcome, and the length of stay after surgery affected the survival rate.

## Wilms tumor of the uterus? A case report

***Khaoula Ben Hassine*** (pediatric surgery B, Children Hospital, Tunis, Tunisia), ***Intissar Chibani*** (pediatric surgery B, Children Hospital, Tunis, Tunisia), ***Marwa Berguellil*** (pediatric surgery B, children hospital, Tunis, Tunisia), ***Yosra Ben Ahmed*** (pediatric surgery, children Hospital, Tunis, Tunisia), ***Tarek Boukesra*** (pediatric surgery B, children hospital, Tunis, Tunisia), ***Awatef Charieg*** (pediatric surgery B, children hospital, Tunis, Tunisia), ***said Jlidi*** (pediatric surgery B, children hospital, Tunis, Tunisia)

**Aim:** Wilms tumor is a malignant pediatric tumor that almost exclusively arises from the kidney. Extrarenal nephroblastoma is rare. We are describing the case of uterine localisation of Wilms tumor.

**Case description:** We report the case of a 4 year-old girl diagnosed with left renal nephroblastoma since the age of two with no syndromic association. The patient had primary chemotherapy according to SIOP protocol. She received four cures based on actinomycine and vincristine. A tumor progression was observed. A total nephrectomy was then performed, followed by conformational 3D radiotherapy and adjuvant chemotherapy. Histopathological examination revealed the blastemal type with 80% of viable tissue. The peritoneal liquid contained neoplastic cells. At the end of treatment the child was tumor free. Six months later, we identified a latero uterine mass on abdominal ultrasounds. Pelvic MRI demonstrated a round median pelvic mass well limited by a peripheral border connecting gently with the uterine fundus, measuring 20\*20\*21 mm, in contact with the posterior surface of the bladder and the sigmoid with loss of the fatty border without signs of low abundance. Due to the age of the child the hysteroscopy couldn't be done. We performed a laparoscopic biopsy reaffirming the nature of the uterine mass. It was a nephroblastoma. Our patient still be cared of in the oncology department. She received chemotherapy based on carboplatine and etoposide.

**Conclusion:** Extrarenal Wilms tumor are exceedingly rare. Few cases of uterine Wilm's tumor have been described. However, is it really an extra renal Wilms tumor? Or it might be the implantation of a tumoral cell in the myometrical tissue? Is it a uterine metastasis?

## High risk neuroblastoma: single center experience of 11 years

**Gizem Özdemir Kenar** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Selin Ural** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Gungor Karaguzel** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **A. Çiğdem Sivrice** (Pediatric Oncology, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Cem Boneval** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Elif Güler** (Pediatric Oncology, Akdeniz University Faculty of Medicine, Antalya, Turkey), **Mustafa Melikoglu** (Pediatric Surgery, Akdeniz University Faculty of Medicine, Antalya, Turkey)

**Aim:** Oncological and surgical treatments of high-risk neuroblastoma (HR-NBL) are controversial. In this study, we present HR-NBL patients consulted for surgical approach in our center.

**Method:** The files of HR-NBL patients between 2010 and 2020 were evaluated retrospectively. These cases were staged, grouped and treated according to autologous/allogenic stem cell transplantations (ASCT) arm of our national protocol. In addition, the patients' age at the time of surgery, gender, tumor localization, surgical interventions and prognosis were evaluated.

**Results:** Totally 60 patients diagnosed as NBL during study period and 33 (55%) of them were HR-NBL. Sex ratio was 16 female to 17 male. Mean age at diagnosis was 50 months (median age 34.5 months). Twenty-nine (87%) patients were stage M and 4 (13%) patients were stage L2 at the time of diagnosis. Primary tumors were, abdominal in 29/33 (87%), mediastinal in 3/33 (9%) and pelvic in 1/33 (3%). Thirty patients underwent delayed primary resection following six courses of chemotherapy. Two patients died before operation and one had a complete remission without surgical intervention. Complete resection in 9 patients (with positive surgical margin in 5), resection with minimal residue in 13 (43%) patients and incomplete resections in 8 (27%) patients were performed. Total postoperative complication rate was 4/30 (13%, adhesive intestinal obstruction in 3, invagination in 1 patient). ASCT were performed in 22 patients (13 patients developed relapse, 12 patients died). Eight of the remaining eleven patients died while awaiting for ASCT, and 3 are still under treatment. Totally 20 patients died. Overall mortality was %61.

**Conclusion:** Abdominal localization and stage M patients were relatively high in our series. Delayed primary resection during consolidation phase was the preferred surgical strategy in all. Absence of secondary resection, performing incomplete resection in selected cases and postoperative intestinal obstruction were noted.

## Incidental solid pseudopapillary neoplasm of the pancreas: a rare pediatric entity with unique features!

**Meriem Oumaya** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Mongi Mekki** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Sabrina Ben Youssef** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Sana Mosbahi** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Amine Ksia** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Lassad Sahnoun** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Mohsen Belguith** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia)

**Aim:** SPN is a rare tumor which predominantly affects young women in second and third decade. Most common presentation is abdominal mass. We report a very rare case of SPN in younger age and with to review key imaging findings and to guide early management and surgical planning

**Case description:** We present the case of a 13-year-old boy who presented to the emergency department after an abdominal trauma. No significant past medical or surgical history was recorded. The patient referred severe epigastric pain at presentation. Physical examination demonstrated a painless firm mass in the left hypochondriac region. Laboratory tests were normal and pancreatic markers were not elevated. An abdominal ultrasound and a CT scan showed a heterogeneously exophytic lesion within the body and tail of the pancreas, measuring 11×11×10 cm. Regions of hemorrhage were also identified within the lesion. Magnetic resonance imaging (MRI) with emphasis to the pancreas was performed for further characterization. There was no association with the splenic vein or artery. No evidence of metastatic lesions were identified. Distal pancreatectomy was performed. The resected, encapsulated mass showed areas of hemorrhage and necrosis, surrounded by tissues with solid and papillary projections. A pathologic diagnosis of solid pseudopapillary neoplasm (SPN) was established. The patient discharged home a week after without complications. During a follow-up period of one year no clinical or ultrasonographic signs of recurrence were noticed.

**Conclusions:** Solid pseudopapillary neoplasm of the pancreas is a rare exocrine tumor with excellent prognosis if a complete resection was performed. Radiologists play a vital role in the diagnosis, since many times, as in our case, it presents as an incidental finding. Imaging findings are suggestive, but a pathology evaluation is necessary to make the final diagnosis.

## Lipomatosis revealing a Cowden Syndrome: A rare case report and literature review

**Senda Houdi** (pediatric surgery A, Children's Hospital of Tunis, Ariana, Tunisia), **Yosra Kerkeni** (pediatric surgery A, Children 's Hospital of Tunis, Tunis, Tunisia), **Fatma Thamri** (pediatric surgery A, children's Hospital of Tunis, Tunis, Tunisia), **Zouaoui Arije** (pediatric surgery A, Children's Hospital of Tunis, Tunis, Tunisia), **Jouini Riadh** (pediatric surgery A, Children's Hospital of Tunis, Tunis, Tunisia), **Senda Houdi** (Chirurgie pédiatrique A, ARIANA, Tunisia)

**Introduction:** Cowden's syndrome, also known as multiple hamartoma syndrome, is a rare but well-described entity. The syndrome is associated with mutations of the human tumor suppressor gene phosphatase and tensin homolog (PTEN) and is closely related to Bannayan's syndrome in which macrocephaly and benign tumors, especially lipomas and hemangiomas are pathognomic. We report a rare case of Cowden Syndrome revealed by lipomatosis in a child.

**Case report:** A 6 years old boy was referred to our department for multiple lipomas of the head and trunk gradually increasing in number. On physical examination, we counted seven renitent masses distributed on the head and the trunk, he had a significant macrocephaly at 58cm (+2DS). Oral papillomatous lesions were identified. Radiological investigations were done. They showed multiple subcutaneous and intrabdominal lipoma without compression. Lipoma with largest diameter of 9cm was intra-peritoneal situated on the right side of the bladder, traversed by hyper echogenic streaks without vascularization on color Doppler US. Cowden syndrome was suspected and PTEN mutation was confirmed. Despite of the risk of developing cancers, a multidisciplinary approach involving pediatrician, geneticist, dermatologist and pediatric surgeon was conducted. Regular control with ultrasound and physical examination was done every 3 to 6 months. Actually, the child is in a good condition without recrudescence of other lipomas.

**Conclusion:** Cowden syndrome is a rare dominantly inherited multisystem disorder, characterized by an extraordinary malignant potential. In 80% of cases, the human tumor suppressor gene phosphatase and tensin homolog is mutated. Early diagnosis makes it possible to establish close follow-up of these patients in order to detect tumor-related malignancies.

## Progressive aspirations of a simple cyst

***Eva H Sorensen*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Harmit Ghattaura*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Darren Fowler*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Esther Blanco*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***David Grant*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Khaled Ashour*** (Oxford University Hospitals NHS Foundation Trust, Oxford, UK), ***Kokila Lakhoo*** (Oxford Universities NHS Foundation Trust, Oxford, UK)

**Aim:** We describe a rare tumour and its management after initial antenatal diagnosis of a simple renal cyst, and highlight a management dilemma of removing a kidney for an apparent benign lesion, versus watching a pre-malignant or malignant lesion

**Case Description:** We present the case of a baby girl born in good condition at term by elective Caesarean Section with an antenatally diagnosed right renal cyst. Postnatal ultrasound at 3 months of age demonstrated a mass in the mid-polar region of the right kidney (4.1x3.7x4.8cm). Echotexture was distinct to the rest of the kidney with a central cystic component. Given these unusual appearances, an MRI was performed with differential diagnoses including congenital mesoblastic nephroma or infundibular stenosis. Percutaneous ultrasound-guided biopsy followed. The sampled cystic component contained haemorrhagic fluid, whilst histopathology of the biopsy sample was not able to narrow the differential diagnosis. Neo-adjuvant chemotherapy was given as per CCLG guidelines; subsequent imaging showed no decrease in size indicating that the tumour was relatively chemoresistant. CT excluded metastatic disease. At operation, the relationship of the cyst to hilar structures was prohibitive to nephron sparing surgery. Nephrectomy specimen demonstrated a complete surgical and histological excision (Figure 1). Pathology showed an anaplastic lymphoma kinase (ALK) rearranged spindle cell tumour of the kidney. ALK rearranged spindle cell tumours in children comprise a spectrum of tumours including inflammatory myofibroblastic tumour (IMT; soft tissue) and cellular congenital mesoblastic nephroma (cCMN; kidney). The anaplastic lymphoma kinase (ALK) rearrangement creates an oncogenic driver for neoplastic change. The patient is doing well and completed treatment.

## Conclusions

- Clinicians must recognise the limitations of antenatal imaging and 'diagnosis'. Confirmation with clinical assessment and postnatal imaging is key.
- Always have a high index of suspicion for slight unusual appearance on ultrasound



00511\_22 - 06 Jan 2022 16:05

## POSTER WALK 10G

### Various 1

#### Omphalocele with unusual content of bladder prolapse through wide patent urachus – mystery till solved

**Tanvi Goel** (Christian Medical College, Ludhiana, India), **Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India), **Devasenathipathy Kandasamy** (Radiology, All India Institute of Medical Sciences, New Delhi, India), **Minu Bajpai** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India)

**Aim:** Here we describe an unusual case of Omphalocele with underlying hidden anomaly.

**Case Description:** A term neonate presented on day 11 of life with defect in the lower abdomen with swelling since birth and exposed with bowel like structure with a ruptures thin membrane covering since 1 week. At umbilicus there was a defect, measuring 6x4 cm with covering of normal skin in the proximal part and exposed bowel like structure in distal part. There was a visible opening in that bowel like structure which could be calibrated and had watery serous output but no meconium staining. There was divarication of recti but no pubic diastasis. Anal opening was normal. Detailed radiological evaluation of the child was done with ultrasound and contrast studies from the opening and the normal urethra. They all showed some communication to the urinary tract but no formal diagnosis. The child was operated at 4 months age wherein bladder mucosa was found prolapsed through the defect with metaplastic tissue forming circumferential cover around the top. The baby underwent Bladder Closure + Excision of Metaplastic tissue, with cicatrised tissue at the neck used for umbilicoplasty. Repair was done in three layers with excision of metaplastic tissue. Bladder capacity was good and both ureters and vas were identified on the dorsal aspect of the bladder. He was discharged in one week but catheter was kept for 2 weeks. The lax abdominal wall was strapped for 3 weeks to help regain muscle tone. He is doing well on follow up of 1 year, with a healthy wound and normal voiding.

**Conclusion:** We report a rare urachal anomaly which mimics an abdominal wall defect and exstrophy variant on clinical examination. Delaying repair for complete evaluation in certain cases helps to achieve a better surgical outcome.





## Predictive model of postnatal outcomes in prenatal urinary tract dilatations

**Paolo Bragagnini** (Pediatric Surgery, Hospital Universitario Miguel Servet, Zaragoza, Spain), **Yurema Gonzalez** (Pediatric Surgery, Hospital Universitario Miguel Servet, Zaragoza, Spain), **Reyes Delgado** (Pediatric Surgery, Hospital Universitario Miguel Servet, Zaragoza, Spain), **Paula Salcedo** (Pediatric Surgery, Hospital Universitario Miguel Servet, Zaragoza, Spain), **Jesus Gracia** (Pediatric Surgery, Hospital Universitario Miguel Servet, Zaragoza, Spain)

**Aim:** To create predictive models for the outcomes and prognosis in patients with prenatal urinary tract dilation (UTD), such as spontaneous resolution, need for surgery, and poor renal outcome.

**Material and Methods:** Retrospective study in which renal units (RU) of patients diagnosed with prenatal DTU were reviewed. Clinical, analytical and ultrasound variables, both prenatal and postnatal, are analyzed, identifying those that have a significant relationship with the event, building with them a predictive model per event, using logistic regression through the automatic selection method and with internal cross-validation.

**Results:** Of the 489 RUs analyzed, 48.06% (235) were operated, 28.43% (139) resolved spontaneously, and 19.43% (95) had a poor outcome at a median follow-up of 6.99 years (IQR 4, 52-10.44).

The predictors for surgical intervention included in the model were: degree of prematurity, kidney size, first postnatal renal pelvis APD and corticomedullary difference, duplication, UTI, and first kidney function. Model accuracy 77.4%, AUC 0.830 (CI 0.795-0.866).

For the spontaneous resolution model, we included: prenatal renal pelvis APD, first postnatal renal pelvis APD, calycial dilation, echogenicity, duplication, UTI, and first kidney function. Model accuracy 83.6%, AUC 0.874 (CI 0.841-0.907).

In poor renal outcome, we included: contralateral nephro-urological pathology, creatinine, previous surgery and the first kidney function. Model accuracy 87%, AUC 0.915 (CI 0.887-0.943).

**Conclusions:** We have managed to develop three models that have adequate sensitivity and specificity, superior to parameters that are commonly used to predict these events. Models that can help in daily clinical practice, given the easy reproducibility thanks to the digital application in which we present it. <https://utdprediction.shinyapps.io/utdprediction/>

## A single-institution retrospective descriptive study of pre- and post-natal characteristics of the workup of bronchopulmonary sequestrations (BPS)

**Zishaan A Farooqui** (Pediatric General and Thoracic Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, USA), **Irene Isabel P Lim-Beutel** (Pediatric General and Thoracic Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, USA), **Stefanie Riddle** (Neonatology and Pulmonary Biology, Cincinnati Children's Hospital Medical Center, Cincinnati, USA), **Foong-Yen Lim** (Pediatric General and Thoracic Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, USA), **Jose L Peiro** (Pediatric General and Thoracic Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, USA)

**Aims:** Bronchopulmonary sequestrations (BPS) are rare congenital lesions that are generally surgically removed after birth due to concern for infection and potential for malignant degeneration given the difficulty in distinguishing from congenital pulmonary airway malformations. The appropriate pre- and postnatal workup to guide management is yet unclear. We aim to characterize aspects of the perinatal workup for BPS.

**Methods:** A retrospective analysis on the pre- and postnatal workup and treatment was conducted for patients diagnosed with BPS at a single institution from January 2010 to August 2021.

**Results:** A total of 20 patients were included. Median age at gestation was 39 weeks [IQR 37.93-39.54] with a preponderance in males (65%) over females (35%). Median birthweight was 3.35 kg [IQR 3.03-3.74]. All had a systemic arterial blood supply detected prenatally. Pre-operative Congenital-pulmonary-airway Volume Ratio (CVR) on the last ultrasound prior to delivery was not correlated with surgical approach (thoracoscopy vs open approach,  $p=0.83$ ). One fetal patient required thoracentesis and a thoraco-amniotic shunt. Only 2 cases had expectant management. Of 18 surgical, 11 cases were thoracoscopic (60%), 6 open (30%), and 1 was thoracoscopic converted to open (5%). 10 lesions were extralobar (50%) and 8 intralobar (40%). Mean age at surgery was 4.93 months [IQR 3.11-7.02]. Surgical approach was significantly associated with fewer abnormal post-operative CXR findings ( $p=0.02$ ). Pre-operative CVR was not significantly associated with re-admissions within 6 months from surgery ( $p=0.86$ ). No patients had infections or bleeding occurrences within 2 years of surgery.

**Conclusions:** We have described pre and postnatal characteristics of patients with BPS. This data is limited by small sample size. It is not appropriately powered to detect differences in imaging characteristics that may modify post-operative outcomes. However, we demonstrate broad characteristics of a rare disease presenting at a single institution, paving the way towards a larger retrospective study.

<b>Table 1: Demographic Characteristics</b>		<b>BPS (n=20)</b>
<b>Gestational age in weeks, median [IQR]</b>		39 [37.93-39.54]
<b>Maternal Age in years, median [IQR]</b>		28 [26-31.75]
<b>Gender, n (%)</b>		
Male		13 (65%)
Female		7 (35%)
<b>Infant Race, n (%)</b>		
White		13 (65%)
Black/African American		3 (15%)
Hispanic		1 (5%)
Asian		1 (5%)
Other		2 (10%)
<b>Insurance, n (%)</b>		
Medicaid		8 (40%)
Private		12 (60%)
Uninsured		0 (0%)
<b>Birthweight in kg, median [IQR]</b>		3.35 (3.03-3.74)

<b>Table 2: Characteristics of Workup</b>	
<b>Ultrasound CVR, median [IQR]</b>	0.35 [0.20-0.59]
<b>Laterality, n (%)</b>	
Left	16 (80%)
Right	4 (20%)
Bilateral	0 (0%)
<b>Intrapartum complications, n (%)</b>	
Polyhydramnios	3 (15%)
Fetal hydrops	1 (5%)
Pleural effusion	4 (20%)
Hydrothorax	0 (0%)
Ascites	0 (0%)
<b>Prenatal interventions, n (%)</b>	
Steroids	1 (5%)
Thoracentesis	1 (5%)
Thoracoamniotic shunt	1 (5%)
Percutaneous ablation/sclerotherapy	0 (0%)
In utero open resection	0 (0%)

## POSTER WALK 11

### Lower Gastrointestinal 2

#### Application of the ERAS protocol in the case of elective Meckel's diverticulum resection – description of the ERAS procedure

**Anna Modrzyk** (Department of Children's Developmental Defects Surgery and Traumatology, Independent Public Clinical Hospital No. 1, Zabrze, Poland), **Michał Pasierbek** (Department of Children's Developmental Defects Surgery and Traumatology, Independent Public Clinical Hospital No. 1, Zabrze, Poland), **Wojciech Korlacki** (Department of Children's Developmental Defects Surgery and Traumatology, Independent Public Clinical Hospital No. 1, Zabrze, Poland)

**Aim:** ERAS (Enhanced Recovery After Surgery) it's a modern approach for perioperative care commonly used for adult patients. It was established with the goal of reducing postoperative complications and shortening time to recovery for surgical patients. Over last few years implementations of the ERAS protocol have become more popular and started to be applied also to pediatric patients. One of the patient groups that may benefit from ERAS treatment are patients qualified for elective resection of the Meckel's diverticulum. We are presenting a complete ERAS protocol developed and applied for the patient undergoing bowel resection because of Meckel's diverticulum with intestinal end to end anastomosis. The protocol stages include pre-operative, perioperative and postoperative steps of care and treatment.

**Case description:** All 21 procedures of the ERAS protocol were applied for the patient. Length of stay was 4 days. Oral fluid and diet intake were enabled in 0 day after surgery. Tolerance of the full diet was achieved in the 1 day after surgery. The patient passed a stool in the 2 days after surgery, and was discharged from the hospital in 3 days after surgery. In the postoperative period the parenteral nutrition wasn't enabled.

**Conclusions:** Application of the ERAS protocol for the pediatric patient's group in the case of resection of the Meckel's diverticulum was possible and safe for the patient. More research is needed to assess impact of the protocol for larger groups of surgical patients.

## What changes in the follow-up over time after Duhamel operation, comparison of short-, medium- and long-term intestinal functions

**Gökhan Demirtaş** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey), **Hüseyin Tuğrul Tiryaki** (Pediatric Urology, Ankara City Hospital, Ankara, Turkey)

**Aim:** Surgery for Hirschsprung's disease (HD) generally results in a satisfactory outcome but some patients continue to have bowel dysfunction. In this study we aimed to evaluate the change in anorectal functions and clinical outcome with age in patients who underwent Duhamel operation for HD.

**Materials and methods:** We invited our patients for control for whom we previously Duhamel operation and published early and middle follow up results. Anorectal inhibitory reflex and maximum and resting pressure were monitored, functional outcomes were determined by a questionnaire. In the same way as the evaluation forms we did in the first and second study, we evaluated the patients who came for control and examined the long-term control results.

**Results:** Seven cases in the first two studies responded to our call and came for follow-up. Postoperative enterocolitis was not seen in adulthood and constipation was reported in 14% of the patients. We found a spontaneous improvement in bowel function from 43% to 14% within years. While the rate of patients who were clinically good at the early postoperative evaluation was 53%, it was 86% in the adult evaluation.

**Conclusion:** The results of our study show that the majority of the patients have impaired bowel functions in early postoperative period. On follow-up symptoms of constipation and enterocolitis had decreased significantly after five years old age. We noted that the improvement continues into adulthood. Despite abnormal anorectal manometry, voluntary straining of the abdominal muscle and relaxation of the external sphincter keep the patients of recovery.

## Impact of Pseudomonas infection for early postoperative outcomes in pediatric perforated appendicitis

**Jūratė Pakrosnytė** (Department of Pediatric Surgery, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania), **Nora Visockytė** (Department of Pediatric Surgery, Vilnius University Hospital Santaros Klinikos, Vilnius, Lithuania), **Idilė Vansevičienė** (Department of Pediatric Surgery, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania), **Dalius Malcius** (Department of Pediatric Surgery, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania), **Vidmantas Barauskas** (Department of Pediatric Surgery, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania), **Aušra Lukošūtė-Urbonienė** (Department of Pediatric Surgery, Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania)

**Aim:** The aim of the current study was to identify the impact of Pseudomonas infection and its coverage on early postoperative outcomes in children with perforated appendicitis

**Methods:** A retrospective single-centre study included children <18 years old undergoing appendectomy for perforated appendicitis in our institution 2014-2021. For all study participants demographic and clinical data, intra-operative culture results, antibiotics usage were assessed. The primary outcome was early post-operative organ-space infection (SSI) during the hospitalisation period. Data analysis was performed using IBM SPSS 22.0 Statistics. P-value of <0,05 was considered significant.

**Results:** We identified 349 children with perforated appendicitis who underwent the surgery. The mean age was 10,51 years ( $\pm 4,65$ ), majority of patients were boys 215 (61,6%). Post-operative SSI were observed in 25 patients, 12 (48%) children had an abscess, 9 (36%) infection of incision and 4 (16%) seroma. There was no significant difference between patients sex, age, clinical symptoms, leukocytes count, CRP level on postoperative outcomes ( $p > 0,05$ ). Intraoperative cultures were collected in 268 (76,8%) patients and 245 (91,4%) were positive. Most common bacterias were E. coli (n=194; 72%), Bacteroides (n=77; 28%), E. Faecalis (n=14; 5%), P. Aeruginosa (n= 29; 10,8%) and beta hemolytic streotococcus (n= 28; 10,4%). Additionally, as suspected only Pseudomonas growth was associated with more SSI (7/29; 24%) vs. 18/316; 5,7%) ( $p=0,002$ ), even though the sensitivity of Pseudomonas for gentamycin was 100%. Children with Pseudomonas had longer antibiotic duration (9,06 vs. 8,3 days,  $p = 0,03$ ). The empiric administration of gentamicin did not reduce the number of complications, triple antibiotic therapy 21/260 (8,1%) vs. double therapy 4/77 (5,2%) of complications ( $p=0,46$ ).

**Conclusion:** Pseudomonas infection was identified in 10,8% of children with perforated appendicitis and was associated with early postoperative outcomes, longer antibiotic usage. However, Gentamicin as empiric coverage of Pseudomonas did not influence early SSI.

## A tale of conjoint pyopagus twins; trial of successful separation

***Mudassar Fiaz Gondal*** (Pediatric surgery, Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), ***Noor ul Sabah Butt*** (Pediatric surgery, Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan)

**Aim:** The objective is to present a successful trial of separation of rare case of pyopagus conjoint twins, who were not only joined from the buttocks but also had sacral fusion sharing a common anal opening.

**Case description:** Conjoined female twins were diagnosed at routine anomaly scan at 20 weeks to a 30 year old mother (gravida 5, para 4, abortion 0). The parents were referred to department of pediatric surgery for discussion about the prognosis. Elective cesarean section was planned at early term (37 weeks). The cesarean lasted four hours and the twins were delivered successfully with instant cry and initial Apgar score of 10.

All the parameters were within normal until after 36<sup>th</sup> hour of life, both the twins had developed difficulty in breathing along with abdominal distension. Both the twins were planned to undergo pelvic divided colostomies. A management team was organized that consisted of general pediatric surgery, neurosurgery, anesthesiology, neonatology, plastic surgery, orthopedic surgery and social work. After extensive planning and discussion amongst all the relevant specialties, it was decided to carry out a single operative procedure leading to the separation of both neurosurgical and gastrointestinal elements.

The workup diagnostic imaging modalities included plain x-rays, echocardiography, ultrasound KUB, cranial USG, MRI dorsolumbar spine, CT abdomen and pelvis, CT angiography, CT urography. The date chosen corresponded to the twins six month of age leading to the successful separation of the pyopagus twins.

**Conclusions:** From the experience at our center, it is worth noting that this successful separation needs an excellent interdepartmental liaison between gynecologist; for uneventful delivery, pediatric specialist; to closely monitor any changes that might lead to increased morbidity, neurosurgeons; to minimize the neural deficits expected, anesthesiologists, radiologists; for the accurate reporting of the imaging and Us, pediatric surgeons for successful separation.

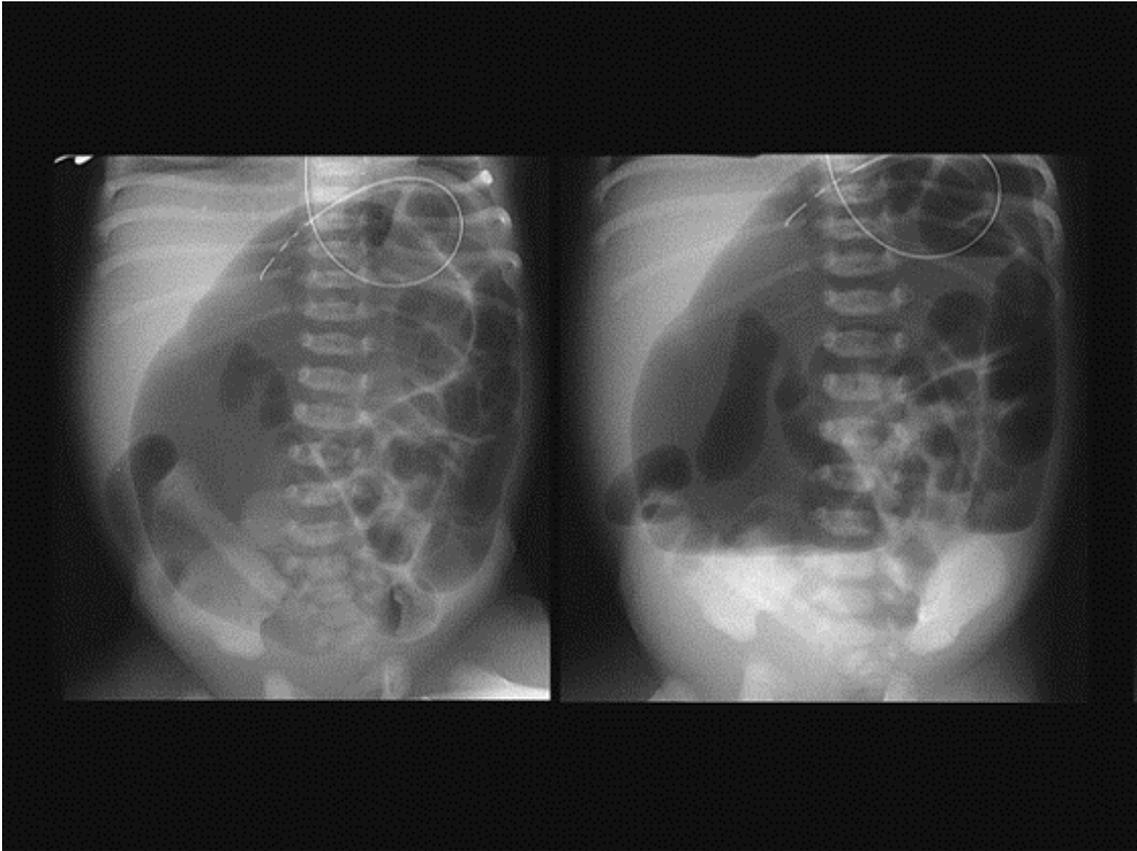
## Colonic atresia associated with Hirschsprung's disease: A very rare entity

**Devin Hosein** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Naaz Nasar** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Kayleene Barrera** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Anthony Barone** (Pediatrics, Richmond university medical center, Staten Island, New York, New York, USA), **Santosh Parab** (Pediatrics, Richmond university medical center, Staten Island, New York, New York, USA), **Jason Sulkowski** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Francisca Velcek** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA)

**Aim:** This case highlights the possibility of concomitant Hirschsprung's disease with colonic atresia. Colonic atresia is very rare occurring in 10% of all intestinal atresias, the reported incidence of Hirschsprung's disease with colonic atresia is about 4%. When confronted with a case of colonic atresia associated with severe microcolon, the possibility of aganglionosis should be considered.

**Case description:** A full term baby boy presented with failure to pass meconium after 48 hours of life. The abdomen was distended, rectal exam showed empty ampulla and no explosive bowel movement on withdrawal of the examining finger. Imaging showed massively dilated distal bowel. (Figure1). Contrast enema demonstrated microcolon with no transition zone. (Figure2) At exploration proximal colonic atresia was noted with very dilated ascending colon, ileum and microcolon with proximal blind end. A resection of atretic ends, tapering primal coloplasty and end-to-end colonic anastomosis was performed with initial return of bowel function. The patient developed intestinal obstruction 1 week post operatively requiring repeat laparotomy with findings of a kink due to adhesions. Again the patient had bowel movements post operatively, however, there were repeated bouts of large bowel obstruction eventually requiring resection of the anastomosis with enterostomy. Surgical pathology of the resected distal colon demonstrated aganglionosis prompting us to perform repeat barium enema and rectal biopsy which confirmed our suspicion for Hirschsprung's disease. A resection of the aganglionic colon with Duhamel pull through of normal colon was done with a satisfactory post operative course. On 5 year follow up, the child is thriving well with normal bowel movements.

**Conclusion:** Colonic atresia with concomitant Hirschsprung's disease is very rare. When treating a patient with colonic atresia, one must keep in mind the possibility of Hirschsprung's disease despite absence of classic rectal examination and radiographic findings, especially when the colonic atresia is very proximal.



## Type 4 Ileal Atresia and Anorectal Malformation in a Neonate – A Rare Association

**Munema Khan** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), **Mudassar Fiaz Gondal** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), **Noor Ul Sabah Butt** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan)

**Aim:** Anorectal Malformations and Jejunoileal atresias are common causes of intestinal obstruction in neonates. Both have their own set of associated anomalies but it is extremely rare for the two to co-occur in the same patient.

**Case description:** In this case report, we detail and describe this unusual incidence in a three-day-old neonate who was provisionally diagnosed as a case of simple imperforate anus. Pre-op findings showed a type 4 Ileal atresia and an ileostomy was then constructed.

**Conclusions:** Our experience stresses the importance of timely antenatal diagnosis and the presence of a high index of suspicion when encountering such patients. Both factors are key and crucial in determining the outcome and post-op course of the patient.

## Appendicitis in children: correlation between surgically presumed and histological findings

**Balázs Fadgyas** (Surgery and Traumatology, Heim Pál National Institute of Paediatrics, Budapest, Hungary), **Lídia Judit Gácsi** (Semmelweis University, Budapest, Hungary), **Georgina Monostori** (Pediatrics, Zala County Hospital, Zalaegerszeg, Hungary), **Dorottya Óri** (Mental Health, Heim Pál National Institute of Paediatrics, Budapest, Hungary), **Péter Vajda** (Surgical Division, Department of Pediatrics, Medical Centre, University of Pécs, Pécs, Hungary)

**Aim:** To investigate the differences between surgical and histological diagnoses of paediatric acute appendicitis (AA), furthermore to compare the outcomes of laparoscopic (LA) and open appendectomies (OA).

**Methods:** A retrospective observational cohort were analysed. Patients were included under 18 years of age with preoperative diagnosis of AA, operated at the authors institute between 2011 and 2020. LA and OA groups were subdivided into four subgroups according to the severity of the histological findings: (1) negative/simplex/catarrhal, (2) phlegmonous, (3) gangrenous and (4) perforated AA. For statistical analysis Spearman's correlation and Cohen's kappa tests were used.

**Results:** Altogether 1445 patients were analysed. Majority of these patients were male (n=886; 61%), the median age was 11 years (IQR 8;14). Strong correlation and moderate agreement were found between surgical and histopathological results in all AA cases (Spearman's rho correlation coefficients were in OA: 0.773, LA: 0.785, altogether: 0.778;  $p < 0.0001$ ; Cohen's kappa with 95% confidence intervals (CI) were in OA: 0.607 (0.558-0.656), LA: 0.638 (0.579-0.697) altogether: 0.620 (0.583-0.657),  $p < 0.001$ ). No difference has been found between the OA and LA groups and within the subgroups, since the 95% of these groups overlapped.

**Conclusions:** Study revealed strong correlation and moderate agreement between the intraoperative and histopathological findings regarding the severity of AA. According to this study the surgeons intraoperatively predict well the potential need and the quality of AA, also the antibiotic treatment (i.e. complicated AA) required following appendicectomy, which usually determine the final outcome.

## Risk factors of Hirschsprung-associated postoperative enterocolitis? A single-center experience

**Meriem Oumaya** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Intissar Chibani** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Marwa Barguellil** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Yosra Ben Ahmed** (Pediatric Surgery B, Children Hospital Of Tunis, Tunis, Tunisia), **Tarek Boukesra** (Pediatric Surgery B, Children Hospital Of Tunis, Tunis, Tunisia), **Faouzi Noura** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Awatef Charieg** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Said Jlidi** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia)

**Aim:** Hirschsprung-associated enterocolitis (HAEC) is a feared clinical syndrome causing most of the morbidity in HSCR patients before and after surgery. This study aims to identify risk factors of developing postoperative HAEC.

**Methods:** A comparative study of 69 Hirschsprung patients treated from 2010 to 2021 was performed. Patients without HAEC were compared to patients with postoperative HAEC.

**Results:** The study included 48 males and 21 females with a median age of 52.6 months. Trisomy 21 was present in 6 patients (8.7 %). Preoperative HAEC occurred in 14 patients (20.3%). Age at pull-through surgery was 48.5 months. The level of aganglionosis was confined to the distal rectum in 8.7 %, rectosigmoid in 73.9 %, transverse colon in 5.8 %, right colon in 2 patients and total colon in 1 case. Anastomotic leak was significantly associated with postoperative HAEC (25% vs 1.5%,  $p=0.006$ ). Although birth weight appeared to be lower in patients with postoperative HAEC, this difference did not reach statistical significance (3.14 vs 3.65 kg;  $p=0.087$ ). Postoperative HAEC was associated with higher incidences of preoperative HAEC (50 vs 18.4%,  $p=0.13$ ) and postoperative strictures (13.8 vs 25%,  $p=0.5$ ) but no statistically correlation was confirmed. no association between gender, Trisomy 21, level of aganglionosis with postoperative HAEC was found ( $p=0.8$ ,  $p=0.53$  and  $p=0.23$ , respectively) Finally, patients who developed postoperative HAEC seemed to be younger at their pull-through surgery (8.25 vs 9.75,  $p=0.87$ ).

**Conclusions:** HAEC is a life-threatening complication of Hirschsprung disease. The results of our study helps to distinguish high-risk children, and therefore, recovery without recurrent episodes of HAEC could be anticipated for most patients. Prospective multicenter studies are of crucial importance to include more patients and allow a more precise characterization of risk factors for HAEC.

## A syndrome of Hirschsprung disease (HSCR) and mental retardation on distal chromosome 4q?

**David Croaker** (Paediatric Surgery, The Canberra Hospital, Canberra, Australia), **Bonnie Reeves** (Emergency Department, The Canberra Hospital, Canberra, Australia), **Matt Edwards** (Hunter Genetics, John Hunter Hospital, Newcastle, Australia)

**Background:** HSCR is a polygenic condition with a strong familial component and a known association to several mental retardation syndromes. The authors report a new multi-case mental retardation – HSCR family, and a third unrelated case associated with chromosome 4.

**Methods:** A short case series and literature review.

**Results:** BS and DS are brothers with short segment HSCR and severe mental retardation including epilepsy and autism features. Two older deceased uncles may have had the same condition. The family carries a small interstitial deletion on chromosome 4q31.21, and the brothers carry a mutation for Snyder-Robinson syndrome. Whole exome sequencing has not found a recognised mutation related to HSCR. JP is an unrelated man with short segment HSCR, mental retardation, abnormal corpus callosum and dysmorphic features. He carries an unbalanced translocation involving a gain of 4q32 – q35.2. We have identified 12 HSCR cases, our own and nine others, associated with 4q. As far as can be seen from the earlier reports, the only possible overlap is near the boundary of 4q31 and 4q32.

**Conclusions:** Brooks et al in 2006 reported linkage analysis to 4q31 in a multi-case HSCR family. There have been a number of HSCR cases linked to distal 4q, with mental retardation common but not uniform. We propose that there is a Hirschsprung disease locus at or close to 4q31, likely in a non coding region, that is necessary but not sufficient for a syndrome of Hirschsprung disease with or without mental retardation. Reported variation in phenotype is likely due to contiguous gene effects. Snyder-Robinson syndrome has not previously been reported with HSCR and may be coincidental.

An as yet uncharacterised gene in 4q31 is responsible for rare cases of HSCR, reinforcing the link between enteric nervous system development and central nervous system development.

## Appendectomy in Children: Initial Experience with Scarless Periumbilical Approach

**Mohamed Hisham Soliman** (Pediatric Surgery Department, Ain-Shams University, Cairo, Egypt), **Hesham Mohamed Abdel-kader** (Pediatric Surgery Department, Ain-Shams University, Cairo, Egypt), **Mohamed Saber Mostafa** (Pediatric Surgery Department, Ain-Shams University, Cairo, Egypt), **Mohammed Abdel-Latif** (Pediatric Surgery Department, Helwan University, Cairo, Egypt)

**Aim:** We aimed at examining the feasibility and safety of using conventional surgical instruments for appendectomy in children through periumbilical incision to achieve an almost invisible umbilical scar.

**Methods:** From January 2018 till June 2019, only patients with classic symptoms of acute uncomplicated appendicitis were included. Patients with retrocecal appendix by ultrasound, and those had intraoperative normal appendix were excluded. Appendectomy was performed via small periumbilical incision using conventional surgical instruments. If difficulty was faced due to the limited mobility of the appendix, the cut in the muscle, without disturbing the umbilical scar or the skin incision, was extended to the right side from its lower end for about 1-1.5 cm.

**Results:** Forty-six patients were included. Right sided extension of the muscle incision was needed in 13 cases. Mean operative time was 41 minutes. Mean hospital stay was 1.7 days. All patients were followed up for 3-6 months. Subcutaneous wound problems occurred in 2 patients, while there were no incisional hernias.

**Conclusion:** In selected cases, open appendectomy by conventional instruments can be safely performed in children through periumbilical incision. This technique is suitable where laparoscope is not available either due to its higher cost or lack of appropriate experience.

## Pushing backwards: evaluating effectiveness of conservative treatment of intestinal intussusception

**Catarina Carvalho** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Mário Rui Correia** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Ana Barros** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **José Banquart-Leitão** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Fátima Carvalho** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal), **Ana Sofia Marinho** (Pediatric Surgery, Centro Hospitalar Universitário do Porto, Porto, Portugal)

**Aim:** Intestinal intussusception (II) is a common cause for acute abdomen in children, occurring in 0.33-0.71/1000 children-year. Early diagnosis and treatment are fundamental for intestinal irreversible damage prevention. First-line of treatment is conservative, with saline solution (SRE) or air reduction enemas (ARE), which are effective in 80% of cases. Our goal is to evaluate results with conservative treatment of II in children.

**Methods:** Retrospective, single-center review of all patients discharged with final diagnosis of II diagnosis from January 2014 to December 2019. Demographics, clinical data, treatment option and results were assessed.

**Results:** Thirty-eight cases were identified. Mean age was 25.8 months, 68% were males. Most presented with abdominal pain (95%) and vomiting (66%), after an average of 30 hours. Rectal bleeding was present in 32% of patients. Abdominal ultrasound was performed in all patients; one required CT scan for diagnosis. Average intussuscepted bowel length was 60mm. Conservative treatment was first option in 95% of patients, with a global effectiveness of 83% after one attempt. 57% tolerated diet within 10 hours after treatment, 37% within 4. SRE was more effective than ARE (88% vs 70%) and patients with successful reduction were younger (23.8 vs 33.4 months), but neither reached statistical significance. 37% were treated in ambulatory regimen. Four patients had subsequent II episodes (3 SRE and 1 ARE), two within one week after hospital discharge.

Neither age, gender, symptoms and respective duration, rotavirus inoculation, intussuscepted bowel length or technique used were predictive of treatment failure or II relapse.

**Conclusion:** Conservative treatment in II is a safe and effective option, preventing invasive surgical procedures. In our series, effectiveness of such treatments may be as high as 88% after one attempt, with rapid diet reintroduction. Same day discharge after oral feeding toleration is safe.

## Long-term clinical outcomes in cystic fibrosis patients after neonatal meconium ileus: a 21-year follow-up study

**Thomas Wolf** (Department of Pediatric Surgery, University Hospital Frankfurt, Goethe University Frankfurt, Frankfurt, Germany), **Olaf Eickmeier** (Division of Allergology, Pulmonology and Cystic Fibrosis, Department of Children and Adolescents, University Hospital Frankfurt, Goethe University Frankfurt, Frankfurt, Germany), **Till-Martin Theilen** (Department of Pediatric Surgery, University Hospital Frankfurt, Goethe University Frankfurt, Frankfurt, Germany), **Henning C. Fiegel** (Department of Pediatric Surgery, University Hospital Frankfurt, Goethe University Frankfurt, Frankfurt, Germany), **Udo Rolle** (Department of Pediatric Surgery, University Hospital Frankfurt, Goethe University Frankfurt, Frankfurt, Germany), **Florian Friedmacher** (Department of Pediatric Surgery, University Hospital Frankfurt, Goethe University Frankfurt, Frankfurt, Germany)

**Aim:** The purpose of this study was to evaluate long-term clinical outcomes in cystic fibrosis (CF) patients who presented with meconium ileus (MI) during the newborn period, focusing on gastrointestinal, pulmonary and pancreatic/hepatobiliary function.

**Methods:** Clinical data was collected from a prospectively maintained regional database of CF patients that were treated in our institution between 2000 and 2021. General patient demographics, type and management of MI, CF-related gastrointestinal, pulmonary and pancreatic/hepatobiliary morbidities were recorded. Comparative statistics were used to analyze differences between non-operative and surgically managed MI cases.

**Results:** A total of 135 CF patients were identified, 27 (20.0%) of whom presented with neonatal MI [16 (59.3%) females]: 14 (51.9%) simple MI and 13 (48.1%) complex MI [i.e. segmental volvulus ( $n=7$ ), intestinal atresia ( $n=4$ ) and necrosis+perforation ( $n=2$ )]. In 5/6 (83.3%) cases with simple MI, non-operative contrast enema decompression was successful, whereas 22 (81.5%) underwent primary ( $n=21$ ) or secondary ( $n=1$ ) laparotomy: stoma formation ( $n=13$ ), enterotomy+washout ( $n=5$ ) and resection+reanastomosis ( $n=4$ ). Median follow-up was 7.5 (range, 1-21) years and all patients were alive. There were no significant differences in the frequency of CF-related gastrointestinal morbidities between the two management groups (**Table 1**). Patients with distal intestinal obstruction syndrome (DIOS) developed their first (range, 1-3) episode at a median age of 2.5 (range, 0.5-12.5) years, each responding to conservative treatment. Two (7.4%) patients remain dependent on gastrostomy tube feeding. In one case, placement of a transjugular intrahepatic portosystemic shunt became necessary and one required lung transplantation. Latest BMI z-scores, pulmonary function tests and *P. aeruginosa* infection rates were comparable, with similar percentage of exocrine pancreatic insufficiency, CF-related liver disease and diabetes (**Table 1**).

**Conclusions:** Gastrointestinal, pulmonary and pancreatic/hepatobiliary morbidity is high among CF patients after neonatal MI, irrespective of the initial management. However, with modern, multidisciplinary CF treatment, satisfactory long-term outcomes can be achieved.

**Table 1:** Long-term clinical outcomes in CF patients after neonatal MI

Outcome parameters	Non-operative management (n=5)	Surgical intervention (n=22)	P-value
<b>Gastrointestinal</b>			
- Gastroesophageal reflux, n (%)	0 (0)	9 (40.9)	0.1358
- Intussusception, n (%)	0 (0)	1 (4.5)	1.0
- Constipation, n (%)	1 (20.0)	3 (13.6)	1.0
- DIOS, n (%)	1 (20.0)	5 (22.7)	1.0
- Rectal prolapse, n (%)	0 (0)	2 (9.1)	1.0
- BMI z-scores (range)	0.01 (-0.81-1.34)	0.11 (-1.78-1.67)	0.8650
<b>Pulmonary</b>			
- FEV <sub>1</sub> (range)	93.75 (80.0-107.5)	91.10 (20.6-101.4)	0.6101
- <i>P. aeruginosa</i> infection rates, n (%)	0 (0)	10 (45.5)	0.1240
<b>Pancreatic/hepatobiliary</b>			
- Exocrine pancreatic insufficiency, n (%)	4 (80.0)	14 (63.6)	0.6361
- CF-related liver disease, n (%)	2 (40.0)	6 (27.3)	0.6159
- CF-related diabetes, n (%)	0 (0)	4 (18.2)	0.5613

## Relationship between cytokine interleukin 10 with degrees of Hirschsprung-associated enterocolitis (HAEC) based on teitelbaum criteria

**Nita Mariana** (Surgery/ pediatric surgery division, Hasanuddin university, Makassar, Indonesia), **Glendy Kandouw** (Surgery, Hasanuddin university, Makassar, Indonesia)

**Introduction:** Hirschsprung's disease is a developmental disorder of the intrinsic component of the enteric nervous system characterized by the absence of ganglion cells in the myenteric plexus and submucosa in the distal intestine, due to failure of cephalocaudal migration of ganglion cells at 12 weeks gestation, which causes aganglionic conditions in part or the whole of the colon. Hirschsprung's Associated Enterocolitis (HAEC) is a cause of morbidity and mortality in Hirschsprung patients. The reported incidence of HAEC varies widely, ranging from 6 to 60% definitive pre-operatively and from 25 to 37% postoperatively. Among all researches have been published in international and national journals, there was no study explore the relationship between IL-10 and HAEC degrees. Based on this, the researcher is interested in conducting further studies on the role of IL-10 in HAEC because it has almost similar mechanisms where there is damage to the colon wall.

**Methods:** Children suffering from Hirschsprung's disease without HAEC and Hirschsprung's disease with HAEC were examined for the degree of HAEC based on colon histopathology and IL-10 level according to Teitelbaum's criteria. Analysis is performed using computer-based software and determined by regression analysis.

**Results:** most frequent HAEC grades were grade 3,4 and grade 5 (59.9%), analysis IL 10 in Hirschsprung without HAEC and Hirschsprung accompanied by HAEC using the independent t-test ( $p = 0.007$ ) with correlation showed  $r = -0.774$  using Pearson test.

**Conclusion:** There is a very strong positive relationship / correlation between histopathological grade and IL10 levels, the higher the histopathological grade, the lower the IL10 levels, on the contrary the lower the grade histopathology, the higher the IL10 level.

**Keywords:** Hirschsprung-Associated Enterocolitis (HAEC), IL10

## Giant meconium hydrocele: a rare presentation of antenatal ileum perforation due to small intestines atresia

**Janis Karlsons** (Rigas Stradins University, Department of pediatric surgery, Children's Clinical University Hospital Riga, Riga, Latvia), **Zane Abola** (Rigas Stradins University, Department of pediatric surgery, Children's Clinical University Hospital Riga, Riga, Latvia), **Ksenija Soldatenkova** (Children's Clinical University Hospital Riga, Riga, Latvia), **Anete Rozentalberga** (Rigas Stradins University, Children's Clinical University Hospital Riga, Riga, Latvia)

**Aim:** Meconium peritonitis results from in-utero perforation of the gastrointestinal tract with subsequent leakage of meconium into the peritoneal cavity of the gastrointestinal tract. The presence of a patent processus vaginalis in either a male or female foetus may lead to migration of meconium into the inguinal canal. We report a rare case of unilateral meconium hydrocele in a male newborn, which mimicked clinical symptoms and ultrasound findings of incarcerated hernia.

**Case description:** The patient was a preterm boy, born during the 32nd GW, weighing 1.54kg was referred to us 20hours after birth with bilateral scrotal swelling with a circumference of 23cm; the swelling was hard, cyanotic, painful upon examination, and had gradually increased in size since birth. The patient had passed urine normally after birth but had not yet passed any meconium. The general condition was serious with signs of respiratory distress, abdominal distension. Abdominal and scrotal ultrasound were performed, the findings were suggestive of complicated incarcerated inguinal hernia. Right sided inguinal canal exploration was performed, 40 ml of meconial fluid was drained without signs of bowel loops. Supraumbilical transverse laparotomy was performed, the peritoneum was found to be filled with liquefied meconium, small bowel conglomerate with bowel perforations was noticed in right lower quadrant and an atretic ileum segment was found 5 cm before ileocecal region. Terminal ileostomy was performed, right sided inguinal ring was closed. The stoma was closed 2 months after the original surgery. The patient was discharged at 43+6 weeks (corrected age), and weighed 3.2kg The baby was well in the follow-up.

**Conclusions:** In our case, the cause of meconium hydrocele was an antenatal perforation in the gastrointestinal tract due to ileum atresia. It is mandatory to rule out this life-threatening condition by antenatal ultrasound, post-natal clinical examination and radiological study.

## POSTER WALK 12

### Urology 5

#### Circumcision, can this procedure be dangerous for the patient?

**Mehdi Fathi** (Mashhad Medical University of Science, Mashhad, Iran), **Mahdi Parvizi Mashhadi** (Pediatric Surgery, Mashhad Medical University of Science, Mashhad, Iran)

**Aim:** Circumcision is a relatively low – risk operation that has been recom – mended in different religions. Although circumcision is technically simple and safe, it can some - times lead to serious complication such as partial or complete genital amputation.

**Case description:** A 6 year old boy who had admitted to a charity institution in the city around Mashhad for the circumcision, during the procedure a complete cut of glans from the coronal groove had occurred. Immediately, the bleeding site was bandaged and the glans was put in a plastic bag pro - tected with ice pack. The patient was delivered to Akbar hospital (the referral pediatric hospital) in Mashhad after 4 hours. The patient was immediately transferred to the operating room.

**Conclusions:** If a part of the glans is cut, the amputated tissue must be trans - planted immediately and there is no need to microvascular surgery. In cases that the repair was done in the first 8 hours after amputation, the result is likely to be successful in the most cases.

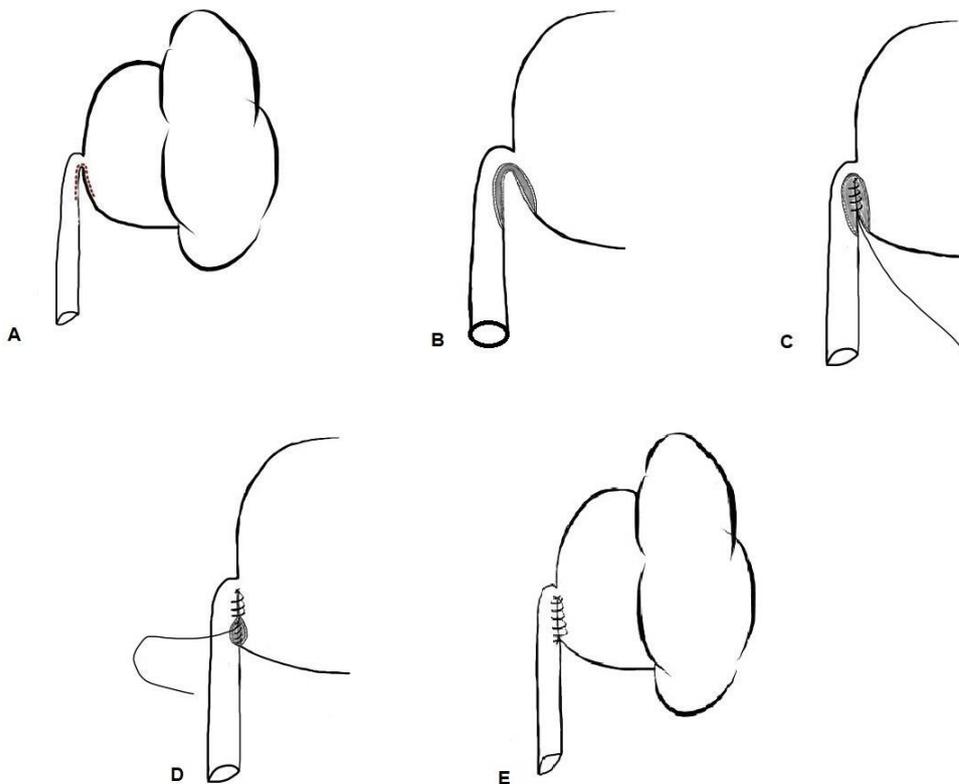
## Laparoscopic pyeloplasty by Finney's principle for pyeloureteral junction obstruction with high ureteral insertion

**Tran Ngoc Son** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Duong Van Mai** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** Finney's pyeloplasty is a well-known technique. Finney's principle has been reported to be applied successfully in open repair for pyelo-ureteral junction (PUJ) obstruction but not yet for the laparoscopic approach. We present the first case of laparoscopic pyeloplasty by Finney's principle.

**Case description:** A four-year-old boy was diagnosed with left PUJ obstruction, with an anterior-posterior pelvic diameter of 35mm. Laparoscopic repair using 3 trocars was performed. After exposing the PUJ, we found a high ureteral insertion to the middle of the pyelon, causing kinking and obstruction of the PUJ. An incision was made on the pyelon, started below the PUJ and continued on the lower wall of the PUJ to the adjacent ureteral wall, with a total length of 25 mm. A pyeloplasty by Finney's principle was performed as the opened walls of the pyelon were sutured to the adjacent opened walls of the ureter, using running 5.0 PDS suture. A transcutaneous pyelo-ureteral drain was placed. The operative duration was 50 minutes. There was no intraoperative complication. The patient recovered uneventfully, the drain was removed on the 6<sup>th</sup> day and he was discharged on the 7<sup>th</sup> day after the operation. At the follow-up of 18 months, the patient was asymptomatic, ultrasound showed no dilated pyelon.

**Conclusions:** Laparoscopic non-dismembered pyeloplasty by Finney's principle could be a good alternative technique in surgical repair for PUJ obstruction with high ureteral insertion.



A: Location of the incision on the pyeloureteral junction (dotted line); B: after the incision is made; C: suturing of the posterior wall of the pyelon to the posterior wall of the ureter; D: suturing of the anterior wall of the pyelon to the anterior wall of the ureter; E: Finished pyeloplasty by Finney's principle.

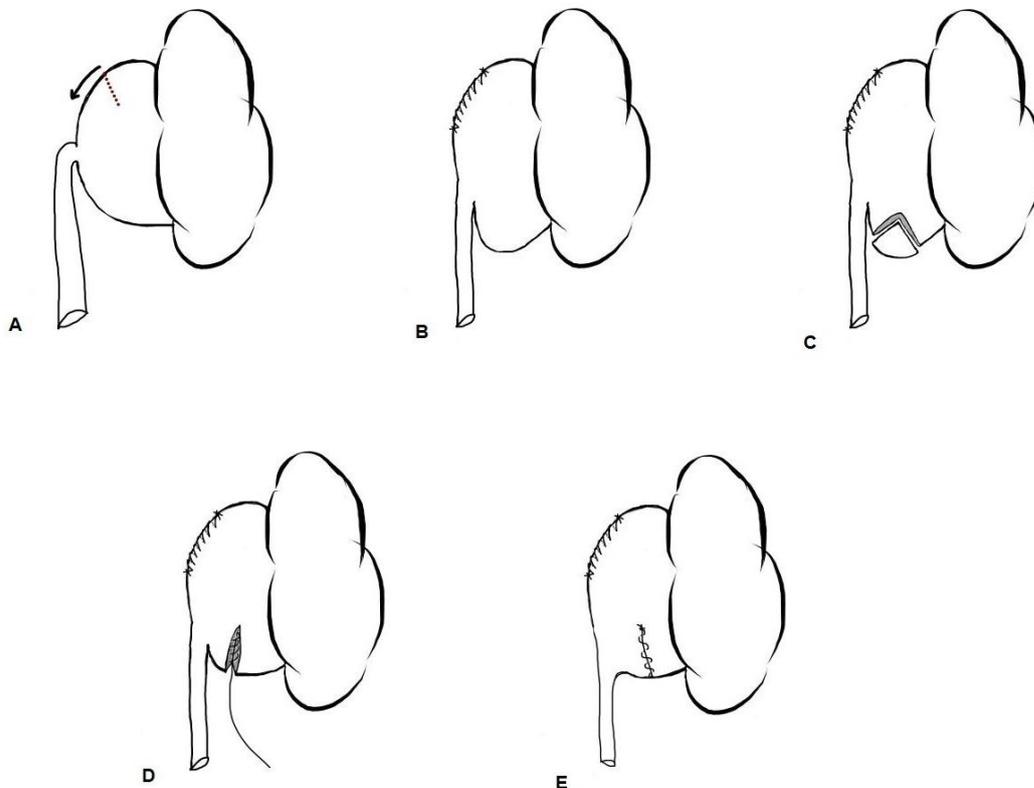
## A novel technique of advancement of ureteral insertion in surgical repair for pyelo-ureteral junction obstruction due to high ureteral insertion

**Tran Ngoc Son** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Hoang Van Bao** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Nguyen Thi Hong Van** (Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** We present our novel technique of advancement of ureteral insertion without dismembering the pyelo-ureteral junction (PUJ) in surgical repair of PUJ obstruction due to high ureteral insertion (HUI).

**Case description:** A 5-year-old boy was indicated for surgical repair of left PUJ obstruction, with a pelvic anterior-posterior diameter (APD) of 43mm. The patient was operated on with a left flank extraperitoneal approach. Intra-operatively, a high ureteral insertion at the upper pelvic half was found to make the PUJ kinked and obstructed. Firstly, a transversal incision was made on the pelvic above the PUJ. Then a catheter is inserted through this incision to check the PUJ. After ruling out any internal obstruction of the PUJ, the opened pelvic was closed perpendicularly by running sutures. Secondly, a transversal wedge resection of the pelvic below the PUJ was performed and the trimmed pelvic is closed transversally by running sutures. Consequently, the ureteral insertion was advanced towards the lower pole of the pelvic in a dependent position without dismembering of the PUJ. A percutaneous pyelo-ureteral drain was placed. The operative duration was 75 minutes. The patient recovered well. The drain was removed on the 6<sup>th</sup> postoperative day, and the boy was discharged on the 7<sup>th</sup> postoperative day. At a follow-up of 36 months, he was asymptomatic. Ultra-sound showed pelvic APD of 10mm, and renal scintigraphy showed no obstruction.

**Conclusions:** This novel technique of advancement of ureteral insertion without dismembering the PUJ can be a good alternative option in surgical repair of PUJ obstruction due to HUI without internal obstruction.



A: Transversal incision of the pelvic above the ureteral insertion; B: perpendicular closure of this incision by a running suture; C: transversal wedge resection of the pelvic below the ureteral insertion; D: transversal closure of this second incision by a running suture; E: The final result: the ureteral insertion is advanced toward the lower pole at a dependent position of the pelvic.

## Evaluation of testicular torsion in the paediatric population

**Sarah Ellul** (Paediatric Surgery, Mater Dei Hospital, Swatar, Malta), **Gabriella Grech** (Paediatric Surgery, Mater Dei Hospital, Swatar, Malta), **Julie Galea** (Paediatric Surgery, Mater Dei Hospital, Swatar, Malta), **John A. Cau-chi** (Paediatric Surgery, Mater Dei Hospital, Swatar, Malta)

**Aim:** Testicular torsion, is a surgical emergency, requiring immediate surgery based on a surgical assessment in order to avoid testicular loss. This study compares acute paediatric scrotal presentations in order to offer insight into the current local practice in patients with suspected torsion.

**Method:** A retrospective review of 136 paediatric acute scrotal presentations reviewed at one tertiary paediatric surgical centre between 2014 and 2020, were collected. Patient demographics, transfer times, time to surgery and operative findings were obtained.

**Results:** In our study, 60% of total patients (n=81) underwent scrotal exploration, and testicular torsion was found in 25% (n=20). Mean age at presentation was 9.8 years. The mean presentation time from onset of symptoms was 25 hours and the mean time to theatre from onset of symptoms was 27 hours. From the explored patients 20 cases (25%), were torsion with 4 orchidectomies (20%). Whilst taking into consideration the significant delay in presentation from onset of symptoms, 95% (n=78) of cases having all details available were explored within three hours from review at hospital.

**Conclusion:** Whilst ongoing improvement in clinical assessment of the acute scrotum by the referring physicians and surgical team is merited, the time lost between onset of symptoms and seeking medical input is decisive. This study shows that the major delay for an acute scrotum to reach theatre is the time to presentation at the A+E department so raising awareness in the parent groups is important to improve rates of testicular salvage.

## The role of the first postnatal ultrasound scan to predict outcome in antenatally diagnosed hydronephrosis

**Rebecca Lisseter** (Great North Children's Hospital, Newcastle upon Tyne, UK), **Rohini Sahay** (Great North Children's Hospital, Newcastle upon Tyne, UK), **Anindya Niyogi** (Great North Children's Hospital, Newcastle upon Tyne, UK), **Milan Gopal** (Great North Children's Hospital, Newcastle upon Tyne, UK), **Alok Godse** (Great North Children's Hospital, Newcastle upon Tyne, UK)

**Aims:** We aimed to determine if the renal pelvic diameter on the first postnatal scan can predict the need for surgical intervention in children with antenatally diagnosed hydronephrosis.

**Method:** Data of all babies with antenatal hydronephrosis born in our centre from 2009-2015 were obtained from the National Congenital Anomaly and Rare Disease Registration Service (NCARDRS). The medical records were analysed retrospectively for diagnosis, investigations, and interventions. Mean follow-up was 7 (4-10) years. The results were expressed as mean and percentage. Statistical data analysis was performed on GraphPad.

**Results:** 223 babies were included in the study. The median age was 8 days at the first postnatal ultrasound. 154 (69%) were males, and 69 (31%) had bilateral hydronephrosis. Unilateral hydronephrosis was more common on the left side (59%). 165 (74%) had spontaneous resolution of hydronephrosis. The resolution rates were similar for unilateral and bilateral cases. The mean renal pelvic diameter was 6.2mm in the resolved group and 16.2 mm in the persistent group ( $p < 0.01$ ). The highest renal pelvic diameter undergoing spontaneous resolution was 24 mm. Of the 58 (26%) children with persistent hydronephrosis, 37 (62%) children required surgery. The most common procedure was pyeloplasty (14) for pelviureteric junction obstruction, followed by nephrectomy (10) for a non-functional kidney. 21 (38%) patients continued to have persistent dilatation but needed no intervention. Renal duplex (8) was the most common diagnosis in this group, followed by vesicoureteric reflux (7). All babies with a pelvic diameter of 25mm or above on their first postnatal ultrasound required surgical intervention.

**Conclusion:** The majority of antenatally diagnosed hydronephrosis resolves spontaneously. However, interventions are necessary if the pelvic diameter is 25mm or above.

## Bladder exstrophy with complete urethral duplication: case report

**Mircia-Aurel Ardelean** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Ingrid Orendi** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Georgina Brandtner** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Christa Schimke** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Roman Metzger** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria)

**Aim of study:** To report the case of a 9-year-old boy with bladder exstrophy associated with urethral duplication.

**Case description:** The patient was completely incontinent. The exstrophic bladder, located deep into the pelvis, had a good volume. The penis had a normal size with a light dorsiflexion. On its ventral side was the normal urethra. The dorsal epispadic urethra had no veru montanum. There was a diastasis of the symphysis of about 5 cm: accordingly, the recti abdominis muscles were separate from each other. There were no further malformations.

We performed primary closure of the bladder exstrophy with approximation of the pubic bones and recti abdominis muscles. We excised the dorsal epispadic urethral plate and corrected simultaneously, the epispadias. The postoperative course was unproblematic. The bladder emptying follows through the ventral urethra, the penis is straight.

**Conclusions:** The bladder exstrophy with urethra duplication is rare and the preoperative diagnosis usually missed. After correction of the malformation, the bladder volume is in the normal range and the patients are usually continent.

## Correction of female epispadias

**Mircia-Aurel Ardelean** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Giorgina Brandtner** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Ingrid Orendi** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Christa Schimke** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria), **Roman Metzger** (Clinic of Pediatric Surgery, Paracelsus Medical University, Salzburg, Austria)

**Aim:** To present our procedure of epispadias repair and to assess the results in three female patients.

**Methods:** We performed a single-stage correction in three patients (2, 9 & 11 months-old) by following technique:

- Dissection of the urethral plate.
- Circumferential dissection of the bladder neck with extension of anterolateral dissection cranially above the interpubic ligament.
- Construction of urethra around of an 8-Fr-catheter.
- Removal of catheter and insertion of a suprapubic catheter under cystoscopic vision.
- Bladder neck-WV-plasty under cystoscopic control: extramucosal W-plication and V-suspension of bladder neck with 2-3 Dacron sutures on the interpubic ligament.
- Transurethral insertion of a 6-Fr indwelling catheter into the bladder
- Sewing of urethra to the vaginal wall and to the periurethral tissues.
- Mons- and clitoroplasty.
- Median splitting and laterally unfolding of distal part of urethra creating a mucosal lined vestibule.

**Results:** The first at the age of 2-months repaired, now 9-years-old patient, is continent.

The second patient repaired at 11-months, was seen last in 2019 at the age of 3,3-years (before she moved away). She was dry at night, but lost very rare urine during the day (2-3 times a month). The third patient, now 5-years old, is dry at night. She loses urine occasionally during the day in stress environment.

Bladder volume and the urinary tract ultrasound is normal in all three patients; all have good cosmetic results.

**Conclusions:** The single-stage correction of female epispadias (urethroplasty, bladder neck-WV-plasty and genital plasty) with the technique presented here leads to continence and good cosmetic outcomes.

## Does having periods mean all is well?

**Ilhama Jafarli** (Paediatric Urology, Guy's and St Thomas' Hospital/ Evelina Children's Hospital, London, UK),  
**Massimo Garriboli** (Paediatric Urology, Guy's and St Thomas' Hospital/ Evelina Children's Hospital, London, UK),  
**Anu Paul** (Paediatric Urology, Guy's and St Thomas' Hospital/ Evelina Children's Hospital, London, UK),  
**Arash Taghizadeh** (Paediatric Urology, Guy's and St Thomas' Hospital/ Evelina Children's Hospital, London, UK),  
**Pankaj Mishra** (Paediatric Urology, Guy's and St Thomas' Hospital/ Evelina Children's Hospital, London, UK)

**Aim:** OHVIRA syndrome is a rare congenital anomaly of the Mullerian and Wolffian structures. The most common presentation is nonspecific pelvic pain starting with menarche. Diagnosing is usually delayed because of the regular menstruation from the nonobstructed moiety.

Aim of the study is to share our experience, increase the awareness of this condition and propose a diagnostic pathway of management in girls with solitary kidney.

**Case description:** Four cases (Table 1) at the study centre were analysed, including demographic characteristics, symptoms, diagnosis, treatment and follow up. Main presentation was abdominal pain started with menarche, gradually increased in severity and all of them have solitary kidney. Ultrasound scan revealed uterine didelphys with double vagina, hematocolpos in the obstructed vagina and absent ipsilateral kidney. MRI scans done to delineate the Mullerian anomaly and for surgical planning (Image 1). Findings were right hematometrocolpos with right side vaginal septum. Patient was having normal periods due to continuity of the contralateral uterus with vagina.

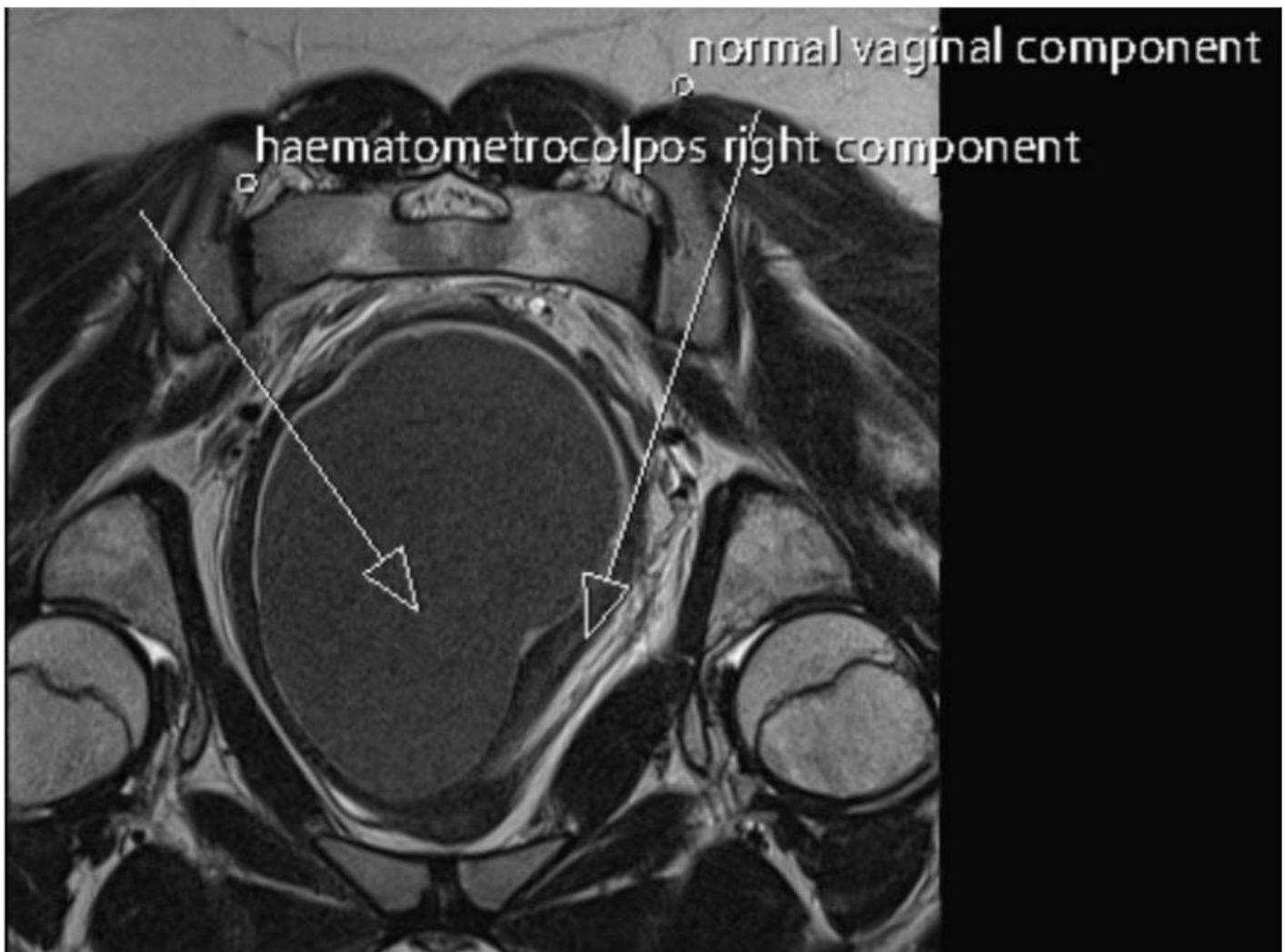
In view of the above mentioned, we looked into the existing literature for this condition and follow up of girls with solitary kidney that could facilitate early diagnosis and prevent complications. We propose US at menarche as it is unmistakable landmark of puberty. Menarche in addition will increase the peak up rate, anatomical delineation of the imaging modality and facilitate surgical intervention.

All patients had transrectal US on the table and transvaginal excision of the septum to drain obstructive moiety. It is prompted us to include US at menarche for girls with solitary kidney.

**Conclusion:** Awareness of such anomaly is prerequisite for early diagnosis, timely management and prevention of potential complications. ***US at menarche should be included in the follow up of girls with solitary kidney to facilitate the timely diagnosis and intervention for OHVIRA syndrome.***

Table 1.

Patient	Onset of symptoms	Age at diagnosis (yrs)	Age at menarche (yrs)	Presentation
1	Pelvic pain with periods	12	14	Constant watery leakage from age of 3
2	Heavy periods	12	12	Watery leakage before menses
3	Pelvic pain with periods	11	11	Pain with periods not responding to OCP's
4	No pain with periods	4	11	Watery leakage before menses



## Tubularized incised plate repair for hypospadias with a urethral plate incision up to the glans tip

**Tran Ngoc Son** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Hoang Van Bao** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam), **Nguyen Thi Hong Van** (Department of Pediatric Surgery, Saint Paul Hospital, Hanoi, Vietnam)

**Aim:** In tubularized incised plate repair for hypospadias (TIP), there are concerns about the risk of meatal stenosis when the urethral plate incision (UPI) is performed up to the glans tip. The aim of this study is to present our experience with modified TIP with UPI up to the glans tip.

**Methods:** Medical records of all hypospadias patients undergoing our modified TIP repair at our center from July 2016 to October 2021 were reviewed. We performed the UPI up to the glans tip. For chordee over 30°, Baskin's dorsal plication was performed. A urethral catheter was kept for at least 7 days. All patients were scheduled for calibration of the meatus 2 weeks after discharge and were followed up regularly at the out-patient clinic.

**Results:** 153 patients were enrolled with a median age was 3 years (range: 1- 13 years). Anterior, midshaft and posterior hypospadias were presented in 3.3%, 90.8% and 5.9% of the patients, respectively. Baskin's dorsal plication was carried out in 9.8%. The median operative time was 90 minutes. The median postoperative hospital stay was 9 days. At a median follow-up of 34 months, complications were recorded in 13.0%: urethral fistula in 6.5%, meatal retraction – 3.9%, recurrent chordee – 2.6%. No patient suffered from meatal stenosis. The location of the neomeatus was nearly natural.

**Conclusions:** The UPI up to the glans tip in TIP could bring the neomeatus to a nearly natural location. Our modified TIP with UPI up to the glans tip is safe, with no incidence of meatal stenosis.

## Correlation of renal pelvis histology and post-operative radiological outcome in ureteropelvic junction obstruction

**Vishal Michael** (Paediatric Surgery, Christian Medical College, Ludhiana, India), **Kanwardeep Kwatra** (Pathology, Christian Medical College, Ludhiana, India), **William Bhatti** (Paediatric Surgery, Christian Medical College, Ludhiana, India), **Dhruva N Ghosh** (Paediatric Surgery, Christian Medical College, Ludhiana, India)

**Aim:** To evaluate the correlation between renal pelvic wall histopathology with post-operative outcome as assessed by radiological studies after surgical correction of the congenital ureteropelvic junction obstruction (UPJ).

**Methods:** 18 children operated with congenital ureteropelvic junction obstruction were included in this prospective study. All patients underwent preoperative ultrasound and diuretic renal scan. The excised ureteropelvic junction specimen included the specimen included dilated part of pelvis, narrowed segment or the uretero-pelvic junction and at least 0.5 cm of normal ureter distal to the narrowed segment. Histological features assessed were of thickness of the muscularis propria of the pelvic wall, signs of chronic inflammation and distortion of muscularis propria.

Follow-up examination included serial ultrasound scan at 3 months and 6 months postoperatively as well as a post operative diuretic renal scan for the assessment of both the morphological and functional outcome. Improvement was defined as the resolution seen radiographically at 6 months post operatively.

**Results:** The median age of children in our cohort was 48 months. Lower maximum muscularis propria thickness (mean :  $906.32 \pm 272.22$ ) was significantly associated with better radiological outcome at 6 months post pyeloplasty (p value 0.03).

Lower muscularis propria thickness was also associated with a significant post-operative reduction in SFU grading, renal pelvic diameter and a improvement in split renal function.

**Conclusion:** The present study shows muscularis propria thickness of the excised renal pelvis after pyeloplasty correlates with post-operative radiological improvement. Muscularis propria thickness could hence become an objective clinical tool to prognosticate patients for radiological improvement after pyeloplasty.

## Varied diversity of Pediatric Ovarian Lesions: Versatile Laparoscopic management

**Nellai Krishnan** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India),  
**Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India)

**Aim:** Ovarian lesions are rare in children. Laparoscopic management of ovarian lesions leads to less postoperative adhesions compared with conventional open surgery. We present our experience in the laparoscopic management of ovarian lesions.

**Method:** A retrospective review of the patients with ovarian lesions operated laparoscopically from 2014 to 2021 was performed.

**Result:** Ten patients (eleven ovaries) were included in the study. The age at presentation ranged from antenatal to 10 years. The lesion was cystic: solid lesions in 7:4. One case had bilateral lesions. Six were simple cysts. One cyst grossly mimicked a Hydatid Cyst but histopathologically was reported as a serous cystadenoma. Of the solid lesions; two were dermoid cysts (one involving the ovary). One was a germ cell tumor. One was a necrotic material without any ovarian tissue following torsion. One had an associated tiny fimbrial cyst that was also removed. Cystectomy was done in 7. In 3 the ovary was removed as two had tumor involvement and one was necrotic. In one, the para-ovarian dermoid cyst was removed. In one patient, an additional omentectomy was done. The mean size of the lesion was= 4.2 cm (1.5 -8) Mean age at surgery was 5.3 years (5 months- 10 years). Mean operating time (n=8) : 62 min +/- 21.

**Conclusion:** Laparoscopic management of ovarian lesions in children is safe and effective.

## Novel view to the congenital megaureter based on molecular genetic studies

**Zukhra Sabirzyanova** (urology, RNCRR, Moscow, Russian Federation), **Andrey Pavlov** (Urology, RNCRR, Moscow, Russian Federation), **Vladimir Solodkiy** (RNCRR, Moscow, Russian Federation), **Galina Snigireva** (genetic, RNCRR, Moscow, Russian Federation)

**Aim:** it is well known that clinical picture of each patient with congenital megaureter is different. Are there any genetic markers play role in the pathogenesis and severity of MU?

**Methods:** 25 boys with severe stages of bilateral megaureter were investigated with the next generation sequencing (NGS), which includes the analysis of encoding sequences of 4812 genes and bioinformation analysis of founded mutations with the help of genetic data bases OMIM, ClinVar and MedGen.

Clinical diagnosis based on US, DMSA-scintigraphy, MAG3-scintigraphy, VSUG in all patients and MSCT or MR-urography in some cases.

**Results:** All patients had got severe stages of MU with needing of surgical treatment in infancy. Abnormal mutations were found in 15 boys. Among them there were mutations which are known as pathological in different kidney or smooth muscle diseases in 18 genes: AGT, COL4A4, PKHD1, ACE, PKD1, CFH, CFHR2, COL9A3, COMP, NID1, EYA1, MYH9, FRAS1, TP63, ITGB4, MYLK, HNF1B, HSPG2. Each patient has from 1 to 3 mutations in these genes. Three of these genes: AGT, PKHD1 and ITGB4 were abnormal in not one of them. Moreover, the mutations, related to another diseases, were found in 4 from these 15 patients. There were mutations in well-known BRCA1, MAN2B1, MEFV and NSD1 genes. In 10 patients without any kidney or smooth muscles related mutations any others mutations also weren't founded.

**Conclusions:** In spite of the same clinical picture of megaureter the genetic base of disease was different in these patients. Some of them have got sporadic anomaly and they must be assessed as malformation without dysplasia. But in most of patients with severe MU the genetic mutations were founded and it confirms there's syndromic malformation and may assess as monogenic disease. We suppose this group of patients who require more attention

## Is it necessary to do the ureteral tapering during the megaureter reimplantation in children of different ages?

**Zukhra Sabirzyanova** (urology, RNCRR, Moscow, Russian Federation), **Andrey Pavlov** (Urology, RNCRR, Moscow, Russian Federation)

Some specialists believe that in young children the ureter tapering must be done during the reimplantation of wide ureter due the small bladder volume.

**Aim of the Study:** to evaluate the functional state of wide ureter in cases of refluxing and obstructive urodynamic disorders in children of different ages for prognosis the possibility of reducing its size and upper urinary tract urodynamic rehabilitation after the reimplantation.

**Methods:** 130 patients with 175 ureter units in the age from 9 month till 12 years with megaureter were operated. Ureter reimplantation by extravesical approach were done in all. Ultrasound, DMSA and MAG3 dynamic scintigraphy and VCUG were done in all of them for accessing the severity level of disease and post-operatively for access the results cases.

**Main results:** among 32 children before 2years of age the ureter tapering were done in 5 cases of refluxing ureter units. In 70 patients from 2 to5 years old tapering were need in 12 refluxing ureters and 7 obstructive cases. In the age of elder than 5years old ureter tapering were done in 21 (20%) regardless of the type of primary urodynamic disorders. Postoperative VUR were in 6 cases, UVJ obstruction in 1 of them. They were no any complications in patients without tapering reimplantation.

**Conclusions:** the consideration of ureter tapering of wide ureter is not due the small bladder volume in infants, but depends of functional state of ureter wall which is worse in elder patients and it may be the reason of postoperative disorders.

## POSTER WALK 13

### Lower Gastrointestinal 3

#### Outcomes of Hirschsprung disease patients with long-segment and total colon aganglionosis after pull-through

**Krisna Dwiantama** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Asri Khairana Wardhani** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Junaedy Yunus** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Gunadi Gunadi** (Universitas Gadjah Mada, Yogyakarta, Indonesia)

**Aim:** To determine the outcomes of Hirschsprung disease (HSCR) in patients with long-segment and total colon aganglionosis (TCA).

**Methods:** A retrospective study was conducted using medical records of HSCR patients with long-segment and TCA admitted to our institution from January 2013 to August 2020. The functional outcomes were evaluated using the Krickenbeck classification, while HAEC was evaluated using the HAEC scoring system with a cut-off level of  $\geq 4$ .

**Results:** There were 19 HSCR patients: 13 long-segment and six TCA. Eight patients underwent Duhamel. Other patients underwent Kimura (2), transabdominal Soave (3), laparotomy-assisted transanal endorectal pull-through (TEPT) (1), and TEPT (5) procedure. For functional outcomes, we excluded nine patients: one patient still having a stoma, eight patients were  $<3$  years old. While all patients with long-segment HSCR ( $n=7$ ) showed good functional outcomes, two TCA patients did not achieve voluntary bowel movement and had soiling. Three long-segment and four TCA patients showed Hirschsprung-associated enterocolitis (HAEC). Ten patients showed a surgical site infection, and two patients had a diaper rash.

**Conclusion:** Our study shows that the functional outcomes of patients with long-segment HSCR are better than patients with TCA, while the HAEC incidence is similar in both groups. Long-term follow-up is mandatory to detect complications early and determine the appropriate management.

## Waardenburg-Shah syndrome with homochromia and total gut aganglionosis: rare presentation

**Vishal Michael** (Paediatric Surgery, Christian Medical College, Ludhiana, India), **Savleen Kaur** (Paediatric Surgery, Christian Medical College, Ludhiana, India), **Tanvi Goel** (Paediatric Surgery, Christian Medical College, Ludhiana, India), **William Bhatti** (Paediatric Surgery, Christian Medical College, Ludhiana, India), **Dhruva N Ghosh** (Paediatric Surgery, Christian Medical College, Ludhiana, India)

**Clinical Descriptions:** A 5 day old neonate presented with a history of not passing meconium and abdominal distention along with features of Waardenburg syndrome with homochromia.

Patient was diagnosed with Hirschsprung disease on rectal biopsy.

Biopsies from the entire colon did not show ganglion cells, serial biopsies till the stomach also showed absence of ganglion cells.

Patient was diagnosed to have Shah-Waardenburg Syndrome with homochromia and total gut aganglionosis.

**Aims:** Waardenburg syndrome is a rare disease characterized by sensorineural deafness in association with pigmentary anomalies and defects of neural crest derived tissues. Depending on additional symptoms, WS is classified into four types, WS1, WS2, WS3 and WS4.

WS4, also called Waardenburg-Shah syndrome, is a very rare congenital disorder with variable clinical expression, characterised by Hirschsprung disease, and abnormal melanocyte migration, resulting in pigmentary abnormalities and sensorineural deafness. Heterochromia is seen in these patients but our patient had a homochromous iris.

This is second case reported with homochromous iris with type 4 Waardenburg-Shah syndrome and first case from India to the best of our knowledge.

**Conclusions:** Waardenburg syndrome type 4 or Waardenburg-Shah syndrome is associated with colonic aganglionosis which is usually long segment or even total gut aganglionosis.

Heterochromia is the usual presentation and very rarely homochromia can also be seen.

## Functional outcomes of Hirschsprung's disease in children – a single center study done at children's hospital and institute of child health

**Muhammad Saleem** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamaal Butt** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Moeezah Moeezah** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Fatima Majeed** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Imran Hashim** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Mehboob Ahmed** (Children Hospital, University of Child Health Sciences, Lahore, Pakistan)

**Aim:** Hirschsprung's Disease (HD) is a congenital bowel disorder resulting in functional dysmotility. Advancement in surgical techniques have improved outcomes but recent studies have identified problems having significant impact on patient's quality of life. Aim of this study is to analyze post-operative functional outcome after definitive surgery for HD.

**Method:** A retrospective study, conducted in Pediatric Surgery department of The Children's Hospital Lahore. In which record of 64 patients was reviewed from year 2009 – 2019. Parents were interviewed on phone call and a predesigned questionnaire was filled. Degree of constipation, incontinence and voluntary bowel movements was analyzed according to Krickenberg Classification.

**Results:** Median age at presentation was 11 days, with male to female ratio of 3.9:1. Most common presentation was delayed passage of meconium (38%). Diagnosis was made on biopsy in 70.3%, while contrast enema and biopsy in 28%. Aganglionosis was limited to short segment in 78%, long segment (14%). On initial presentation, decompressing enterostomy was made in 63% of patients. Duhamell pull-through (89%) was the most frequently performed procedure at mean age of 4 years.

Mean age at follow up was 10.6 years. Post-operative complications include enterocolitis (27%), while 34.4% reported fecal incontinence and 18.7% had complained of constipation. Among patients, 80% could hold their voluntary bowel movements, of which 5% reported feeling of urge and 15% had the capacity to verbalize. In 25% of patients, fecal incontinence was a constant social problem whereas in 25% of patients constipation was resistant to diet and laxatives.

**Conclusion:** On long term follow up, fecal incontinence was more worrisome affecting quality of life requiring help of bowel management program. Such patients need close follow up after definitive procedure, so that they have normal stooling habits in their adulthood and lead a normal life.

## The diagnostic utility of Meckel's scan in evaluation of Meckel's diverticulum: our experience

**Prathibha B Naik** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India), **Vijai D Upadhyaya** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India), **Anju Verma** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India), **Rohit Kapoor** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India), **Pujana Kanneganti** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India), **Ankur Mandelia** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India), **Basant Kumar** (Pediatric Surgery, Sanjay Gandhi Institute of Medical Sciences, Lucknow, India)

**Aim:** The aim of this study is to assess the diagnostic utility of Meckel's scan in evaluation of patients with Meckel's diverticulum.

**Methods:** Retrospective analysis of 16 Meckel's diverticulum patients who underwent Meckel's scan for lower GI bleed and recurrent abdominal pain at a tertiary centre of North India from March 2017 to November 2021 were considered. Institutional Ethical clearance was taken. Patient's demographic data, presenting symptoms, imaging, clinical & surgical findings with histopathology reports were reviewed and analysed.

**Results:** Total of 16 patients were studied. 10 patients were Meckel's scan positive and 6 patients were Meckel's scan negative. Median age of the patients was 19 months, of which 93.8 % were male. 93.8 % had history of bleeding per rectum, pain abdomen in 18.8 % of patients. Transfusion was required in 37.5% of patients. All patients underwent surgery and Meckel's diverticulum confirmed on histopathology. Of the 16 patients, 3 patients underwent diverticulectomy with GI stapler. Post operatively one patient had subacute intestinal obstruction which was managed conservatively and patient recovered.

Meckel's scan had a sensitivity of 62.5 % with a false negative detection rate of 37.5 %. Accuracy of 62.5 % in determining Meckel's diverticulum.

**Conclusion:** Meckel's scan had a truncated predictive value. Its contribution in clinical decision making is limited. These findings suggest that exploratory laparotomy or diagnostic laparoscopy is indicated in whom a high suspicion of bleeding Meckel's diverticulum exists.

**Keywords:** Meckel's diverticulum, Meckel's scan, Exploratory laparotomy, Diagnostic laparoscopy.

## H type fistula, a rare variant of anorectal malformations in a two years old female

**Walaa Balla Ahmed** (Pediatric surgery department, Khartoum North Teaching Hospital, Khartoum, Sudan)

Anorectal malformations (ARMs) are one of the commonest anomalies that face pediatric surgeons worldwide. The challenge in managing ARMs comes from the fact that they occur in a wide spectrum ranging from minor defects (which have excellent outcomes) to complex defects which need more care and dedication.

**Case report:** Two years old girl was brought to our pediatric surgery referred clinic by her mother because she was noticing stool coming from near her vagina since birth.

On examination, she looked healthy with no dysmorphic features, examination of all systems was unremarkable. Perineal examination revealed well developed buttocks, normally sized and located anal opening (dilator size 15). In the vestibule there was normal urethral opening, normal vaginal opening and a third opening discharging stool.

Firstly a full work up of associated anomaly was done, all were unremarkable. Secondly contrast enema was obtained which showed the fistula tract. Then patient underwent divided colostomy, two months later repair of fistula was done, lastly stoma was reversed three months later. Patient came for follow up and she was doing very well.

H type fistula is a rare variant of ARMs, it has good outcome in terms of future bowel function because the rectum is normally placed within the sphincter.

According to our settings, With limited resources and limited availability of total parenteral nutrition, we decided to perform staged surgery so that we prevent perineal wound infection and reduce the risk of possible incontinence.



## Posterior cloaca with multiple associated anomalies: a surgical challenge

**Charu Yadav** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India), **Yogesh Kumar Sarin** (Pediatric Surgery, Lady Hardinge Medical College, New Delhi, India)

**Aim:** Posterior cloaca is a rare variant of cloaca in which the urethra and vagina are fused forming a urogenital sinus opening either on the anterior wall of a normally placed anus or immediately anterior to the anus. Variety of associated anomalies can present with this condition in the form of urogenital, vertebral, or gastrointestinal anomalies which increases the complexity of this defect and poses a challenge for the surgeon to correctly identify and manage such anomalies.

Hereby we report a case of posterior cloaca with multiple associated congenital anomalies.

**Case Description:** A new-born delivered at 37 weeks of gestation presented to us with gross abdominal distention, abnormally looking external genitalia and neural tube defect. on examination was identified as posterior cloaca (type A). Associated anomalies were thoracic meningomyelocele (MMC), esophageal atresia with tracheoesophageal fistula (EA+TEF Kluth type IIIb5), vertebral anomalies, hydroureteronephrosis, absent urinary bladder and Mullerian duct anomaly. Emergency surgical interventions were done to create sigmoid colostomy, TEF repair, MMC excision and Sober's ureterostomy. In post-operative period patient required prolonged invasive ventilation and succumbed to death on post op day 5 due to severe metabolic abnormalities and respiratory failure.

**Conclusion:** Posterior cloaca is a unique entity. It is different from classical cloaca as in this anus is normally located or minimally displaced anteriorly. Several associated anomalies make this entity complex and its management challenging with high frequency of associated urologic anomalies. In cases of posterior cloaca prior suspicion is necessary in view of high incidence of associated anomalies to avoid missing any associated defect at the time of first evaluation of such cases. We recommend meticulous examination of external as well as internal anatomy as survival and prognosis of these patients are affected by presence of associated multiple anomalies.

## Surgery for magnetic foreign body ingestion: 11-year single center experience

**Petra Rounova** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Vojtech Dotlacil** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Kucerova Barbora** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Kubat** (Department of Paediatrics, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic), **Michal Rygl** (Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital, Prague, Czech Republic)

**Aim:** Magnetic foreign body ingestion (MFBI) increases the risk of morbidity and mortality. The aim of our study was to evaluate our experience with the treatment of MFBI in children.

**Methods:** A retrospective study of children treated for MFBI in a single center between January 2011 to January 2022 was conducted. The clinical characteristics, treatment methods, and outcomes were summarized and analyzed.

**Results:** In total, sixty two patients (37 males and 25 females) were treated in our hospital following MFBI. The average age was 6 years (range 1-15 years) and the average number of ingested magnetic foreign bodies per patient was 5 (range 2-34). Management included: endoscopic removal in 19 patients (31%), self-discharge of magnets in 28 patients (45%) and surgery in 15 patients (24%). The average number of ingested magnetic foreign bodies in surgical patients was 9. Six surgical patients were asymptomatic (40%), the remaining 9 patients presented with vomiting (including four cases of ileus in patients without MFBI as the presenting complaint). In 8 cases open surgery was performed (including one case of conversion from laparoscopy), 7 patients underwent laparoscopic surgery. The average length of hospitalization after surgical treatment was 7.5 days. Postoperative complication (sepsis) occurred in two patients and was treated with a combination of broad-spectrum antibiotics.

**Conclusions:** Patients who have ingested multiple magnets should be regarded as conditional surgical patients even though their clinical condition is stable. Laparoscopy is a suitable method for nonprogressive multiple MFBI especially in asymptomatic patients. It is necessary to consider MFBI in the differential diagnosis in children with unexplained abdominal symptoms. Timing of the medical interventions for MFBI continues to be a challenge for pediatric surgeons, pediatricians and gastroenterologists. The focus should be on reduction of the incidence of MFBI through national campaigns and possibly a ban on the sale of magnetic toys.

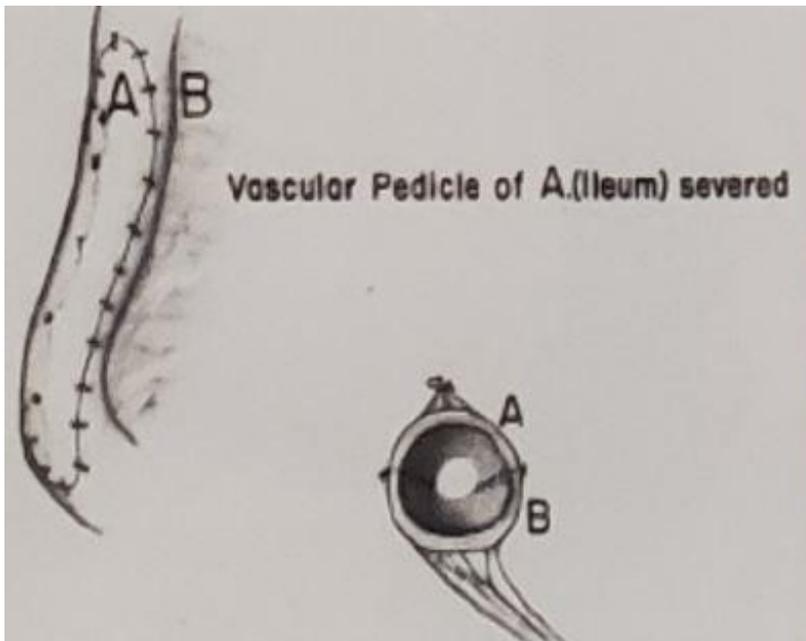
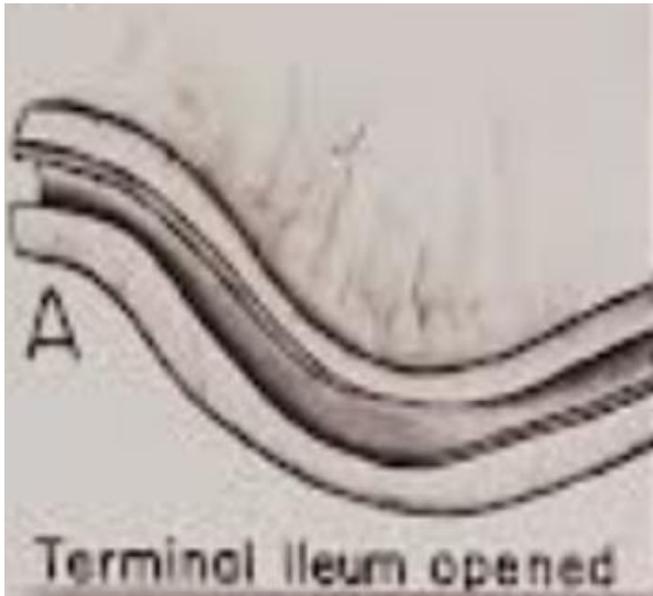
## Long term follow up of ultra-long segment aganglioneurogenesis managed with the Kottmeier procedure

**Devin Hosein** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Benjamin Many** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Samuel Linton** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Douglas James** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Bienvenido Jongco** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Francisca Velcek** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA)

**Aim:** This demonstrates that ultra-long segment aganglioneurogenesis can be successfully managed with the Kottmeier procedure which involves preservation of aganglionic ileum anastomosed in a side to side fashion with normal ileum thus increasing absorptive capacity while preserving motility. This procedure has stood the test of time and demonstrated excellent long term outcome.

**Case description:** A full term baby born via normal vaginal delivery presented with no bowel movement in 48 hours with abdominal distension. Family history was significant for 2 siblings with aganglioneurogenesis. One sibling had rectosigmoid Hirschsprung's and the other involved a long segment up to left colon, both treated with standard endorectal pull through. Unfortunately, the sibling with long segment disease died of severe enterocolitis. Work-up of our patient revealed ultra-long segment aganglioneurogenesis, involving the entire colon and terminal ileum. She underwent an ileostomy creation complicated by high output with electrolyte imbalance and dehydration requiring readmission. Based on bench research demonstrating absorptive capacity of denervated small bowel, a side-side anastomosis of the ganglionic to aganglionic ileum was performed resulting in a dual vascular pedicle anastomosis. (Figure1) Post operatively, stools became progressively more semi-solid. At 23 months of age, she then underwent devascularization of the aganglionic segment with an uneventful post-operative course. (Figure 2) The patient continued to gain weight appropriately and at 28 months of age, she underwent a resection of the aganglionic colon with a Duhamel ileo-rectal pull through procedure with a satisfactory post-operative course. On 43 year follow up, she is asymptomatic with regular bowel movements.

**Conclusion:** Ultra-long segment aganglioneurogenesis is very difficult to treat and as a result there are many different surgical approaches. This case with long term follow up demonstrates the Kottmeier procedure is a option that can be employed for the successful management of this challenging clinical problem.



## A rare cause of intestinal obstruction: sock ingestion

**Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Salih Bayram** (Pediatric Surgery, Mardin Training and Research Hospital, Mardin, Turkey), **Bahattin Aydoğdu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Mehmet Hanifi Okur** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey)

**Aim:** We aimed to present a case of the foreign body ingestion of 14-years-old boy with cerebral palsy

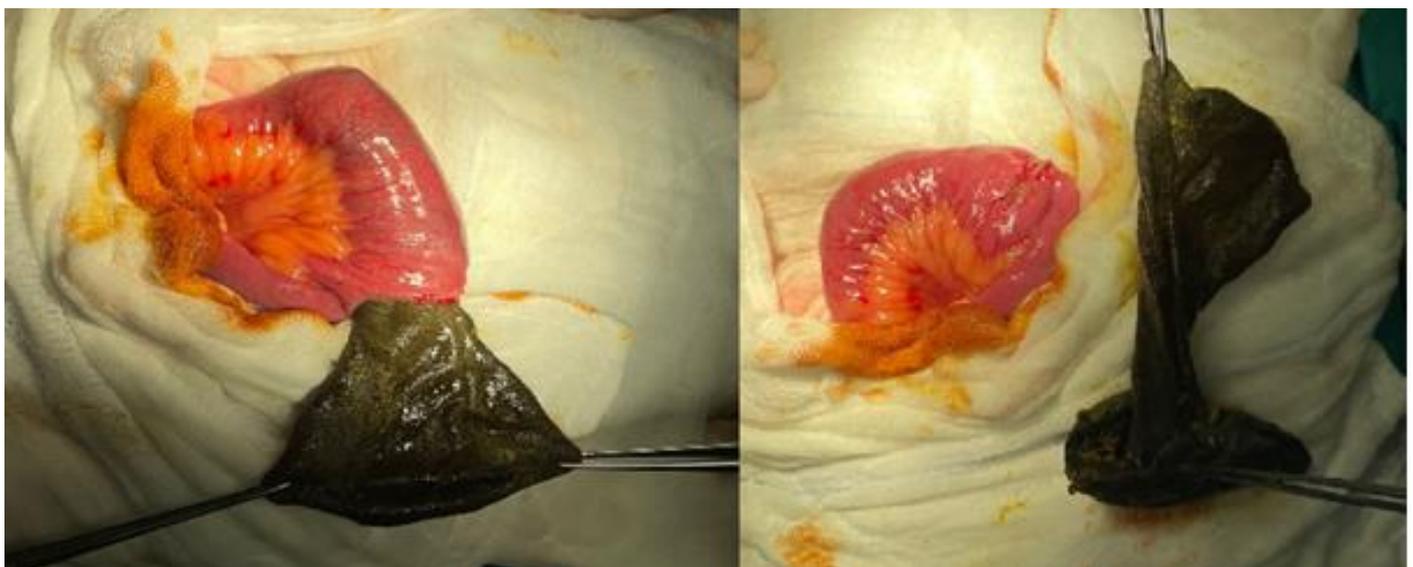
**Case Report:** A 14-years-old boy with cerebral palsy and past medical history of foreign body ingestion was admitted to the emergency department (ED) due to intractable vomiting. The patient presented with a two-day history of the inability to defecate, retch, nausea, bilious vomiting, restlessness, and abdominal pain. On abdominal examination, tenderness was observed. There was no gas and stool output after the rectal enema. At the admission, body temperature: 37,5 °C, blood pressure: 110/76 mmHg, heart rate: 96/min, CRP: 1,25 mg/dl, WBC: 22,74, and NEU: 20,9. The X-ray revealed an air-fluid level with partial obstruction (Fig.1).

The CT reports noted intestinal obstruction and ileus secondary to foreign body ingestion (Fig.2).

Then, the patient underwent a laparotomy. All bowel loops were checked. We found that proximal intestinal loops were dilated. The foreign body (sock) was palpable at 110 cm of the ligament of traits (Fig.3). Enterotomy was performed at this point of the intestine on the antimesenteric face and the sock was removed. And then, the intestine was repaired with a double layer of continuous stitching. Endoscopy was performed on the patient, and after making sure that there was no other foreign body. The surgical intervention was completed without complications.

Oral feeding was started at the postoperative 48th hour. The patient was discharged uneventfully at the 72nd hour postoperatively.

**Conclusion:** Especially when mentally retarded patients present with intestinal obstruction, it should be considered that they may have swallowed a foreign body, and CT may be performed to confirm the diagnosis in these patients. At the same time, considering that these patients may swallow more than one foreign body, endoscopy may be performed during the surgery.



## Treatment of perianal abscess in children: spontaneous drainage or simple incision-drainage?

**Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Can Ihsan Öztoran** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Medine Ezgi Öcal** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Sabri Demir** (Pediatric Surgery, Ankara City Hospital Children's Hospital, Ankara, Turkey), **Mujdem Nur Azili** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey), **Emrah Senel** (Pediatric Surgery, Ankara Yildirim Beyazit University Faculty of Medicine, Ankara, Turkey)

**Aim:** The aim of this study is to evaluate the clinical characteristics and compare the treatment methods of perianal abscess by assessing our treatment experiences.

**Methods:** We have retrospectively analyzed the records of the children who received perianal abscess and fistula-in-ano treatment between January 2014 and January 2022. Demographic information of the patients, complaints, treatment procedures, abscess recurrence, and development of fistula-in-ano were evaluated. Patients with systemic diseases and inflammatory bowel diseases were excluded from the study.

**Results:** 312 children (230 boys, 82 girls) were included for the study. Median age was 13,8 months (1-216). In the first examination, 61(19,5%) patients had fistula-in-ano and 251(80,5%) patients had perianal abscess. Most common symptoms were erythema at perianal region, mass, constipation, rectal bleeding and inability to defecate. Spontaneous drainage was determined in 34.2% (n=86) of the perianal abscess and 65.7% (n=165) of perianal abscess were treated with simple incision -drainage without general anesthesia and systemic antibiotherapy. In the follow-up, fistula-in ano formed in 27 patients who had perianal abscess. 24 of the patients who developed fistula-in ano, were seen after spontaneous drainage, and 3 of them were seen after simple incision drainage. Perianal abscess recurred in 64 patients. Spontaneously drained of abscess significantly increased the development of fistula-in-ano (p=0.001). However, recurrences in perianal abscess (26%) don't increase the fistula-in-ano formation (p>0.05). In fistula-in-ano treatment, 10 (11,5%) patients were resolved spontaneously, 70 (79,5%) patients were treated with fistulotomy and 8(9%) patients were treated with fistulectomy.

**Conclusion:** Treatment of perianal abscess and fistula-in-ano in children is still controversial. According to our results, simple incision-drainage and antibiotic usage in the treatment of the perianal abscess is the most appropriate treatment to decrease the rate of fistula-in-ano.

## POSTER WALK 14

## Urology 6

## A rare case of bladder fibroepithelial polyp in childhood

**Takwa Mili** (Pediatric Surgery B, Bechir Hamza Children Hospital, Tunis, Tunisia), **Takwa Mili** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Yosra Ben ahmed** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Tarek Boukesra** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Riadh Jouini** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Faouzi Nouira** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Awatef Charieq** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Said Jlidi** (Bechir Hamza Children Hospital, Tunis, Tunisia)

**Background:** Fibroepithelial polyps have been reported in the newborn, infant and in adults. Lower tract fibroepithelial polyps are found most commonly in the posterior urethra.

We report a case of a 5-year-old boy who presented with haematuria and urinary retention due to a polypoid lesion of the bladder neck.

**Case report:** A 5-year-old boy referred to our pediatric surgery department for a 3-week history of pelvic pain, hematuria and dysuria. His physical exam was normal. Urinary ultrasound revealed a budding tissue formation of the bladder floor, measuring 19 \* 11 mm. The pelvic MRI objectified a round formation on the anterior surface of the bladder trigone of 17 mm with an irregular thickening of the posterior wall of the bladder, suggesting a local rhabdomyosarcoma. Cystoscopy was performed to assess the lesion. The bladder wall was inflammatory and a budding mass of the bladder trigone was detected. The mass was biopsied but the histopathological examination came back inconclusive.

Open surgery exploration found a 2 cm bladder neck polyp with regular contour and non-infiltration. We resected the polyp and its implantation base and we sent it for histologic examination which revealed a polyp covered with urothelial epithelium that was mature and there were no signs of atypia and/ or dysplasia. They concluded to a benign fibroepithelial polyp.

The patient has been attending routine follow-up for 3 years now with no evidence of recurrence.

**Conclusion:** Benign fibroepithelial bladder polyps are a rare cause of childhood hematuria and urinary retention. Treatment is surgical and involves cystoscopic resection of the mass with good long-term prognosis. The exact etiology of benign fibroepithelial polyp is uncertain with no clear guidelines on long-term surveillance.

## Outcomes of infant laparoscopic pyeloplasty – a single centre experience

**Abirami Krithiga Jayakumar** (Pediatric Surgery, Rainbow Children's Hospital, Chennai, India), **Harish Jayaram** (Pediatric Surgery, Rainbow Children's Hospital, Hyderabad, India), **Mainak Deb** (Pediatric Surgery, Rainbow Children's Hospital, Hyderabad, India)

**Aim:** The aim of this study was to determine the course and outcome of infants undergoing Laparoscopic Pyeloplasty (LP).

**Methods:** This was a study conducted from January 2017 to June 2020 of Infants who underwent laparoscopic pyeloplasty. The results of pre and postoperative imaging (ultrasound and diuretic renogram), operative details and complications were noted.

**Results:** 107 infants underwent laparoscopic pyeloplasty. The mean age of patients was 3.715 months with the range of 23 days – 11 months. 103 infants had antenatal diagnosis and 4 presented with palpable mass. Mean APD pre op – 34.182mm, postop – 10.954mm. Mean preoperative and postoperative parenchymal thickness was 3.993mm and 7.554mm. 95 infants had both preoperative and postoperative renograms for comparison. 76 had reduced perfusion in preop EC scan which became normal in 73 patients, pre op mean SRF – 40.013, post op SRF – 43.896, The drainage curve grading showed 5(6.5%), 71(74.73%), 18(19%) infants had normal, mildly prolonged, moderately prolonged drainage curve and 1 infant had poor function post operatively but follow up USG showed reduction in APD. Mean surgical time was 102.5 ± 26.0359 minutes from port insertion to closure. The average length of the stay was 2.95 days. There were 15 postoperative complications, 9 children developed UTI. 1 developed adhesive obstruction, 3 developed DJ stent migration. One child had a re-obstruction underwent redo LP on follow up. Pre and postoperative parameters were compared.

**Conclusion:** Laparoscopy offers good result and acceptable complication, with shorter hospital stay, less post-operative pain and better cosmetic results.

## Characteristics and management of urethral stones in children

**Hasan Deliağa** (Pediatric Urology, University of Health Sciences Erzurum City Hospital, Erzurum, Turkey), **Halil Tosun** (Pediatric Urology, University of Health Sciences Van City Hospital, Van, Turkey), **Bilge Karabulut** (Pediatric Urology, University of Health Sciences Ankara City Hospital, Ankara, Turkey), **H. Tugrul Tiryaki** (Pediatric Urology, University of Health Sciences Ankara City Hospital, Ankara, Turkey)

**Introduction:** Incidence of urethral stone is less than 0,3%. They may be detected solely or with stones in other parts of urinary tract. Symptomatology is generally enough to be suspected of the diagnosis.

**Patients & Methods:** Among 675 urinary tract stone patients, there were 9 urethral stones with an incidence of 1,33%. One of the patients was girl and 8 of them were boys with a mean age of 3,96.

**Results:** Main symptoms were difficulty to pass urine and acute urinary retention. Ultrasonography was the chosen diagnostic modality but low-dose computed tomography was performed to only girl patient due to ambiguity of diagnosis. Two stones were detected within the fossa navicularis and 7 were in the posterior urethra. The mean diameter was 7 mm. Two patients had no history of stone disease previously and three patients had staghorn stones. The analysis of stones were whewellite-weddellite and cystine stone. Spontaneous passage was occurred in one patient while surgery was performed in 8 patients. Endoscopic treatment with stone push-back and intravesical lithotripsy was the treatment of choice in proximal stones and extirpation in distal. Where the stone was impacted, low energy laser lithotripsy to release the stone was performed in 3 patients without any complications.

**Conclusion:** The symptoms and treatment of choice in urethral stones is related to the localization, diameter and shape of the stone. Diagnosis is challenging in girls due to shortness of urethra requiring additional diagnostic modalities. Endoscopic treatment is effective in proximal stones while extirpation is feasible in distal stones.

## Pyeloureteral stenosis in duplicated renal collecting system: laparoscopic pyeloureterostomy as an option

**Walter Romero** (Pediatric surgery, Hospital Infantil San Vicente Fundación, Medellín, Colombia), **Angelo Loochkartt** (Pediatric surgery, Hospital Infantil San Vicente Fundación, Medellín, Colombia), **Daniela Moreno** (Pediatric surgery, Universidad Nacional de Colombia, Bogotá, Colombia), **María Jose Neira** (Medicine, Universidad El Bosque, Bogotá, Colombia), **Mauricio Pedraza** (General surgery, Universidad El Bosque, Bogotá, Colombia)

**Aim:** To present a case report of a pediatric patient with an unilateral duplex collecting system with incomplete duplication of ureters in the right kidney with an inferior system stenosis, who underwent a laparoscopic pyeloureterostomy.

**Case description:** An 11 year-old female patient with a right duplicated renal collecting system and repeated urinary tract infections with multiple antibiotic treatments. The patient is admitted to the emergency room presenting abdominal pain associated with fever, dysuria and urinary frequency. A renal ultrasound is requested and it shows a duplicated collecting system and reduced right renal cortex. A MAG3 diuretic renography shows an obstructive pattern. A magnetic resonance urography reported an unilateral duplex collecting system with incomplete duplication of ureters in the right kidney and fused ureters in the middle third. Also, renal pelvis dilation and an image suggestive of pyeloureteral stenosis of the lower system. An end-to-side pyeloureterostomy is performed with three trocars. Antegrade Double-J stent is placed. The stent was removed a month after the procedure was performed. A one-year follow up was carried out with improvement of the lower system dilation.

**Conclusions:** The presence of an incomplete duplicated renal collecting system and pyeloureteral stenosis is a rare pathology in the pediatric population. A minimally invasive pyeloureterostomy could be a therapeutic option for patients with a preserved renal function as shown in our case.

## The association of glanuloplasty with surgical complications in Bracka two-stage technique for severe proximal hypospadias

**Jonida Mene** (2nd Pediatric Surgery department, Athens General Pediatric Hospital “P. & A. Kyriakou”, Athens, Greece), **Moschos Berberidis** (2nd Pediatric Surgery department, Athens General Pediatric Hospital “P. & A. Kyriakou”, Athens, Greece), **Miquel Villanueva Moreno** (2nd Pediatric Surgery department, Athens General Pediatric Hospital “P. & A. Kyriakou”, Athens, Greece), **ZOE LAMPRINOY** (2nd Pediatric Surgery department, Athens General Pediatric Hospital “P. & A. Kyriakou”, ATHENS, Greece), **IOANNIS SKONDRAS** (2nd Pediatric Surgery department, Athens General Pediatric Hospital “P. & A. Kyriakou”, ATHENS, Greece), **ALEXANDROS PASSALIDES** (2nd Pediatric Surgery department, Athens General Pediatric Hospital “P. & A. Kyriakou”, ATHENS, Greece)

**Aim:** To compare the Bracka two-stage procedure for the severe proximal hypospadias, with and without glanuloplasty taking into account surgical complications.

**Materials and Methods:** This study includes 40 cases from one single expert surgeon of our department that range from May 2013 until December 2021. We included 18 primary and 22 multi-operated cases, 34 of them with a severe degree of ventral curvature ( $>30^\circ$ ). The average age of the patients was 4 years old. All children underwent two-stage Bracka procedure. In the first stage, buccal mucosa was used as a graft in 14 cases and inner preputial skin in the rest 26 cases. Tunica vaginalis flap was used as second-layer coverage of neo-urethra in the second stage operation. Glanuloplasty was performed in the first 11 cases. Thereon, glanuloplasty was not applied in the rest 29 cases. The patient’s follow-up period ranged from 3 months to 2 years.

**Results:** Eight of the eleven patients (72%) who underwent glanuloplasty had glans dehiscence postoperatively ( $p$ -value $<0,001$ ) and had to be reoperated. Two cases of urethrocutaneous fistula were recorded on this group of patients. We found that performing glanuloplasty was statistically significant associated to more surgical complications ( $p$ -value $<0,05$ ). Among the other 29 cases that did not undergo glanuloplasty, five cases of urethrocutaneous fistula and one case of urethral diverticulum were recorded. Although a slight tendency to fistula formation after glanuloplasty was seen we did not find a statistically significant association between them ( $p$ -value $=0,127$ ). No patients developed postoperative residual chordee or urethral stricture. All patients urinate standing up having a good urinary stream.

**Conclusion:** Although our sample is small, we believe that Bracka two-stage repair for severe hypospadias without glanuloplasty may be related to a smaller number of postoperative complications. Regarding aesthetic outcomes more follow-up time is needed to lead to a reliable conclusion.

## Patterns of Presentation and Management Approaches of Posterior Urethral Valve, in Soba University Hospital, Sudan

**Abdelrahman E. S. Elnour** (Pediatric surgery, Nyala teaching hospital, Nyala, Sudan), **Awad Rahmattah** (Pediatric surgery, Soba University hospital, Khartoum, Sudan), **Aziza Alneamea** (Pediatric surgery, Sob University hospital, Khartoum, Sudan), **Rashid Elledir** (Pediatric nephrology, Soba University hospital, Khartoum, Sudan)

**Aim:** To study the patterns of presentation and management approaches of the posterior urethral valve in our institution.

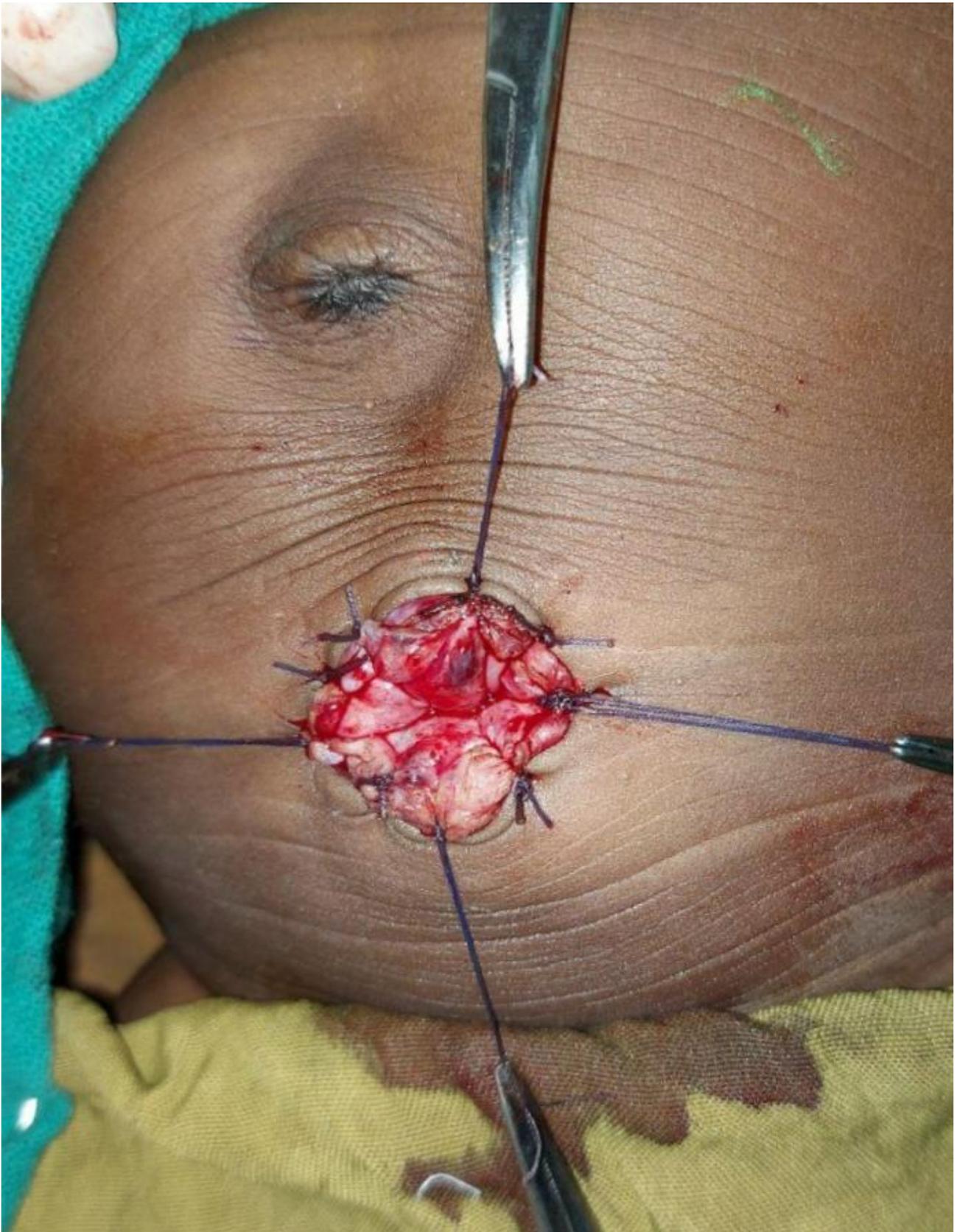
**Methods:** This is a descriptive, retrospective, cross-sectional hospital-based study. It was conducted in the pediatric surgery department at Soba university hospital, Sudan, for two years. The study sample included (53 cases). Data were collected and then analyzed.

**Results:** A total of 53 patients with PUV were managed within two years, most of the patients presented during their first year of life, 26.4% were neonates and 47.2% were infants, with a median age of 7.2 months. The antenatal diagnosis was made in 11.3%. Voiding and UIT symptoms in a form of poor stream 79.2%, Fever 73.6%, burning micturition 64.2% and dribbling of urine 41.5%, were the commonest presenting symptoms, Abdominal US and MCUG were done for all patients, urine culture for 73.5% of them. The initial mean serum creatinine level is 1.8 mg/ dl; with 79.2% having altered renal function. Packed red cells transfusion was needed for 20.8%, while peritoneal dialysis for 5.7%. Endoscopic valve ablation was the initial surgical intervention for 72%, while vesicostomy is needed in 28% of patients. Most of the cases presented with complications, 73.6% had urosepsis, and 24.5% had renal impairment.

**Conclusion:** This study concedes that early presentation enables early diagnosis and management; this reduces the incidence of complications. In our setting, this can be achieved through improving both prenatal diagnosis and awareness among healthcare providers.

**Keywords:** Posterior urethral valve, Children, presentation, Management, Urinary Drainage, Valve Ablation, vesicostomy.





## Child sexual abuse and dysuria: lessons to learn

**Malek Mezni** (surgery B, Children's hospital, Tunis, Tunisia), **Awatef Charieq** (surgery B, Children's hospital, Tunis, Tunisia), **Takwa Mili** (Surgery B, Children's hospital, Tunis, Tunisia), **Yosra Ben Ahmed** (Surgery B, Children's hospital, Tunis, Tunisia), **Said Jidi** (Surgery B, Children's hospital, Tunis, Tunisia), **Faouzi Nouira** (Surgery B, Children's hospital, Tunis, Tunisia)

**Aim:** Child sexual abuse is a public health crisis. It's a violation of children's rights with known lifelong devastating consequences. Therefore, it's a subject of concern for healthcare professionals, individuals, and society in general.

Cases are underreported and may not be disclosed early due to its private character and judgemental nature of societies.

Nevertheless, the difficulty lies in learning to recognize symptoms and signs that may lead to the diagnosis.

The purpose of this review is to learn how to recall sexual abuse in the presence of lower urinary tract symptoms, dysuria being the most common alleged symptom.

**Case description:** We report the case of a 12-year-old boy presenting with dysuria and urinary retention occurring intermittently since few months. Physical examination was normal. The neurologic examination found a normal anal tone (the absence of skin lesions overlying the sacrum). Cytobacteriological urine examination was clean. Abdominal, renal and vesical ultrasonography showed no abnormalities. Spine cord and brain MRI was normal too. Cystomanometry evaluation showed voiding dysfunction of the bladder with functional bladder outlet obstruction and without neurologic deficit.

We started daily catheter bladder voiding. The child showed no urinary infection. It took the surgeon a year to suspect abnormal behavior. It took the child a year to confess having been victim of child abuse during the three last years. Psychiatric treatment was assessed and lower urinary tract symptoms disappeared as soon.

**Conclusion:** Healthcare professionals who are suspicious of child sexual abuse must remember that often there are no evident external signs that abuse occurred. The most important thing is to restart the interview and create a safe, empathic space for the child to open up. The approach to CSA must be multidisciplinary with a mental health follow up for the child and future adolescent.

## Cystic nephroma a rare cause of renal mass in a one-year-old female

**Walaa Balla Ahmed** (Pediatric surgery department, Khartoum North Teaching Hospital, Khartoum, Sudan)

Cystic nephroma is a rare type of renal tumors in children. Most of the reported cases are sporadic and unilateral but there are few familial cases.

Usually, the clinical presentation is asymptomatic abdominal mass in a healthy child, although it mimics the presentation of Wilm's tumor cystic nephroma is benign in nature. The final differentiation is usually based on histopathology.

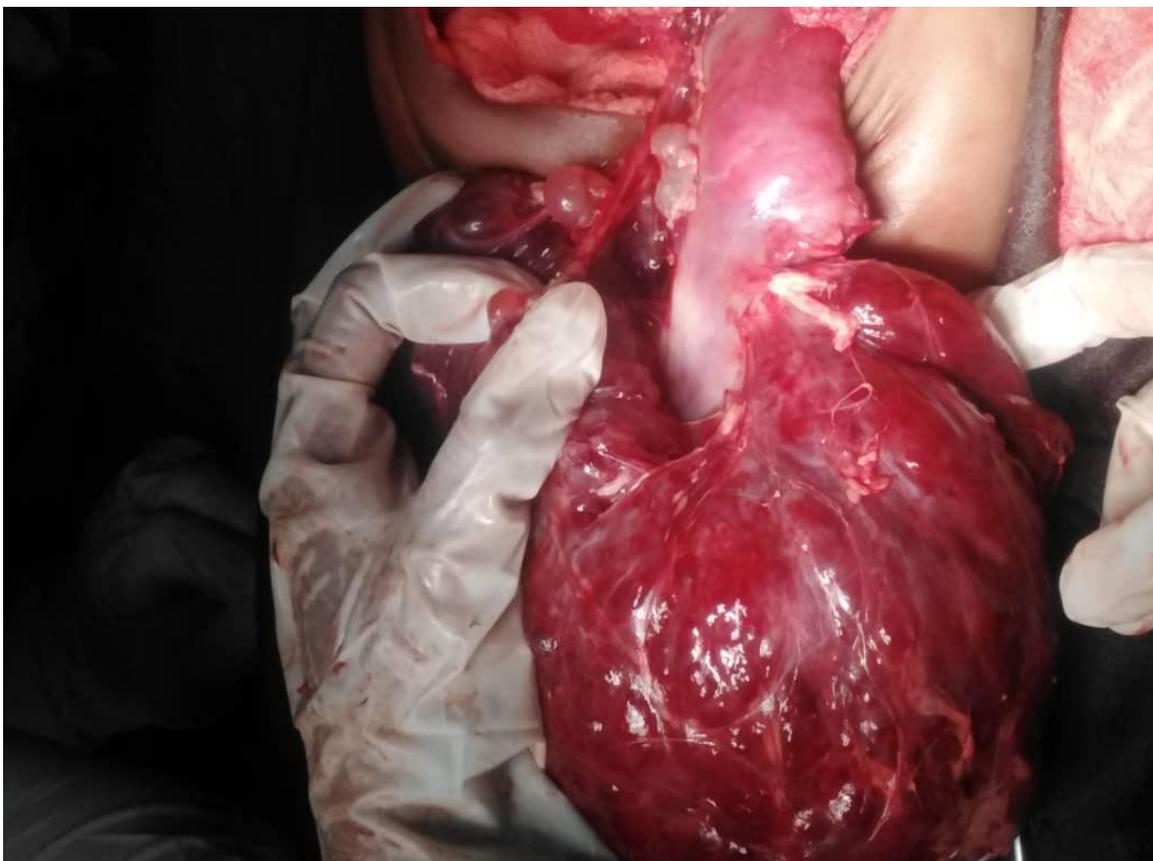
**Case description:** A one-year-old female was brought by her parents to our pediatric surgery emergency department with massive abdominal distension and shortness of breathing. The mother said that her child was well until one month prior to admission when she started to notice a gradual increasing abdominal distention with no other complaint. She sought medical advice in a nearby hospital where routine investigations were done and abdominal CT was requested then referral to pediatric surgery department was done.

Ct abdomen showed a huge left retroperitoneal mass pushing the left kidney and appears inseparable from it. After stabilization and optimizing her condition, the child underwent exploration.

Intraoperative there was a huge multicystic mass, so aspiration was done it showed clear urine. After that the mass regressed in size and dissection was possible. Left nephrectomy was done and the specimen was sent for histopathology, the result came as benign cystic nephroma with no evidence of malignancy.

The patient had a smooth postoperative course, was discharged home in good condition then came for follow up after 3 months she was doing well with normal renal function tests.

**Conclusion:** Cystic nephroma is a rare benign renal tumor that only requires surgical removal with no need of chemotherapy.





## Outcomes of poorly functioning kidneys secondary to ureteropelvic junction obstruction preserved by pyeloplasty in children

**Cyrine Saadi** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Meriem Oumaya** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Aida Daib** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Asma Jabloun** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Rabaa Ben Abdallah** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Youssef Hellal** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Najib Kaabar** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia)

**Aim:** Surgical indication in ureteropelvic junction obstruction (UPJO) is based on confirmation of the obstructive nature or deterioration of renal function. For renal units with impaired function, the therapeutic protocol remains poorly understood and the management of these kidneys remains controversial.

**Methods:** Retrospective study involving 27 children operated on for UPJO with differential renal function (DRF) less than 25 % was conducted between January 2008 and December 2019.

**Results:** The median age of our patients was 2 years. The most frequent circumstance of discovery was antenatal diagnosis (66,7%). On ultrasound, the median anteroposterior diameter (APD) of the pelvic was 40.6 mm. The median DRF was 17,44% (0-25%). We performed a first nephrostomy in five patients. The indications for nephrostomy were non-functioning kidney in three cases and bilateral involvement in two cases. Of these five patients, four presented with improvement of the DRF. They had pyeloplasty. Only one patient had a nephrectomy for non-functioning kidney with the high blood pressure. Postoperatively, three anastomotic stenosis occurred requiring revision surgery. The evolution of the APD was favorable in 81%. An improvement in the quality of the parenchyma as well as corticomedullary differentiation was noted in 58% and 46 % of cases respectively. We estimated the isotopic success, according to the emptying curve at 65,4%. Regarding DRF, there was improvement in 55,6%, stabilization in 11,1% and worsening in 33,3%. Age, gender and antenatal diagnosis do not appear to be correlated with favorable outcome. On the other hand, APD > 25 mm, thinned parenchyma, very altered initial DRF <15% are associated with success with a statistically significant difference.

**Conclusions:** Conservative treatment should be recommended for renal units with UPJO impaired function. Nephrectomy should be considered in the event of anuric kidney with the onset of urinary tract infection and high blood pressure.

## Rupture of the posterior urethra in children: What's the Contribution of endoscopy?

**Cyrine Saadi** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Meriem Oumaya** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Aida Daib** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Fatma Trabelsi** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Rabiah Ben Abdallah** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Youssef Hellal** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Nejib Kaabar** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia)

**Aim:** Rupture of the urethra in children is a rare condition. The main etiology is trauma essentially public road accident. The lesion sits mainly in 90% of cases on the posterior urethra. Treatment is surgical with possible functional sequelae concerning continence and stenosis.

The aim of this study was to describe a therapeutic alternative to the surgical treatment with the same efficiency.

**Case description:** We report the case of 2 boys aged 7 and 8 years who were victims of public road accident with no threatening life lesions. Both of them had a distended bladder at clinical examination with urethrorrhagia. Investigation has shown rupture of the posterior urethra due to pelvic fracture. They were initially managed by a suprapubic catheter. They had 15 days later a cystoscopy which allowed the confirmation of the lesion and realignment. A combined diversion was then preconized until integrity of the urethra was verified. During follow up, one patient had urethra stenosis which was managed by internal urethrotomy with uneventful follow up.

**Conclusions:** Urethra rupture treatment is increasingly early by endoscopic realignment with low morbidity. Endoscopic management offers multiple advantages: Avoid major surgery in a trauma patient, decrease the risk of pelvic hematoma infection and avoid mobilization of the prostate and membranous urethra which can lead to trauma to the erector nerves. Some complications are inevitable such as prolonged period of urinary diversion and urethra stenosis. First line open surgery is no longer relevant. It can be proposed lately in case of failure of endoscopic treatment with longer period of disability and more frequent complications.

## Outcome of endoscopic ablation of posterior urethral valves in Cameroonian boys: a report on 29 cases

**Florence O Obono Ebo** (Yaoundé Gynaecobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Gacelle Fossi Kamga** (Yaoundé Gynaecobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Caroline E Dikongue Dikongue** (Yaoundé Gynaecobstetric and Paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Faustin Félicien Mouafo Tambo** (Surgery and sub-specialties, University of Yaounde I, Cameroon, Yaoundé, Cameroon)

**Aim:** This study aimed at describing the outcome of endoscopic valve ablation in patients diagnosed with posterior urethral valves (PUV) after a decade of practice.

**Method:** This was an observational, descriptive, and retrospective study of all patients managed for PUV over ten year period from June 2011 to September 2021. We included all the files of boys aged < 15 years diagnosed with PUV who underwent endoscopic valve ablation. Files of patients awaiting valve ablation were excluded. PUV was diagnosed by a voiding cystourethrogram (VCUG) and at cystoscopy. Valves were resected primarily or after vesicostomy. A pediatric nephrology consultation was mandatory for all cases. Data retrieved from clinical files included: age at the time of surgery, indication, operation time, complications, mortality, length of hospital stay, and duration of follow-up.

**Results:** A total of 29 patients with mean age 1.4 years were identified during the study period. Age at surgery ranged from 1 to 4 years. Indications for valve ablation were type II PUV according to Young's criteria in all cases. The mean operation time was 90 minutes and the mean hospital stay was 15 days. The mean duration of follow-up was 80.5 months. Three patients presented postoperative complications including hyperdiuresis and urethral stenosis. Two patients (6.57%) died during the study period from renal failure.

**Conclusion:** Endoscopic valve ablation in our setting is performed at an older age due to inadequate technical resources.

## Ureteral valves in children: challenges in diagnosis and surgical management

**Meriem Oumaya** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Mongi Mekki** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Sabrine Ben Youssef** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Sana Mosbahi** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Sami Sfar** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Lassad Sahnoun** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia), **Mohsen Belghith** (Pediatric Surgery, Fattouma Bourguiba University Hospital, Monastir, Tunisia)

**Aim:** Congenital ureteral valves (UV) are a rare cause of upper urinary tract obstruction in children, only few cases have been reported in the literature so far. We discuss epidemiologic, diagnostic modalities and management of this malformation.

**Methods:** We retrospectively reviewed the clinical data of all children diagnosed with UV and operated in the pediatric surgery department of Fattouma Bourguiba hospital of Monastir from 2001 to 2018.

**Results:** Nine children with a mean age of 4,5 years were included. Seven were boys. Antenatal ultrasound detected hydronephrosis in 4 cases. A febrile urinary tract infection was the most common presentation (66,6 %). Ureteral obstruction was suspected after renal ultrasound showing ureteral dilatation in 5 cases and confirmed by vesicoureterogram in 4 cases. Significantly decreased function and delayed drainage on diuretic renal scan were noted in 7 patients. The diagnosis in the other 5 cases was made at surgery. Surgical reconstruction was accomplished in all children. Ipsilateral end to end ureteroureterostomy was performed in five children, pyeloureterostomy in three cases, and ureteral reimplantation in the last case. Pathologic examination confirmed the diagnosis in all cases. There were no complications. The seven children with pre-operative obstructed diuretic renal scans showed improved drainage postoperatively. The mean follow up period was 5 years.

**Conclusions:** Ureteral valves are uncommon. Their diagnosis is challenging as symptoms and imaging are non-specific. UV should be considered in the differential diagnosis of upper urinary tract obstruction. Treatment consisted in ureteric resection-anastomosis with favorable outcome.

## POSTER WALK 15

## Urology 7

## Congenital primary vesical diverticula in a ureteral duplication: Which way does the ureter flow?

**Souha Laarif** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Asma Jabloun** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Aida Daib** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Mariam Oumaya** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Cyrine Saadi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Rabaa Ben Abdallah** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Fatma Trabelsi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Youssef Hellal** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Youssef Gharbi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Nejib Kaabar** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia)

**Aim:** Congenital paraureteral diverticula are rare and often give rise to urinary complications. A double malformation combining left ureteral duplication and a congenital ipsilateral paraureteral diverticulum is reported and discussed.

**Case description:** A 5 year-old boy with history of recurrent urinary tract infections and drip urination, Radiological explorations (renal ultrasound, voiding cystourethrogram and intravenous urography) concluded to a left para ureteral diverticulum associated with a homolateral total ureteral duplication. There was also an active vesicoureteral reflux (VUR) grade III in both ureters of the duplicity. The renal function was preserved in kidney scan. The child was operated; the ureter was found implanted inside the diverticulum, diverticulum resection was performed with reimplantation of the two ureters. The postoperative course was simple. The child did not develop any urinary tract infection and acquired full urination in one time. The postoperative ultrasound and cystographic control was normal with a follow-up of seven years.

**Conclusions:** Paraureteral or Hutch diverticula are congenital bladder diverticula that occur adjacent to the ureteral hiatus and are usually associated with VUR. Endoscopic therapy has been suggested as the first line of treatment in managing patients with symptomatic paraureteral bladder diverticula.

## Kelly Procedure for bladder Extrophy; the results Multi-institutional Brazilian Group

***Guilherme E Peterson*** (Hospital Moinhos de Vento, Porto Alegre, Brazil), ***Francisco Nicanor A Macedo*** (Hospital Estadual da Criança, Rio de Janeiro, Brazil), ***Jovelino Q Leão*** (Hospital Infantil Darcy Vargas, São Paulo, Brazil), ***Eduardo C Costa*** (Hospital de Clínicas de Porto Alegre, Porto Alegre, Brazil)

The bladder extrophy-epispadia complex is a challenging congenital anomaly, which surgical approach involves the preservation of renal function and urinary continence. Classical options for treatment involve the complete primary reconstruction and the staged approach. Kelly's radical mobilization of soft tissue (RMST) comes as an alternative technique aiming at anatomical reconstruction of the bladder neck, urethra, and muscular sphincteric structures in association with mobilization of the crura cavernosa from the ischiopubic rami to improve penile length in males. RMST is a radical and complex approach requiring excellence and expertise. Brazil is a continental country with several centers for the treatment of complex pediatric urologic patients. We describe the results of the Multi-institutional Brazilian Group for the Treatment of Bladder Extrophy with the Kelly Procedure. Results: 40 male children with median age of 11,5 months (range 2-192 mo) were operated upon, 6 presented with urinary fistulae of which 1 was submitted to drainage (urinary ascites), 1 patient presented with evisceration (that was corrected with a mesh). There was no bladder nor penile dehiscence. Conclusion: The Kelly procedure is a feasible technique for the treatment of bladder extrophy, however it requires an experienced team.

## Our experience in the management of the bladder exstrophy-epispadias complex in Yaoundé, Cameroon

**Florence O Obono Ebo** (Yaoundé Gynaecoobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Gacelle Fossi Kamga** (Yaoundé Gynaecoobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Caroline E Dikongue Dikongue** (Yaoundé Gynaecoobstetric and Paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Faustin Félicien Dikongue Mouafo Tambo** (Surgery and sub-specialties, Yaoundé Gynaecoobstetric and Paediatric hospital, Cameroon; University of Yaoundé I, Yaoundé, Cameroon)

**Aim:** The purpose of this study was to highlight the epidemiological, diagnostic, and therapeutic particularities of the management of bladder exstrophy complex in Yaoundé.

**Method:** Our study was an observational, retrospective, descriptive study over a time frame of 13 years. All the files of pediatric patients with bladder exstrophy managed at HGOPY and followed up at our consultation were enrolled in this study. The records of patients lost to follow-up (n=2) were excluded. The following data were collected: age, sex, indication, age at surgery, surgical technique, operation time, duration of hospital stay, morbidity, urine continence, mortality, and follow-up. Taking into consideration our perioperative setting, a single-stage surgical approach without pelvic osteotomy was performed in all cases. The surgical technique was determined by the surgeon's experience.

**Results:** A total of 15 patients were recorded during the study period, thus a hospital frequency of 1.15 cases per annum. The mean age at presentation was 29 months. The male sex was most affected (sex ratio 1.14). Only two patients with syndromic forms underwent surgical repair. The mean age at surgery was 6years 5months. Radical soft tissue mobilization as described by Kelly was performed in most cases (n=4). The surgery lasted an average of 5 hours and the mean hospital stay was 33 days. One patient presented with partial breakdown after surgery. Mean follow-up lasted 3 years, four patients were continent after primary repair (3 females and 1 male) and 4 patients were lost to follow up.

**Conclusion:** The management of the bladder exstrophy-epispadias complex primarily involves school-aged boys with a mean age at surgery of 6years and 5months. Kelly's one-stage repair without pelvic osteotomy is the most usual technique with good functional outcomes.

## Anterior Nutcracker syndrome with left vein renal duplication: A rare cause of Varicocele in Children

**Arije Zouaoui** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yosra Kerkeni** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Senda Houdi** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Fatma Thamri** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia)

**Aim:** The nutcracker syndrome is a rare clinical condition, caused by compression of the Left renal vein between the abdominal aorta and the superior mesenteric artery (anterior nutcracker syndrome) or between the aorta and the vertebral column (posterior nutcracker syndrome), that manifest rarely with varicocele. We present a rare case of left varicocele in an 11-year-boy revealing an anterior nutcracker syndrome.

**Case presentation:** An otherwise healthy 11-year-old boy consulted for isolated chronic left testicular pain with feeling of heaviness especially at the end of the day. Clinical examination found a quiet thin boy, a visible and palpable left varicocele and a left testicle increased in size compared to the contralateral side.

Radiological assessment was performed to rule out an intraabdominal cause for the varicocele and concluded to an anterior nutcracker syndrome with duplication the left renal vein.

The patient was operated and had laparoscopic spermatic vein ligation without incidents. At 1-year follow-up, the patient is perfectly asymptomatic with no recurrence of his varicocele.

**Conclusion:** The nutcracker syndrome is a rare cause of varicocele in children. An abdominal Doppler ultrasound must be systematically requested in any boy presenting with a varicocele in order to determine its cause. Treatment should be as conservative as possible and surgery should only be considered in selected cases, and this, for both nutcracker syndrome and varicocele.

## Treatment of ureterocele in the duplex urinary tract: Review of 26 cases

**Souha Laarif** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Asma Jabloun** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Mariam Oumaya** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Cyrine Saadi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Aida Daib** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Rabaa Ben Abdallah** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Fatma Trabelsi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Youssef Hellal** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Youssef Gharbi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Nejib Kaabar** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia)

**Aim:** Ureterocele is a cystic dilations of the distal ureter and may be associated with a single or duplex urinary system. They are associated with the upper pole kidney in most of time. The mainly objective of treatment is to preserve the renal function.

**Methods:** We had reported a retrospective study, in the pediatric surgery department of Habib Thameur's hospital in Tunis over a period of 27 years, between January 1994 and December 2020.

**Results:** We had reported 26 patients with ureterocele associated to duplex kidney. They were 16 girls and 10 boys. Ureterocele was in the right side in 15 cases, left side in 10 cases and bilateral in two patients. Eighteen patients were symptomatic with urinary tract infections. The diagnosis of ureterocele was reported by renal ultrasound in 25 cases. The diagnosis was confirmed by voiding cystourethrogram in 16 cases and was associated to vesicoureteral reflux in 12 cases ureterocele. The diagnosis was confirmed also per-operative findings in 8 cases and per endoscopic findings in 2 cases. Twenty-four children were operated: 16 cases had endoscopic section, 5 patients had ureterocele section with ureterovesical reimplantation. Heminehrectomy was performed in 3 cases for non-renal functional. Two patients had a small ureterocele with good renal function had non-operative management. The post-operative period was uneventful in all patients.

**Conclusions:** Ureteral reimplantation and bladder neck reconstruction appears to be unnecessary in a significant portion. Actually, there is no consensus for the treatment of ureterocele associated to duplex kidney. Recent advances revolve around differing surgical approaches. These approaches include nonoperative management, various forms of endoscopic puncture, ureteroureterostomy, and most recently upper pole ureteral ligation.

## An original technique of a urethral rupture repair in a girl

**Arije Zouaoui** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yosra Kerkeni** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Senda Houdi** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Fatma Thamri** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children's Hospital Bechir Hamza of Tunis, Tunis, Tunisia)

**Aim:** Post traumatic urethral injury in girls is rare and the management remains aggressive and unclear. We report a case of a girl with blunt trauma and a pelvic fracture with urethral rupture managed by an original mini invasive technique.

**Case description:** A 6-year-old girl had a blunt polytrauma. We operated the patient for a ruptured bladder. The catheterization of the urethra failed. We put a suprapubic cystostomy. Cystourethrography was performed postoperatively and showed no communication between the bladder and the urethra suggesting the complete urethral rupture. The patient was lost to follow-up for 2 years. When returned, we drilled a neourethra endoscopically with a suprapubic and transurethral approaches. The hypospadiac urethra had a 1cm-length with a dead end. The endoscope in the cystostomy showed a well developed but stenosed bladder neck. A metallic guidewire was introduced by the urethra until seen in the bladder by the suprapubic endoscope. We drilled a new path with a Veress needle and dilated with a nephrostomy tube dilator until a CH10 bladder catheter was reached. We kept the suprapubic cystostomy and the transurethral catheter 18 weeks to achieve a neoepithelisation of the urethral path. The control cystoscopy showed an epithelisation of the neourethral path. The result was a urethra of 1.5cm permitting a normal voiding behaviour after the closure of the suprapubic opening. The literature review before 2019 was quite poor and counted about 168 girls with urethral injuries. The management varied from immediate repair via primary alignment, or anastomotic repair, to a delayed repair with the same techniques and dilatation when the injury is punctual or short.

**Conclusion:** Post traumatic urethral injury in girls is rare and difficult to deal with. Our case showed that simple delayed dilatation can be a safe effective way to re-establish urethral continuity along with continence.

## Xanthogranulomatous ureteritis (XGU) – a new entity?

**Angus Fitchie** (Paediatric Urology, Oxford University Hospitals, Oxford, UK), **Natalie Durkin** (Paediatric Urology, Oxford University Hospitals, Oxford, UK), **Darren Fowler** (Paediatric Pathology, Oxford University Hospitals, Oxford, UK), **Mohammad Bader** (Paediatric Urology, Oxford University Hospital, Oxford, UK)

**Aim:** This was a very unusual case of significant ureteritis from an unnoticed staghorn calculous migrating from renal pelvis to lower ureter, which was not picked up on pre-operative imaging. It is not reported in the literature.

**Case description:** A nine-year-old boy presented with left loin pain and hypertension. His ultrasound showed significant left pelvicalyceal dilatation with loss of renal thickness and without ureteric dilatation, suggesting PUJO. MAG3 renogram and MCUG revealed split function 13% (left) (no reflux). Because of hypertension and pain, MDT decision was to proceed with nephrectomy. A laparoscopic retroperitoneal nephrectomy was performed. No significant ureteric dilatation was noticed. Histopathology suggested obstructive nephropathy. Following discharge, his hypertension resolved. Two months later, the patient developed left hip pain and a limp (unable to straighten left leg) with raised inflammatory markers. Ultrasound and CT scans confirmed a thick-walled structure with calcification and fluid over the left psoas muscle, suggestive of a psoas abscess or infected ureteric stump. A laparoscopic exploration was performed – tissues were bleeding and densely adherent to iliac vessels therefore conversion to open procedure was necessary. Under a thick peel, an inflamed thick-walled ureter was identified. It was opened revealing a big staghorn calculous protruding through the ureteric wall. Ureterectomy was performed. Pus cultures were negative, and histopathology indicated ulceration, squamous epithelial metaplasia and chronic inflammatory infiltrate within the lamina propria and muscular wall (non-malignant). Post-operative recovery was uneventful.

**Conclusions:** This is an exquisitely rare condition in children. If a child presents with signs and symptoms of acute inflammation post nephrectomy and a calcified lesion on x-ray, then XGU should be excluded. - Thick fibrotic tissue around an inflamed ureter can be confusing at operation, making laparoscopy difficult – open technique can minimise complications.



## Management of congenital posterior urethral valves in the neonatal period

**Meriem Oumaya** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Takwa Mili** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Yosra Ben Ahmed** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Chibani Intissar** (Pediatric Surgery B, Children Hospital Of Tunis, Tunis, Tunisia), **Boukesra Tarek** (Pediatric Surgery B, Children Hospital Of Tunis, Tunis, Tunisia), **Faouzi Nouira** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Awatef Charieg** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Said Jlidi** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia)

**Introduction:** Posterior urethral valves (PUV) are the most common obstructive uropathy of the lower urinary tract in boys. It is a serious malformation causing significant perinatal mortality and a major risk of progression to end-stage renal disease.

**Methods:** Descriptive, retrospective study including 45 observations was held in the department of Pediatric Surgery “B” of Béchir Hamza Children's Hospital of Tunis, over a period of 11 years (January 2008 – December 2018).

**Results:** The diagnosis was made antenatally in 33% of cases. Postnatally, the mean age of diagnosis was 14 months with 87% of patients aged less than two years old. Urinary tract infection was the most frequent circumstance of discovery at all ages (71%). On examination, the urine stream was weak in 62.5% of cases. Biological renal function was disturbed in 21 patients at the time of treatment (46.6%). Unilateral or bilateral ureteropyelocal dilatation was the most frequent abnormality observed on vesico-renal ultrasound (80%). Retrograde urethrocytography confirmed the diagnosis showing PUV appearance in 90.7% of cases. Pending surgical treatment, bladder drainage was performed in 18 patients (40%) by bladder catheter in 61% of cases and suprapubic catheter in 39%. As initial surgical treatment, endoscopic sectioning was performed in 25 patients. On cystoscopy, 77.8% of the patients were found to have type I PUV. Primary vesicostomy was chosen in 20 patients due to the unavailability of age-appropriate endoscopic equipment in ten cases, impaired renal function in seven cases and the presence of refractory or recurrent urinary tract infection in three cases.

**Conclusions:** The management of boys with PUV is a real challenge which is to establish a standardised plan of care, while remaining adapted to each child.

## Management of Duplex kidney in children: Report of 65 cases

**Souha Laarif** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Asma Jabloun** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Mariam Oumaya** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Aida Daib** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Cyrine Saadi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Rabaa Ben Abdallah** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Fatma Trabelsi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Youssef Hellal** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Youssef Gharbi** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia), **Nejib Kaabar** (Pediatric Surgery Department, Habib Thameur Hospital in Tunisia, Tunis, Tunisia)

**Aim:** Duplex kidney (DK) is a common congenital anomaly of the urinary tract. Early detection had increased last years because of advanced technology. It can be associated with other malformation. The aim of our work is to evaluate the diagnosis of DK, to establish predictive factors of a conservative treatment.

**Methods:** We had reported the results of a retrospective study, in our department of pediatric surgery over a period of 27 years.

**Results:** Sixty-five patients were included in this study. The sex ratio was 0.5. Duplication was unilateral in 83.07% of cases (54 cases). DK was on the right side in 30 children and on the left side in 24. Forty three children had associated vesicoureteric reflux (VUR). The grade was I in two patient, grade II in four cases, grade III in 14 cases, grade IV in 12 patients and grade V in 11 cases. In six cases, an association of VUR and ureterocele was observed. In another case, we had found an association of VUR with a Hutch diverticulum. One more patient had VUR and megaureter associated. Twenty patients had ureterocele, of which four were obstructive. We found two cases of DK associated to ureteropelvic junction obstruction. One child had an ectopic ureter and was successfully treated. Radioisotope renal scan was performed in 53 patients (81.5%). The renal function was >35% in 36 patients (68%). Fifty eight patients were successfully operated on and seven patients who had no symptoms with symmetric renal function received regular follow-up.

**Conclusions:** the diagnosis of complete DK should be made at an early age. In most cases, this is possible using imaging techniques. The treatment, mainly surgical, is less and less mutilating. Radioisotope renal scan is the main examination to decide whether conservative or radical treatment should be undertaken.

## Treatment of vesicoureteral reflux in children with neurogenic bladder overactivity

**Aida Daib** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Meriem Oumaya** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Rabia Ben Abdallah** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Dorra Tarchella** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Cyrine Saadi** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Asma Jabloun** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Fatma Trabelsi** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia), **Youssef Hellal** (Pediatric Surgery B, Children Hospital of Tunis, Tunis, Tunisia), **Najib Kaabar** (Pediatric Surgery, Habib Thameur Hospital, Tunis, Tunisia)

**Introduction:** Vesicoureteral reflux (VUR) is one of the factors that can contribute to the deterioration of kidney function in children with neurogenic bladder. Its optimal treatment if it does not respond to medical treatment is controversial.

**Methods:** This is a retrospective study, including children operated in our department between January 2009 and June 2018 by surgical or endoscopic treatment (Delux©) for vesicoureteral reflux with neurogenic bladder overactivity.

**Results:** A total of 43 children including 24 girls and 19 boys were treated. The median age was 6 years. The VUR was unilateral in 23 patients, and bilateral in the 20 others. Retrograde urethrocytography performed in all patients showed high-grade vesicoureteral reflux in 49 renal units studied. A urodynamic exam was carried out in all cases. Medical treatment was initiated in all patients. The endoscopic treatment by injection of DEFLUX© was carried out for 28 refluxing ureters. Surgical treatment was performed for 24 ureters by ureterovesical reimplantation. The VUR persisted after endoscopic treatment on 8 ureters. A second injection of DEFLUX was attempted in 4 children. The VUR disappeared after surgical treatment in 19 cases. By comparing the overall success rate of endoscopic treatment versus surgical treatment of RVU on neurological bladder the difference was not statistically significant ( $p = 0.52$ )

**Conclusion:** The results of endoscopic treatment compared to surgical treatment of persistent RVU despite conservative treatment in children with neurological bladder are very encouraging. More extensive studies are needed to reach a consensus guiding the care of these children.

## Accessory scrotum a rare congenital anomaly

**Duygu Tatli Ucarci** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center,, Zonguldak, Turkey), **Burcin Acuner** (Dept. of Plastic and Reconstructive Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center,, Zonguldak, Turkey), **Figen Barut** (Dept. of Pathology, Zonguldak Bulent Ecevit University Health Application and Research Center,, Zonguldak, Turkey), **B. Haluk Guvenc** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey)

**Aim of the Study:** The labioscrotal swellings migrate inferomedial and merge at 12 weeks of gestation to form the scrotum. Accessory scrotum is the rarest form amongst the classification of four types of congenital scrotal anomalies. The clinical presentation outlines as the presence of scrotal skin outside its normal location, with no testis in it. Herein, we present three cases with an accessory scrotum.

**Case Description:** Three patients (8-day, 20 day and 3 mo. 21 day) attended our clinic with a patch of rugosity (1x1 cm, 6x4 cm and 2.5x1.5 cm in size), mimicking scrotal tissue. In two cases, the perineal patch of rugosity was found overlying a mass resembling lipoma. One patient presented with bilateral inguinal hernia and patch of rugosity on the left inguinal region, with no underlying palpable swelling. Abdominal and regional ultrasound did not reveal any abnormality. Total excision was possible in all lesions, one of which needed an inguinal rotational flap, following bilateral herniotomy and high ligation. The postoperative course was uneventful. Histological investigation showed rugose epidermidis, rudimentary dartos fibers and hair follicles, confirming accessory scrotum.

**Conclusions:** Accessory scrotum is reported to accompany with mesenchymal tumors, bifid scrotum, ano-rectal malformations, and hypospadias. Published reports support their hypothesis concerning disruption of continuity of caudally developing labioscrotal swelling by the presence of mesenchymal tumors with perineal attachment. Our third case shares common characteristics with another previously reported case, with its isolated presentation in the inguinal location, without an accompanying mesenchymal tumor.

## POSTER WALK 16

## Upper Gastrointestinal 1

## Evaluation of childhood corrosive ingestions and the role of diagnostic esophagoscopy

**Ülfet N İrdem Köse** (Pediatric Surgery, Dr. Sami Ulus Maternity, Children's Health and Diseases Training and Research Hospital, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Ankara City Hospital, Ankara, Turkey)

**Aim:** Corrosive substance ingestion is still a public health problem especially in developing countries. The aim of our study is to evaluate the demographic data of pediatric patients hospitalized due to caustic ingestion and to determine the necessity of diagnostic esophagoscopy in these patients.

**Methods:** Between 2010 and 2020, 230 patients aged 0–18 years who were hospitalized due to corrosive ingestion were evaluated retrospectively. Patients who had no burn and patients who had any grade of burn were compared statistically in terms of the type and the amount of the corrosive substance taken, symptoms and physical examination findings, the time of starting oral feeding and the length of hospital stay. Patients who had undergone esophagoscopy and the patients who were observed conservatively were compared in terms of their symptoms, physical examination findings, the type of corrosive substance taken, the time of starting oral feeding, total length of hospitalization and the need for dilatation.

**Results:** When symptoms and physical examination findings evaluated individually, only presence of oropharyngeal lesion and burn relation was statistically significant. But when the patients were grouped as symptomatic/asymptomatic and with normal/pathological physical examination findings; presence of caustic burn was statistically higher in the symptomatic and pathologic physical examination findings group.

**Conclusions:** Conservative follow-up of patients with suspicious history of corrosive ingestion, normal physical examination findings, patients who can swallow their saliva and has the opportunity to reach to the hospital in case of swallowing difficulty, will protect the majority of patients from unnecessary endoscopy and anesthesia risk. Similarly, if the patient is symptomatic and has pathological physical examination findings and if the amount of the substance ingested is known to be a lot (especially intentional ingestion), performing diagnostic endoscopy will allow to initiate the medical treatment support until the second evaluation.

## Comparison of right upper quadrant vs circum-umbilical incision for pyloromyotomy in patients of infantile hypertrophic pyloric stenosis

**Zubair Shoukat** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Muhammad Saleem** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Muhammad Abdullah** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Mehboob Ahmed** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Aziz Ahmad Chattha** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan), **Jamaal Butt** (Pediatric Surgery, Children Hospital, University of Child Health Sciences, Lahore, Pakistan)

**Objective:** To compare the operative time and post operative hospital stay in patients operated for IHPS by right upper quadrant vs. circum-umbilical incision.

**Material and Methods:** It was a prospective randomized control study conducted at Children's hospital Lahore from January 2020 to January 2021. 60 patients were included in the study and randomly divided in two groups. Group A patients were operated via right upper quadrant approach while group B patients were operated via circum-umbilical approach. Operative time and post operative hospital stay were noted. Data was analysed with SPSS 23.

**Results:** Total of 60 patients, mean age was calculated as  $31.93 \pm 16.39$  days in group A and  $23.17 \pm 6.22$  days in group B, there were 21.7 % (n=13) males whereas 28.3 % (n=17) were females in group A and 21.7 % (n=13) were male whereas 28.3 % (n=17) were females in group B. Mean time of procedure was  $31.72 \pm 3.07$  minutes in group A and  $39.68 \pm 2.74$  minutes in group B. (p value < 0.05). Mean hospital stay was  $37.93 \pm 11.09$  hours in group A and  $38.3 \pm 8.44$  hours in group B. (p-value > 0.05)

**Conclusion:** We concluded that right upper quadrant approach is superior to circum-umbilical approach in having shorter operative time while having comparable hospital stay.

## Short and long-term outcomes of surgery for duodenal atresia: a single centre experience

**Francesca Galbiati** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Anna Morandi** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Antonio Di Cesare** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Martina Ichino** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Giorgio Fava** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy), **Ernesto Leva** (Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy)

**Aim:** Evaluation of short and long-term outcomes of patients with duodenal atresia (DA) operated at our Centre.

**Methods:** A retrospective observational study was conducted, including patients operated between 2011 and 2021. Antenatal and clinical data (prenatal ultrasonography-US, associated syndromes, gestational age-GA, birth weight), operative data (age at surgery, surgical technique, operative time, intraoperative complications) and post-operative data (early/late complications, feeding, full enteral feeding-FEF, length of stay-LOS, further investigations) were recorded.

**Results:** Seventeen patients were included. Twelve (71%) had prenatal diagnosis. 6/17 (35%) have trisomy 21, 3/6 with associated cardiac defect. Median GA was 36 (31-41) weeks and median birth weight 2720 (1090-3660) g. Median age at surgery was 3 (1-34) days. All patients underwent open Diamond-shaped duodenoduodenostomy. Median operative time was 75 (40-130) minutes. No intraoperative complications were recorded.

Feeding was started at a median of 10 (7-15) days; FEF was reached at a median of 20 (13-46) days. Median post-operative LOS was 24 (13-76) days.

One (6%) patient had a late complication: laparocoele requiring surgery.

Average follow-up for patients who completed the follow-up was 2,1±1,8 years. Six patients are still followed. Neither anastomotic stenosis nor dehiscences were recorded.

Four (23%) patients underwent upper gastro-intestinal (GI) contrast study to work-up gastro-esophageal reflux disease: anatomical obstruction was excluded. Additionally, pH-metry was done in two patients and esophagogastroduodenoscopy in one.

**Conclusion:** Diamond-shaped duodenoduodenostomy is a safe and effective technique, with very low incidence of complications. Upper GI contrast study should be performed to rule out anatomical postoperative obstruction.

## The efficiency of preoperative gastroesophageal reflux study of gastrostomy with or without a concurrent fundoplication

**Sungjoo Park** (Division of Pediatric Surgery, Department of General Surgery, Samsung Medical Center, Seoul, Korea), **Wontae Kim** (Division of Pediatric Surgery, Department of General Surgery, Samsung Medical Center, Seoul, Korea), **Sanghoon Lee** (Division of Pediatric Surgery, Department of General Surgery, Samsung Medical Center, Seoul, Korea), **Jeong-Meen Seo** (Division of Pediatric Surgery, Department of General Surgery, Samsung Medical Center, Seoul, Korea), **Minjung Bang** (Division of Pediatric Surgery, Department of General Surgery, Samsung Medical Center, Seoul, Korea)

**Aim:** The aim of this study is to evaluate whether a preoperative evaluation for gastroesophageal reflux (GER) prior to gastrostomy is required to determine concurrent fundoplication in children.

**Methods:** We reviewed the medical records of children who underwent a gastrostomy at Samsung Medical Center from June 2016 to February 2022. All gastrostomy patients had preoperative upper gastrointestinal series (UGIS) or/and esophageal pH monitoring test to assess the presence of GER.

**Results:** There were 150 children who underwent gastrostomy. There were 138 patients with GER symptoms and 12 with none; 119 (86.2%) and 5 (41.7%) patients who received concurrent fundoplication and gastrostomy, respectively. 17 of the 48 symptomatic patients who had a negative GER test result underwent a gastrostomy alone. Five of them underwent a subsequent fundoplication during the follow-up period (29.4%). Only one of the seven asymptomatic patients who had gastrostomy alone underwent a subsequent fundoplication (14.3%).

**Conclusion:** The need for fundoplication after gastrostomy is more closely associated with the presence of GER symptoms than with a positive pre-operative GER test result. In addition, routine GER screening tests prior to gastrostomy placement in children are unnecessary.

## Iatrogenic perforation of esophagus successfully treated with Endoscopic Vacuum Therapy in a 6-year-old girl

**Takwa Mili** (Pediatric Surgery B, Bechir Hamza Children Hospital, Tunis, Tunisia), **Intissar Chibani** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Awatef Charieg** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Yosra Ben ahmed** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Tarek Boukesra** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Faouzi Nouira** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Said Jlidi** (Bechir Hamza Children Hospital, Tunis, Tunisia)

**Aim:** The use of endoluminal therapies to treat esophageal leaks and perforations has grown exponentially over the last decade and offers many advantages over traditional surgical intervention in the appropriate circumstances.

**Case description:** A 6-year-old female patient presented to the emergency department with a witnessed foreign body ingestion (a coin). Chest radiograph showed a 20-mm round foreign body on the inferior esophagus. The attempted removal was unsuccessful and ended in iatrogenic esophageal perforation. The physical examination showed fever and respiratory distress.

The computed tomography of the chest with water-soluble contrast revealed pneumomediastinum with massive right pleural effusion and contrast extravasation on the esophageal left side.

She required a thoracic drain, broad-spectrum antibiotics, strict fasting and a gastrostomy for enteral nutrition. A second attempt removal with flexible endoscopy was able to remove the coin without causing further damage to the oesophageal mucosa.

The results of the esophogram repeated weekly showed the persistence of the oesophageal leak.

Endoscopic therapeutic procedure by endoluminal vacuum therapy (EVT) was then suggested. A porous wound sponge attached to suction tubing was placed endoscopically into luminal defect via the existing gastrostomy site. The sponge is advanced into position under fluoroscopic guidance. The suction tube was then attached to a negative pressure wound vacuum therapy system.

The esophageal perforation resolved in two weeks. No vomiting or dysphagia was observed. After two months of hospitalization, she was discharged in stable condition and no difficulty with oral intake. After 14 months of follow-up, our patient is home, doing well, and feeding by mouth.

**Conclusions:** EVT seems to be an effective and safe definitive treatment option for management of esophageal perforations in pediatric patients, provided that the perforation is early detected, and the healing process is being regularly evaluated.

## Late-Presenting Congenital Diaphragmatic Hernia with Gastric Volvulus: about 3 cases

**Takwa Mili** (Pediatric Surgery B, Bechir Hamza Children Hospital, Tunis, Tunisia), **Khaoula Ben Hsin** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Awatef Charieg** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Yosra Ben ahmed** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Tarek Boukesra** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Intissar Chibani** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Faouzi Nouira** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Said Jlidi** (Bechir Hamza Children Hospital, Tunis, Tunisia)

**Aim:** Acute gastric volvulus (GV) associated with congenital diaphragmatic hernia (CDH) is extremely rare. Owing to the rarity of the disease, clinical diagnosis is usually difficult. The purpose of the present study was to assess, through three cases, the clinical presentation, management and outcomes of GV in the pediatric population.

**Materials and methods:** A retrospective study including three patients treated for acute GV associated with CDH in in the Department of Pediatric Surgery “B” in the Children Hospital of Tunis.

**Results:** The median age was 24 months (two girls and one boy).

Vomiting was the most common symptom and acute presentation occurred in the majority of cases. History of abdominal trauma was described in two children.

X-ray of the chest and abdomen showed elevated left diaphragmatic dome with a single large gastric air–fluid level. CT scan confirmed the diagnosis. The initial management was surgical by open surgery in all cases. GV was organoaxial in two cases and mesentericoaxial in one case. The stomach was dilated and yet viable in the three cases.

Operative treatment includes derotation of the volvulus, reduction of the herniated stomach, repair of the diaphragmatic defect. A gastropexy was associated in two cases. The patients started oral feeding on average three days post-operatively and discharged from the hospital by the fourth day.

**Conclusion:** Gastric volvulus is a surgical emergency as it may progress rapidly to strangulation with a high risk of necrosis and ischemia of the stomach. It requires high suspicion and prompt management, as mortality is considerable.

## Paediatric gastric perforation beyond neonatal period: one emergency, different causes

**Carolina Soares-Aquino** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Miguel Soares-Oliveira** (Instituto Nacional de Emergência Médica, Porto, Portugal), **Sofia Vasconcelos-Castro** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Sara Fernandes** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Leonor Carmo** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Tiago Tuna** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Miguel Campos** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal)

**Aim:** Gastric perforation is uncommon beyond the neonatal age and could be life-threatening. Prompt diagnosis and treatment are essential. We aim to describe our recent experience on cases of gastric perforation in a tertiary paediatric center.

**Methods:** Retrospective review of gastric perforation cases presented in children between 2019 and 2021. The analyzed data included demographics, past medical history, symptoms, examinations until diagnosis, the surgical procedure performed and postoperative complications.

**Results:** Four cases were identified. The median age of the patients was 15 [6-16] years. All patients mentioned abdominal pain, and 75% presented vomiting. All patients presented pale, sweating and with upper abdominal guarding. Symptoms lasted between 6 hours and 1 week. The primary pathologies were: perforated gastric ulcer in a patient with a Hodgkin lymphoma two years before (figure 1 – 1.1); perforation of a herniated Nissen fundoplication wrap (figure 1 – 1.2); perforated pyloric ulcer in a patient with previous history of duodenal ulcer; perforation of the anterior gastric wall after blunt abdominal trauma. The diagnosis was suspected on a clinical basis and in the presence of pneumoperitoneum at the abdominal radiography, and confirmed after surgical exploration. Simple suture of the perforation was performed in three cases (two laparoscopically); a partial gastrectomy was performed in the case of the perforated fundoplication wrap. There was one case of wound dehiscence with evisceration requiring surgical correction. With a median of 8 months of follow-up, all patients are well.

**Conclusion:** Paediatric gastric perforations can have multiple causes but usually have a similar clinical presentation; diagnosis can be made with few exams and in a timely manner. A high suspicion level is important, allowing early treatment and prevention of complications.

Figure 1. 1.1 – Intraoperative image showing perforation of the anterior gastric wall; 1.2 – Abdominal radiography showing herniated fundoplication wrap and pneumoperitoneum.



## Intestinal Malrotation: Is ultrasound reliable to achieve diagnosis?

**Victória L de Matos** (Pediatric surgery department, Hospital Pediátrico – Centro Hospitalar e Universitário de Coimbra, coimbra, Portugal), **Inês Pessanha** (Pediatric surgery department, Hospital Pediátrico – Centro Hospitalar e Universitário de Coimbra, coimbra, Portugal), **Carla Fernandes** (Pediatric Intensive Care Unit, Hospital Pediátrico – Centro Hospitalar e Universitário de Coimbra, coimbra, Portugal), **Maria J Noruegas** (Department of Radiology, Hospital Pediátrico – Centro Hospitalar e Universitário de Coimbra, coimbra, Portugal), **Maria F Lopes** (Department of Pediatric Surgery, Hospital Pediátrico – Centro Hospitalar e Universitário de Coimbra, coimbra, Portugal)

**Aim:** Intestinal malrotation and particularly volvulus are traditionally assessed by Upper Gastrointestinal (UGI) contrast study. However, the relevance of ultrasonography (US) in this matter has been extensively described, since it is a safer non-radiation dependent imaging tool. The purpose of this study was to report our experience and to assess the reliability of US in the diagnosis of malrotation and volvulus in clinically suspected patients.

**Methods:** The patients included in this study were transferred to our tertiary referral center or presented in the emergency department with bilious vomiting, abdominal distention or intestinal subocclusion between 2016 and 2021. Only patients who underwent US to assess the presence of sonographic signs of malrotation or volvulus were included. Inversion of the superior mesenteric artery and superior mesenteric vein and the “Whirlpool sign” were analysed. Patients that were not submitted to abdominal surgery after US assessment were excluded. The US findings and the operative reports were compared.

**Results:** A total of 23 patients were included, 15 male (66%). The mean age of presentation was 68 days. Presenting symptoms were bilious vomiting (65%), abdominal distension (13%) and intestinal subocclusion (22%). Malrotation was diagnosed in 7, with associated volvulus in 2, all confirmed at surgery, with no false positives. Sonographic signs of malrotation or volvulus were negative in 10. All underwent surgery for other causes and malrotation was excluded. There were no false negatives. US was nondiagnostic in 6 (26%). Malrotation was confirmed in 5 intraoperatively (3 with concomitant volvulus), and was excluded in 1 (diagnosed with volvulus caused by internal hernia).

**Conclusions:** Prospective studies with a larger cohort of patients are needed in order to determine if US can be considered as a gold standard for the diagnosis of malrotation or volvulus. However, US appears to be an accurate tool for the diagnosis of intestinal malrotation, preventing unnecessary exposure to ionising radiation of UGI studies. Furthermore, it may provide additional information to explore differential diagnosis.

## Management of proximal small bowel atresia

**Jarray Leila** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Chibani Intisar** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Barguellil Marwa** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Ben Ahmed Yosra** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Boukesra Tarek** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Nouira Faouzi** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Charieg Awatef** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Jlidi Said** (Pediatric Surgery, Bechir Hamza, Tunis, Tunisia)

**Aim:** To report clinical features and surgical outcomes of proximal small bowel atresia.

**Materials:** This is a retrospective study of 12 neonates operated for proximal small bowel atresia collected from pediatric surgery departments a 10 years period (from January 2012 to December 2021).

**Results:** The mean age was 8.3 days, the sex ratio was 1,2. Antenatal diagnosis was made by ultrasound in 6 cases (50%).

Clinical signs were bilious vomiting in 9 patients (75%) and alimentary vomiting in 4 patients (33,66%). Meconium anomalies were observed in 7 patients (58,5%). 7 patients had flat belly (58,5%) and 5 patients had an epigastric distention (41,6%).

The abdominal X-ray was realized in all cases. It showed double bubble sign in 2 cases (16,66%). Ultrasound was performed in 6 cases (50%), confirming the diagnosis of small bowel atresia.

All patients were operated. Surgical treatment depended on the anatomical type of jejunal occlusion and associated anomalies. 5 patients have a Short bowel syndrome and 3 patients have a multiple atresia of the small bowel

The evolution was favorable in 11 patients (91%), oral feeding was introduced within 5 days. Only one patient presented with peritonitis requiring surgical revision (8.3%).

**Conclusion:** A better knowledge of the particularities of atresia of the proximal small bowel make it possible to establish a multidisciplinary collaboration between the various specialists: pediatrician, pediatrician surgeon, anesthetist-resuscitator for better management of this atresia.

## Does percutaneous peritoneal drainage stand for an alternative surgical approach in treating neonatal gastric perforations

**Sertac Akman** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey), **Duygu Tatli Ucarci** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey), **Y. Doruk Bilgili** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey), **B. Haluk Guvenc** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey)

**Aim:** The reported incidence of gastric perforations in premature newborns is one in 5000 live births, constituting 7% of all gastrointestinal perforations. Open surgical approach is advocated in this life-threatening condition. Some recent publications discuss the use of percutaneous peritoneal drainage as an alternative. In this report, the feasibility of this novel approach and accompanying early trophic enteral feeding is evaluated.

**Methods:** Three premature babies born via C-section (33 w/8<sup>th</sup> day female, 28 w/24 hours male, 36 w/7<sup>th</sup> day male) without any previous antenatal history, and initially admitted due to respiratory distress, developed acute severe abdominal distention while under NCPAP treatment in the NICU. All presented with copious free abdominal air in plain roentgenograms. Absence of bilious discharge from NG tube and rectal bleeding, led to differential diagnosis of isolated gastric perforation.

**Results:** A percutaneous peritoneal drain was inserted from the right upper quadrant via small incision, under sedation. All babies received proton pump inhibitors and antibiotics. Decreasing amount of saliva and clear gastric fluid with no trace of intestinal content was observed during control visits. Follow-up abdominal X-ray demonstrated resolution of free air and presence of gastric gas shadow after 72, 120 and 24 hours consecutively. Early trophic enteral breast feeding was started following confirmation by contrast studies. Second case further developed distal ileal perforation, due to an ileal meconium plug and an ileostomy had to be created. Scar tissue on lesser curvature was observed during abdominal exploration. All recovered without any further complications and were discharged for controls.

**Conclusions:** Surgical intervention may increase fatal morbidity under presence of prematurity, perinatal stress, hypoxia and accompanying prolonged gastric distension from positive pressure ventilation. Percutaneous peritoneal drainage may be a better choice of treatment in selected cases with isolated gastric perforation, in the absence of clinical or diagnostic features of necrotizing enterocolitis.

## POSTER WALK 17

### Upper Gastrointestinal 2 & Hepatobiliary

#### Congenital oesophageal stenosis: Tracheo-bronchial remanent

**Thozama Violet Siyotula** (Paediatric Surgery, Red Cross War Memorial Children's Hospital, University of Cape Town, South Africa, Cape Town, South Africa), **Dirk von Delft** (Paediatric surgery, Red Cross War Memorial Children's Hospital, University of Cape Town, South Africa, Cape Town, South Africa), **Hettie Le Roux** (Paediatric surgery, Red Cross War Memorial Children's Hospital, South Africa, Cape town, South Africa)

**Aim:** Congenital oesophageal stenosis, defined as intrinsic oesophagus lumen narrowing secondary to congenital malformation present at birth. Is a very rare clinical condition found in one out of 25,000 to 50,000 live births, not necessarily symptomatic at birth. We review challenges of diagnosis and management strategies for a patient.

**Case description:** A 3-year-old male, initially presented at 8-months with significant failure to thrive, recurrent vomiting which was first noticed at the age of 2 months. On investigation milk scan showed severe reflux complicated by oesophagitis. A fluoroscopic meal showed markedly distended oesophagus with a tight stricture at the level of the gastro-oesophageal junction. His first upper endoscopy showed dilated upper oesophagus and a pinhole stricture just above the gastro-oesophageal junction. The stricture was dilated by balloon dilatation, under fluoroscopy. No improvement noted after multiple dilatations to the stricture. Patient was offered laparoscopic Nissen Fundoplication as the stricture was suspected to be reflux related. His symptoms still did not improve post Nissen fundoplication. This raised clinical suspicion of achalasia, for which an oesophageal manometry testing found features in keeping with a type II Achalasia. Laparoscopic Heller's myotomy and undo of the Nissen fundoplication, complicated by oesophagus perforated at the site of the narrowing. A thick and fibrotic structure was palpated at the site of perforation, sent for histology. Confirmed tracheobronchial remnants a subtype of the congenital oesophageal stenosis. Completion resection of the area of narrowing with partial wrap (Toupet) was undertaken. Follow-up 1 month after the last surgery, patient was tolerating fluids and a soft diet without any episodes of vomiting or dysphagia.

**Conclusion:** It is well known how rare congenital oesophageal stenosis is in the paediatric population and the challenges surrounding its diagnosis. There are still controversies regarding management of the congenital oesophageal stenosis among surgeons.

## Incidence and Main Risk Factors of Pneumonia after Repair of Esophageal Atresia A single center study

**Oumaya Mariem** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Marwa Barguelli** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Yosra Ben Ahmed** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Mariam Zribi** (Médecine Préventive, Faculté de Médecine de Tunis, Tunis, Tunisia), **Intissar Chibani** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Faouzi Nouira** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Awatef Charieg** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Said Jlidi** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia)

**Introduction:** Advances in anesthesia, surgical, and neonatal cares have improved the overall survival rate in patients with Esophageal Atresia (EA). Nevertheless, pneumonia remains one of the major complications.

We aimed to assess incidence and predictive factors of pneumonia, in the neonatal period, after repair of EA.

**Methods:** The hospital records of patients who underwent repair of EA between the years 2010 and 2020 were reviewed. Major EA associated diseases, types of EA, anastomotic complications were analyzed as potential risk factors for pneumonia.

**Results:** Forty-eight patients were included in our study. 10 newborns were premature. The mean birth weight was 2785 g. 37.5% of patients had associated malformations with cardiac malformations in 17 cases and chromosomal abnormalities in only one case. 5 patients presented long gap esophageal atresia. 41.7% of neonates presented pneumonia after EA repair. The right side was affected in 85% of cases. Anastomotic leak was significantly associated with postoperative pneumonia (30% vs 7.1%,  $p=0.067$ ). Although diagnostic delay and cardiac malformations appeared to be higher in patients with pneumonia, this difference did not reach statistical significance. Pneumonia were associated with higher incidence of recurrent tracheoesophageal fistula but no statistically correlation was confirmed (10% vs 3.5%;  $p=0.45$ ). No association between chromosomal defect, Types of EA, Anastomotic stenosis, gastroesophageal reflux disease were found ( $p = 0.8$ ,  $p=0.53$ ,  $p=0.15$  and  $p=0.23$ , respectively). Finally, patients who developed postoperative pneumonia presented longer length of hospital stay (19 vs 7 days) and higher incidence of mortality (20% vs 8%).

**Conclusions:** Despite of improved management and survival of EA the occurrence of pneumonia remained high. Presence of cardiac malformations, Anastomotic leak and Recurrent tracheoesophageal fistula are critical factors for pneumonia. The results of this study will be helpful to distinguish high-risk neonates, and therefore, lead to an earlier recognition and treatment of this complication.

## Complete and incomplete congenital duodenal obstruction a retrospective study

**Jarray Leila** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Chibani Intisar** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Wiem Rheim** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Ben Ahmed Yosra** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Boukesra Tarek** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Nouira Faouzi** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Charieg Awatef** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Jlidi Said** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia)

**Aim of the Study:** Congenital duodenal obstruction (CDO) can be complete (CCDO) or incomplete (ICDO). The aim of this study was to clarify differences in clinical features between CCDO and ICDO.

**Methods:** This is a retrospective and comparative study of 12 patients undergoing surgery for CDO, during 10 years period, in the department of pediatric surgery.

**Results:** Twelve patients who underwent CDO repair were enrolled and followed for a median of 37,5 months. 6 patients had CCDO et 6 patients had ICDO. CCDO was associated with a significantly higher rate of prenatal diagnosis (66% versus 33%;  $P < 0.05$ ) as well as prematurity (66%).

Bilious vomiting was the most common symptom. There was no significant difference between the 2 groups. 80% of newborns in both groups had a flat abdomen. The radiological sign of double bubble was notified in all patients in CCDO group. However, there was no specific image in the patients of ICDO group with a statistically significant difference. All the patients with CCDO were operated within 5 days in the neonatal period however; the average time for surgery is 16 days in the ICDO group. We observed a longer period for the initiation of enteral feeding in the CCDO group ( $P < 0,01$ ).

**Conclusion:** CCDO and ICDO differ with regard to prenatal detection rate, prematurity and rate of associated congenital heart disease and preoperative radiological diagnosis. The degree of CDO influences the postoperative initiation of enteral feeding.

## The Mysterious Travel of Missing Needle: Needle Stuck to The Vena Cavae

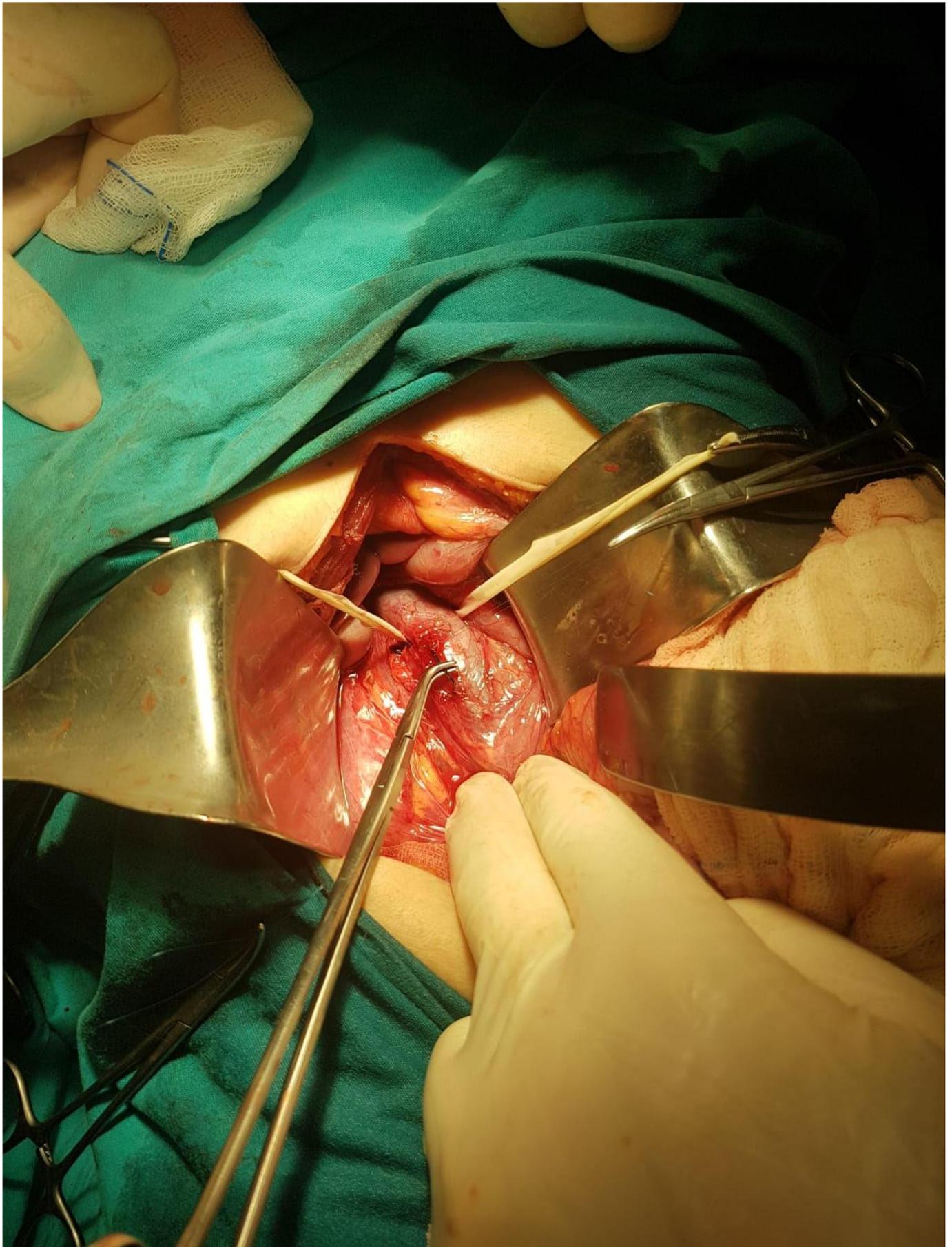
**Tahsin Onat Kamçı** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Hakkari Aydoğdu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Serkan Arslan** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Mehmet Hanifi Okur** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey)

**Aim of the Study:** Foreign body ingestion is common in children due to their curious nature. We aimed to present our mysterious case report.

**Case Description:** 14 years-old girl patient has admitted to our department due to foreign body ingestion 5 months ago. She ingested a needle. She had no complaint. On examination, she was hemodynamically stable and afebrile. There was no significant pathological value in laboratory studies. We performed an Abdominal X-Ray (AXR). On the AXR seems that the needle was passed pylorus. There was no pneumoperitoneum on the AXR. The patient was evaluated with serial daily AXR. The Foreign Body (FB) was clearly observed at the same place. On the 3rd day of the follow-up, the decision for surgery was made. We performed an endoscopy and didn't see any FB and any perforation point. We performed laparotomy. The needle was migrated through the duodenal wall to the vena cavae wall. There was fibrotic tissue between the duodenum and vena cavae. The needle was excised from the vena cava wall. The vena cavae was repaired with 6/0 prolene suture. The patient was discharged without complaints on the third postoperative day.

**Conclusion:** Complications of foreign body ingestion can be life-threatening. In this case, intervention as quickly as possible can be life-saving. In such cases, surgical intervention should be considered if the foreign body remains in the same place in the x-ray seen for 3 consecutive days

**Keywords:** Foreign body, vena cavae, needle



## Morbimortality of extra hepatic biliary atresia in infants in Yaoundé, Cameroon: about 22 cases

**Tibizing Etoa Grace** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), **Fossi Kamga Gacelle** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), **Obono Ebo Florence Ornella** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), **Dikongue Dikongue Eugenie Caroline** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon), **Mouafo Tambo Faustin Felicien** (Paediatric Surgery, Yaounde Gynaeco-Obstetric and Paediatric Hospital, Yaounde, Cameroon)

**Aim:** The aim of this work was to describe the peculiarities of the management of extra hepatic biliary atresia (EHBA) in infants in the context of a developing country.

**Methods:** The study was observational, retrospective, descriptive in the paediatric surgery unit of the Gynaeco-Obstetric and Pediatric Hospital (YGOPH). Files of patients aged from day 22 to 30 months suffering from EHBA diagnosed using an abdominal ultrasound were included. Files of patients with intra and extra hepatic biliary atresia were excluded. The parameters studied included: prevalence, age at presentation, post natal diagnostic delay, classification, surgical delay, surgical technique, morbidity, mortality and prognosis.

**Results:** 22 cases were collected in 15 years, representing an annual frequency of 1.5 cases/year. during this same period 13,213 patients were admitted to the pediatric surgery department of the YGOPH. EHBA then represented 0.17% of all admissions to the service. The mean age at presentation was 4 months (1 to 8 months). The mean precise postnatal diagnostic delay was 21 days (7 to 37 days). The French classification identified 52.6% of type III EHBA, 15.7% of type IV, 5.2% of type II and the type was not specified in 26.3% of cases. The surgical techniques used were: cholecystoenterostomy (n=3), Kasai procedure (n=1), liver transplantation done abroad (n=1). Complications occurred in 40% of cases, dominated by sepsis and hemorrhagic syndrome. the mortality rate was 47% and if we consider those lost to follow-up, this rate increases up to 79%. Only 20% of our patients presented a resumption of choleresis.

**Conclusion:** EHBA in infant remains correlated with a high morbidity and mortality in our practice. This is explained the delay in consultation and then in diagnosis, the precarious perioperative environment which leaves little place to the Kasai portoenterostomy and finally the absence of a liver transplantation program.

## Living donor liver transplantation with inferior vena cava and portal vein replacement in a pediatric patient with advanced inflammatory myofibroblastic tumor

**Anar Jafarov** (Pediatric Surgery Department, Ankara University School of Medicine, Ankara, Turkey), **Onur Elvan Kırımker** (Department of General Surgery, Ankara University School of Medicine, Ankara, Turkey), **Za-rife Kuloglu** (Department of Pediatric Gastroenterology, Ankara University School of Medicine, Ankara, Turkey), **Suat Fitöz** (Department of Pediatric Radiology, Ankara University School of Medicine, Ankara, Turkey), **Tanil Kendirli** (Department of Pediatric Intensive Care, Ankara University School of Medicine, Ankara, Turkey), **Deniz Balci** (Department of General Surgery, Ankara University School of Medicine, Ankara, Turkey), **Kaan Karayalcin** (Department of General Surgery, Ankara University School of Medicine, Ankara, Turkey), **Meltem Bingol-Kologlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** Inflammatory myofibroblastic tumor is an unusual, benign, mezenkimal solid tumor that most often affects children and young adults. Although its histopathologic nature is benign, it may not be differentiated from a malignant tumor because of its local invasiveness and its tendency to recur. We present a case report representing the first documentation to date of living donor liver transplantation combined with suprahepatic and infrahepatic inferior vena cava and portal vein replacement in a 3-year-old, female patient with locally advanced IMT.

**Case Description:** The patient had history of chemotherapy resistant IMT, chronic liver failure and intractable esophageal variceal bleeding. Computerized tomography revealed a large mass that involved suprahepatic, and infrahepatic IVC, hepatic veins and extended to hepatic hilum with concomitant high-grade biliary obstruction, portal venous and hepatic arterial encasement. The patient underwent living donor liver transplantation with left lateral section graft from his uncle. After pericardial opening and total clamping of IVC, recipient liver is removed with suprahepatic and infrahepatic IVC, bile duct, portal vein at level of superior mesenteric vein and splenic vein confluens and both right and left hepatic artery. IVC and reconstruction was done by using cryopreserved cadaveric iliac vein graft and portal vein reconstruction was done by jump graft. Bile duct reconstruction was done by Roux and Y hepaticojejunostomy. The patient recovered from liver transplantation without any problems. She required staged abdominal closure and presented with acquired right diaphragmatic hernia which is corrected by thoracoscopic repair, 1 year after transplantation. She is doing well without any problems during 3 -year follow up.

**Conclusions:** IMT is a benign tumor with rarely presented malignant features such as local invasiveness, recurrence, distant metastases, and malignant transformation. It can cause end stage liver failure leading to liver transplantation.

## Hepatic arteriovenous malformations with patent Ductus Venosus- Endovascular embolization

**Thozama Violet Siyotula** (Paediatric surgery, Red Cross War Memorial Children's Hospital, University of Cape Town, South Africa, Cape Town, South Africa), **Dirk von Delft** (Paediatric Surgery, Red Cross War Memorial Children's Hospital, University of Cape Town, South Africa, Cape Town, South Africa), **Nicky Wieselthaler** (Radiology, Red Cross War Memorial Children's Hospital, University of Cape Town, South Africa, Cape Town, South Africa), **Rick De decker** (Cardiology, Red Cross War Memorial Children's Hospital, University of Cape Town, South Africa, Cape Town, South Africa), **M Wojno** (Interventional radiology, Red Cross War Memorial Children's Hospital, South Africa, Cape Town, South Africa), **G Sudwarts** (Interventional radiology, Red Cross War Memorial Children's Hospital, South Africa, Cape Town, South Africa)

**Aim:** We discuss congenital vascular anomalies of the liver which include a range of malformations of the portal venous, hepatic arterial and venous systems.

**Case description:** A 19 day old infant Trisomy 21 with fenestrated duodenal web. Incidental finding on abdominal ultrasound of large Segment 4 hepatic arteriovenous malformation (HAVM), venous contribution coming from the left portal vein and its arterial supply from the common hepatic artery, an aberrant branch of superior mesenteric artery and the internal thoracic arteries. The HAVM drained via the middle hepatic vein. Confirmed on computer tomographic angiography. Echocardiography confirmed a Patent Ductus Arteriosus and an Atrial Septal Defect. Laparotomy with ligation of the hepatic artery and duodenal web repair. Recovery was uneventful however no HAVM shrinkage was seen. Subsequently the infant developed cardiac failure. Re-evaluation by CTA demonstrated a Patent Ductus Venosus (PDV). Endovascular occlusion of the PDV was complicated by portal hypertension as manifested by haematemesis, melaena stools, and severe ascites. To relieve inflow pressure the arterial feeding vessels were occluded by endovascular occlusion. Follow-up ultrasound confirmed worsening portal hypertension, ascites and areas of hepatic ischaemia but no shrinkage of the HAVM. Infant subsequently demised

7 week female presented in cardiac failure. Patent ductus arteriosus and Atrial septal defect on echocardiography. A left HAVM seen incidentally on echocardiography and confirmed abdominal ultrasound. Arterial supply from accessory coeliac trunk and aortic branches were seen on CTA as well as drainage of the left hepatic vein into the dilated PDV. Endovascular occlusion of the arterial inflow was undertaken while the PDV was left untouched. At 1 month follow-up, infant is doing well.

**Conclusion:** Congenital hepatic vascular malformations are a rare and diverse group of anomalies. Both cases highlight the association between HAVM, Trisomy 21 and cardiac anomalies. Surgical approach can be achieved by open surgery or endovascular techniques.

## Prognostic factors for Biliary Atresia: 6-year experience

**Mehmet Hanifi Okur** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Tahsin Onat Kamçı** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Bahattin Aydoğdu** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Serkan Arslan** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey), **Erol Basuguy** (Pediatric Surgery, Dicle University Medical School, Diyarbakır, Turkey)

**Aim of the Study:** Our purpose was to present our 6-year experience on Biliary Atresia.

**Method:** The records of 22 patients who underwent Kasai portoenterostomy due to biliary atresia in our institute from 2015 to 2021 were recruited retrospectively. Sociodemographic features, clinical findings, laboratory studies, associated anomalies, the presence of TORCH infections, surgical intervention, and follow-up results were evaluated.

**Results:** 36% (n=8) of patients were male and 64% (n=14) of the patients were female. All patients were admitted to our clinic due to acholic stool and jaundice. In all patients, laboratory studies and ultrasonographic findings supported biliary atresia and then Kasai portoenterostomy (KPE) was performed. The mean serum direct bilirubin and GGT levels prior to KPE were 6,4 mg/dL and 818 U/L, respectively. Serum GGT levels prior to KPE were less than 200 U/L in three patients. Although direct bilirubin was found higher in the CMV IgM+ve group than IgM-ve group ( $p<0,01$ ), no difference was found in terms of GGT levels ( $p>0,05$ ). The mean age at portoenterostomy was 57 days (range 13-90 days). According to Phenotype classification of BA, Type 1: 80%, Type 2A: 13,3%, Type 2B: 6,7%. Cardiac anomalies, polysplenia, genitourinary anomalies, cranial anomalies were seen in 26,7%, 13,3%, 13,7% and 6,7%, respectively. CMV infections rate was 68%. All patients had normal cholic stool when discharged and the bilirubin. Follow-ups with native liver were between 3 months and 5 years. The overall mortality was 13%. 32% of patients underwent liver transplantation.

**Conclusions:** Although many risk factors were marked for the prognosis of biliary atresia, the predictivity of morbidity and mortality still remains a challenge. In the present study too, was found that the main life-saving goal is associated with anomalies, presence of CMV infections, and serum direct bilirubin prior to KPE.

## Recurrence of hydatid cyst of liver: Which predictive factors?

**Wiem Rheim** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Chibani Intisar** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Ben Ahmed Yosra** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Boukesra Tarek** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Nouira Faouzi** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Charieg Awatef** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia), **Jlidi Said** (Pediatric Surgery, Bechir Hamza Hospital, Tunis, Tunisia)

**Aim of the study:** To evaluate the predictive factors of hepatic hydatid cysts (HHC) recurrence in order to optimize surgical management and to implement preventive measures.

**Methods:** A retrospective study, including 60 patients with hepatic hydatid cysts operated in the department of pediatric surgery B, was conducted from 2011 to 2020.

The univariate study of predictive factors of recurrence was based on the Fisher test and the multivariate one on the logistic regression model.

**Results:** Sixty patients were included. There were 29 girls and 31 boys with a mean age of 9,13 years. The diagnosis of HHC was confirmed by an abdominal ultrasound. The most common location was the right liver (53,3%). The mean diameter for HHC was 70mm. All patients had surgical treatment. A resection of the protruding dome of the cyst associated with the evacuation of the parasite and the closure of the biliary communications, if existed, was performed. The diagnosis of recurrence was suspected on radiological survey. The recurrence rate reached 20% in our study with an average period of 15 months. Univariate analysis showed that the predictive factors of recurrence were: the rural origin of patients, the voluminous cysts larger than 5 cm 16,7% (P=0,482), and multivesicular hydatid cyst 35% (P=0,429) and the urgency of surgery 33,3% (P=0,356).

**Conclusion:** The multivesicular and voluminous hydatid cysts are predictive factors for relapse. This is may be explained by the immunogenic character and the presence of exocysts in the pericysts. A better evaluation of the factors predictive factors of recurrence through prospective randomized studies would allow better adaptation of therapeutic indications in order to guarantee better short and medium-term results

## POSTER WALK 18

### Global Surgery 1

#### Impact of irreducibility on outcomes in inguinal hernia repair

**Nabila Talat** (Pediatric Surgical Unit 2, The Children's Hospital and University of Child Health Sciences., Lahore, Pakistan), **Muhammad Rehan** (Pediatric Surgical Unit 2, The Children's Hospital and University of Child Health Sciences, Lahore, Pakistan), **Bilal Mirza** (Pediatric Surgical Unit 2, The Children's Hospital and University of Child Health Sciences, Lahore, Pakistan), **Hafiz Adnan Mehmood** (Pediatric Surgical Unit 2, The Children's Hospital and University of Child Health Sciences, Lahore, Pakistan)

**Aim of the Study:** Inguinal hernias that become complicated with irreducibility and obstruction can endanger the life of the child and increase morbidity. The purpose of this study was to identify different presentations of irreducible inguinal hernia, as well as their complications, treatment options, and prognosis.

**Methods:** This is a retrospective study. Data was collected and was entered in SPSS 24 and a P-value of less than 0.05 was considered significant for symptoms at presentation, their operative findings, and complications.

**Results:** A total of 125 patients with complicated inguinal hernias presented to the emergency department, with 92.8% being male and 7.2% female. Median duration of symptoms prior to presentation was 26.76 ±7.175 hours. The most frequent symptom was irreducible swelling (71.2%), which was followed by abdominal distension (7.4%), and vomiting (7.2%). From these, 71.2 % (n-89) of the patients had irreducible inguinal hernias, 25.6% (n-32) had obstructed hernias, and 3.2 % (n-4) had strangulated inguinal hernias. Regarding treatment 38.4% (n-48) hernia was reduced manually and were operated on the elective list while in 28% (n-35) of the patient were operated in emergency via inguinal approach while 33.6% (n- 42) patients were operated in emergency with exploratory laparotomy. The small bowel was the most frequent viscera entrapped in the hernial sac (36%) followed by the large bowel (13.6%) and amyands hernia (5.6 %). The entrapped gut was predominantly healthy, with just 6.4% of patients requiring resection and ETE anastomosis, and 4% requiring stoma formation. Following surgery, 2.4 % experienced recurrence c, while 1.6% experienced stoma complications. There was a 4% mortality rate (n-5).

**Conclusion:** When a hernia presents with irreducibility and obstruction as a result of delayed treatment, it is associated with a high rate of morbidity and mortality, particularly in infants. Inguinal hernia should be repaired or treated as soon as diagnosed to prevent such complications.

## PIPESSTR Tool For Capacity Assessment of Pediatric Surgical Facilities Modified (Pedi-PIPES) Survey using (OReCS) Document

***Wala Mohamed Rahma*** (National center for Pediatric Surgery (NCPS) Gezira State, Madani, Sudan), ***Faisal Abdel Galil Nugud*** (National center for Pediatric Surgery (NCPS) Gezira State, Madani, Sudan)

**Aim:** The Pediatric Surgery Personnel, Infrastructure, Procedures, Equipment, Supplies (Pedi-PIPES) survey is one of several tools used to assess capacity of pediatric surgery facilities. It provides benchmark data that enable comparison between facilities and the same facility in different time interval. This study aiming to overcome the gaps in the previous capacity assessment tool by producing document more specific for pediatric surgical service and have significant impact on improvement projects.

**Methods:** The original Pedi PIPES survey tool consist of five components Personnel, Infrastructure, Procedures, Equipment and Supplies. Modification of the Pedi PIPES survey tool made based on the Optimal Resources for Children's Surgery (OReCS) document developed by the Global Initiative for Children Surgery (GICS). To make the improvement project applicable and time – bounded we added the estimated duration needed to provide the missing equipment or service, the responsible personal and the deadline for completion.

**Result:** After modification of the (Pedi-PIPES) a total of eight sections included in the new tool the original five and extra three which is training, research, and quality improvement. The major and obvious addition were in the manpower and procedures section. Three columns were added for the person responsible of the improvement project, the duration needed and the deadline for achievement regarding the score section its still underdevelopment.

**Conclusion:** Although the original (Pedi-PIPES) survey was helpful in many capacities assessment process further improvement was needed to overcome its limitations. We tried to make it time bounded to guarantee creation of improvement project with responsible team, clear action plan and known date for re assessment. The addition of strategies for improving children's surgical care like training, quality improvement, database and research will facilitate the improvement journey. To finalize the document further piloting studies in different levels of health care needed beside testing for validity inter- / intra-rater reliability and consistency.

## Paediatric acute appendicitis: is there anything we can still learn?

**Paulius Valatka** (Children's Surgery, Orthopaedic and Traumatology Centre, Vilnius University Hospital Santaros Klinikos, Children's Hospital, Vilnius, Lithuania), **Ruta Maciulyte** (Children's Surgery, Orthopaedic and Traumatology Centre, Vilnius University Hospital Santaros Klinikos, Children's Hospital, Vilnius, Lithuania), **Arunas Strumila** (Children's Surgery, Orthopaedic and Traumatology Centre, Vilnius University Hospital Santaros Klinikos, Children's Hospital, Vilnius, Lithuania), **Andrius Cekuolis** (Children's Surgery, Orthopaedic and Traumatology Centre, Vilnius University Hospital Santaros Klinikos, Children's Hospital, Vilnius, Lithuania)

**Aim:** Despite the latest diagnostic techniques and scales, unnecessary appendectomies still occur. The aim was to compare ultrasonography (US) findings with postoperative pathohistology of appendix and reduce the number of negative appendicitis diagnosis.

**Methods:** Charts of 434 patients who underwent laparoscopic or open appendectomy during 2-year period in our tertiary centre were analysed. Clinical features, ultrasound findings and pathohistology results were taken into account. Patients were divided into two main ("negative" and "positive") appendectomy groups. Multiple tests were used to investigate the association between sonographic and clinicopathological findings.

**Results:** 58 negative and 376 positive appendectomies were performed in 2019-2020. The visualization of appendix was successful in 81,2% cases and was significantly more common in histologically proven appendicitis ( $p=0,003$ ) when the wall of appendix was also more thickened ( $11,1\pm 3,0\text{mm}$  compared to  $8,9\pm 1,7\text{mm}$  in negative appendectomies;  $p<0,001$ ). Furthermore, appendix tended to thicken when the duration of illness got longer (<24h, 24-48h and >48h accordingly  $9,9\pm 3,0\text{mm}$ ,  $10,8\pm 2,6\text{mm}$  and  $12,9\pm 4,3\text{mm}$ ;  $p<0,001$ ) but no tendency was seen in patients age (<5 years old ( $10,7\pm 3,0\text{mm}$ ), 5-10 years old ( $10,8\pm 3,0\text{mm}$ ) and >10 years old ( $11,0\pm 2,9\text{mm}$ );  $p=0,63$ ). The free fluid sign was detected in 70% cases but had no significant difference between positive and negative appendectomy groups ( $\chi^2=2,66$ ;  $p=0,10$ ). Meanwhile, local tissue infiltration significantly presented in histologically proven appendicitis ( $\chi^2=8,38$ ;  $p=0,004$ ). Histopathology was slightly more severe as the Alvarado score improved (Spearman test  $R=0,25$ ;  $p<0,001$ ).

**Conclusions:** In cases of unclear diagnosis, it is recommended to repeat the ultrasound examination, as the appendix thickens in time. If the appendix is not visible on ultrasound, the diagnosis of appendicitis could be suspected by observing the sign of local tissue infiltration.

## Successful Separation Surgery of Pygopagus Conjoined Twins

**Shahnoor Islam** (Pediatric Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh), **AKM Khairul Basher** (Pediatric Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh), **M Mozaffar Hossain** (Anesthesiology, Dhaka Medical College Hospital, Dhaka, Bangladesh), **SM Shafiqul Alam** (Anesthesiology, Dhaka Medical College Hospital, Dhaka, Bangladesh), **M Abul Kalam** (Burn and Plastic Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh), **Asit Chandra Sarkar** (Neurosurgery, Dhaka Medical College Hospital, Dhaka, Bangladesh), **M Raziul Huq** (Neurosurgery, Dhaka Medical College Hospital, Dhaka, Bangladesh), **M Shamsuzzaman** (Orthopedic Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh), **AKM Amirul Morshed** (Pediatric Hematology and Oncology, Dhaka Medical College Hospital, Dhaka, Bangladesh), **Sharmin Akter Rupa** (Radiology and Imaging, Popular Medical College and Hospital, Dhaka, Bangladesh)

**Aim:** We share a rare case of symmetrical pygopagus conjoined twins. The aim of study is to share our experiences to enhance skill for treating conjoined twins regarding anatomic variations, investigations, surgical aspects, outcomes and rehabilitation.

**Case Description:** A 22 year-old women delivered a pygopagus conjoined twins per vaginally with birth weight (combined) of 4.8 Kg. Twin A developed acute intestinal obstruction and then they referred to our hospital. They had a large area of fusion at sacrococcygeal region with circumference measuring 45 cm (Fig.1). A single vestibular area with two pairs of labia majora, two urethral and two vaginal openings were present (Fig. 2). Transverse colostomy was done for twins. Magnetic resonance imaging of whole spine with complementary computed tomography scan showed that twins share common 5th sacral and coccygeal vertebrae, common dural sac but no union of spinal cord or cauda equine and vascular sharing. Anorectal malformation was present in twin A. Babies were taken for surgery on single operation table keeping one more table ready for twin A after separation. After intubation double opposing Z flaps were marked and incised. After separation of spinal column by orthopedic surgeon dural sac was found continuous in twins at sacral region without any nerve root or nerve filaments. Closure of dural sac by neurosurgeons were followed by perineal reconstruction by pediatric surgery team. Finally they were separated after 9 hours of surgery. Colostomies were closed after reconstruction of anus. There were no neurological deficit, incontinence for stools and urine. Now they are five years old with good health.

**Conclusions:** Detailed preoperative imaging, staged surgery, meticulous planning, preparedness of treating team led by pediatric surgeon, availability of resources at hospital, multiple rehearsal sessions, monitoring are recommended for successful separation surgery of pygopagus conjoined twin.



## Resection of infantile hemangioma causing massive macroglossia with 30-year follow up

**Devin Hosein** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Esther Yoo** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **George Beyer** (Orthopedic surgery and rehabilitation medicine, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Sagar Rohondia** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Francisca Velcek** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA)

**Aim:** This case highlights the role of surgery for a rapidly enlarging lingual hemangioma causing obstruction and functional impairment resulting in good long term outcomes. To our knowledge, this is the largest hemangioma of the tongue in the English literature with the longest follow up.

**Case description:** We present a case of a giant hemangioma of the tongue who was brought to the United States in 1989 at 6 months of age through a non-profit organization to seek emergent health care due to the surgical expertise not being available in her country of birth, the Dominican Republic. She was born full term via vaginal delivery and no abnormalities were noted at birth. At 1 month of life she was noted to have a rapidly enlarging swelling on her tongue, affecting feeding. Examination revealed a very large protuberant tongue occupying the entire oral orifice with inability to close the mouth and the tip of the tongue extending to the upper chest. (figure 1) The tumor was confined to the anterior 2/3s of the tongue. The patient underwent a first stage partial glossectomy, tracheostomy and nasogastric tube placement. The surgical pathology revealed a cavernous hemangioma. A 2<sup>nd</sup> stage partial glossectomy was done 4 months later. Her postoperative course was uneventful and her tracheostomy was removed 2 months after her 2<sup>nd</sup> stage operation, with the patient tolerating diet orally. She returned home 8 months after arrival, with a change in passport picture. (Figure 2) On a follow up 33 years after her surgery, there were no signs of recurrence and she lives a normal life with children of her own.

**Conclusions:** Hemangiomas of the tongue are benign tumors that may cause massive macroglossia resulting in considerable disability. Complete surgical excision is associated with minimal recurrence and good outcomes.





## Pediatric Germ Cell Tumors; Variations and Challenges

***Nabila Talat*** (Pediatric Surgical Unit 2, The Children's Hospital and The University of Child Health Sciences, Lahore, Pakistan), ***Rija Khalid*** (Pediatric Surgical Unit 2, The Children's Hospital and The University of Child Health Science, Lahore, Pakistan), ***M. Bilal Mirza*** (Pediatric Surgical Unit 2, The Children's Hospital and The University of Child Health Science, Lahore, Pakistan), ***Hafiz Muhammad Adnan*** (Pediatric Surgical Unit 2, The Children's Hospital and The University of Child Health Science, Lahore, Pakistan)

**Aims:** Germ cell tumors are rare in children and adolescent but when they occur, gonads are the most frequent site. Testicular tumors account for 1-2% of all pediatric solid tumors among them 84% are GCT. Incidence of ovarian GCT is 67%. This study aims to highlight clinical features, investigations, treatment and outcome of GCTs in children to look for peri operative challenges and long term prognosis.

**Methods:** A prospective study of 45 patients with GCTs was done from March 2018 to January 2022. The detailed data of each patient was analyzed including history, physical examination, investigations, management, and follow-up. Forty five patients presented during this period. 15 male (33.3%) and 30(66.7%) female with median age of 4.8 years. Twenty eight (62.2%) patients presented with abdominal mass, 15(34.88%) with scrotal swelling and 2(4.65%) with acute abdomen. Hematological and radiological investigations were done in all patients. a-fetoprotein level was high in 30 patients. After discussing in tumor board, surgical excision was done.

**Results:** Macroscopically, 75% were mixed and 25% were solid tumors. Median testicular tumors ranged from 3cm to 8cm while ovarian tumors ranged from 5cm to 23cm. Histologically, Twenty six (57.8%) were mature teratoma, 6 (15.5%) immature teratoma, 8(17.7%) yolk sac tumors, 1 (2.32%) mixed stromal tumor, 1 (2.32%) sex cord tumor and 1 (2.2%) leydig cell tumor. Neo adjuvant chemo was given in 4(8.88%) patients while 3 (6.67%) patients received chemotherapy postoperatively. Thirty three patients are doing fine, 11 had lost follow up and 1 patient expired due to sepsis. Long term follow up with tumor markers and radiological investigations showed no recurrence in majority of patients (73%).

**Conclusion:** GCTs in Pediatric population are not uncommon. However, had good prognosis if diagnosed at early stage. Majority of tumors doesn't require adjuvant therapy. Tumor markers especially alpha-fetoprotein seems reasonable prognostic marker on follow up.

## Epidemiological Comparison of Anorectal Malformation with Other Gastrointestinal Abnormalities in Patients in the Pediatric Ward

**Sajeel S Saeed** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), **Mudassar Fiaz Gondal** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan), **Noor Ul Sabah Butt** (Rawalpindi Medical University, Holy Family Hospital, Islamabad, Pakistan)

**Aim:** Anorectal malformations are congenital defects wherein there is defective development of the anus and rectum. For babies born with congenital anorectal malformations, prompt treatment is crucial which requires detection of the anomalies at the earliest. This study aimed to determine the epidemiology of anorectal malformations in the Pediatric Unit of a tertiary care hospital in Pakistan over a period of 19 months.

**Methodology:** An analytical cross-sectional study was conducted retrospectively from January 2020 to September 2021 using a non-randomized consecutive sampling technique. Patients aged less than eight years were included, whereas burnt, torn, and incomplete records from the Hospital Management Information System (HMIS) were excluded. SPSS version 26 (IBM Corp., Armonk, NY, USA) was used for data entry and analysis. Binomial and multinomial logistic regression were applied for analyzing the association between explanatory and dependent variables.

**Results:** Of the 1,108 patients, 72 (6.5%) patients had anorectal malformations. Gastrointestinal diseases made up about 64.3% of all diseases. Among gastrointestinal causes, the prevalence of anorectal malformation was up to 10.1%. The mortality of anorectal malformation patients was low (2.85%) compared to mortalities due to other gastrointestinal abnormalities (8.25%). Anorectal malformation had significantly lower odds of mortality (adjusted odds ratio = 0.19,  $p < 0.05$ ) compared to other gastrointestinal abnormalities.

**Conclusions:** This study has provided data about the prevalence of anorectal malformation and its mortality which were calculated as 6.5% and 2.58%, respectively. Female gender, neonates, and delayed presentation were seen to have higher mortality, highlighting the need to screen all neonates pre- and post-natally to avoid any misdiagnosis.

## Flat top talus in the bot foot congenital idiopathic equine varus

**Gayito Adagba Rene Ayaovi** (Atacora, Hopital Saint Jean de Dieu de Tanguiéta, Tanguieta, Benin), **Docquier Pierre-Louis** (Université Catholique de Louvain, Bruxelles, Benin), **Miyanhouane Ponce Cossi** (Atlantic, Centre National Hospitalier et Universitaire Hubert Koutoucou Maga de Cotonou, Cotonou, Benin)

**Introduction:** The flat top embankment is the Anglo-Saxon name for the flattening of the dome of the embankment. It is a deformity known for many years but there is very little information in the literature about its etiology or the risk factors responsible for its occurrence.

While we know that this deformation is not always without consequence on the long-term prognosis of the ankle with risks of osteoarthritis. It therefore seemed appropriate to us to carry out this study by asking ourselves the following questions:

- Can we predict the occurrence of flat top slopes on early X-rays?
- Is there a link between the occurrence of flat top talus and the severity of clubfoot?
- Is the flat top talus acquired or congenital?
- Isn't it the result of surgery?

**Materials and Methods:** To provide an attempt to answer these different questions, we proceeded to the realization. To answer these questions, we conducted an extensive retrospective study over a period of 16 years. All children cared for in the orthopaedic department during our study period for a congenital idiopathic equine varus clubfoot were selected. Based on our inclusion criteria which were: \* follow-up from birth to the age of at least 7 years and the existence of strict profile radiography with the ankle in maximum dorsal flexion in children under 2 years of age and in charge in children over two years of age, a number of children had been retained. Within this selected group of children, we counted the number of club feet, thus constituting our study population. Our methodology was first to quantify the flat top slopes, using the flattening index R/L. With R the radius of curvature of the dome of the embankment and L the length of the embankment. Indeed, according to the study by Heljmested et al., the dome of the embankment could be assimilated to a half-sphere and whose radius of curvature could be measured by the method of mose's concentric rings. This was the case in our study. As for the length L, it corresponded to the distance from the posterior process of the embankment through the middle of its head to its intersection with the articular surface in the talonavicular joint. These measurements were made on 7-year X-rays. Thus our population had been subdivided into three groups: \*the group of feet having a small dome with a short slope and a small radius of curvature then at the other end, the group of feet having a flat top embankment with a very short slope but a radius of curvature very large and in the middle of the two groups, the group of feet having a normal dome. All measurements were carried out by two observers, namely an orthopaedic assistant and a confirmed orthopaedist.

**Results:** According to the Dimeglio scale, there was a grade 3 majority in the 3 groups but the severity of the grade did not significantly influence the distribution of the three groups. There was no significant difference between the different groups regardless of the age of the child when taking into account the R1 ratio.

**Conclusion:** The limitations of our study are obviously: the absence of the help of a radiologist in our measurements, to certify standardization and reproducibility between different X-rays and the limited number of radiological criteria defined.

## Long Term Effect of Transepiphyseal Implantation of Mg-Zn-Ca Implants on the Physis of Growing Sheep

**Romy Marek** (Department of Orthopaedics and Traumatology, Medical University of Graz, Graz, Austria), **Ulrich Kronsteiner** (Department of Orthopaedics and Traumatology, Medical University of Graz, Graz, Austria), **Uwe Schwarze** (Medical University of Graz, Graz, Austria), **Stefan Fischerauer** (Medical University of Graz, Graz, Austria), **Patrick Holweg** (Medical University of Graz, Graz, Austria), **Annelie-Martina Weinberg** (Department of Orthopaedics and Traumatology, Medical University of Graz, Graz, Austria)

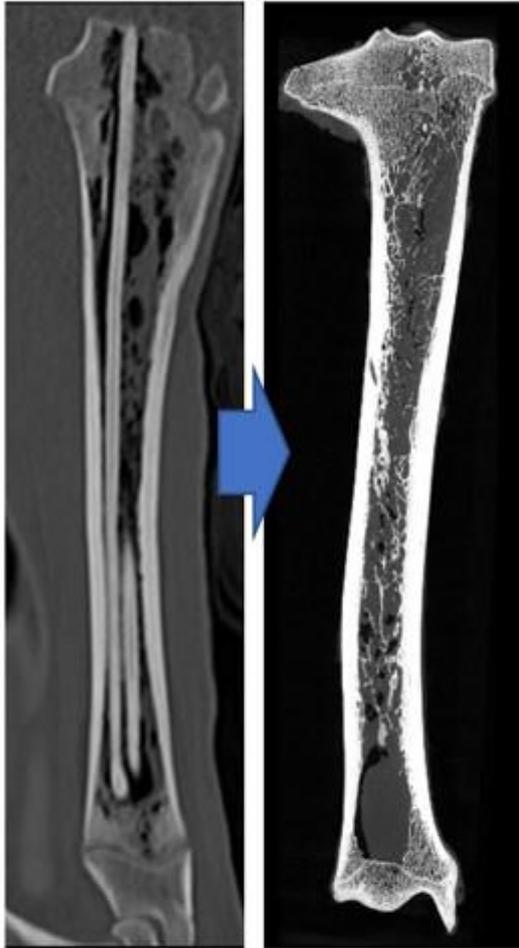
**Aim:** Bioresorbable implants offer new possibilities for fracture stabilization in the physeal area of growing children. In contrast to non-resorbable implants, they do not require removal surgery, avoiding repeated manipulation on the physis. Furthermore, as they dissolve completely, they vacate the physeal area over time. The aim of this project was to investigate the influence of bioresorbable Mg-Zn-Ca implants on the physis of juvenile sheep up to three years after implantation.

**Methods:** A total of 12 juvenile sheep was taken for this study, which was divided into two groups. One group underwent transepiphyseal implantation of Mg-Zn-Ca ESIN, the other group Mg-Zn-Ca screws into the tibia. The contralateral leg was either operated with titanium or left empty as a control. *In vivo* clinical CTs were performed up to 2.5 years after implantation, which we used to evaluate potential growth disturbances. The ESIN animals were euthanized after two or three years. *Ex vivo*  $\mu$ CT imaging was performed, in order to investigate the degradation state of the ESIN.

**Results:** The Mg-Zn-Ca ESIN were almost completely degraded after 3 years (Fig. 1). The Mg-Zn-Ca screws broke several weeks after implantation, withdrawing any potential pressure on the physeal area and thus, minimizing the risk of an early closure of the physis (Fig. 2). No difference in leg length was detected between the Mg-Zn-Ca legs and the contralateral control legs in both groups. Titanium legs were significantly shorter when compared to the contralateral Mg-Zn-Ca legs, starting 76 weeks after implantation, indicating an early closure of the physis.

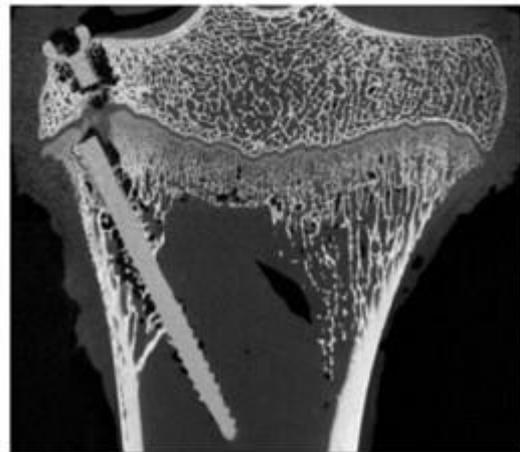
**Conclusion:** Transepiphyseal implantation of titanium screws leads to an early closure of the physis, resulting in growth discrepancies, which was not the case for Mg-Zn-Ca implants. Therefore, we suggest that Mg-Zn-Ca is a potential implant material for fracture stabilization in the physeal area of growing children.

*In vivo* 2 weeks    *Ex vivo* 3 years



*Figure 1: In vivo and ex vivo CT images of transepiphyseally implanted ESIN after 2 weeks and 3 years, respectively.*

*Ex vivo* 24 weeks



*Figure 2: Ex vivo  $\mu$ CT image of Mg-Zn-Ca screw 24 weeks after implantation. The screw broke in the area of the physis.*

## Inequitable postoperative outcomes seen in paediatric Indigenous patients: A scoping review

**Rachel J Livergant** (University of Alberta, Edmonton, Canada), **Catherine Binda** (University of British Columbia, Terrace, Canada), **Georgia Fraulin** (University of Alberta, Edmonton, Canada), **Sasha Maleki** (Pharmacy, Vancouver General Hospital, Fraser Health Authority, Vancouver, Canada), **Sarah Sibbeston** (University of Alberta, Edmonton, Canada), **Tracey Hillier** (Situating Knowledges: Indigenous Peoples and Place, University of Alberta, Edmonton, Canada), **Emilie Joos** (Department of Surgery, Vancouver General Hospital, Vancouver, Canada)

**Aim:** Surgical disease accounts for approximately 30% of the global burden of disease, with a large proportion comprising childhood congenital anomalies and injuries. Indigenous peoples face substantial health inequities globally, including in their surgical care, as evidenced by a recent review that demonstrated a 30% increase in postoperative complications for Indigenous Canadians. In light of mounting evidence that health during childhood is an important predictor of wellness as an adult, enhancing the health outcomes of underserved Indigenous children, including their surgical care, promotes ethical, social, and economic improvements of future generations. This study aims to assess inequities in postoperative morbidity and/or mortality for Indigenous paediatric patients in North America and Oceania.

**Methods:** A comprehensive electronic search of nine databases was conducted using relevant subject headings including “paediatric”, “Indigenous”, “postoperative”, “mortality”, “complications”, and related terms. Abstracts and full-texts were reviewed for inclusion criteria. Data was extracted using predefined forms. A narrative analysis of results was conducted due to heterogeneity of included studies.

**Results:** 13 articles met inclusion criteria. Six surgical specialties were represented: general surgery (3/13), urology (3/13), neurosurgery (2/13), otolaryngology (2/13), cardiac surgery (2/13), ophthalmology (1/13). Eight studies were in Oceania (four Australia, four New Zealand) and five studies in North America (three USA, two Canada). Of the 13 studies, 8 (61.5%) described increased perioperative morbidity for Indigenous children including increased rates of infection (n=2/3), readmission (n=2/3), transplant rejection (n= 3/3), and mortality (n=3/4). Length of hospital stay and postoperative complications such as anemia were also increased for Indigenous paediatric patients(2/2).

**Conclusions:** Pediatric Indigenous patients globally experience poorer surgical outcomes, as evidenced by their increased postoperative complications. Healthcare workers must collaborate with Indigenous communities to investigate the root causes of these outcomes and work towards providing equitable and culturally appropriate surgical care to these diverse populations.

## Surgical Management of Megaureters – Armed Forces Experience

**Navdeep Singh Dhoat** (HOD Paediatric Surgery, All India Institute of Medical Sciences, Bathinda, India), **Col Raman VS** (Paediatric surgery, Army Hospital Research and Referral, New Delhi, India), **Manu Arora** (HOD Paediatric Surgery, Army Hospital Research and Referral, New Delhi, India)

**Aim:** Megaureter describes a ureter that is abnormally dilated and by definition equates to a ureter more than 8 mm in diameter. We present our experience of dealing with megaureters over the last one year.

**Method:** 10 cases of megaureter were managed in our centre over the last one year. Following parameters were studied i.e. age, sex, symptoms and duration of symptoms.

**Results:** We had 6 boys and 4 girls with megaureters (total of 10 ureters) out of which 3 were secondary. 2 cases were having left nonfunctional kidney. Median age at operation was 51 months (range 4 to 132 months) and duration of symptoms was 6.5 months (range 1 1/2 to 36 months). 7 had urinary symptoms and none had lump. (USG) Ureteric diameter ranged between 2.5 – 4 cm. 8 were unilateral megaureter (right side was involved in 5 and left in 3) and two was bilateral. 5 were refluxing, 3 were obstructing and 2 was obstructing and refluxing. In 1 patient right ureteric opening was ectopic (vagina) and left more medially and inferiorly and orthotopic in the remaining. Tapering was done in all cases. 6 underwent Hendren's tapering and 4 underwent plication (kalicinski's). Post op course was uneventful in all patients. Follow up scans reveal a decrease in ureteral diameter in all cases ranging from 1.2 – 2 cm. None of the postop EC scans show any obstructive clearance or reflux on MCU.

**Conclusion:** Excisional tapering is the preferred technique in our institute to tackle megaureter and is safe and effective in pediatric patients.

## POSTER WALK 19

### Miniinvasive surgery and Global Surgery 2

#### Surgical Conditions and Unmet needs of children in a rural setting of Pakistan: Results of a cross-sectional, household SOSAS & PediPIPES survey

**Saqib Hamid Qazi** (Section of Pediatric Surgery, Dept. of Surgery, Aga Khan University, Karachi, Pakistan), **Saqib H Qazi** (Aga Khan University, Karachi, Pakistan)

**Aim/Background:** Surgical Conditions are responsible for up to 15% of total disability adjusted life years lost globally. Worldwide estimates have found that approximately 4.8 billion people have no access to surgical care and within South Asia, greater than 95% of the population does not have access to care for conditions that require surgical management. A large disproportion exists between the wealthiest and poorest third of the population globally, with the wealthy receiving a major share of surgical procedures and the poor receiving only 3.5%. This study used the Surgeons Overseas Assessment of Surgical Need (SOSAS) and Pediatric Personnel, Infrastructure, Procedure, Equipment, and Supplies (Pedi PIPES) survey in Tando Mohammad Khan a rural district in Sindh, Pakistan to assess the surgical needs in children under five years, health facilities in the area along with the health seeking behavior of the community.

**Methods:** Data was collected through SOSAS and PediPIPES survey tool between 22<sup>nd</sup> November 2019 and 28<sup>th</sup> February 2020 from a total of 3,643 households in Tando Mohammad Khan district Sindh Pakistan. The SOSAS survey was carried out with the help of research associates who were trained for data collection. Mothers of the households provided information about their children (Age < 5 years) and the data was recorded electronically via an application developed by the District Monitoring Unit (DMU).

The PIPES survey information was collected on hard copies from all 39 health care facilities in the district which included rural health clinics (RHC) basic health units (BHU) district council dispensaries (DCD) and district head quarter (DHQ) hospitals. Data was collected by core team members which included a research coordinator and research specialist. The data was then entered onto an excel sheets.

**Results:** A total of 3,643 households participated, in which 3,821 mothers were surveyed and information about 6,371 children was collected. A total of 1,794 children were identified to have 3,072 lesions that required surgical attention. We categorized the lesions requiring surgical care according to six regions of the body. Head and neck accounted for the greatest number of lesions (n = 1,697) and the most significant unmet surgical need (16.6%). The chest region had 102 lesions and the least unmet surgical need of 5.9%, back accounted for 87 lesions with an unmet surgical need of 6.9%, abdomen had 493 lesions and an unmet surgical need of 13.4%. A total of 169 lesions were found on buttocks/groin/genitalia region with an unmet surgical need of 14.8%, while extremities presented with 296 lesions amounting to 11.8% unmet surgical need. A total of 39 health facilities were identified and surveyed in the TMK district, consisting of one District Headquarter Hospital (DHQ), three Rural Health Clinics (RHC), 14 Basic Health Units (BHU) and 21 District council Dispensaries (DCD). These facilities were assessed using Pediatrics Personnel, Infrastructure, Procedures, Equipment and Supplies (Pedi PIPES) survey form. Trained staff, consisting of six doctors and two trained nurses, were present only at the DHQ. None of the other facilities had trained staff. The facilities comprised of 197 beds of which 22 were allocated for pediatric patients. Basic procedures such as suturing, wound debridement and incision and drainage were performed more commonly than the more complex procedures. Most hospitals were found to have a good availability of equipment and supplies. PediPIPES scores and indices were calculated for the 39 health facilities in the area. The DHQ was found to have the highest score.

**Conclusions:** This study in Tando Mohammad Khan, Sindh is the first execution of the SOSAS survey in Pakistan. The SOSAS survey tool provides important insight into the burden of operative disease in Pakistan's rural district of Tando Mohammad Khan. The results show a significant need for operative care, which has important implications for the global operative community as well as for strengthening the local health system in Pakistan. This data is useful preliminary evidence that emphasizes the need to further evaluate interventions for strengthening surgical systems in rural Pakistan.

## Scientific work in Pediatric Surgery Worldwide

**Saïoa Santiago-Martínez** (Pediatric Surgery Department, Recerca I3PT. Institut d'Investigació i Innovació Parc Taulí, Parc Taulí University Hospital, Sabadell, Spain), **Shilpa Sharma** (Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, India), **Ruta V Dagilyte** (Pediatric surgery department, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania), **Sarah Ellul** (Paediatric Surgery Department, Mater Dei Hospital Malta, Swatar, Malta), **Dayang A Abdul Aziz** (Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia), **Judith Lindert** (Great Ormond Street Hospital, London, UK), **Paula J Arribas** (Pediatric Surgery Department, Parc Taulí University Hospital, Sabadell, Spain), **Gabriella Grech** (Department of Paediatric Surgery, Mater Dei Hospital, Msida, Malta), **Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Touabti Souhem** (Mother and child hospital, Setif, Algeria), **Helena Reusens** (Department of Pediatric Surgery, Queen Fabiola University Children's Hospital – ULB, Brussels, Belgium), **Sofia Vasconcelos-Castro** (Department of Pediatric Surgery, Centro Hospitalar Universitário São João, Porto, Portugal), **Charlotte Vercauteren** (Pediatric surgery, UZ Brussel – UZ Antwerpen – Saffier, Brussels, Belgium), **WomenInPediatricSurgery** ([womeninpediatricsurgery.org](http://womeninpediatricsurgery.org))

**Aim:** Little is known about the involvement of pediatric surgeons (PS) in scientific activities including research. We aimed to investigate this amongst PS worldwide.

**Methods:** Colleagues worldwide were asked to anonymously fill out an online questionnaire. Data obtained were demographics, time spent on research, congress attendance, publication output and cost involved.

**Result:** 526 PS responded (57% female and 43% male). 61% worked in University Hospitals; 9% at a University Faculty and 1% in a research facility. Only 23% were involved in research (21% of the females and 26% of the males).

76% of the respondents gave information about the attendance at a congress. Of those 72% attended at least one national and 74% one international scientific congress, 69% presented a scientific paper on a national and 56% on an international congress. Despite the active involvement of the pediatric surgeons 84% had to self-sponsor for at least one congress, 24% got funds from their hospitals.

Of those PS who were involved in research, extra time was needed for research especially in female PS (63% female and 35% of male). Only 10% of females were fully paid for their official scientific work time in comparison to 29% of males. As for publication output, 84% of the respondents had at least one scientific publication, 53% have a regular research group for publishing. Scientific reviews were performed by 51% of the respondents, and work as an editorial editor by 28%.

**Conclusion:** Only 23% of the responding PS spent time on scientific activities including research. Many PS had to find time outside working hours with little remuneration. To increase research activities in pediatric surgery regular payment for research work and support for the congress attendance needs to be highlighted and addressed.

## Understanding childhood abdominal tuberculosis through patients' and family experiences: a community engagement initiative

**Ritu Jain** (NIHR Global Health Research Unit on Global Surgery, India Hub, Christian Medical College, Ludhiana, India), **Susan John** (NIHR Global Health Research Unit on Global Surgery, India Hub, Christian Medical College, Ludhiana, India), **Karolin Kroese** (NIHR Global Health Research Unit on Global Surgery, University Of Birmingham, Birmingham, UK), **Atul Suroy** (NIHR Global Health Research Unit on Global Surgery, India Hub, Christian Medical College, Ludhiana, India), **Balwinder Kaur** (NIHR Global Health Research Unit on Global Surgery, India Hub, Christian Medical College, Ludhiana, India), **Karan Dhir** (NIHR Global Health Research Unit on Global Surgery, India Hub, Christian Medical College, Ludhiana, India), **Dhruva N Ghosh** (NIHR Global Health Research Unit on Global Surgery, India Hub, Christian Medical College, Ludhiana, India)

**Background & Aims:** Childhood abdominal tuberculosis (TB) is the second most common extrapulmonary site.

Community Engagement and Involvement identifies and involves local communities, to collaborate in planning implementation strategies as well as dissemination of research outcomes.

We tried to capture the patient's journey from the first symptom to recovery, aiming to identify the dissemination pathway for the clinical data to key stakeholders within the community.

**Methods:** Parents of nine former patients were asked about their experiences of being treated for abdominal TB. An identified nurse who was involved with their care during the hospital stay conducted these interviews.

Due to the Covid-19 pandemic interviews were telephonic in the local language.

A semi-structured script guided the interview that addressed personal experiences, thoughts and concerns of patients and their families. Conversations were recorded, transcribed and translated to extract themes.

**Results:** The main barrier for early treatment was a lack of knowledge amongst families and healthcare professionals in rural/smaller hospitals and led to uncertainty and delay in treatment.

There was an emotional impact of worrying about their child's health, their future, caring for the rest of the family alongside looking after their sick child as well as the burden of out of pocket expenditure for treatment.

The children themselves had to endure months of severe pain and dealing with stigma.

**Discussion:** Involvement of community members in health research is new for for researchers in the global south with little reported evidence of the impact this may have on the outcomes of research.

Exploring the experiences of patient families has provided direction on the importance of involving the end-user in research. Contrary to initial assumptions we found that the main barrier is misdiagnosis rather than late presentation.

Dissemination pathways to reach these key stakeholders should be identified to ensure raising awareness and prevention.

## The significance of laboratory inflammatory indices in children with acute appendicitis

**Ali Tarabieh** (Pediatrics, Ziv Medical Center, Safed, Israel), **Doua Bakri** (Pediatrics, Ziv Medical Center, Safed, Israel), **Hino Bian** (Pediatrics, Ziv Medical Center, Bar-Ilan University, Safed, Israel), **Alon Yulevich** (Pediatric Surgery, Ziv Medical Center, Bar-Ilan University, Safed, Israel)

**Aim:** Acute appendicitis is the most common urgent non-traumatic surgical disease in children. The study aimed to recognize a correlation between white-blood-cell count (WBC), neutrophil cell proportion, and C-reactive protein (CRP) – inflammation indices – and the course of acute appendicitis.

**Methods:** In a retrospective study, we collected children diagnosed with acute appendicitis between 1.1.2015 and 31.12.2019. Clinical, laboratory, imaging, appendectomy, and histological data were collected and analyzed. Children with a peri-appendicular abscess treated conservatively without early operation were not studied, as were not children with suspected appendicitis.

**Results:** The study included 300 children that underwent appendectomy, 65% boys ( $p < 0.05$ ). Their average age was 11-years-old (3-18). Thirty-eight percent of children arrived at the hospital within 24 hours since abdominal pain onset, and 45% after 36 hours. The P-value for WBC, neutrophil percent, and CRP in patients arriving at the hospital after 35 hours or later was 0.03, 0.02, and 0.01, respectively. Abdominal ultrasound was diagnostic in 84% of patients and computerized abdominal tomography in 100%, done in 97% and 10% of patients, respectively. The operative results matched histological examination, with 7% uninfamed appendix. Appendectomies and postoperative courses were uneventful.

**Conclusions:** In our study population, all inflammation indices rose significantly 1.5 days since acute appendicitis onset. Hence, acute appendicitis should be highly suspected in those children.

These tests do not help diagnose or rule out acute appendicitis in children with the shorter unclear disease.

## Multisystem inflammatory syndrome (MIS-C) in children presenting as acute abdomen in children: surgical perspectives

**Petra Zahradnikova** (Department of Paediatric Surgery, Comenius University Medical School in Bratislava, National Institute of Children's Diseases, Bratislava, Slovakia), **Dáša Mišíková** (Department of Paediatrics, Comenius University Medical School in Bratislava, National Institute of Children's Diseases, Bratislava, Slovakia), **Lenka Fedorová** (Department of Paediatric Surgery, Comenius University and National Institute of Children's Diseases, Bratislava, Slovakia), **Martin Smrek** (Department of Paediatric Surgery, Comenius University and National Institute of Children's Diseases, Bratislava, Slovakia), **Igor Béder** (Department of Paediatric Surgery, Comenius University and National Institute of Children's Diseases, Bratislava, Slovakia), **Jozef Babala** (Department of Paediatric Surgery, Comenius University and National Institute of Children's Diseases, Bratislava, Slovakia), **Barbora Balažiová** (Department of Paediatrics, Comenius University and National Institute of Children's Diseases, Bratislava, Slovakia), **Tomáš Dallos** (Department of Paediatrics, Comenius University and National Institute of Children's Diseases, Bratislava, Slovakia)

**Aim:** MIS-C is an identified complication of the COVID-19 infection. In patients with MIS-C, the majority report gastrointestinal signs and symptoms, however acute abdomen (AA) and MIS-C may pose a clinical challenge. We aim to analyse the management of patients presenting with AA and MIS-C.

**Method:** Retrospective analysis of children admitted with MIC-C and AA between June 2020 and March 2022 were performed.

**Results:** Of 34 children admitted to PCUs with confirmed MIS-C, median age was 7.25 (range: 2.5-17) years; 66.7% male. Fever (97%), exanthema n = 27 (79.4%) and conjunctivitis n = 25 (73.5%) were the common presenting symptoms. Organ-system involvement included the gastrointestinal system in 64.7% patients (abdominal pain (64.7%), vomiting (58.8%) and diarrhoea (50%); cardiovascular in 19 (55.9%), CNS in 4 (11.8%), mucocutaneous in 27 (79.4%), and respiratory in 8 (23.5%). Six (17.6%) children had a clinical diagnosis of acute abdomen. Clinical and laboratory characteristics are shown in Table 1. Final diagnoses were mostly non-surgical (4/6, 66.6%), such as mesenteric lymphadenitis (3/6, 50%), ileitis/enteritis (2/6, 33.3%), splenomegaly (2/6, 33.3%) and ascites (3/6, 50%). Laparoscopic appendectomy (LSK) was performed in 2 (5.8%) of children with MIS-C, with pathological findings of phlegmonous appendicitis, no perforation occurred. The median hospitalisation time was 12.8 days (11 in LSK vs. 13.8 in conservatively treated group), median follow up was 222.5 days (332.5 vs. 167.5). There was no death or surgical complication during the follow up period.

**Conclusion:** Our study showed that children often present with acute abdomen during MIS-C, however mostly due to non-surgical pathology. Surgery in patients with clinical signs of acute abdomen and MIC-C syndrome should be carefully evaluated and weighing risk/benefit of surgical procedures.

Table 1. Characteristics of patients with acute abdomen

Characteristics	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Age		7.5	14	2.5	11	11
M/F	M	M	F	M	M	M
Days after COVID-19	24	60	44	30	NA	35
<b>Presenting symptoms</b>						
Fever (°C, days)	40 (2)	39 (7)	39 (5)	40 (6)	40 (5)	38.8 (6)
Abdominal pain	yes	yes	yes	yes	yes	yes
Vomiting	yes	yes	yes	yes	yes	yes
Diarrhoea	no	yes	yes	yes	yes	no
Cardiovascular symptoms (tachycardia/hypotension)	yes	yes	yes	yes	no	No
Respiratory symptoms	No	no	yes	no	yes	no
Mucocutaneous symptoms	no	yes	no	yes	yes	no
CNS symptoms	yes	no	no	no	no	no
<b>Laboratory parameters</b>						
CRP (mg/l)	201.1	334.7	307.1	147.3	427.9	169
PCT (ug/l)	7.58	37.06	7.74	1.25	68.49	2.28
IL6 (pg/ml)	130.4	812	1370	221.2	325.5	226.2
Haemoglobin (g/dL)	107	92	110	104	84	115
WBC count (10 <sup>9</sup> cells/L)	7	4.66	31.56	9.42	10.37	8.83
Platelet count (10 <sup>9</sup> cells/L)	197	130	114	153	82	201
AST (ukat/l)	0.64	0.66	0.34	0.5	2.98	0.47
ALT (ukat/l)	0.42	0.74	0.36	0.44	1.9	0.37
Thorax x-ray (pneumonia)	yes	yes	yes	no	yes	yes
Echocardiography (low function)	yes	no	no	no	no	no
<b>Treatment</b>						
Surgery	LSK APP	0	0	0	LSK APP	0
Pathological findings	App. phlegmonous				App. phlegmonous	
Antibiotic	yes	yes	yes	yes	yes	yes
Antiviral	no	no	no	no	no	no
Corticosteroids	0	1	1	1	1	1
Intensive care unit (days)	yes (3)	yes (7)	yes (3)	no	yes (8)	no
Length of stay (days)	9	29	10	6	13	10
Mortality	no	no	no	no	no	no
Complications	no	no	no	no	no	no
Follow up (days)	545	30	375	150	120	115

## Giant Omphalocele: Paint and Wait

**Takwa Mili** (Pediatric Surgery B, Bechir Hamza Children Hospital, Tunis, Tunisia), **Awatef Charieg** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Marzouki Meryem** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Intissar Chibani** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Anis Fadhlouli** (Aziza Othmana Hospital, Tunis, Tunisia), **Tarek Boukesra** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Yosra Ben ahmed** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Faouzi Nouira** (Bechir Hamza Children Hospital, Tunis, Tunisia), **Said Jlidi** (Bechir Hamza Children Hospital, Tunis, Tunisia)

**Aim:** Despite the numerous methods of closure for giant omphaloceles, uncertainty persists regarding the most effective option. In the present study, we sought to describe our recent institutional experience with this condition using the so called ‘paint and wait’ management of omphalocele.

### Cases description:

**Case 1:** S.T, a female infant was delivered at 38 weeks’ gestation by primary elective cesarean section. Abdominal wall defect was detected on prenatal ultrasonography. Due to the large size of the defect and small abdominal domain, nonoperative management was initiated using silver sulfadiazine cream to accelerate epithelialization. The infant was discharged at 2 months of age, at which point the sac was almost completely epithelialized. Discharge instructions included continued silver sulfadiazine and external compression dressings to the wound. On outpatient follow-up at 18 months, the infant’s omphalocele sac was well epithelialized, and the defect was markedly smaller. Surgical closure was then performed. After 2 years of follow-up, our patient is home, doing well with no residual eventration.

**Case 2:** Y.S, a male infant with a birth weight of 3,200 g. was born at 39 weeks’ gestation with an omphalocele as an isolated birth defect. It contained the liver and small intestines. The omphalocele sac was treated with silver sulfadiazine cream. Complete eschar formation was achieved at the time of discharge, and the infant went home with compression dressings at 1 month of age. The surgical closure was performed when the defect size has plateaued and the omphalocele sac was well epithelialized. Postoperative course was uneventful and he was discharged in stable condition.

**Conclusions:** Primary nonoperative delayed management may lower mortality, and shorten time to full feedings, which may potentially improve long-term neurodevelopment. This method should be considered as the primary strategy and surgical standard to manage the giant omphalocele.

## Neuroma appendicis in children

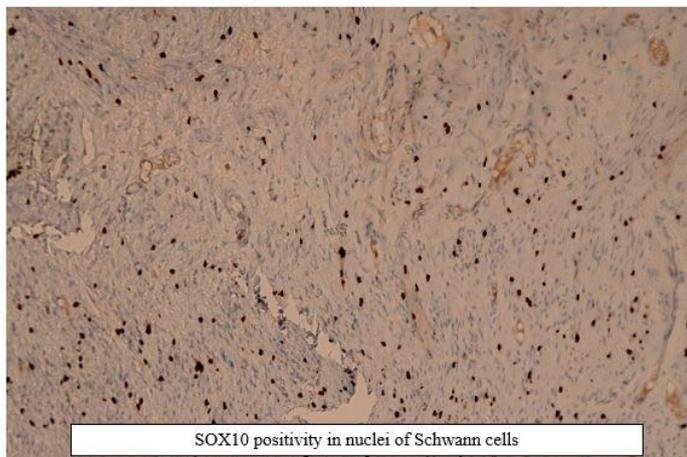
**Lenka Fedorová** (Department of Pediatric Surgery. Comenius University in Bratislava, National Institute of Children's Diseases, Bratislava, Slovakia), **Petra Zahradníková** (Department of Pediatric Surgery. Comenius University in Bratislava, National Institute of Children's Diseases, Bratislava, Slovakia), **Rebeka Pečanová** (Department of Pediatric Surgery. Comenius University in Bratislava, National Institute of Children's Diseases, Bratislava, Slovakia), **Peter Švajdler** (Cytopathos, spol. r.o., Bratislava, Slovakia), **Jozef Babala** (Department of Pediatric Surgery. Comenius University in Bratislava, National Institute of Children's Diseases, Bratislava, Slovakia)

**Aim of the study:** Acute appendicitis is the most common acute inflammatory surgical emergency in children. Preoperative diagnosis of exact appendicular pathologies is unknown. Neuroma of appendix is not common lesion from stromal tumor.

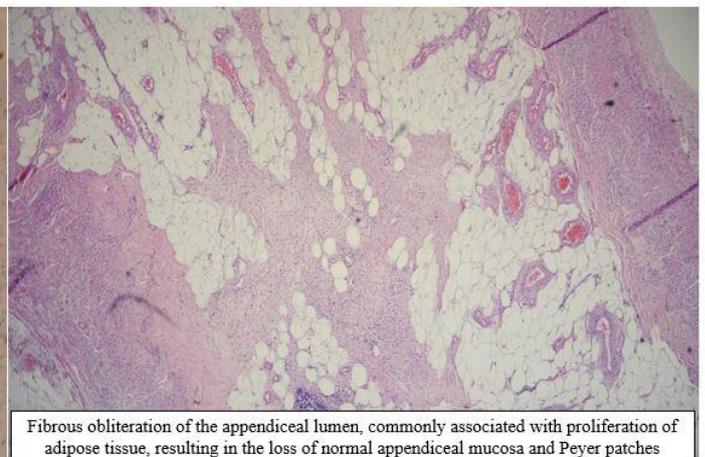
**Case description:** We present two cases of children with symptoms of acute abdomen, surgery was performed in both cases. The final pathological diagnosis was obliterative fibrosis – neuroma appendicis.

1. A) 16-year old male admitted to the hospital for subacute appendicitis, followed by a laparoscopic appendectomy after 6 months.
2. B) 12-year old male admitted to the hospital for acute abdominal pain, underwent a laparoscopic appendectomy with phlegmonous altered appendix and Meckel diverticulum was resected too.

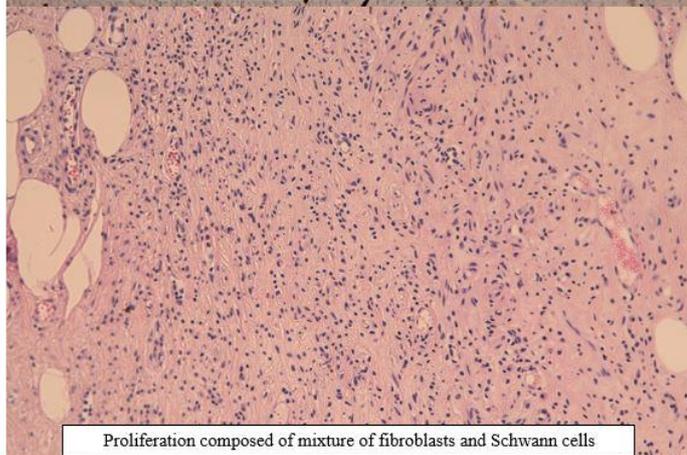
**Conclusions:** Complete surgical excision of the appendix is the treatment of choice. Neuroma of appendix is possible precursor for malignant tumor (carcinoid). Patients are in the pediatric oncologist's dispensary. In both patients observation is recommended 1 year after complete resection of appendix at 3-month intervals.



SOX10 positivity in nuclei of Schwann cells



Fibrous obliteration of the appendiceal lumen, commonly associated with proliferation of adipose tissue, resulting in the loss of normal appendiceal mucosa and Peyer patches



Proliferation composed of mixture of fibroblasts and Schwann cells

## How common is abnormal histology on routine endoscopic surveillance of OA patients?

**Shruti Saxena** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Clare Skerritt** (paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Celine Perera** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK), **Robin Garrett-Cox** (Paediatric Surgery, Bristol Royal Hospital for Children, Bristol, UK)

**Aim:** A recent systematic review assessing the prevalence of Barrett's oesophagus and oesophageal cancer in patients born with OA suggested routine surveillance in this group. 1 Our centre offers 5 yearly surveillance endoscopy (OGD) to all OA patients with the aim of assessing presence of oesophageal inflammation (reflux related or eosinophilic) and individualising treatment. The aim of this study is to report the rate of pathological findings on histology when the majority of OA patients are screened.

**Methods-** A retrospective review of a prospectively maintained patient database was conducted as a service evaluation including all patients born between 2006 to 2016. Number of OGDs and biopsies were collected alongside biopsy results.

**Result:** 120 patients underwent surgery for OA. 19 (9.5%) patients were lost to follow-up/ moved out of area before age 5 years. 5 patients (4.2%) died during follow-up from other co-morbidities. 3 (2.5%) patients had isolated trachea-oesophageal fistula and were not routinely offered endoscopy and 6 (3%) patients declined screening. 87 patients had at least one routine OGD; 56 (64%) normal histology, 30 (35%) had mild/moderate chronic inflammation, 2 (1.7%) had basal cell hyperplasia. 45 patients had 2 OGDs; 27 (60%) normal, 16 (35%) mild/moderate chronic inflammation, 2 other changes. 20 patients had 3 OGDs; 10 (50%) normal, 8 (40%) mild/moderate, 1 (5%) severe inflammation, 1 (5%) Barrett's oesophagus. Histology did not improve over the course of childhood despite maximal medical treatment or surgical intervention.

**Conclusion:** Chronic inflammation is a common finding in patients with OA and did not improve over time. In this series one child developed Barrett's oesophagus- a risk of 1%, and 1 eosinophilic oesophagitis a risk of 1%

1. Tullie L, Kelay A, Bethell GS et al. Barrett's oesophagus and oesophageal cancer following oesophageal atresia repair: a systematic review. BJS Open 2021 zrab069.

	Normal	Eosinophilic oesophagitis	Mild/moderate chronic oesophagitis	Other changes	Barrett's oesophagus
First histology(n=87)	56	1	29	2 basal cell hyperplasia	
Second histology(n=45)	27		16	1-fungal hyphae 1- H.pylori	
Third histology(n=20)	10		9		1

## Five Years' Experiences in Robotic Assisted Laparoscopic Surgery in Children at a Single Center

**Sevim Ecem Unlu Balli** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Gokhan Berktug Bahadir** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Gulenay Korkmaz** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Ozlem Ekici** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Bahadir Caliskan** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Ervin Mam-bet** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Haluk Ozturk** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Ilhami Surer** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey), **Suzi Demirbag** (Pediatric Surgery, Gulhane Training and Research Hospital Department of Pediatric Surgery, Ankara, Turkey)

**Aim:** Robotic-assisted laparoscopic (RAL) surgery has started to get a common acceptance last 15 years in routine pediatric surgical practice. The aim of this study is to examine the overall experience at a single pediatric surgery clinic for common robotic procedures.

**Patients and Methods:** Data of children who underwent robotic surgery between May 2017-April 2022 were retrospectively reviewed.

**Results:** In last 5 years period, 60 robotic surgical procedures were performed in 45 patients. Nineteen of those were girls (1-17 y, med 6), 25 of were boys (1-17 y, med 6). Our first two cases were female patients with simple ovarian cysts (15,17 y). Then, we moved on more complex surgeries in smaller children. The urological procedures included pyeloplasty (n=14), heminephrectomy (n=3), ureteroneocystostomy (n=11), appendicovesicostomy and ureteroneocystostomy (Mitrofanoff procedure) (n=1). We also performed Nissen fundoplication with gastrostomy in eleven children with neurological impaired (one of them was Nissenfundoplication, gastrostomy and gastrojejunostomy). Adrenal mass excision was performed in one patient A thoracic mass excision was performed in a child with paraganglioma. The average hospital staying time was 8 days. There were no conversion to open surgery.

**Conclusion:** RAL procedures in children have been reported and proven as a safe and efficient technique before. However contrary the other surgical disciplines in adults, it is still in its infancy in pediatric surgery. Solving some important technical and financial problems related with RAL will give additional further momentum for using RAL as a main surgical tool.

**Keywords:** child, robot surgery, experience

## A giant serous paratubal cystadenoma treated laparoscopically in an adolescent

**Ghada Habbachi** (Pediatric surgery A, children Hospital Bechir Hamza, Tunis, Tunisia), **Yasmine Houas** (Pediatric surgery A, Children hospital Bechir Hamza, Tunis, Tunisia), **Senda Houdi** (Pediatric surgery A, children Hospital Bechir Hamza, Tunis, Tunisia), **Sabrina Ben Ammar** (Pediatric surgery A, Children Hospital Bechir Hamza, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children Hospital Bechir Hamza, Tunis, Tunisia)

**Introduction:** Paratubal cysts are rare usually occur in adult women representing only 5 to 20% of all adnexal tumors. They are usually small and asymptomatic however in rare cases they can reach large sizes. It should be included in all differential diagnosis of pelvic cysts as it is hardly distinguished via imaging. Herein, we report a case of a giant paratubal cyst diagnosed peroperatively in an adolescent.

**Case report:** A 14-year-old teenage girl presented to our department complaining from abdominal bloating, constipation and urinary disorders evolving for almost 3 months. Ultrasonography showed a giant unilocular cystic lesion with some septations extending from the pelvis up to the epigastria and displacing the surrounding viscera. Both ovaries and uterus were visualized and were normal. With the preoperative diagnosis of giant cystic lymphangioma, laparoscopic treatment was planned. No specific tumor markers were necessary. Using open celioscopie, a primary trocar was placed. The cyst was giant measuring 30\*40cm, unilocular with a smooth surface and no solid growth and had no attachments to the abdominal wall, intestine or mesentery. Two 5 mm trocars were placed under direct vision in the left hypochondrias and the right flank. A primary aspiration was necessary and around 4 liters of serous clear fluid was drained without spillage. After decompression, the giant cyst was found to be originating from paraovarian structures on the right side adjacent to the ipsilatérale ovary. It was densely fixed to an extremely elongated right fallopian tube. The cyst was afterward easily exteriorized via the extended incision of the supraumbilical port and Cystectomy was preceded. The patient was discharged after 24 hours and has an uneventful follow-up. Histology confirmed a benign serous cystadenoma and the patient remains under surveillance.

**Conclusion:** Paratubal cysts are rare in children and adolescent with a lack of a standard protocol of imaging and surgical management. Diagnosis is usually incidental but it should be recalled in all cystic pelvic lesions. Laparoscopy is safe and feasible even in giant cysts but leakage should always be avoided.

## Endoscopic intragastric balloon therapy for pediatric patients: A case report

**Aynur Gurbanova** (Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey), **Ege Evin** (Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey), **Ergun Ergün** (Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey), **Gülnur Göllü, Bahadır** (Pediatric Surgery, Ankara University Faculty of Medicine, Ankara, Turkey)

**Aim:** Endoscopic intragastric balloon placement is often used procedure in bariatric surgery. The intragastric balloon occupies space in the stomach and creates a feeling of satiety, reducing the patient's desire to eat. It is aimed to demonstrate that endoscopic gastric balloon placement is a safe and successful bariatric surgical procedure in pediatric patients followed up for morbid obesity.

**Case Description:** A 14-year-old male patient was operated for craniopharyngioma 7 years ago, and he started to gain weight after the operation. The patient uses steroid therapy, milrinone, growth hormone and levothyron for panhypopituitarism, and metformin for type 2 diabetes. The patient's weight was 112 kg, her height was 154 cm, and her BMI was 47.2 kg/m<sup>2</sup>. It was planned to apply the gastric balloon procedure, which was planned to continue for 6 months, with the result of the council made with the pediatric endocrinology department. The patient was positioned on the right side under general anesthesia. First, the esophagus, gastroesophageal junction, and stomach were examined with an endoscope. No pathology was observed. The gastric balloon was then advanced to the stomach by the aid of endoscopy. The balloon was inflated with saline mixed with methylene blue just below the level of the gastroesophageal junction. The balloon has detached from its cover. The balloon was inflated enough to pass an endoscope through the stomach wall and the procedure was terminated. The patient oral feeding started in the 2nd postoperative hour. He was discharged home on the 1st postoperative day.

**Conclusions:** Endoscopic gastric balloon placement is a bariatric surgical procedure that can be performed easily and safely in pediatric patients. The procedure can be applied before sleeve gastrectomy to help patients lose weight, to perform the surgery more comfortably, and to reduce complications that may occur after surgery.

## POSTER WALK 20G

## Various 2

## Cloacal malformation management in a low-income country

**Manuela Ehua** (Department of pediatric surgery of teaching Hospital of Treichville, Abidjan, Cote d'Ivoire), **Olivier Moulot** (Pediatric surgery of Teaching Hospital of T, Abidjan, Cote d'Ivoire), **Kouamé Agbara** (Pediatric surgery department of the Teaching Hospital of Treichville, Abidjan, Cote d'Ivoire), **Roumanatou Bankolé** (Pediatric surgery department at Teaching hospital of Treichville, Abidjan, Cote d'Ivoire), **Jean Marie Konan** (pediatric surgery department at Teaching hospital of Treichville, Abidjan, Cote d'Ivoire), **Helen Audrey Thomas** (pediatric surgery department at Teaching hospital of Treichville, Abidjan, Cote d'Ivoire)

**Aim:** The cloacal malformation is the most complex of the anorectal malformations. It is a rare malformation (1/50,000 births), with variable anatomical forms, sometimes associated with severe cases of multiple uro-gynecological abnormalities.

The purpose of this study was to report the results of their care in a low-income country.

**Material and Methods:** We performed a retrospective study on medical files of children operated on for cloacal malformation from January 1999 to December 2020.

**Results:** We collected 22 cases, including 17 diagnosed at birth and the other 5 children received at 8 months, 4 years-old, 5 years-old, 10 years-old and 12 years-old. The 10-year-old child was received second-hand after the proctoplasty. The imaging assessment allowed to measure the length of the common channel in 10 patients and had objectified associated hydrocolpos in one case, moderate left hydronephrosis in 2 cases. We performed a colostomy to all patients.

Eight patients were not seen again after the colostomy. We performed proctoplasty via the postero-sagittal approach Pena with urogenital mobilization in 6 patients who had a short common channel less than 3 cm. We combined laparotomy with the postero-sagittal approach in 4 other patients who had a long common channel, we performed proctoplasty, vaginoplasty and the common channel was kept as an urethra.

Four patients are waiting definitive treatment.

Nine children were urinary continent, 6 were stool continent and the other 3 were partially stool incontinent.

**Conclusion:** Cloacal malformation remains a surgical challenge. Early diagnosis and better follow-up of children placed in colostomy will reduce the number of lost sights in a low-income country as our country.

## Polypoid heterotopic gastric Mucosa of terminal ileum causing extensive lower gastrointestinal bleeding in the absence of Meckel's diverticulum

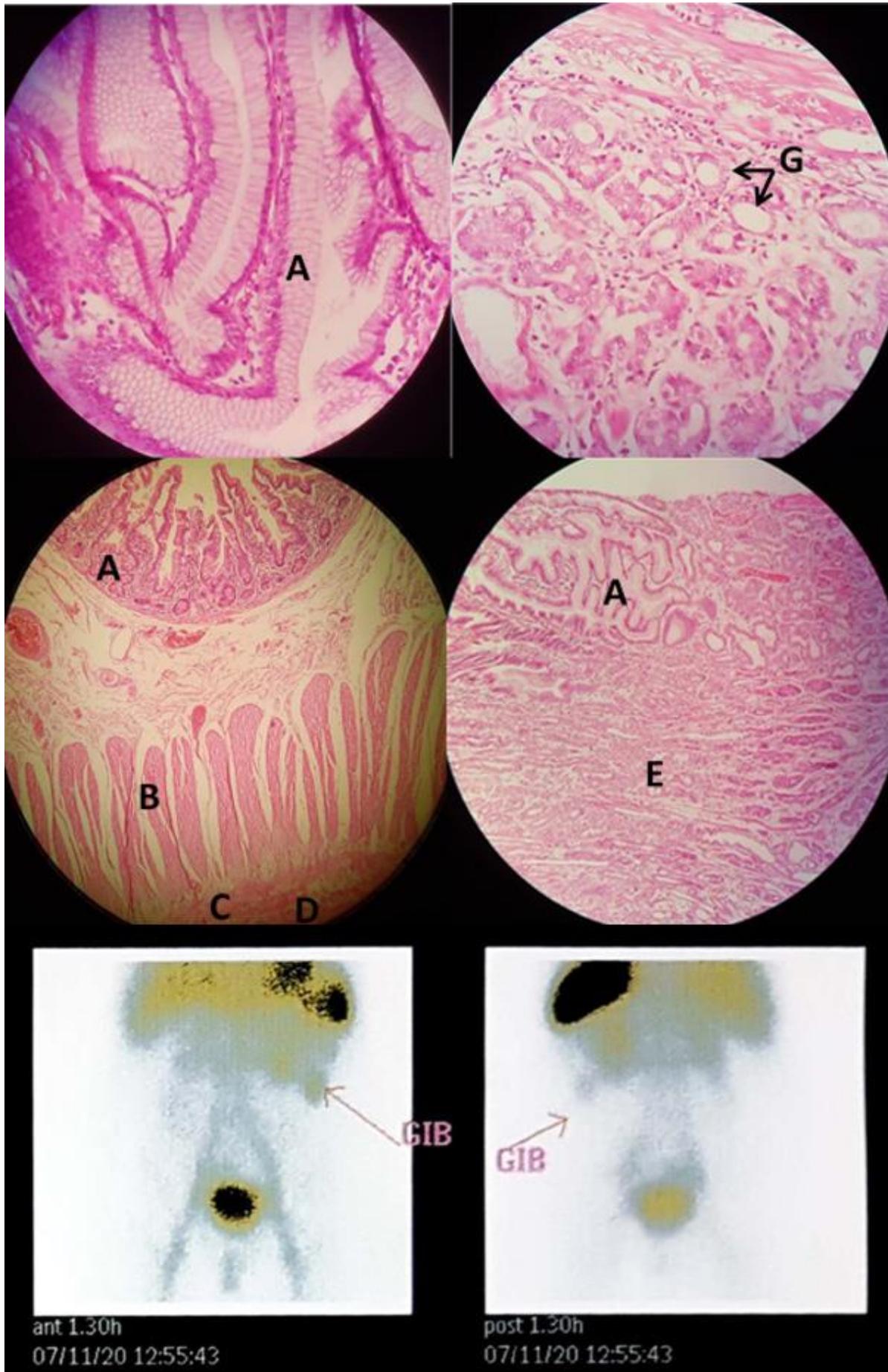
**Saeid Aslanabadi** (Section of Pediatric Surgery, Department of Surgery, Tabriz University of Medical Sciences, Tabriz, Iran., Tabriz, Iran), **Nazila Hasanazadeh Ghavifekr** (Section of Pediatric Surgery, Department of Surgery, Tabriz University of Medical Sciences, Tabriz, Iran., Tabriz, Iran), **Davoud Badebarin** (Section of Pediatric Surgery, Department of Surgery, Tabriz University of Medical Sciences, Tabriz, Iran., Tabriz, Iran)

**Aim:** Heterotopic gastric mucosa (HGM) can be located in various parts of the gastrointestinal tract. As a rare anomaly in the small intestine, it can become complicated by intussusception, obstruction, bleeding, and even peritonitis. The aim of this case report was to present this rare disease mimicking a complicated Meckel's diverticulum.

**Case description:** The present study is a case report of a 12-years-old boy who was presented with hematochezia and abdominal pain for a couple of days. Tagged Red blood cell (RBC) scan and Technetium scan revealed gastrointestinal bleeding at the lower abdomen, highly suggestive for the diagnosis of Meckel's diverticulum. Subsequently, explorative laparotomy revealed contiguous and some scattered mucosal lesions with multiple polyps in various sizes in the terminal ileum but Meckel's diverticulum was absent. The patient was treated by resection of ileum in the involved region and primary anastomosis. The resected tissue revealed extensive ectopic gastric mucosa and polypoid tissues. The patient recovered uneventfully and was discharged four days after the surgery. The symptoms did not recur within six months follow up after his surgery.

**Conclusions:** Our case demonstrated that although multiple polypoid gastric heterotopias in the terminal ileum is extremely rare, it should be considered as one of the differential diagnoses of gastrointestinal tract bleeding which is almost indistinguishable from Meckel's diverticulum before the surgery.





## Testicular Torsion in Low Resource Settings: A Review of Limited Literature

**Annabel Killen** (The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, UK), **Luiza Farache Trajano** (University of Oxford Medical School, Oxford, UK), **Oliver Hague** (University of Oxford Medical School, Oxford, UK), **Laura Wilkins** (University of Oxford Medical School, Oxford, UK), **Kokila Lakhoo** (Department of Paediatric Surgery, Oxford University Hospitals, Oxford, UK), **Kathryn Ford** (Royal London Hospital, London, UK)

**Aim:** Early diagnosis and urgent exploration of testicular torsion is an unmet health need in low resource settings. In this OxPLORE (a global surgical collaborative) initiative, we aimed to investigate the reported burden of children and adolescents with testicular torsion in low- and middle-income countries (LMICs).

**Methods:** A systematic review was performed using the Biosis, Cochrane, Embase, Lilacs, Medline and PubMed databases from database initiation to January 2022 using the search terms ‘acute scrotum’ and ‘testicular torsion’.

In initial screening, records were excluded if they were not written in English, included non-human data, or were level 4 evidence. Further screening ensured inclusion of studies involving LMIC populations (as per World Bank definitions) aged 18 years or under and reporting testicular torsion. Each text was screened by two reviewers with conflicts resolved by a third.

Primary outcomes were time to presentation, management, and outcomes (testicular salvage, complications) at follow up.

**Results:** The search yielded 318 abstracts. 203 were excluded at initial screening (114 non-English, 56 level 4 evidence, 33 non-human data). Of the 115 full-text articles assessed, only nine studies met all inclusion criteria (Table 1). These studies spanned India, Iran, China, Turkey, and Nigeria. All but one were retrospective analyses.

636 cases of testicular torsion were included in total.

Five studies reported an outcome involving time from symptoms to presentation, two reported this as median time (21 vs 30 hrs). Eight studies discussed patient management, although two of these only included orchiectomy patients. Only two studies reported follow-up complications.

**Conclusion:** The literature surrounding paediatric testicular torsion in LMICs is limited and heterogenous. We have been unable to quantify the disease burden or intercepts in the patient pathway where an improvement intervention would be appropriate. This scoping review has formed the basis of future prospective work led by the OxPLORE team.

Authors	Country of study	Study type; level of evidence	No. of testicular torsion patients	Aim of study; main conclusions	Outcome 1- time from onset of symptoms to presentation	Outcome 2- management	Outcome 3 – complications at follow up
Yu et al (2014)	China	Retrospective database analysis; 3	31	Evaluation of importance of early diagnosis and testicular salvage on outcomes of patients with testicular and testicular appendage torsion; cases of acute scrotum need early diagnosis and scrotal exploration to salvage testes or preserve normal function	Median duration 30 (range 1.5-264) hrs	22 (71%) underwent orchiectomy, testicular incision decompression (TID) surgery in 3 (10%), orchidopexy alone in 6 (19%)	Mean follow up 2.75yrs: 3/3 patients who underwent TID developed self-resolving post-operative scrotal swelling lasting 3-5 days. 1/3 developed testicular atrophy within 1 month of surgery
Rourzkh et al (2015)	Iran	Retrospective database analysis; 3	70	Evaluate second look exploration and outcomes in torsion; early surgical exploration is modality of choice, 2 <sup>nd</sup> look exploration after 48hrs can be effective in increasing salvageability	23% patients undergoing orchiectomy and 36% patients undergoing orchidopexy had symptoms <6hrs	26 (37%) orchiectomy, 44 (63%) orchidopexy after 2nd look exploration	Mean follow-up of 3.1 years: 4 (9%) in orchidopexy group developed testicular atrophy
Ekti et al (2018)	Turkey	Retrospective database analysis; 3	30	Evaluation of correlation between seasonal temperature and torsion incidence; acute testicular torsion requiring surgical intervention is seen more commonly in cold seasons with low temperatures	Median duration 21. (IQR 7-142) hrs	24 (80%) surgical detorsion and bilateral fixation/ orchidopexy, 6 (20%) orchiectomy	N/A
Abolarinwa et al (2020)	Nigeria	Retrospective database analysis; 3	5	Overview of paediatric urology practice in Lagos State University Teaching Hospital; there is a need for sub-specialisation in paediatric urology	N/A	N/A	N/A
Kumar et al (2020)	India	Retrospective database analysis; 3	50	Determining surgical outcome of testicular torsion with early and delayed presentation or referral; showed risk of testicular loss is <i>very high</i> if there is delay in initial diagnosis in primary care	90% cases went to primary care first- average 3.6 hrs from symptoms to presentation, 86.4 hrs from there to paediatric surgical unit. Average 14.1 hrs for 5 patients presenting straight to secondary care	45/50 (90%) had orchidectomy, 5/50 (10%) detorsion and orchidopexy	N/A
Pan et al (2020)	India	Prospective study; 3	68	Validate Testicular Workup for Ischaemia and Suspected Torsion (TWIST) score; TWIST score is reliable to identify testicular torsion in patients with acute scrotum	N/A	46/68 (68%) testicular salvage, 22/68 (32%) orchiectomy	N/A
Onuigbo et al (2021)	Nigeria	Retrospective database analysis; 3	28	Study of teenage testicular torsion in Igbo community; there is a need for health education and more specialist hospitals for Igbo communities	3 (11%) presented within 24 hrs of symptoms	Study of testes specimens (100% orchidectomy rate)	N/A
Taşçı et al (2021)	Turkey	Retrospective database analysis; 3	53	Medicolegal inspection of testicular torsion; best way to prevent medicolegal issues is giving priority to patient health and exploring scrotum urgently if any clinical suspicion of torsion	Mean time from presentation to testicular torsion diagnosis= 59 +/-11.2 hrs	Only patients who underwent orchiectomy included	N/A
Yu et al (2021)	China	Retrospective database analysis; 3	301	Investigation of association between geographic, clinical, socioeconomic factors and delayed torsion management; delayed surgical management more likely for boys <8yrs, with a history of former treatment or living far from the main city	Time from symptoms to surgery <12 hrs in 26.9% cases	110/301 (36.5%) underwent orchiectomy	N/A

Table 1- Summary of studies identified by database screening which met all inclusion criteria

## Laparoscopic inguinal hernia repair in girls (Burnia)

***Mansur Nasirov*** (Pediatric surgery, National Children's Medical Center, Tashkent, Uzbekistan), ***Ikrom Bobokulov*** (Pediatric surgery, National Children's Medical Center, Tashkent, Uzbekistan), ***Murat Abduazizov*** (Pediatric surgery, National Children's Medical Center, Tashkent, Uzbekistan)

**Aim:** of this study is to report our experience using monopolar coagulation of internal ring in girls with inguinal hernia.

**Methods:** retrospective review of 21 girls with inguinal hernia admitted from opening of our center. Patient age and weight, intraoperative notes and outcomes were recorder and analyzed. Technique involves 30° 3 mm camera placed infraumbilically with hidden incision and 3 mm Maryland grasper from same incision but separate fascia. Hernia sac identified, pulled into abdomen and cauterized obliterating the sac.

**Results:** Mid age of girls was 2 yo (from 3 months to 4 years). Weight ranged from 4 kg to 28 kg. There was no conversion to open in all cases. In 1 case ovarian cyst from hernia side and mesenteric cyst were identified. In 5 cases presumed unilateral hernia PPV from contralateral side were identified and repaired during the same procedure. Average operating time for unilateral hernia consisted of 7 minutes (5-12 minutes) and 10 minutes (8-14 minutes). All patient has been discharged after 2 hours postoperatively. All patients were on follow-up. No recurrences noted.

**Conclusion:** laparoscopic inguinal hernia burnia repair is safe and effective method in girls. It allows quick operative time, possibility to repair contralateral side and very good cosmetic results.

## POSTER WALK 21

## Upper Gastrointestinal 3

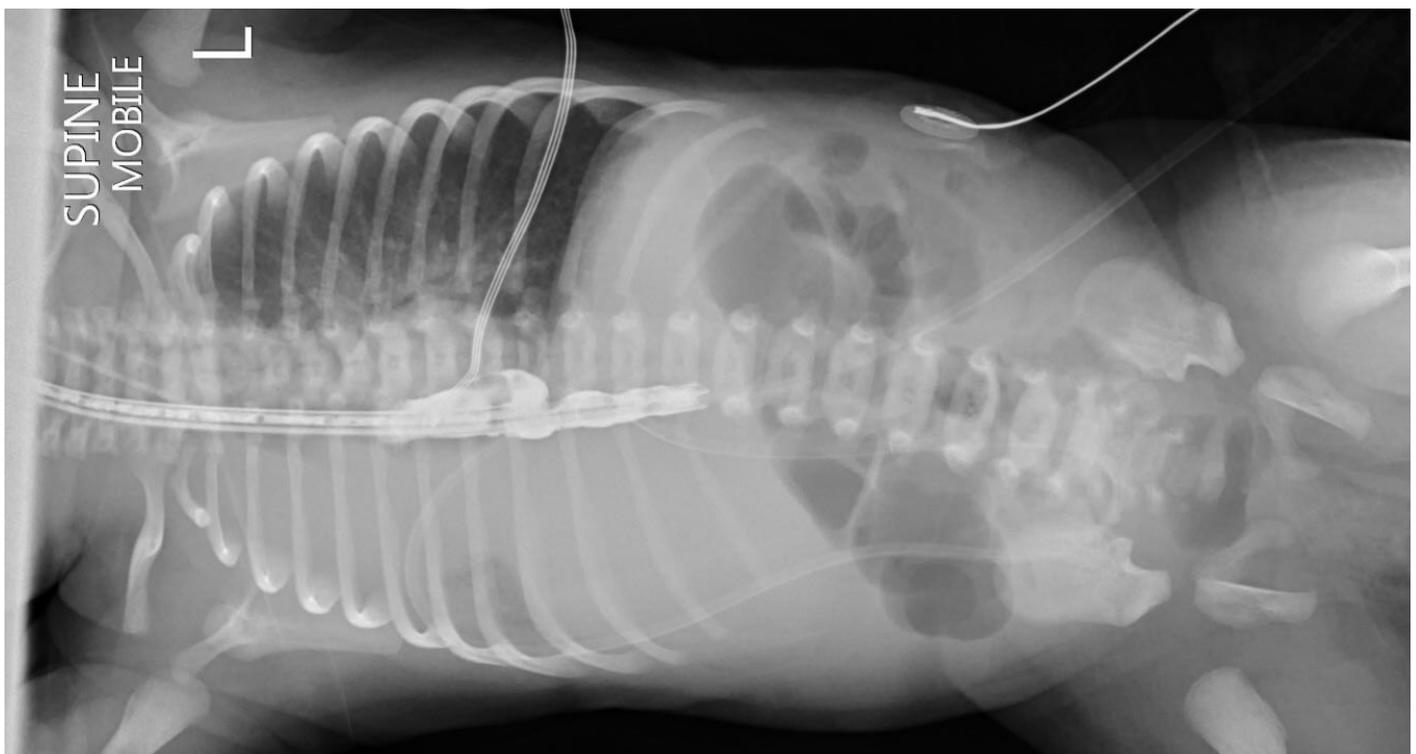
## Long proximal pouch oesophageal atresia with tracheo-oesophageal fistula; a diagnostic dilemma

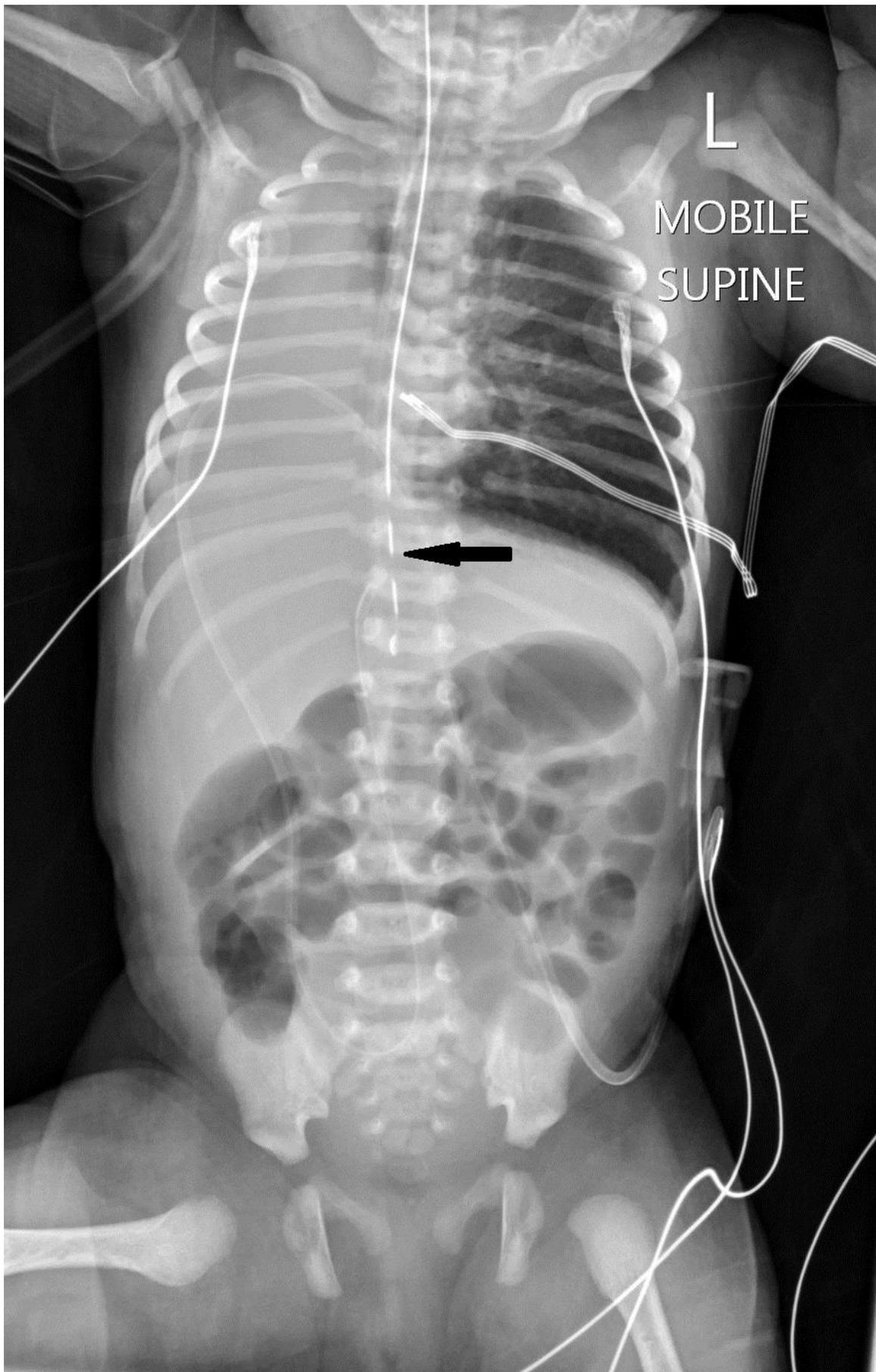
**Sello Machaea** (Paediatric Surgery, Walter Sisulu University, East London, South Africa), **Vuyo Nogela** (Paediatric Surgery, Walter Sisulu University, East London, South Africa), **Milind Chitnis** (Paediatric Surgery, Walter Sisulu University, East London, South Africa)

**Aim:** Oesophageal atresia is a congenital abnormality commonly encountered in neonates. The classification proposed by Gross is the most frequently used. It divides the oesophageal anomalies into five types. Type C-proximal oesophageal atresia and distal tracheo-oesophageal fistula- is the most common. Dafoe and Ross described a rare subtype with a long proximal pouch. Only 11 cases of a long proximal pouch have been reported in the English literature so far. We describe a neonate with long proximal pouch oesophageal atresia with distal tracheo-oesophageal fistula emphasising the difficulty in arriving at the diagnosis.

**Case description:** A one-week-old neonate presented with feed intolerance and failure to advance orogastric tube into the stomach. Water-soluble upper gastrointestinal tract contrast revealed a blind-ending proximal oesophagus at the level of the diaphragm. Gastric volvulus was considered as a diagnosis. The patient underwent a laparotomy where a normal stomach was found. Bubbles were seen coming from the fashioned gastrostomy with each inspiration. This prompted us to consider the possibility of a missed oesophageal atresia with distal tracheo-oesophageal fistula. The diagnosis was confirmed on bronchoscopy and right thoracotomy. The tracheo-oesophageal fistula was ligated and a cervical oesophagostomy and Stamm gastrostomy were performed due to an irreparable tear in the long upper pouch.

**Conclusion:** This rare subtype of long upper pouch oesophageal atresia poses a diagnostic dilemma that can result in a delay in the diagnosis and management. This diagnosis should be suspected if the tip of the orogastric/feeding tube is seen to be far below the level of the carina





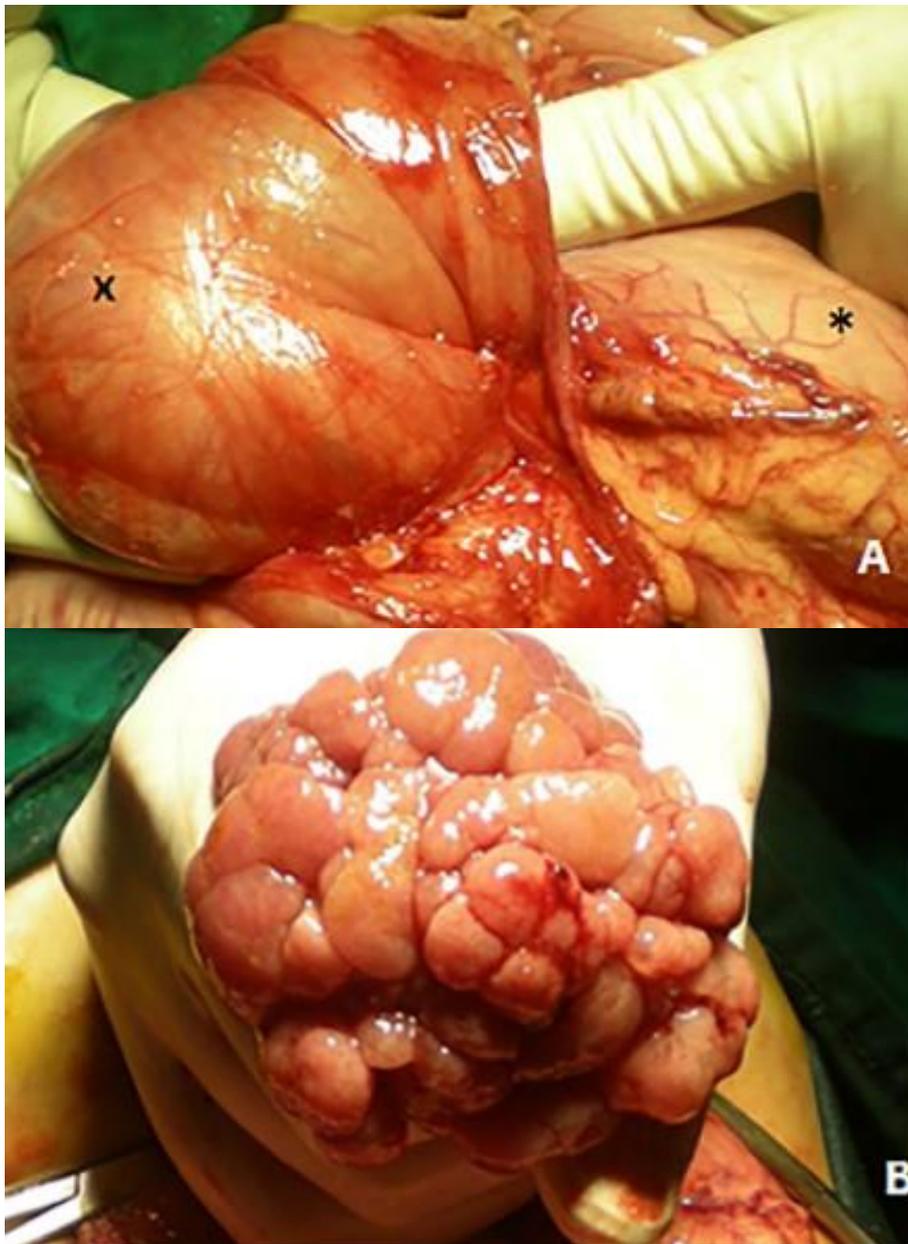
## Gastroduodenal intussusception due to gastric mucosal prolapse polyp in a 2-year-old child

**Mostafa Kotb** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Ahmed Hassan** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Marwa Abdelaziz** (Pathology, Alexandria Faculty of Medicine, Alexandria, Egypt), **Yasser Saad Eldin** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Nagwa Mashali** (Pathology, Alexandria Faculty of Medicine, Alexandria, Egypt)

**Background:** Gastroduodenal intussusception is an invagination of a portion of the stomach into the duodenum. It predominately occurs in adults. The aim of this study is to describe an unusual cause of anemia which was diagnosed as having gastroduodenal intussusception due to gastric mucosal prolapse polyp.

**Case Report:** We present a gastroduodenal intussusception in a hypochromic microcytic anemic 2-year-old girl. A large filling defect in the second and third parts of the duodenum, indenting the pyloric antrum, was due to a gastroduodenal intussusception secondary to a cauliflower-like gastric mucosal prolapse polyp, a type of gastric hyperplastic polyp.

**Conclusion:** Anemia may accompany a gastric mucosal prolapse polyp.



## Dysphagia in esophageal atresia: An extremely common symptom

**Paula Salcedo Arroyo** (Pediatric Surgery Department, Miguel Servet University Hospital, Zaragoza, Spain), **Carolina Corona Bellostas** (Pediatric Surgery Department, Miguel Servet University Hospital, Zaragoza, Spain), **Paolo Bragagnini Rodríguez** (Pediatric Surgery Department, Miguel Servet University Hospital, Zaragoza, Spain), **Paulina Vargova** (Pediatric Surgery Department, Miguel Servet University Hospital, Zaragoza, Spain), **Rafael Fernandez Atuan** (Pediatric Surgery Department, Miguel Servet University Hospital, Zaragoza, Spain), **Ruth García Romero** (Pediatrics Department, Miguel Servet University Hospital, Zaragoza, Spain), **Ignacio Ros Arnal** (Pediatrics Department, Miguel Servet University Hospital, Zaragoza, Spain), **María José Romea Montañes** (Speech therapist, Miguel Servet University Hospital, Zaragoza, Spain), **Ricardo Escartín Villacampa** (Pediatric Surgery Department, Miguel Servet University Hospital, Zaragoza, Spain)

**Aim:** Dysphagia is defined as difficulty in the feeding process. A significant percentage of patients with esophageal atresia (EA) have dysphagia beyond the neonatal period.

**Methods:** Retrospective study of patients operated on for EA between 2005-2021. The modified Functional Oral Intake Scale (FOIS) was used to quantify dysphagia in 4 age groups (<1 year, 1 to 4 years, 5 to 11 years, and >11 years). Dysphagia was considered any FOIS value <7, associated or not with symptoms of choking, impaction or food aversion.

**Results:** We obtained data from 63 patients.

74% (47/63) presented dysphagia during follow-up. The prevalence was 50% in <1 year (mean FOIS 3.39), 77% at 1-4 years (mean FOIS 4.89). 45% at 5-11 years (mean FOIS 5.36) and 38% in >11 years (mean FOIS 6). The mean time of parenteral nutrition, start of enteral feeding, respiratory support and hospital stay in neonatal period was significantly longer ( $p<0.05$ ) in patients with dysphagia in the periods of 1-4 years and 5-11 years.

The main causes of dysphagia were: Stricture 36% (21/63) and gastroesophageal reflux 30% (19/63).

Stenosis was associated with subjective sensation of anastomosis tension at surgery ( $p<0.05$ ). All cases of stenosis were treated with endoscopic dilation (mean dilation 5.66, range 1-26).

The presence of swallowing incoordination in 11% (7/63) of patients was significantly ( $p<0.05$ ) associated with a worse FOIS in the periods <1 year (3.71 vs 6.09) and 1-4 years (4.71 vs 6.02).

**Conclusions:** Dysphagia is an extremely common symptom in patients operated on for EA at any age. Stenosis is the most frequent cause, but not the only one. Long-term standardized and multidisciplinary follow-up of dysphagia is essential, with the aim of improving the quality of life of these patients.

## Platelet-rich plasma treatment on the rats with short bowel syndrome

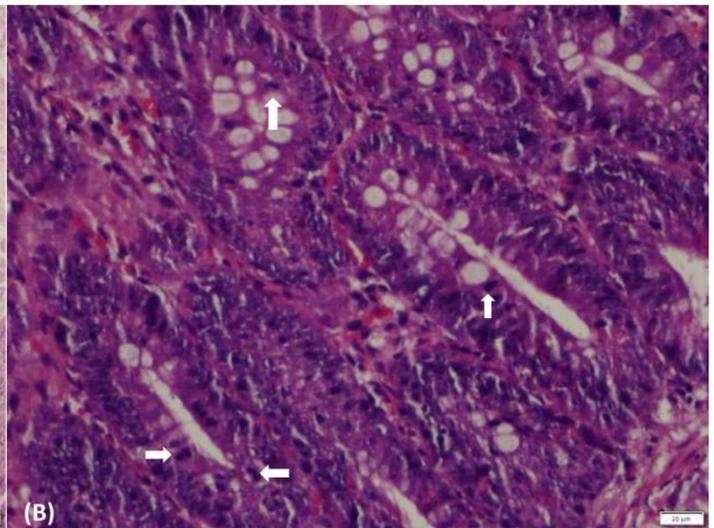
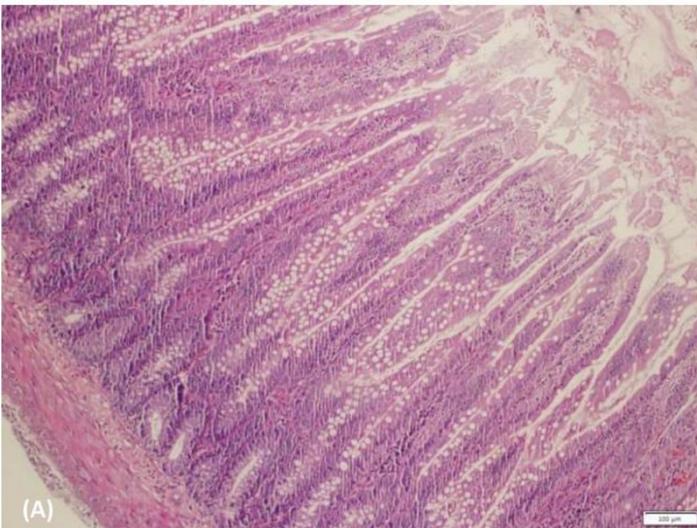
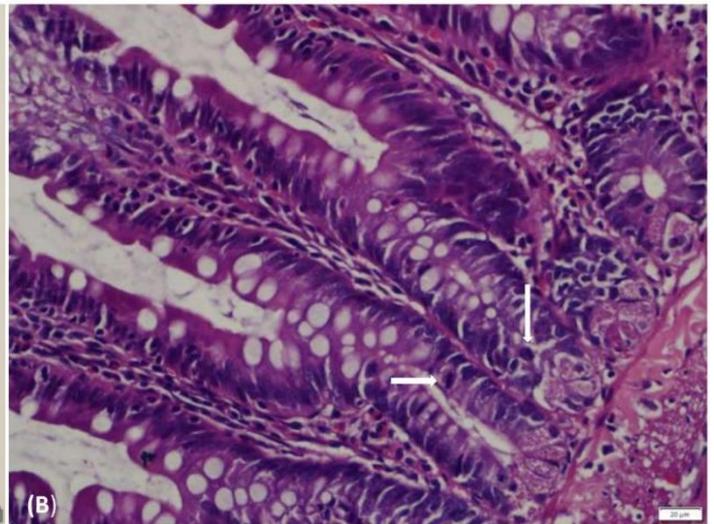
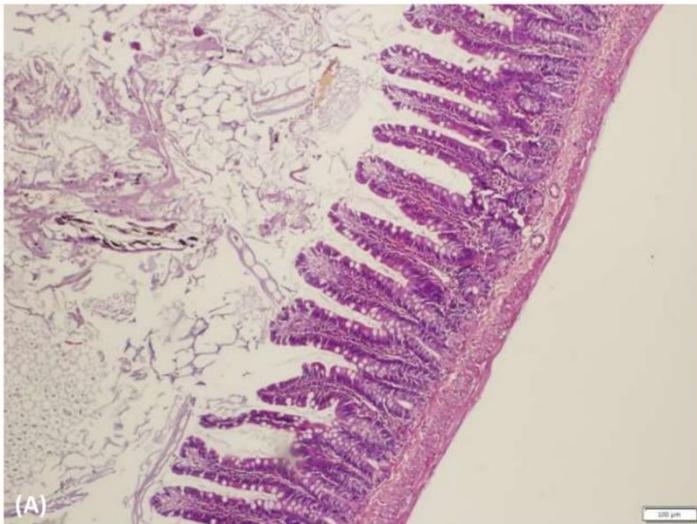
**Ayşe Ertoy** (Pediatric Surgery, Ankara Sehir Hastanesi, Ankara, Turkey), **Tugrul Tiryaki** (Pediatric Surgery, Ankara Sehir Hastanesi, Ankara, Turkey), **Pinar Celepli** (Pathology, Ankara Egitim ve Arastirma Hastanesi, Ankara, Turkey), **Sema Hucumenoglu** (Pathology, Ankara Egitim ve Arastirma Hastanesi, Ankara, Turkey), **Mehmet Senes** (Biochemistry, Ankara Egitim ve Arastirma Hastanesi, Ankara, Turkey)

**Aim:** Short bowel syndrome (SBS) is a rare but highly morbid and mortal disease. After a significant intestinal loss, intestinal absorption becomes inadequate for the body's needs and patient becomes dependent on parenteral nutrition. However, after some time, a process called intestinal adaptation occurs in the small intestine and, patient adapts new conditions and enteral autonomy is regained. During this process, cytokines, especially growth factors are important and many studies are going on about this topic. Platelet-rich plasma (PRP) is acquired by santrifugation of blood and it contains a great variety of growth factors intensely. It is thought that PRP could accelerate the process of intestinal adaptation and this experimental study was designed. Aim of this study is to reveal the effect of PRP on intestinal adaptation on the rats with SBS.

**Methods:** Eighteen adult Wistar-Albino rats divided in three groups with 6 rats in each as sham, control and PRP group. Besides this, 6 rats were sacrificed to acquire PRP. Sham group was objected to a laparotomy only. Control group was objected to a resection of 30% of small intestine and anastomosis. PRP group was objected to a resection of 30% of small intestine and anastomosis too, but on the postoperative day 1, 1 cc of PRP was given to this group through orogastric route. Each rat sacrificed on postoperative day 7. Blood samples and intestinal biopsies were collected.

**Results:** Each rat weighed preoperatively and postoperatively on seventh day. No weight difference was detected between groups ( $p>0.05$ ). Plasma citruline level was statistically higher in the PRP group ( $p<0.05$ ). On histopatological analysis, clear signs of enhanced intestinal adaptation were confirmed such as increased crypt length, villus depth and mitotic index.

**Conclusions:** PRP can be a cheap treatment alternative during the intestinal adaptation process for the patients with short bowel syndrome.



## Outcome of oesophageal atresia – Inborn vs. outborn patients

**Till-Martin Theilen** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Goethe University Frankfurt/M., Frankfurt/M., Germany), **Denise Schlee** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Goethe University Frankfurt/M., Frankfurt/M., Germany), **Udo Rolle** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Goethe University Frankfurt/M., Frankfurt/M., Germany)

**Background:** Oesophageal atresia (EA) is a rare congenital disease that is usually not detected prenatally. Due to the lack of prenatal diagnosis, some newborns with EA are born outside of specialized centres. Nevertheless, centralized care of EA has been proposed, even if a clear volume-outcome association in EA management remains unconfirmed. Furthermore, whether outcomes differ between outborn and inborn patients with EA has not been systematically investigated.

Therefore, this single-centre, retrospective study aimed to investigate EA management and outcomes with a special focus on inborn vs. outborn patients.

**Methods:** The following data were extracted from the medical records of infants with EA from 2009-2019: EA type, associated anomalies, complications, and long-term outcome. Patients were allocated into inborn and outborn groups.

**Results:** Altogether, 57 patients were included. Five patients were excluded (referral before surgery, loss of data, death before surgery (n=1) and incorrect diagnosis (diverticulum, n=1)). Among all patients, the overall survival rate was 96%, with no mortalities among outborn patients. The overall hospitalization period was shorter for outborn patients. The median follow-up durations were 3.8 years and 3.2 years for inborn and outborn patients, respectively.

Overall, 15% of patients underwent delayed primary anastomosis (long-gap atresia (n=4) and other reasons (n=4)). Early complications included three anastomotic leakages and one postoperative fistula; 28% of patients developed strictures, which required dilatation, and 38% of patients showed relevant gastroesophageal reflux, which required fundoplication, without any differences between the groups.

**Conclusions:** The two groups had comparable low mortality and expected high morbidity with no significant differences in outcome. The outborn group showed nonsignificant trends towards lower morbidity and shorter hospitalization periods, which might be explained by overall better clinical status.

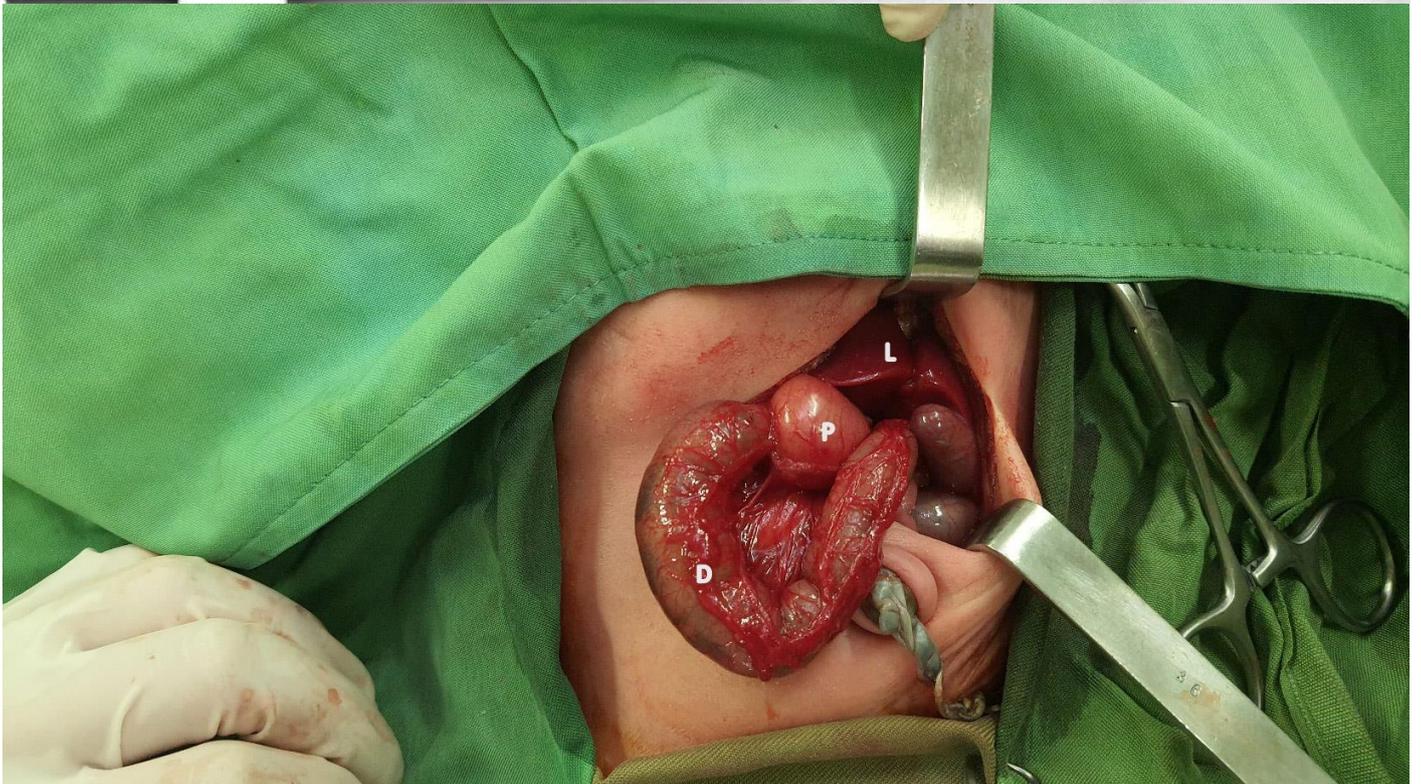
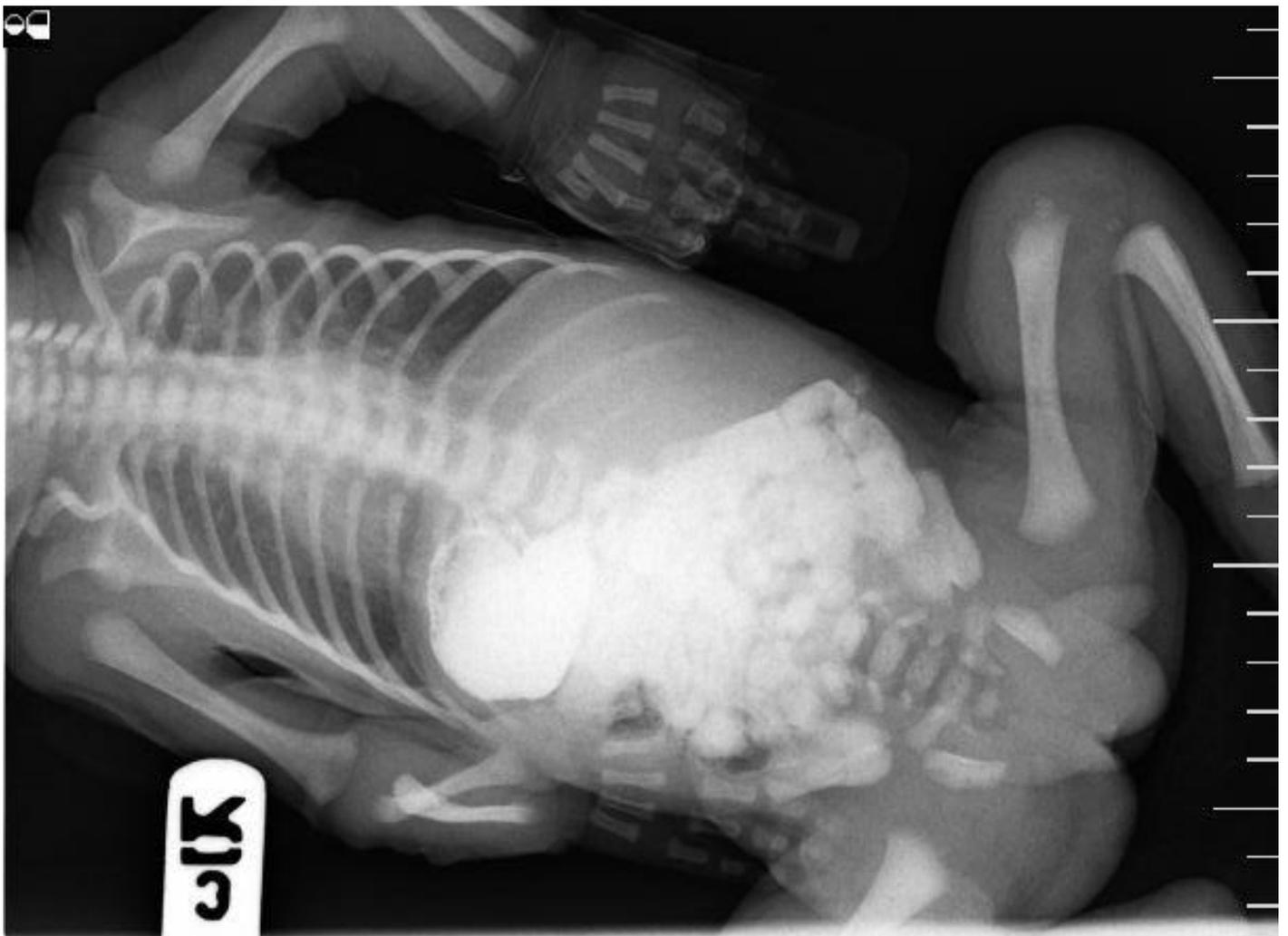
## Infantile Hypertrophic Pyloric Stenosis, the Cause of Non-bilious Vomiting of a 3-day-old Male Infant with Situs Inversus Totalis; A Case Report

***Khashayar Atqiaee*** (Department of Pediatric Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, Mashhad, Iran), ***Reza Shojaeian*** (Department of Pediatric Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, Mashhad, Iran), ***Ahmad Mohammadipour*** (Department of Pediatric Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, Mashhad, Iran), ***Ali Azadmand*** (Department of Pediatric Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, Mashhad, Iran), ***Mahdi Parvizi Mashhadi*** (Department of Pediatric Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran, Mashhad, Iran), ***Ali Samady Khanghah*** (Department of Surgery, Ardabil University of Medical Sciences, Ardabil, Iran)

**Aim:** Introducing a rare association of pyloric Stenosis (IHPS) and *Situs Inversus* totalis (SIT) in a 3-day-old male infant.

**Case description:** A 3-day-old term infant with a normal Apgar score and weighing 2200 gr presented with persistent non-projectile, non-bilious vomiting and unremarkable physical findings. The plain chest and abdominal radiography depicted dextrocardia. The ultrasonography revealed pyloric channel length 22 mm with thickened pylorus (muscle thickness 4 mm) without abdominal anomalies, but an incidental finding was the mirror displacement of the viscera. Preoperative echocardiogram confirmed the diagnosis of situs inversus totalis. For the rarity of HPS diagnosis on the third day, an upper gastrointestinal contrast examination was performed to rule out associated anomalies such as malrotation or midgut volvulus. Ramstedt pyloromyotomy was done by open method using left supra-umbilical transverse incision. Four hours after surgery, feeding with Pedalyte was initiated and continued with full-strength formula. He was discharged 24 hours after the feedings. The postoperative and 3-month follow-up periods were uneventful, and his growth charts were in normal ranges.

**Conclusions:** Despite the classical features of HPS, persistent non-projectile, non-bilious vomiting in the early days of life needs careful evaluation for earlier diagnosis and treatment.



## Primary anastomosis is the preferred surgical approach in proximal intestinal atresia – Result of a retrospective 20-year analysis

**Adrian Chi Heng Fung** (Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong), **Man Kei Lee** (Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong), **Michael Pak Kiu Lui** (Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong), **Long Yam Lip** (Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong), **Patrick Ho Yu Chung** (Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong), **Kenneth Kak Yuen Wong** (Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong)

**Aim:** Intestinal atresia is a major cause of intestinal obstruction in neonates with significant morbidity. Whether primary anastomosis (PA) or enterostomy is the best approach remains controversial. We aimed to compare the outcomes of these two surgical approaches and to identify factors that influence the choice.

**Methods:** A retrospective single-centre analysis of all neonates with intestinal atresia between 2000 and 2020 was performed. Outcomes measured were complications, mortality, operative time, duration on parenteral nutrition, time to full enteral feeding and length of hospital stay. Logistic regression was carried out for identification of factors influencing the choice of surgical approach.

**Results:** Among 62 intestinal atresia neonates, 36 (58%) had ileal atresia while 26 (42%) had jejunal atresia with overall mortality of 1.6%. Majority of them (71%) received PA. There was no significant difference in gestation, gender, age at operation, birth weight and body weight at operation between PA and enterostomy group. Re-operation was not required in 78% of patients with PA. PA group resulted in shorter hospital stay, although it did not reach a statistical significance (58+/-50 vs 81+/-47 days, p=0.1). Complications, operative time, duration on parenteral nutrition, time to full enteral feeding were comparable in both groups (p > 0.05). Upon multivariate regression analysis, proximal atresia favored PA [Odds ratio (OR) 38.5, 95% Confidence Interval (CI) 2.558-579] while smaller body size [OR 2.75, CI 0.538-14.02] and lower Apgar score [OR 1.1, CI 0.07-17.8] favored enterostomy.

**Conclusion:** Both surgical approaches achieved comparable outcomes but PA appeared to be associated with a short hospital stay and avoid stoma-related complications. In most cases, a second operation is not required. This surgical approach is particularly favored in proximal atresia. For patients with a smaller body size and lower Apgar score, enterostomy remained a sensible choice.

## Does laparoscopic assisted gastrostomy tube placement require routine preoperative upper gastrointestinal contrast study?

***Sniigdha M Reddy*** (Paediatric Surgery and Urology, Birmingham Children's Hospital, Birmingham, UK), ***Shoon Lac*** (Paediatric Surgery and Urology, Birmingham Children's Hospital, Birmingham, UK), ***Elmaire Van Der Merwe*** (Paediatric Surgery and Urology, Birmingham Children's Hospital, Birmingham, UK), ***Max Pacht*** (Paediatric Surgery and Urology, Birmingham Children's Hospital, Birmingham, UK)

**Aim:** Upper gastrointestinal (UGI) contrast studies are often conducted prior to gastrostomy placement to evaluate for pathologies including malrotation and reflux. We examine the results of such studies and if change in surgical management was subsequently required.

**Methods:** 440 consecutive patients who underwent a laparoscopic gastrostomy between March 2017 and Dec 2021, in our tertiary paediatric centre, retrospectively had their electronic case notes and imaging reviewed.

**Results:** Of 440 patients, 26 were excluded due to insufficient data and 50 having a combined procedure with a fundoplication. Demographic data included 205 males 156 females, with median age of insertion at 44.9 months. 347 patients (96%) had a 14Fr gastrostomy with a median length of stay 1(1-330) days post operatively. Longer LOS were all due to ongoing medical management of underlying conditions.

170 patients (47%) had a preoperative contrast, 63(17%) requested at the time of decision to operate and 107(30%) for alternative indication. 8(2.2%) patients were identified to have an abnormally sited duodeno-jejunal (DJ) flexure, 11(3.0%) uncertain site of DJ flexure, 37(10.2%) gastroesophageal reflux, 1(0.3%) gastric outlet obstruction, 1 had previously undergone a Ladd's procedure.

At the time of laparoscopic gastrostomy placement, only 5 patients were deemed intraoperatively to require surgical correction, all for malrotation. 4 patients had a confirmed genetic syndrome (mosaic trisomy 8, trisomy 21, Noonan's syndrome, Wolf-Hirschhorn syndrome) and 1 with multiple cardiac defects coupled with extreme prematurity.

**Conclusions:** Conducting a preoperative UGI study routinely only yielded a 2.9%(5/170) diagnosis of pathology requiring an alteration to the surgical management plan. A background of neuromuscular disorders, inherited metabolic diseases, global developmental delay and injury (head or caustic) are not absolute indicators for a contrast. We suggest utilising a preoperative UGI in select cases only; for those with genetic syndromes and complex cardiac anomalies.

## Management of an Index Adhesive Small Bowel Obstruction in Children: Is it Worth the Wait?

**Romeo Ignacio** (Surgery/Division of Pediatric Surgery, University of California San Diego School of Medicine, San Diego, USA), **Utsav Padwardhan** (Rady Children's Hospital San Diego, San Diego, USA)

**Aim:** This study aims to examine the management patterns in children presenting with an index adhesive small bowel obstruction (ASBO) and to identify the impact of the timing of operative management on patient outcomes.

**Methods:** The California Office of Statewide Health Planning and Development discharge database was used to identify pediatric patients (<18 years of age) with an index admission for ASBO between 2007-2018. The primary outcome was bowel resection in patients who underwent operative management. The secondary outcomes included complications and readmission among all patients. Survival analysis was used to determine the risk factors for increased morbidity based on patient factors and initial management type.

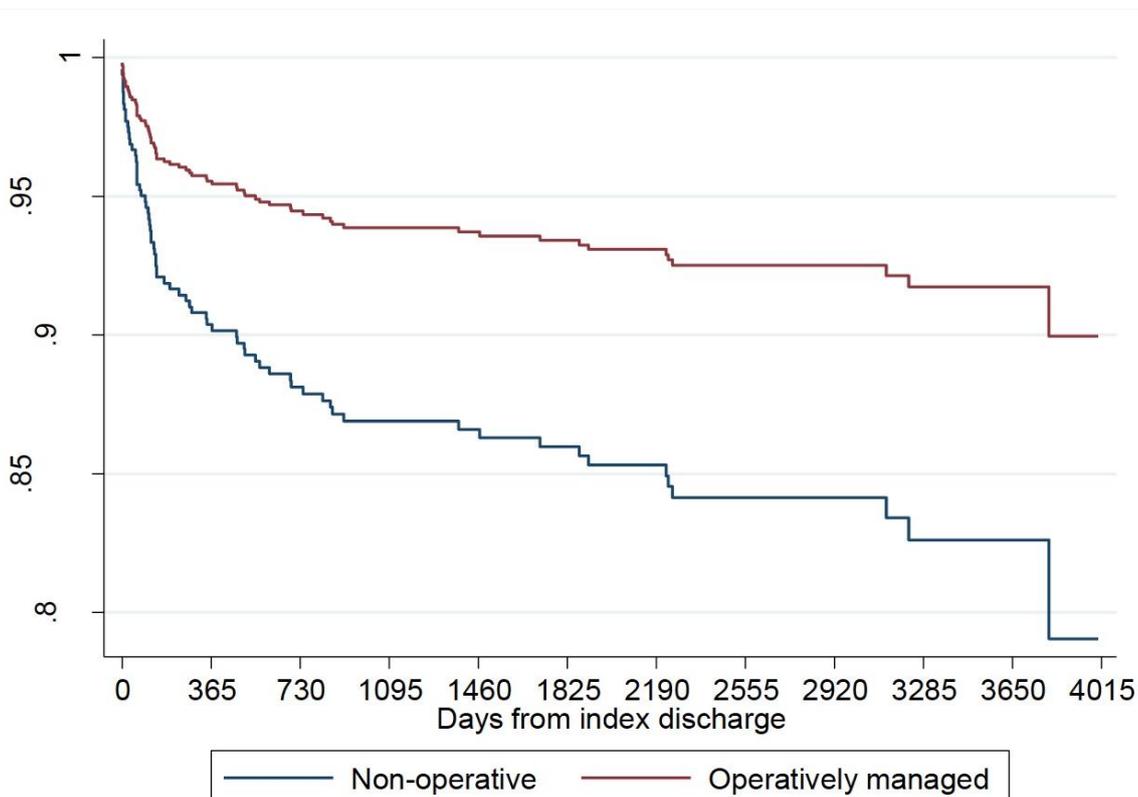
**Results:** Of the 815 patients identified, 671 (82%) underwent operative management for ASBO during the index admission. Of these, 452 (69%) underwent surgery within three days of admission. Patients who underwent operative intervention >3 days after admission had a higher chance of undergoing a bowel resection (24% vs. 17%,  $p=0.02$ ). Patients who underwent operative management were significantly less likely to be readmitted compared with those patients managed non-operatively (adjusted Hazard Ratio 0.45 (CI 0.26-0.77,  $p<0.05$ ). Compared with patients who underwent non-operative management, operative intervention was associated with longer a length of stay (8 vs. 4 days,  $p<0.05$ ), greater use of total parenteral nutrition (28% vs. 13%,  $p<0.05$ ), and more infectious complications (14% vs. 8%,  $p<0.05$ ).

**Conclusion:** This study suggests a high rate of operative management among pediatric patients presenting with an index adhesive small bowel obstruction. Although operative intervention is associated with a longer LOS, increased TPN use, and infectious complications, there is a lower risk of readmission. If non-operative management is considered, waiting beyond 72 hours increases the risk for bowel resection. Surgeons must balance the risks of nonoperative management versus operative intervention, including the timing of intervention, to optimize surgical outcomes.

**Table 1.** Factors predicting risk of re-admission after an index admission for small bowel obstruction.

	<b>Sub-Hazard Ratio</b>	<b>95% Confidence Interval</b>	<b>p-value</b>
<b>Operative management</b>			
Non-operative	1.00	-	-
Operative	0.39	0.23 – 0.67	0.001
<b>Age at admission, years</b>	1.03	0.99 – 1.08	0.132
<b>Race</b>			
White	1.00	-	-
Black	0.62	0.24 – 1.62	0.328
Native American	3.00	0.56 – 15.92	0.198
Asian/Pacific Islander	2.04	1.03 – 4.03	0.040
Other	1.73	1.04 – 2.88	0.036
Unknown	0.59	0.04 – 8.20	0.694
<b>Log-transformed index length of stay</b>	0.80	0.60 – 1.05	0.109

**Figure 1 -** Survival analysis of risk factors for increased morbidity based on patient factors and initial management type (non-operative versus operative).



## Enteral reduction and oblique anastomosis: a novel technique in the treatment of intestinal atresia

**Abdelbasit E Ali** (Department of Pediatric Surgery, King Saud Medical City, Riyadh, Saudi Arabia), **Awad R Abdalla** (Department of Pediatric Surgery, Soba University Hospital, Khartoum, Sudan)

**Background:** Jejunioileal atresias are major causes of neonatal intestinal obstruction and various surgical techniques were described for their treatment. Resection and/or tapering of the proximal dilated pouch and end to end or end to back enteral anastomosis are the most commonly used techniques. Either of these techniques, however, has shortcomings such as loss of bowel length, kink obstruction and anastomotic leak due to anastomotic line mismatch.

**Aim:** To describe an alternative surgical technique for bowel atresia repair, enteral reduction and oblique anastomosis (EROA).

**Method:** The technique involves reduction of the dilated bowel diameter by removal of an elliptical full thickness part of the anterior wall of the proximal dilated pouch and oblique anastomosis of the resultant window with a longitudinally incised posterior wall of the distal bowel.

**Results:** This technique was used in 9 neonates, 5 females and 4 males in one year. Ages at operation ranged between 2-30 days (median 3 days). Eight neonates recovered well. Enteral feeds were tolerated in 7-12 days and the length of hospital stay ranged between 15-36 days. One baby, who underwent surgical repair at the age of 30 days, died following severe sepsis and anastomotic leak.

**Conclusion:** Enteral reduction and oblique anastomosis is an easy and safe alternative to current surgical techniques used for the treatment of small intestinal atresia. No bowel resection is required while proximal bowel tapering is achieved.

## Neonatal Visceral Perforation, a rare presentation of gastric hemangioma

***Basma Magdy*** (Pediatric surgery, Cairo university pediatric hospital, Cairo, Egypt), ***Hadeer Mohamed Nasr eldin*** (Pediatric surgery, Cairo university pediatric hospital, Cairo, Egypt), ***Khaled Bahaeldin*** (Pediatric hospital, Cairo university pediatric hospital, Cairo, Egypt)

**Aim:** Although gastro-intestinal hemangiomas have an approximate incidence of 0.05%, the prevalence might be underestimated due to asymptomatic patients. Gastrointestinal hemangiomas tend to present later in childhood, only 4 cases of gastric hemangiomas are reported to present in neonatal period. Despite the fact that bleeding and ulceration causing hematemesis and melena are the symptoms reported in the earlier neonates, gastric perforation has not been reported yet among any. We hereby present the first reported case of a patient who presented with a perforated stomach due to gastric hemangioma.

**Case description:** A one-day female patient, born at 36 weeks of gestation and weighing 2170 grams, developed a sudden episode of fresh hematemesis while receiving her feed. Although her haemoglobin abruptly dropped from 14.8 to 5.79 grams per deciliter, her bleeding profile was normal. Her abdominal examination revealed severe distention with signs of peritonitis. During the resuscitation, the bedside ultrasound scan detected hemo-pneumoperitoneum secondary to a possible perforated viscus or a vascular malformation. No other vascular lesions were detected by the ultrasound scan.

Urgent laparotomy revealed perforated stomach on ventral aspect with surrounding vascular pool in the gastric wall of 3.5 \*2.5 cm in size, that was excised and the stomach was repaired primarily. The tissue histopathological study exhibited the picture of cavernous hemangioma.

The early postoperative course was unremarkable. Contrast follow-through confirmed the integrity of the repair and the rest of the bowel. Oral feeding was restored gradually and the patient was discharged on day 17.

**Conclusions:** Perforation could be the initial presentation of visceral hemangioma if the proliferative phase causes relative transmural vascular ischemia in earlier age requiring prompt surgical intervention. Thus, a special consideration should be given to visceral hemangiomas as they may present with life-threatening events.

## Surgery for the correction of esophageal atresia in children – a nationwide analysis

**Andrea Schmedding** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany), **Udo Rolle** (Department of Pediatric Surgery and Pediatric Urology, University Hospital Frankfurt, Frankfurt, Germany)

**Aim:** Esophageal atresia (EA) is a rare disease. Surgical treatment of EA is decentralized in Germany. Furthermore, the registry for EA just started in 2021. Currently, nationwide epidemiological studies for these rare diseases can only be carried out with insurance claims data. The aim of this study was to analyze the surgery for the correction of EA on a nationwide base.

**Methods:** The national database of administrative claims data of the Institute for the Remuneration System in Hospitals (InEK) was analysed regarding all operated patients with EA in the years 2019-2021. This database contains data of all hospital admissions in Germany with their diagnoses and procedures, including complications, duration of hospital stays and mortality.

**Results:** 528 EA patients underwent surgery for reconstruction of the esophagus in the years 2019 to 2021. 4% of them were older than 28 days of life when admitted for surgical correction. Elongation therapy was performed in 6% of the patients prior to surgery. Tracheobronchoscopy was performed in 50% of the patients, pleural drainage was administered in 61% of the patients. 16% of the patients needed gastrostomy. Chylothorax was documented in 7% of the patients. Blood transfusion was documented in 42% of the patients. Postoperative dilatations of the reconstructed esophagus were required in 18% patients until discharge. Mean length of hospital stay was 47 days, mortality was 1 %.

18 patients had gastric pull-up procedure for long gap EA during the study period. 33% of them were admitted as newborns, 22% were older than one year at the admission for surgery. Mean length of stay was 81 days in these patients with no mortality.

**Conclusion:** Surgical treatment of EA has been performed with very low mortality, but relevant morbidity. Trachobronchoscopy was performed only in 50% of the patients. Gastric pull-up is rarely performed.

## POSTER WALK 22

### Miscellaneous 1

#### Omphalocele Management – The 30 Years' Experience of a Tertiary Center

**Tarca Elena** ("Gr. T. Popa" University of Medicine & Pharmacy, Iasi (Iasi), Romania), **Bogdan Savu** ("Gr. T. Popa" University of Medicine & Pharmacy, Iasi (Iasi), Romania), **Livia Lupu** ("Sfanta Maria" Children's Hospital, Iasi (Iasi), Romania), **Dina Al Namat** ("Sfanta Maria" Children's Hospital, Iasi (Iasi), Romania), **Viorel Tarca** ("Apolonia" University, Iasi (Iasi), Romania)

**The aim** of the study was to review our 30 years' experience regarding the treatment of this congenital abdominal wall defect, in order to emphasize the main risk factors associated with unfavorable evolution.

**Methods:** we devised an analytical retrospective study of all neonates with omphalocele treated in our pediatric third level hospital, between January 1990 and December 2021. Demographic data, therapeutic management and the mortality rates were analyzed, as well as the statistical correlations between them.

**Results:** a total of 154 patients with omphalocele were treated in our hospital during the aforementioned period; from these, 139 were eligible for the study. The percentage of antenatal omphalocele diagnosis had increased over the three decades from 6.5% to 15% and 35%, respectively (statistically significant,  $p=0.02$ ); the mean gestational age was 37 weeks and the mean birth weight was 2720 grams. Provenance from a rural area was predominant throughout the analyzed period, showing a significant increase, from 54% to 64% and 80%, respectively ( $p=0.04$ ). 26% of all patients presented with associated chromosomal abnormalities, with no significant differences among the three decades. Surgical treatment was performed in 60% of overall cases (54%, 55% and 72% by decade); the remaining cases were treated conservatively. Conservative treatment doubled the risk of death (Chi-square test 4.386,  $p=0.04$ ). The overall survival rate was 47.5%, with no statistically significant differences among the 3 decades. The presence of chromosomal abnormalities and a birth weight below 2500 grams were also significantly correlated with the evolution towards death ( $p=0.005$ ,  $p=0.00$ ).

**Conclusions:** chromosomal abnormalities, low birth weight and conservative treatment were the three main factors significantly associated with high death risk in our series. Omphalocele management may still present as a challenge for the pediatric surgeon, as it associates morbidity and mortality rates that are yet of concern in our area.

## Spontaneous knotting of intravesical urethral catheter, an unusual complication in pediatric: report of a rare case

**Hani Elhaj Abdalla Bilal Omer** (Pediatric surgery, Bahri teaching hospital, Khartoum, Sudan), **Mohamed Basheer Elhilali** (Pediatric surgery, Bahri teaching hospital, Khartoum, Sudan), **Ibrahim Salih Elkhier** (Pediatric surgery, Bahri teaching hospital, Khartoum, Sudan)

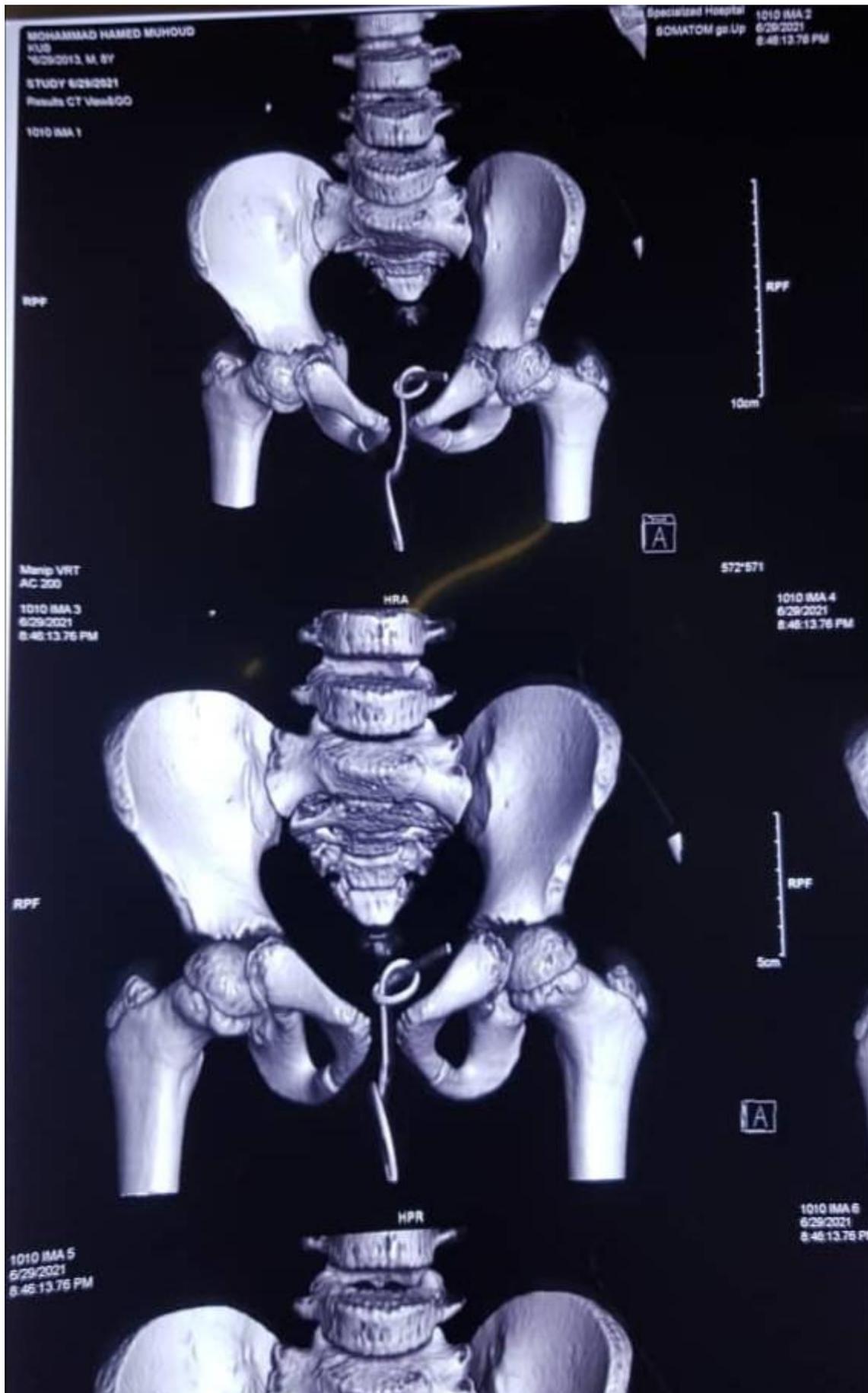
**Aim:** Knotting of urinary catheters has been reported as a rare complication in paediatrics. This is caused by inserting thin flexible catheters too far in, allowing it to coil. Awareness of this complication and education on length of catheter insertion is important to avoid this.

**Case description:** 8 years old male child, a known case of polycystic kidney disease, presented to our hospital with abdominal distention and vomiting, work up revealed an intestinal obstruction for which the patient underwent an emergency laparotomy, he was catheterised at the time of operation with a 8Fr long urethral catheter. The finding was Mikel's diverticulum, resection and anastomosis was done, with an eventful post-operative days, an overwhelming sepsis occurred and treated, on day 7 postoperatively, the catheter was planned for removal, difficult removal was experienced, Despite multiple attempts by several experienced nurses and doctors, the catheter balloon failed to deflate, and the valve did not allow further inflation. Other methods of cutting the valve or passing a wire via the balloon channel were attempted, and the catheter could not be removed. However, the catheter continued to drain. An abdominal CT was scheduled to investigate this and rule out any bladder pathology; this revealed that the catheter was knotted inside the bladder. He underwent a cystotomy via a pfannensteil incision under general anaesthetic. This confirmed a knotted catheter just under the balloon preventing the balloon from deflating (see the attached figure). The balloon was punctured and the catheter was removed. The patient completed his postoperative rehabilitation and was discharged home.

### Conclusions:

- ▶ Spontaneous urethral catheter knotting is a rare complication in pediatric population.
- ▶ Consider catheter coiling and subsequent knotting when experiencing difficult catheter removals.
- ▶ The knotted catheter removal can be done either through cystoscopy or open cystotomy with positive results for both.





## Counseling both ends of fetal spina bifida spectrum: Large myeloschisis versus large cystic myelomeningocele

**Jose L Peiro** (Fetal Care Center – Pediatric Surgery Division, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA), **Foong-Yen Lim** (Fetal Care Center – Pediatric Surgery Division, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA), **Mounira Habli** (CCHMC Fetal Care center, Cincinnati, USA), **David Mckinney** (CCHMC Fetal Care center, Cincinnati, USA), **Mallory Hoffman** (CCHMC Fetal Care center, Cincinnati, USA), **Braxton Forde** (CCHMC Fetal Care center, Cincinnati, USA), **Erinn Gotze** (CCHMC – Fetal Care center, Cincinnati, USA), **Usha Nagaraj** (Pediatric Radiology, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA), **Karin Bierbrauer** (Pediatric Neurosurgery, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA), **Charles Stevenson** (Pediatric Neurosurgery, Cincinnati Children's Hospital Medical Center (CCHMC), Cincinnati, USA)

**Objective:** Spina bifida is a disabling birth defect that can be detected and surgically treated prenatally. MOMS-trial showed worsened motor outcomes in fetuses with a cystic myelomeningocele (MMC) compared to flat defects. Progressive cerebrospinal fluid egress into the sac may exert stretch on the neural-plate and nerve roots resulting in subsequent motor impairment. However, other data suggest the presence of a sac maybe protective in limiting the severity of hindbrain-herniation and ventriculomegaly.

**Methods:** We present retrospective analysis of 2 cases consecutively seen for prenatal repair evaluation. They represent opposite extremes of the fetal spina bifida spectrum in considerations for prenatal surgery and counseling in our 400 prenatal MMC evaluated cases.

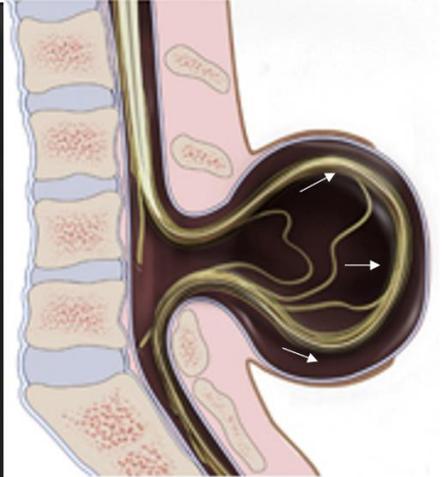
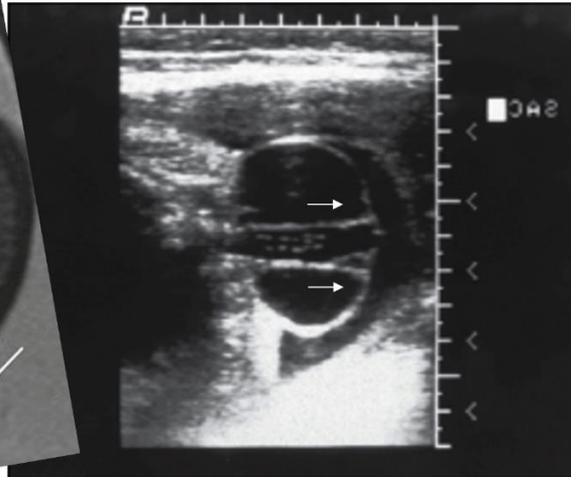
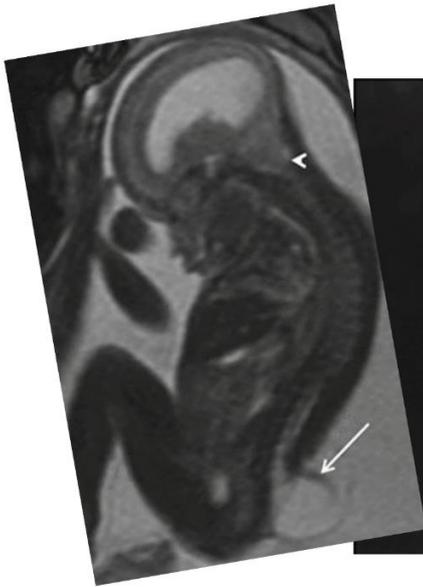
### Results:

**Case 1:** Large cystic MMC defect at L5 level with minimal Chiari malformation (grade-1), no hindbrain-herniation, and normal cerebral ventricles at prenatal evaluation at 25 weeks' gestation. Bilateral club-feet, with significant muscular atrophy at the tibial level and impaired motility at ankles and knees. Briefly, good head and bad feet.

**Case 2:** Large flat myeloschisis defect at T10 level with grade 3 Chiari malformation, hindbrain herniation and severe ventriculomegaly (22 mm) at the mid-gestation evaluation. Conversely, preserved active hip, knee, and ankles flexor-extension motility on ultrasound examination, without talipes. Briefly, bad head and good feet.

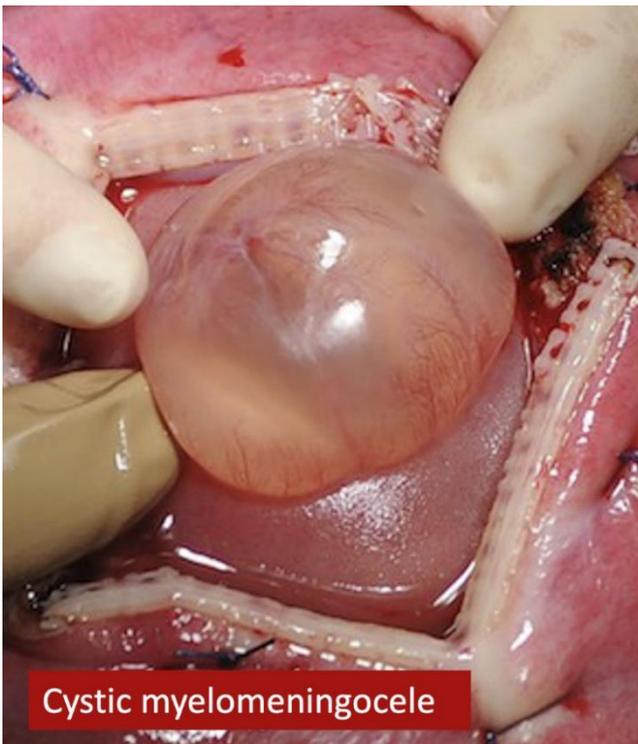
**Conclusions:** Our clinical observation supports that large cystic MMC cases anticipate a worse motor outcomes than other flat forms of open spina bifida including large myeloschisis. However, these cystic forms seem to show less progression of hindbrain-herniation and ventriculomegaly. Inversely, the large rachischisis forms seem to maintain good lower extremities' motor function at mid-gestation but develop severe cerebellar herniation and hydrocephalus early in pregnancy.

It is important to transmit this information to families in counseling for prenatal surgery with dilemma of the potential benefits for opposite scenarios in spina bifida.

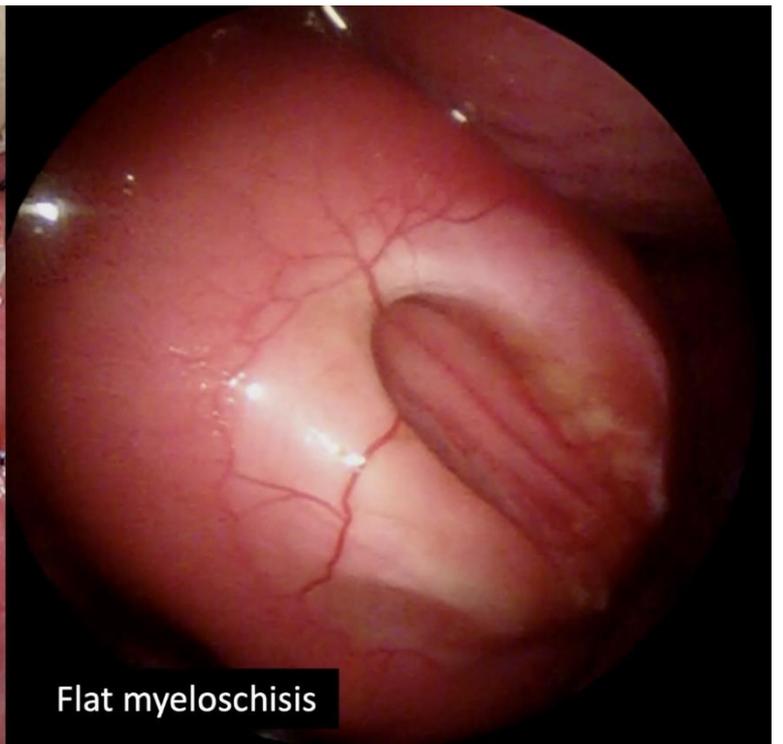


3<sup>rd</sup> HIT

stretching of nerve roots



Cystic myelomeningocele



Flat myeloschisis

## Congenital Dermoid Fistula of Anterior Chest: Case Report and Review of Literature

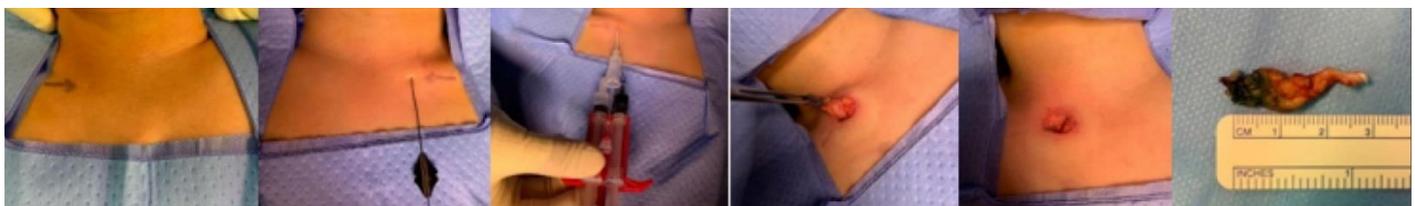
**Rakan S aldusari** (College of Medicine, KSAU-HS, King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), King Abdullah Specialized Children's Hospital (KASCH), Riyadh, Saudi Arabia), **Sabrin Al Magbol** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia), **Salwa Al Humaid** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia), **Mutaz Gieballa** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia), **Mazyad Alenezi** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia), **Faten Al Robian** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia), **Jaber Alshammari** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia), **Rakan S aldusari** (Home, Riyadh, Saudi Arabia)

**Background:** Congenital dermoid sinuses of the anterior chest wall (CDACR) are congenital anomalies that are rare and often misdiagnosed or mistreated.

**Aim:** We aim in our report to raise awareness regarding these issues and present our experience with a demarcation technique for anomalous tissue.

**Case Description:** We present one case of CDACR that presented in our clinic and was treated surgically and later confirmed using histopathology. The patient's health record was reviewed for the following: demographics, visits, imaging modalities, management, outcome, and histopathology. Our 4-year-old patient underwent ultrasonography revealing characteristics of a dermoid sinus on her right anterior chest, this was later confirmed by histopathology post-excision which was facilitated by a methylene blue and fibrin glue mix. The incision healed well and there were no complications.

**Conclusion:** CDACRs are rare congenital anomalies that must be excised to prevent recurrent infections or complications. Knowing how to identify and deal with them is essential.



Pic-A

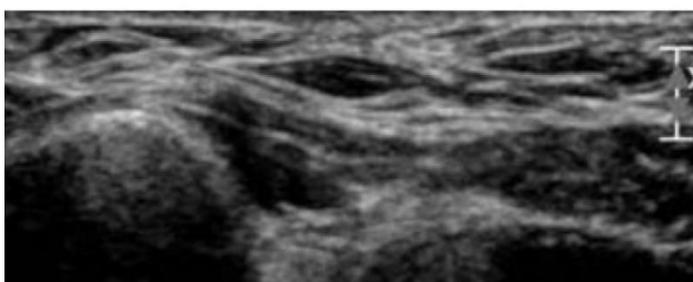
Pic-B

Pic-C

Pic-D

Pic-E

Pic-F



US-A: Ultrasonographic findings of the hypoechoic tract.

Pic-A: Right upper chest fistula opening visualized.

Pic-B: Lacrimal probe tip being inserted inside the opening.

Pic-C: Injection of the mix through the fistulous tract.

Pic-D: Dissection of the tract is almost completed, and excision is facilitated by the colored glue mix.

Pic-E: Wound site after excision.

Pic-F: Excised tract measuring 3cm before being sent to histopathology.

## Proximal clavicular osteochondroma: A report of an unusual site

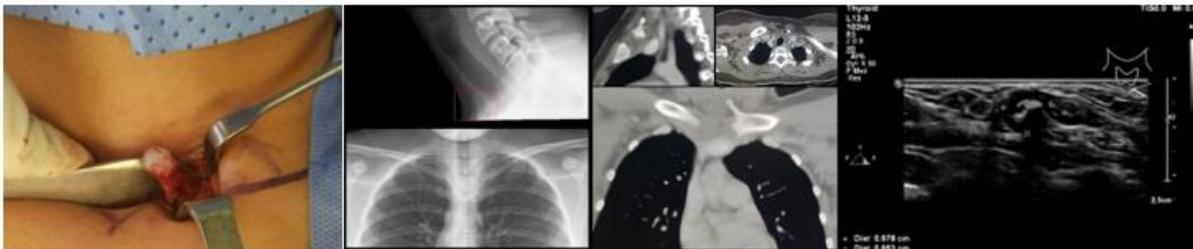
**Rakan Saad aldusari** (College of Medicine, KSAU-HS, King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), King Abdullah Specialized Children's Hospital (KASCH), Riyadh, Saudi Arabia), **Motaip H Alrawili** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia, King Abdullah Specialized Children's Hospital (KASCH), Riyadh, Saudi Arabia), **Samir S Alsayegh** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia, King Abdullah Specialized Children's Hospital (KASCH), Riyadh, Saudi Arabia), **Faten S Al Robian** (Division of Pediatric Surgery, Department of Surgery, King Abdulaziz Medical City and King Abdullah Specialist Children's Hospital, Ministry of National Guard Health Affairs, Riyadh, Saudi Arabia, King Abdullah Specialized Children's Hospital (KASCH), Riyadh, Saudi Arabia)

**Background:** Osteochondromas are benign surface tumors that comprise a large sum of all bone tumors. They can present as solitary lesions or as part of a collective such as in hereditary multiple osteochondromas (HMO). Generally, they are asymptomatic but can present in some cases with complications such as pain, Horner syndrome, plexopathy, tendinopathy, and even erosion into adjacent structures.

**Aim:** We aim in our report to raise awareness regarding these issues and present our experience with osteochondromas of the head & neck

**Case Description:** Our 14-year-old patient had X-rays and ultrasound studies done, revealing characteristics of osteochondroma of the clavicle. The size of the lesion and resulting cosmetic deformity warranted surgical intervention. Osteotomy was done and the specimen was sent to histopathology which confirmed the prior suspicion of osteochondroma.

**Conclusion:** Osteochondromas are mostly benign and asymptomatic but can develop serious complications. Thus, early detection and diligent observation, especially in young patients, are essential to prevent degeneration or complications.



Pic-A

Pic-B

Pic-C

Pic-D

Pic-A: Intraoperative image showing the exostosis after being exposed. Chest X-Ray – Unremarkable.

Pic-B: Cervical Spine X-ray showing the bony prominence. Not visualized on chest X-ray.

Pic-C: Three different views of the clavicular prominence. Sagittal, axial, and coronal, respectively.

Pic-D: Ultrasonographic view of the exostosis.

## Delayed presentation in the common paediatric surgery cases among Sudanese children: possible causes

***Nosyab Hasab Alnabi Rahma Omer*** (Pediatric surgery, Khartoum university – faculty of medicine / Soba University Hospital, Khartoum, Sudan), ***Mr. Abdelbasit Elsayed Ali*** (Pediatric surgery, King Saud medical city, Riyadh, Saudi Arabia)

**Aim:** to determine the reasons for delayed presentation in the common pediatric surgery cases among Sudanese children.

**Methods & materials:** this is a descriptive cross-sectional hospital-based study that had been conducted among pediatric surgery units in Sudan from March 2018 to March 2019, all children with surgical conditions whose age between 1 day & 16-year-old were included and after consents had been obtained then using a predesignated data collection sheet (questionnaire) data had been collected and analyzed using SPSS version 22.

**Results:** one hundred and twenty children were involved in this study, 61% were males, most of the children either below 10 months of age or between 5–8 years, 36% of the patients came from the Khartoum and its surroundings, the most common reason for late presentation was the delayed referral either due to misdiagnosis & admission in other wards or being on follow-up with a physician. followed by: illiteracy, negligence, ignorance, poverty & living faraway. The most commonly involved condition in the emergencies was complicated appendicitis (19.9%) and in the cold cases was the undescended testis (18%).

**Conclusion:** there are many factors that led to delayed presentations of children with surgical conditions. The most common reason was the delayed referral by other medical staff followed by the other factors like living faraway & poverty. All of them have a remarkable impact on the morbidity & mortality of the children so the pediatric surgical care should be given the priority in the future plans.

## Bleomycin sclerotherapy for Giant macrocystic lymphatic malformation: minimal complications with maximum result

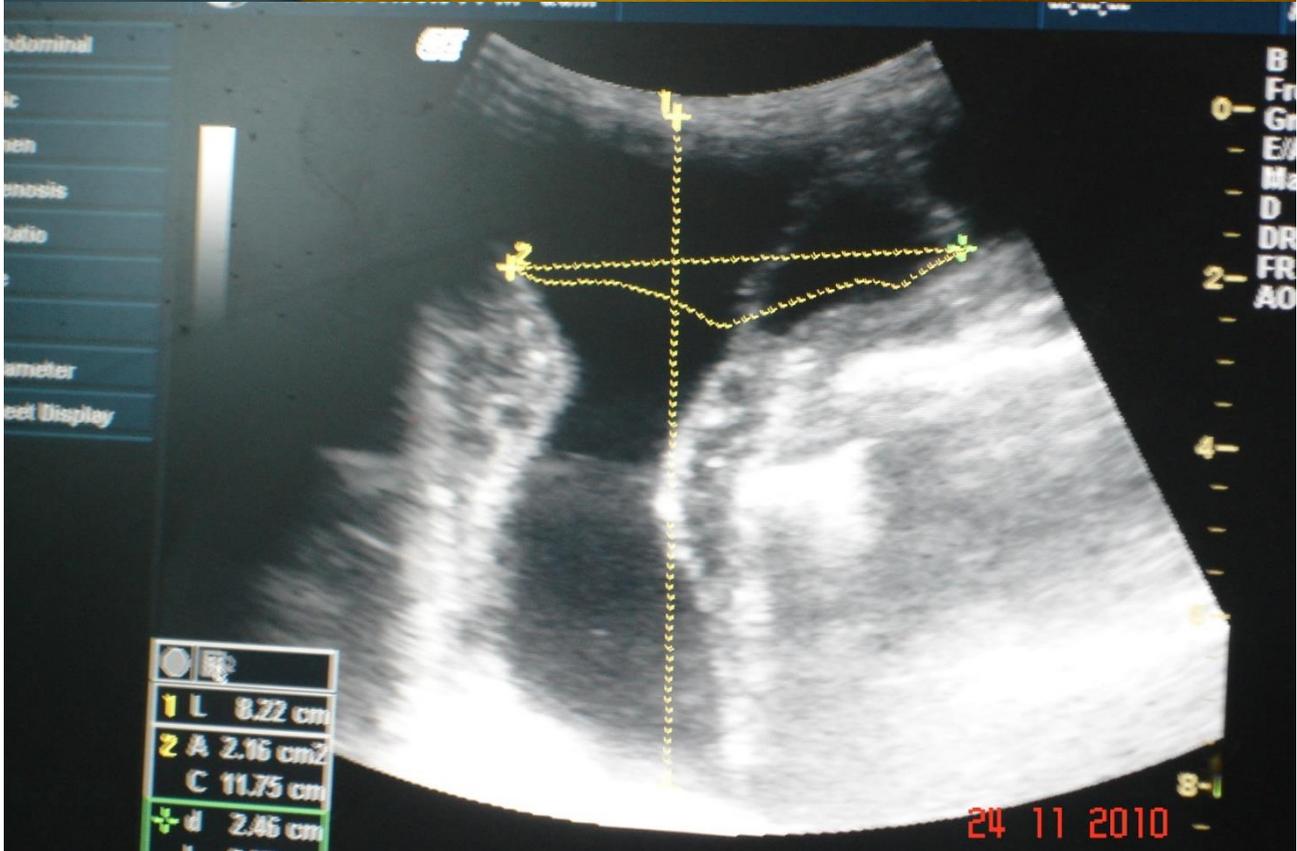
**Vijai Datta Upadhyaya** (SGPGIMS, Lucknow, India), **Basant Kumar** (SGPGIMS, Lucknow, India), **Rohit Kapoor** (SGPGIMS, Lucknow, India), **Anju Verma** (SGPGIMS, Lucknow, India)

**Introduction:** Cystic lymphangioma (CL) is a multiloculated congenital malformation of the lymphatic system occurring in approximately 1 in 6000-12000 births and mostly presents at the birth. CL is of variable size and can found at any age and any part of body. This study was carried out to observe the effect of intralesional aqueous bleomycin in giant CL presenting in adult as well as in pediatric cases.

**Material and Methods:** This is an observational study done in department of pediatric surgery and plastic surgery from January 2012 to January 2022. All the diagnosed cases of lymphangioma measuring more than 6 cm in size managed during this period were reviewed. The lesion with vascular component or had any history of previous surgery or any form of treatment were excluded from the study. A total of 22 cases were included in the study. Primary mode of management of CL at present centre is intralesional sclerotherapy by bleomycin. Standard protocol followed at our centre to treat the cases of CL. Relevant demographic and clinical data of all included patient was collected on structured proforma and data was analysed.

**Result:** Four cases had favorable outcome in single session, 12 cases showed favorable response after 2<sup>nd</sup> session and 4 cases showed favorable response after 3<sup>rd</sup> session. Two cases showed partial response even after fourth session and considered non responder, one of which was operated whereas other one was satisfied with partial response and is not willing for surgical excision. No major complications were observed in present series. Few cases developed mild pain with or without fever but none of them required hospitalization.

**Conclusion:** Intralesional sclerotherapy by bleomycin is safe, effective and economical treatment option for management of large cystic lymphangiomas and avoids surgery related complications.



## Right upper quadrant transverse vs. Upper-umbilical incision in hypertrophic pyloric stenosis surgery

**Irene Diequez** (Pediatric Surgery, Hospital Universitari i Politècnic La Fe, Valencia, Spain), **Elena Carazo** (Pediatric surgery, Hospital Universitari i Politècnic La Fe, Valencia, Spain), **Adrià Costa-Roig** (Pediatric Surgery, Hospital Universitari i Politècnic La Fe, Valencia, Spain), **Juan J Vila** (Pediatric Surgery, Hospital Universitari i Politècnic La Fe, Valencia, Spain)

**Aim:** hypertrophic pyloric stenosis (HPS) is a common condition in the newborn, where pyloromyotomy surgery is curative. This technique can be done through a right upper quadrant transverse (RUQ) or through an upper-umbilical (UU). Our aim was to compare complications, operative time and hospitalization length and aesthetics results between both approaches.

**Methods:** cross-sectional study performed on patients with HPS between January 2010-2020. Qualitative variables (Sex and complications) were expressed as absolute frequency and percentage, and quantitative ones (age at surgery, operative time, length of hospital stay (LOS) and scars aesthetics scales: MVSS (*Modified Vancouver Scar Scale*) and P-SAS (*Patient Scar Assessment Scale*)) as median and interquartile range.

**Results:** 107 patients were analysed RUQ (60,7%, n=65) vs. UU (39,3%, n=42): male (89,2%, n=58 vs. 83,3%, n=35), days of life (31 (24,5 – 39,5) vs. 34,5 (29,5 – 47,25)), operative time (41 (33,75 – 60) vs. 46 (38,5 – 60) minutes) and LOS (2 (2 – 4) vs. 3 (2 – 3)). Clavien-Dindo II complications were more frequent in UU group (1,54%, n=1 vs. 23,81%, n=10; p<0,001), being most of them surgical wound infection. UU group presented with better aesthetics opinion about their scar in MVSS scale (1,5 (0 – 4) vs. 0 (0 – 2); p=0,022). Although P-SAS scale did not reach statistical significance (10 (6 – 18) vs. 6 (6 – 9); p=0,060).

**Conclusions:** UU incision is better accepted aesthetically but, even though it presents slightly more chances of wound infection, it does not require more operative time, length of hospital stay or more severe complications.

N=107		RUQ = 60,7% (n=65)	UU = 39,3% (n=42)	p
<b>SEX</b>	<b>Male</b>	89,2% (58)	83,3% (35)	0,377
	<b>Female</b>	10,8% (7)	16,7% (7)	
<b>AGE (Days)</b>		31 (24,5 – 39,5)	34,5 (29,5 – 47,3)	0,098
<b>OPERATIVE TIME (minutes)</b>		41 (33,75 – 60)	46 (38,5 – 60)	0,520
<b>LOS (days)</b>		2 (2 – 4)	3 (2 – 3)	0,808
<b>Complications</b>	<b>CV I</b>	0	7,1% (3)	0,058
	<b>CV II</b>	1,54% (1)	23,81% (10)	<b>0,001</b>
	<b>CV III</b>	0	4,8% (2)	0,152
	<b>CV IV-V</b>	0	0	

**Patient's characteristics.** RUQ (Right Upper Quadrant incision); UU (Upper-umbilical incision); CV (Clavien-Dindo).

(A)



(B)



Selection of pictures of the scar provided by patients. (A) RUQ. (B) UU.

## Practical Solution for Distal Objects in Emergent Rigid Bronchoscopy

**Gul Ilayda Sarar** (Pediatric Surgery, University of Health Sciences Turkey, Hamidiye Faculty of Medicine, Department of Pediatric Surgery, Istanbul Zeynep Kamil Women and Children's Diseases Health Training and Research Center, Istanbul, Turkey), **Serdar Moralioglu** (Pediatric Surgery, University of Health Sciences Turkey, Hamidiye Faculty of Medicine, Department of Pediatric Surgery, Istanbul Zeynep Kamil Women and Children's Diseases Health Training and Research Center, Istanbul, Turkey)

**Aim:** Foreign body (FB) aspiration is still common in children and a potentially life-threatening problem in acute period. Additionally, missed or retained FBs can cause long-term irreversible complications. Rigid bronchoscopy (RB) is the main treatment of choice but its use is limited in distal FBs due to narrow bronchial calibre. In this study, we aimed to evaluate and share our technique to remove distal FBs with RB.

**Methods:** The demographic data, location and nature of the FBs, operation time, removal technique and complications of patients who underwent emergent RB due to FB aspiration by single surgeon between October 2013 and April 2022 were evaluated from hospital records, retrospectively.

**Results:** 72 patients ranging in age from 3.5 months to 11 years underwent RB due to FB aspiration in 9 years, in 44 males and 28 females. 94.4% of the patients (n:68) were under 3 years old. In 12.5% (n: 9), FBs were not reached by the optic forceps of the rigid bronchoscope due to distal localization and flexible grasping forceps which originally suited for fiberoptic bronchoscope (Karl Storz, Germany, Serial No 11003MB or 11003MA) were used under direct visualization for removal. All FBs were successfully removed. The mean duration of hospitalization and intravenous antibiotic use of the patients with distal FBs was longer (3 days vs 1.3 days). Postoperative course was uneventful.

**Conclusion:** Distal FBs are challenging due to increased need of additional operations and risk of residues. By the use of flexible grasping forceps, 12.5% of our patients who would otherwise need additional interventions, were successfully treated on the first trial. Using flexible grasping forceps under direct visualization is a useful, practical and safe solution for removing objects unreachable by rigid optical forceps during RB.

## Congenital Treves' field transmesenteric hernia complicated with bowel gangrene; a case report and literature review

**Abdelrahman S.Elnour** (Pediatric surgery, Nyala teaching hospital, Nyala, Sudan), **Faisal Nugud** (National Centre for pediatric surgery, national Centre for pediatric surgery, Madani, Sudan), **Osman Taha** (National Centre for pediatric surgery, Madani, Sudan)

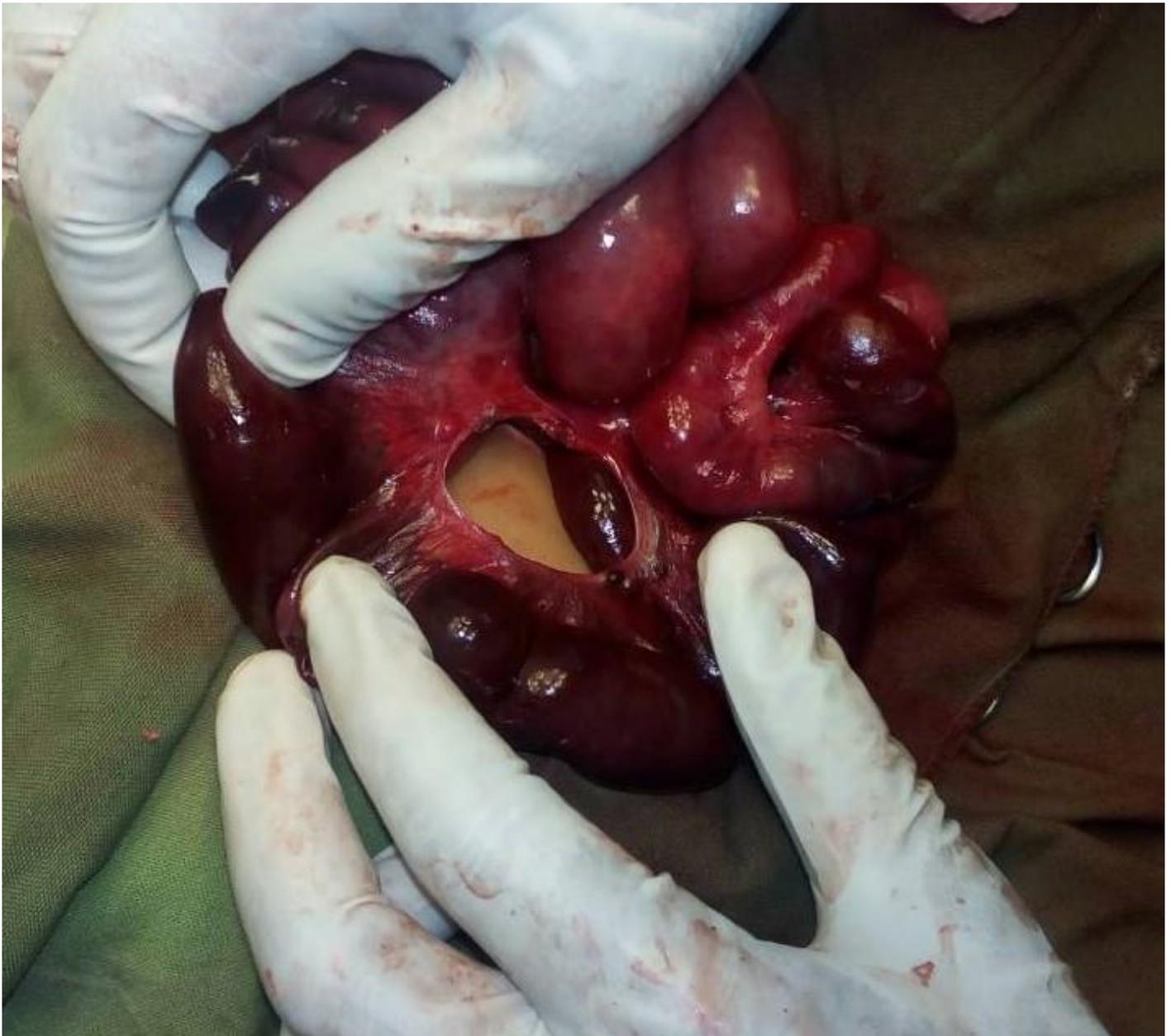
**Background:** Treves' field transmesenteric hernia is a very rare cause of intestinal obstruction in children, its diagnosis and management are challenging and need a high index of suspicion.

**Aim:** To highlight the presentation and our management approach to a female infant with Treves' field transmesenteric hernia.

**Case description:** We present a seven months old female infant, presented with 18 hours history of intense diffuse abdominal pain, nausea, and repeated vomiting that started yellowishly then became bilious, associated with abdominal distension and constipation. She was ill and dehydrated. Her abdomen is grossly distended, tense, and tender. Abdominal x-rays revealed dilated small bowel loops with multiple air-fluid levels. The US showed no intussusception. Emergency laparotomy was performed with a diagnosis of acute abdomen and probably small bowel obstruction. Exploration revealed Treves' field transmesenteric hernia, with a gangrenous segment of the small bowel which is mandates bowel resection.

**Conclusions:** Rare causes of intestinal obstruction in children, such as congenital Treves' field transmesenteric hernias should be considered in unexplainable mechanical small bowel obstruction. They should be managed urgently with resuscitation and prompt surgical intervention.





## Optimal timing for inguinal hernia repair in premature infants

**Yu Jeong Cho** (Department of Surgery, Hanyang University Guri Hospital, Hanyang University College of Medicine, Guri-si, Korea), **Seong Chul Kim** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Dae Yeon Kim** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Jung-Man Namgoong** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Hyunhee Kwon** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Suhyeon Ha** (Department of Pediatric Surgery, Asan Medical Center Children's Hospital, University of Ulsan College of Medicine, Seoul, Korea), **Ju Yeon Lee** (Department of Pediatric Surgery, Chonnam National University Children's Hospital, Gwangju, Korea), **Min Jeng Cho** (Department of surgery, Ulsan University Hospital, University of Ulsan College of Medicine, Ulsan, Korea), **Eunyoung Jung** (Pediatric Surgery, Keimyung University Dongsan Medical Center, Daegu, Korea), **So-Hyun Nam** (Department of Surgery, Dong-A University College of Medicine, Busan, Korea)

**Aim:** Inguinal hernia (IH) is relatively common in premature infants, and the timing of appropriate surgical correction is still controversial. We analyzed the timing of IH repair (IHR) in premature infants in neonatal intensive care unit (NICU) considering recurrence, incarceration, and other complications.

**Methods:** This study is a multicenter retrospective review of premature infants (<37 weeks) in neonatal intensive critical unit (NICU) diagnosed with inguinal hernia from 2016 to 2021. Patients were segregated into groups based on the timing of IH repair (NICU: IHR at the NICU, Delayed: IHR after discharge from the NICU). Collected data included clinical characteristics, IHR-related outcomes.

**Results:** Of the 149 patients, 109 patients (73.2%) underwent IHR in the NICU, and 40 patients (26.8%) underwent IHR after discharge from the NICU. There was no difference in the surgical methods and operation time, and the postoperative hospitalization period was shorter in the delayed group. Preoperative incarceration was not different, but complications including recurrence and postoperative respiratory insufficiency were higher in the NICU group (11.0% vs 0%,  $P=0.029$ ; 22.0% vs 5.0%,  $P=0.01$ ). In multivariate analysis for the factors affecting the recurrence, the significant factors were preoperative ventilator dependence and body weight less than 3 kg at the time of surgery (odds ratio (OR) 16.9,  $P<0.01$ ; OR 9.9,  $P=0.04$ ).

**Conclusion:** We found that preoperative incarceration and recurrence were not higher and were safe even with IHR after discharge from the NICU. It is recommended that premature infants in NICU who have a ventilator before surgery or weigh less than 3 kg at the time of surgery might be operated on with caution in complication.

## Pediatric primary pyogenic psoas abscess – Abscess volume-based algorithm

**Devendra Kumar Yadav** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Sameer Kant Acharya** (Pediatric Surgery, VMMC and Safdarjang Hospital, New Delhi, New Delhi, India), **Prabudh Goel** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Anjan Dhua** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Vishesh Jain** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India)

**Aims:** To present the clinical Features, diagnostic Protocol, microbiological Profile & management protocol (Volume-based management) of primary pyogenic psoas abscess in children

**Materials and methods:** Prospective evaluation of psoas abscess was done from 2009-to 2016. The diagnosis was established by clinical evaluation and USG. The treatment protocol includes Group A-Needle aspiration-small amount of pus (<25 ml), B-Pigtail insertion (posterior approach and ant-lateral approach)-> 25 ml pus without lump, C-Extraperitoneal surgical drainage (GA, or LA with sedation) for abscess with a lump, **D-** Psoas fascia opening for bulky psoas and E-Conservative management with skin traction in the bulky psoas. The outcome was measured in terms of pain improvement, leg straightening, and hospital stay.

**Results:** Sixty consecutive pts were included. The age ranges from 4-to 12 years. The classic triad of pain, fever, and limping was noticed in 56 patients. Pus culture showed growth in 41 pts. Gr A includes 6 pts, which showed pain improvement and leg straightening in 48 hrs. Gr B include 20 pts, which showed pain improvement and leg straightening in 36 hrs. Gr C include 23 pts, which showed pain improvement and leg straightening in 18 hrs. Gr D include 5 pts, which showed pain improvement and leg straightening in 52 hrs. Gr E include 6 pts, which showed pain improvement and leg straightening in 72 hrs. Hospital stay ranges from 5-to 18 days.

**Conclusion:** Small quantity psoas abscesses responded well to needle aspiration and pigtail drainage while large abscesses with lumps required surgical drainage. Surgical drainage was more effective than conservative management in terms of Symptomatic improvement and hospital stay.

## Ultrasound may be helpful in diagnosis of non-supra-umbilical epigastric hernias

**Christina Oetzmann von Sochaczewski** (Sektion Kinderchirurgie der Klinik und Poliklinik für Allgemein-, Viszeral-, Thorax- und Gefäßchirurgie, Universitätsklinikum Bonn, Bonn, Germany), **Laura Oerters** (Sektion Kinderchirurgie der Klinik und Poliklinik für Allgemein-, Viszeral-, Thorax- und Gefäßchirurgie, Universitätsklinikum Bonn, Bonn, Germany), **Andreas Heydweiller** (Sektion Kinderchirurgie der Klinik und Poliklinik für Allgemein-, Viszeral-, Thorax- und Gefäßchirurgie, Universitätsklinikum Bonn, Bonn, Germany)

**Aim:** Epigastric hernias in children are rarely reported in the literature with only 81 cases from 8 articles identified by a current systematic review (DOI: 10.1055/s-0040-1719056). While surgical approaches – laparoscopy and open repair – are equally suitable, the role of ultrasound during diagnosis was not evaluated before; neither was the aspect of localisation. We therefore analysed them in our cohort to shed light on these aspects.

**Methods:** All children diagnosed with an epigastric hernia between 1/1/2009–31/12/2020 at our centre were identified and misclassified incisional hernias were excluded. Data was collected by a specifically trained chart abstractor using a pre-specified data sheet. Associations were assessed via point-biserial correlation analysis.

**Results:** We included 13 children with a median age of 25.8 months (95% confidence interval: 17.2–47.4) of which 9 were females (69%). A swelling was present in 12 children and 2 experienced pain. Fascial defect could be palpated in 6 patients, but demonstrated in 9 by ultrasound. Except for a 7 months old infant whose asymptomatic ultrasound-proven hernia was managed expectantly, the remaining 12 children had open repairs. Median defect size was 6 millimetres (95% confidence interval: 2–12). Supra-umbilical hernias were associated with larger defect sizes than epigastric hernias ( $R=0.68$ , 95% confidence interval: 0.2–0.89,  $P=0.011$ ). While there was no association between defect size and its detection by clinical examination ( $R=0.45$ , 95% confidence interval: -0.14–0.8,  $P=0.123$ ), a negative association between defect size and the use of ultrasound ( $R=-0.72$ , 95% confidence interval: -0.28–(-)0.91,  $P=0.005$ ) was present.

**Conclusion:** Clinical examination alone may miss the diagnosis of an epigastric hernia, but ultrasound may overcome this limitation and could be particularly helpful in the diagnosis of small epigastric hernias. Supra-umbilical hernias seemed to be larger than true epigastric hernias, but further research on this matter is necessary.

## The importance of perinatal consultation in the management of paediatric surgical developmental anomalies

**Tibor Molnár** (Department of Paediatrics, Division of Paediatric Surgery, University of Pécs Clinical Centre, Pécs, Hungary), **Attila Vástyán** (Department of Paediatrics, Division of Paediatric Surgery, University of Pécs Clinical Centre, Pécs, Hungary), **Gábor Molnár** (Department of Obstetrics and Gynecology, University of Pécs Clinical Centre, Pécs, Hungary), **Funke Simone** (Department of Obstetrics and Gynecology, University of Pécs Clinical Centre, Pécs, Hungary), **Zsuzsanna Herbert** (Department of Medical Imaging, University of Pécs Clinical Centre, Pécs, Hungary)

**Aim:** Prenatal ultrasound and detection of structural congenital anomalies provides opportunity to influence the perinatal management. Consultations with the parents and various medical specialists has a considerable impact on the pregnancy and the postnatal treatment. The aim of our study was to evaluate our experiences on this field.

**Methods:** We reviewed the records of patients referred for pre- and postnatal consultation to our „Perinatal Team” between January 2019 and August 2021. Their ultrasound results and the newborns’ records were evaluated. Furthermore, a questionnaire (with 15 questions) was sent to the patients. The questions were focused on the impact of the consultation on the pregnancies, the parents’ anxiety and the understanding of the anomalies.

**Results:** Eighty-two consultations were available for detailed analysis (45 prenatal, 37 postnatal). From the questionnaires we obtained 58% response rate. The consultations significantly influenced the parents’ knowledge regarding the anomalies ( $p < 0,05$ ) and their understanding of the severity of the anomalies ( $p < 0,05$ ), while it also alleviated parental anxiety in 80%. The parents’ decisions regarding the outcome of the given pregnancies were influenced in 5 cases. The consultations also impacted the site ( $n=15$ ), mode ( $n=1$ ) and timing ( $n=2$ ) of the delivery.

**Conclusion:** Providing perinatal consultation may have a significant impact on a fetus and newborn with surgically correctable congenital anomalies. Providing obstetric colleagues and parents with insight into the surgical management and correction of anomalies allows delivery in an appropriate clinical setting, by the safest mode of delivery, and at the gestational age appropriate to minimize effects of the anomaly.

## POSTER WALK 23

### Hepatobiliary surgery

#### Spontaneous rupture of gallbladder in neonate with heterotaxy 2021

**Halah SaidAhmed Yasin** (*Pediatric surgery, Police hospital, Khartoum, Sudan*)

Spontaneous intrauterine rupture of the gallbladder is extremely rare in neonates with acute abdomen, and rapid diagnosis is often difficult to achieve.

We have a case of a newborn female with heterotaxy (left isomerism) and ruptured gallbladder prenatally. Patient presented with abdominal distension and was rapidly deteriorating. laparotomy was done and the patient was successfully managed with refashioning and suturing of the remnant gallbladder without the need for cholecystectomy. Drain was kept for one week and she was discharged in good condition. Now patient is doing well.

Such a condition should be suspected in neonates with acute abdomen, and the primary repair can be done without cholecystectomy.

## Abscess of round ligament of liver, a rare cause of acute abdomen in a 50 days infant

**Hazem Alagib** (pediatric surgery, Algazera national pediatric surgery centre, Wad Madani, Sudan), **fisal nugud** (Algazera national pediatric surgery centre, Wad Madani, Sudan), **Wala Balla** (Algazera national pediatric surgery centre, Wad Madani, Sudan)

**Aim:** to discuss abscess of the round ligament (ligamentum teres hepatis) one of the complication of omphalitis, home delivery and umbilical catheter.

**Case presentation:** 52 days female baby was outcome of vaginal delivery at home attended by midwife, umbilical cord was cut and fixed without use of antiseptic measures.

She was quite well until 5 days prior to admission when she developed high grade fever, remitted associated with abdominal distention.

2 days later she developed bilious vomiting large amount 3-4 times per day, there was no constipation or jaundice.

No signs of omphalitis.

Patient underwent exploration, we found a bucket of pus in the extension of the round ligament which was thickened. also there was pus inside peritoneum and granulation tissue. The bowel was healthy no perforation and liver was normal.

**Discussion:** Home delivery carries risk of infection and sepsis specially when done in a septic condition round ligament abscess can occur in the absent of omphalitis (latent infection).

Treating sepsis in low income countries with limited resources cause burden on the health system, application of simple measures like educating midwives about importance of sterilization can make better outcome.

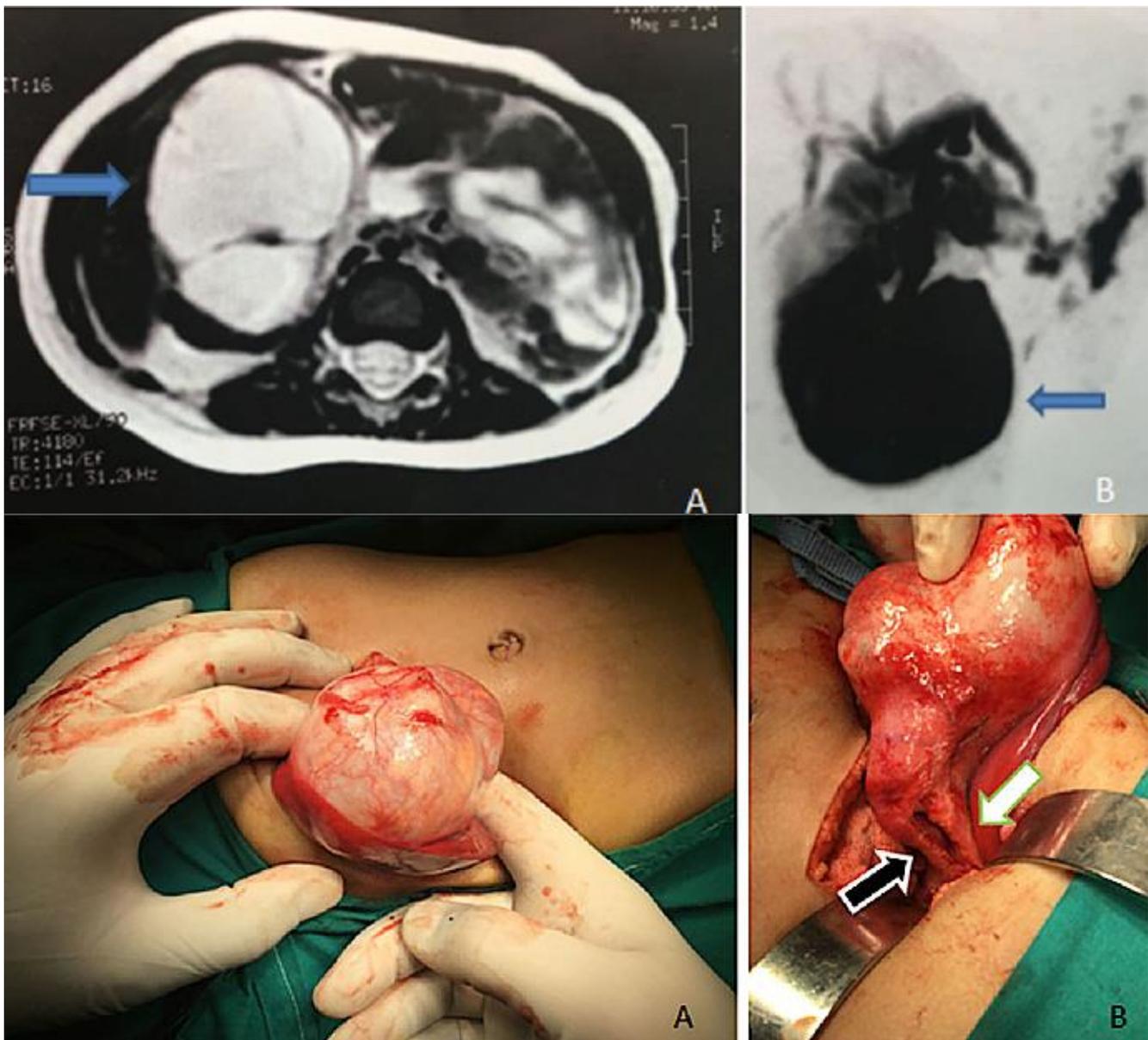
## Gallbladder Papilloma in a Child Unmasking Metachromatic Leukodystrophy: A Case Report

**Ahmed Hassan** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Mostafa Kotb** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Marwa Abdelaziz** (Pathology, Alexandria Faculty of Medicine, Alexandria, Egypt), **Yasmine Abdelmeguid** (Pediatrics, Alexandria Faculty of Medicine, Alexandria, Egypt), **Sameh Shehata** (Pediatric Surgery, Alexandria Faculty of Medicine, Alexandria, Egypt), **Mona Abdel-Hadi** (Pathology, Alexandria Faculty of Medicine, Alexandria, Egypt)

**Aim:** Metachromatic leukodystrophy (MLD) is a lipid storage disease characterized the accumulation of sulfatides in different viscera including the gallbladder. Herein, we describe a case of a girl who presented with gall bladder papilloma that, after histopathologic evaluation, unmasked MLD which is a more serious disease.

**Case description:** A 2-year-old girl had upper right quadrant lesion that was preoperatively thought to be a biliary cystadenoma. Histologically, the gallbladder lesion was a tubulo-villous papilloma with multiple foci of papillary mucosal hyperplasia. Many storage histiocytes containing metachromatic granules, characteristic of MLD, were present in the tips of the papillae. MLD was later confirmed by enzyme studies.

**Conclusion:** Gallbladder papilloma can be the presenting feature of MLD.



## Extrahepatic bile duct tumor in an infant: a case report

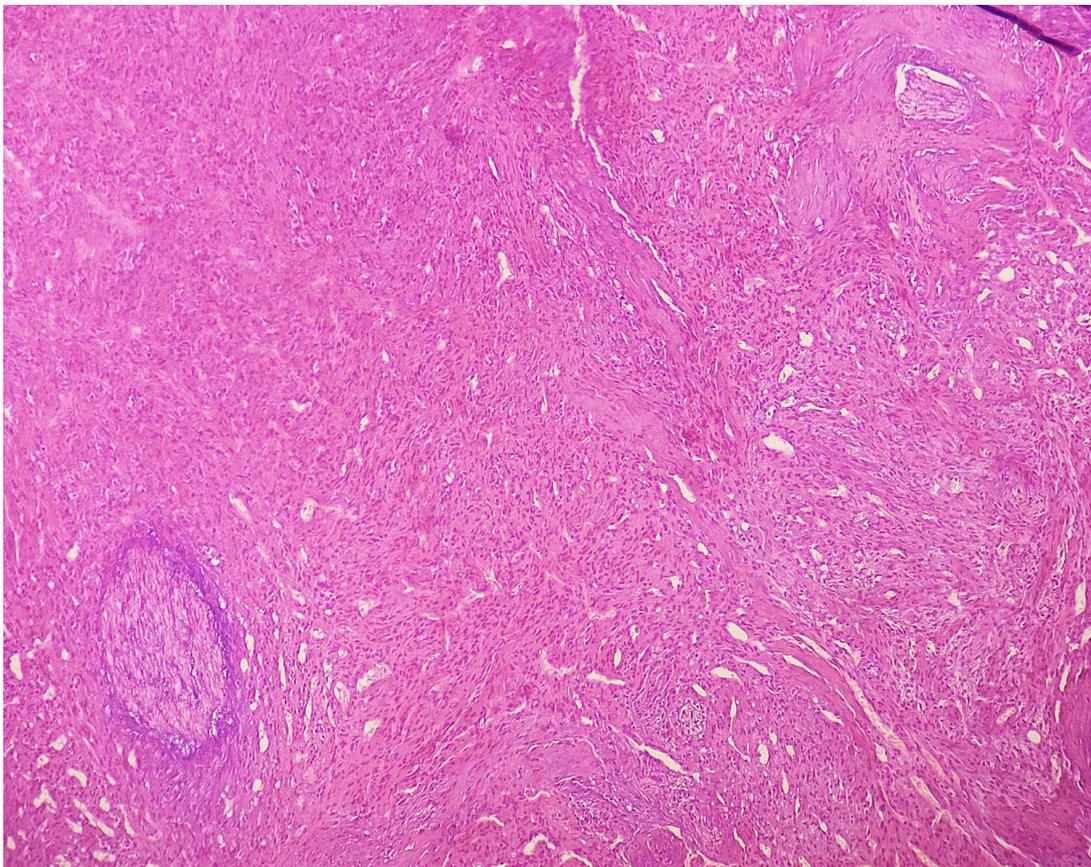
**Md Samiul Hasan** (Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh), **Nazmul Islam** (Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh), **Ashrarur Rahman Mitul** (Pediatric surgery, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh)

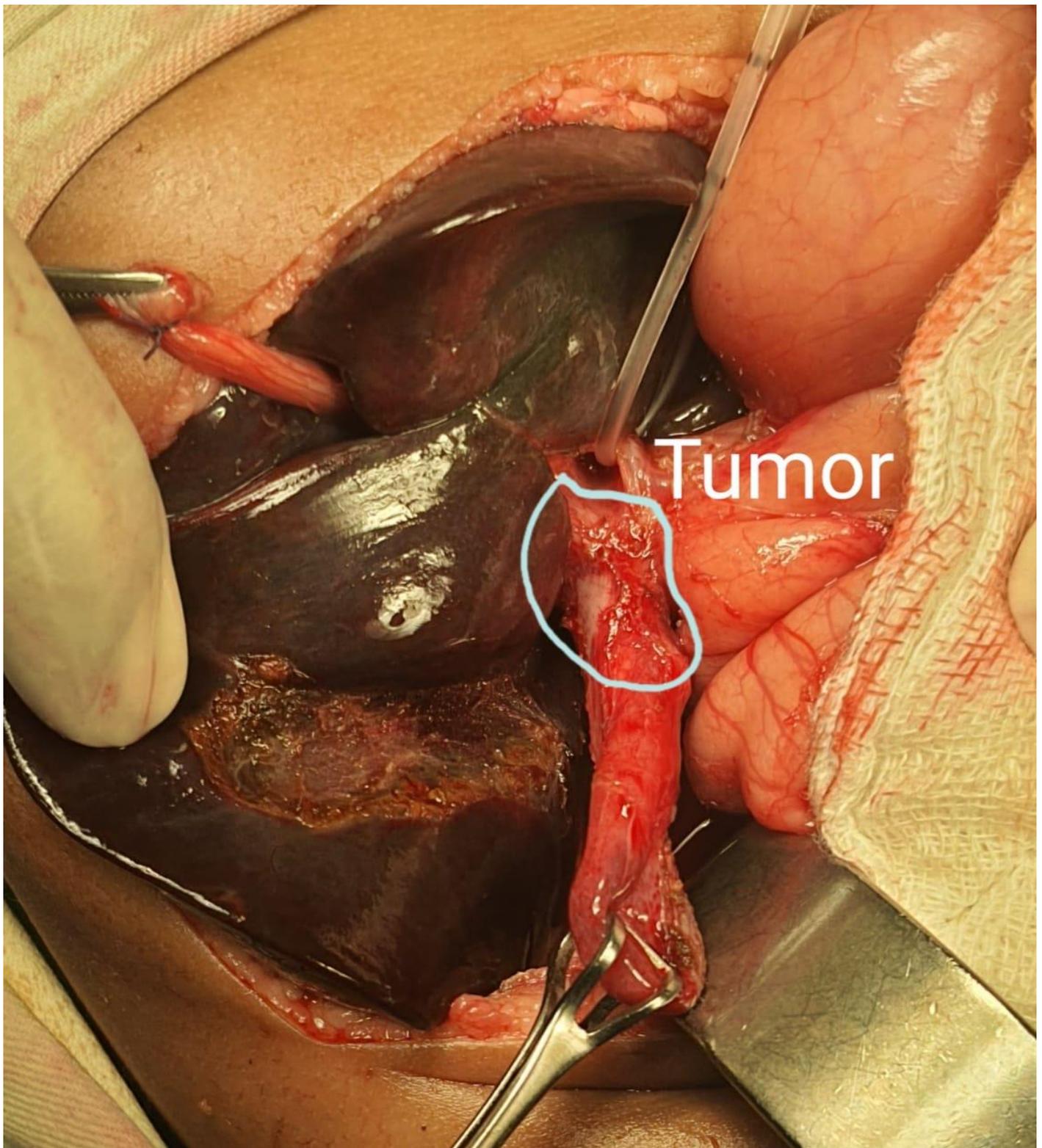
**Aim:** Extrahepatic bile duct tumor in neonates and infants is extremely rare. The youngest case in literature is a three-year-old girl with papillomatosis in the common bile duct (CBD). We report a two months old girl with CBD fibroma.

**Case description:** A two-month-old girl presented with jaundice and pale stool for 15 days. Her perinatal period was uneventful. On examination, we found the girl deeply icteric and having hepatomegaly but no palpable lump. Laboratory investigations revealed direct hyperbilirubinemia with elevated liver enzymes. Ultrasonography revealed hepatomegaly with focal dilatation of the extrahepatic bile duct (2.1x0.5 cm). Our working diagnosis was a type I choledochal cyst. Considering the clinical scenario, we planned for exploration without further imaging. On exploration, we found the liver blackish and a hard mass involving the common CBD and cystic duct. The gall bladder was filled with clear mucus. After excising the mass, the gall bladder, and CBD, we reconstructed the anatomy with Roux-N-Y hepaticojejunostomy. The postoperative period was uneventful except for minor bile leakage during the first four postoperative days. Histopathology revealed spindle-shaped fibrous tissue admixed with collagenous tissue, compatible with a fibroma. Liver biopsy showed the features of cirrhosis. However, liver function tests were normal two weeks after surgery.

**Conclusions:** CBD fibroma is a rare cause of obstructive jaundice in neonates and infants. Confirmatory diagnosis is only possible after surgery and histopathology. The earliest possible excision of the tumor and restoration of bile drainage is necessary to halt the progression of liver fibrosis.

**Keywords:** Bile duct tumor, Bile duct fibroma, obstructive jaundice in infants





## Giant pancreatic hydatid cyst as a rare cause for acute pancreatitis in childhood

**Narcis F. Tepeneu** (University of Medicine and Pharmacy “V. Babes” Timisoara, Timisoara, Romania)

**Aim:** Hydatid disease may develop in almost any part of the body. The location is mostly hepatic (75%) and pulmonary (15%), and only 10% occur in the rest of the body. Primary pancreatic hydatidosis is a rare event and acute pancreatitis related to pancreatic hydatid cyst is extremely rare.

**Case description:** We present the case of an 8 year old male, living in the rural area, with an huge abdominal mass (18/15 cm diameter) situated in the epigastric and upper umbilical region, which presented to the hospital with abdominal pain, vomiting, diarrhea and fever.

The laboratory studies showed mild anemia, a normal white blood cell count, no eosinophilia, inflammatory markers were positive, lipase levels were 11 times higher than normal range, the levels of vanilmandelic acid, lactate dehydrogenase, alpha-fetoprotein and ferritin were in normal range, Anti – Echinococcus granulosus and multilocularis antibodies type IgG were positive. The MRI exam showed a cystic formation connected to the pancreas, compressing the organs around it (stomach, liver, extra-hepatic biliary ducts). CT scans and X-rays did not reveal the presence of any other cysts. The patient underwent surgical treatment – partial pericystectomy (Mabit-Lagrot method) and peritoneal drainage, medicamentous treatment with antibiotics and albendazole.

The postoperative evolution was favorable and the patient was released from the hospital two weeks after operation. There were no short-term or long-term complications.

**Conclusions:** Since hydatid disease is endemic in some regions, it should be considered as one of the underlying etiologies for infection or inflammation of the pancreas even in the pediatric population.

## ERCP in managing liver echinococcus disease obstructing the biliary system: A case report

**Nayha Gautam** (Paediatric Surgery, University of Walter Sisulu, Frere and Cecelia Makiwane Hospitals, East London, South Africa), **Sello Machea** (Paediatric Surgery, University of Walter Sisulu, Frere and Cecelia Makiwane Hospitals, East London, South Africa)

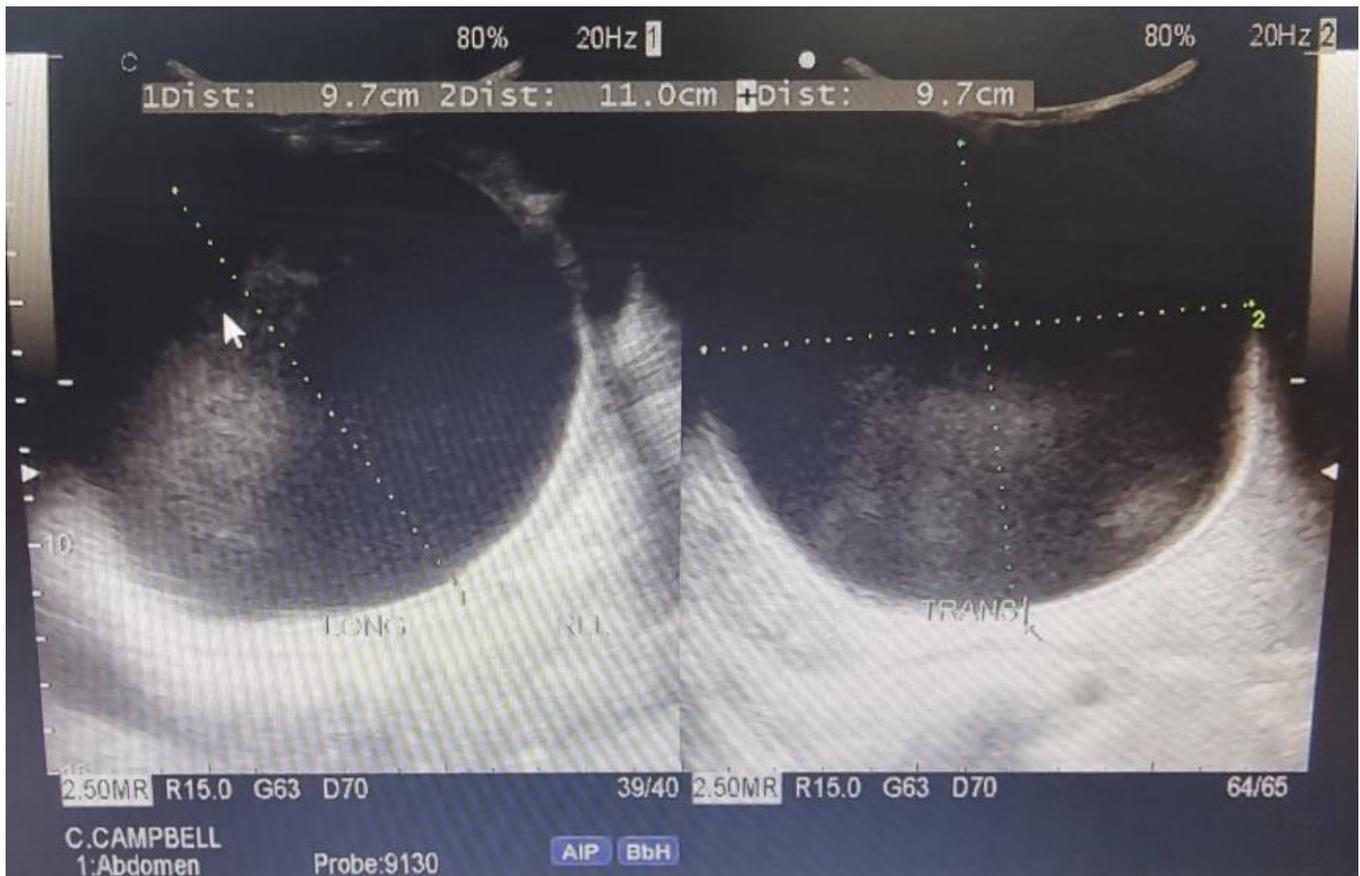
**Aim:** The aim is to report on the treatment of liver echinococcus and show how Endoscopic retrograde cholangiopancreatography (ERCP) plays an important role in not just visualising the biliary system, but in offering interventions such as sphincterotomy and balloon extraction of daughter cysts within the biliary ducts.

### Method & results:

**Case 1:** 5-year-old male, presented with 2 weeks of jaundice with hepatomegaly. TORCH and hepatitis screen negative. Ultrasound abdomen showed a WHO Classification Type CE1 echinococcus in segment 7 of liver (figure 1). Patient received albendazole and underwent percutaneous aspiration, injection and re-aspiration (PAIR) procedure, as per protocol. Presented again 2 months post PAIR procedure with recurrent cyst. Underwent laparoscopic assisted cyst drainage where bile was drained. Proceeded to deroof cyst, remove germinal layer and insert a corrugated drain, as biliary fistula was considered. Child had persistent bile leak from the drain despite optimising nutrition, and preventing sepsis and ultimately underwent an ERCP. Sphincterotomy was done and an occlusion cholangiogram demonstrated no leak. A 5cm 10fr stent was left in situ. Bile leak ceased and the stent was removed 6 weeks later with a full recovery

**Case 2:** 9-year-old boy presented with acute jaundice and hepatomegaly. Ultrasound abdomen showed a complex liver cyst with dilated intra and extra hepatic bile ducts and cysts within the duct. Proceeded to MRCP which confirmed similar findings (figure 2). Albendazole was commenced and proceeded to ERCP where a multisized extraction balloon removed debris within the ducts. Occlusion cholangiogram was clear. Child had an uneventful recovery

**Conclusion:** There are very few reports of the use of ERCP in the paediatric population. ERCP can play a pivotal role in selected groups of children with complicated hepatic echinococcus in case of rupture or obstruction and be used for both diagnostic and therapeutic options.



## All Dilated Common Bile Ducts are not Choledochal Malformations!

**Vijai Datta Upadhyaya** (SGPGIMS, Lucknow, India), **Basant Kumar** (SGPGIMS, Lucknow, India), **Rohit Kapoor** (SGPGIMS, Lucknow, India), **Pratibha Nair** (SGPGIMS, Lucknow, India)

**Background and Aim:** Choledochal cyst with calculi form a close differential diagnosis for choledocholithiasis (CDL) as both can have similar symptoms & findings on imaging. Due to rarity of CDL in children, their management is not well described in literature. This Study aims to describe our approach for such cases.

**Methods:** Its a retrospective chart review in which all the patients with dilated CBD with choledocholithiasis presented to us over a period of last 5 years (2017-2021) All patients were investigated and managed as per our institutional protocol for such cases. ERCP and stenting was done as initial management. Stent was removed if patients were asymptomatic for 3 months and Laparoscopic cholecystectomy was planned. Patients were observed for up to 2 years after stent removal for dilatation of CBD via USG. Data such as patient demographics, Clinical presentation, biochemical & radiological investigations, ERCP/stenting and operative details (if any) was collected and analysed.

**Results:** 5 patients diagnosed as CDL with mean age 8 years (range 5-11) were included. All patients initially presented with pain abdomen, vomiting followed by development of jaundice. However, pale stool was reported in just 1 patient. Direct bilirubin was raised in all patients on presentation and all patients had choledocholithiasis on USG & CMD diameter was more than 10mm on MRCP/MRCP, ERCP and stenting was done in all patient and stones in CBD were removed. In 3 patients stent was removed and laparoscopic cholecystectomy was done while rest 2 patients are waiting for surgery. On mean follow up of 11 months, all patients are asymptomatic and have normal LFTs and CBD diameter on USG.

**Conclusion:** Choledochal cyst form a close differential diagnosis for CDL as both can present with similar symptoms and have similar findings on imaging, this protocol can avoids major reconstructive surgery in few cases

## Blunt abdominal trauma causing gallbladder rupture in an 18 months of life with choledochal cyst: a very rare case

**Tri Thanh Tran** (Department of Hepato-Pancreato-Biliary Surgery and Liver Transplant, Children's Hospital No 2, Children's Hospital No 2, Ho Chi Minh, Vietnam), **Duy Phi Ho** (Department of Hepato-Pancreato-Biliary Surgery and Liver Transplant, Children's Hospital No 2, Children's Hospital No 2, Ho Chi Minh, Vietnam), **Thuan Nguyen An Luu** (Department of Hepato-Pancreato-Biliary Surgery and Liver Transplant, Children's Hospital No 2, Children's Hospital No 2, Ho Chi Minh, Vietnam)

Blunt abdominal trauma causing gallbladder rupture is exceptionally rare in children. This condition occurs in patients with choledochal cysts even more rarely. The clinical presentation is nonspecific and is often confounded by other concomitant injuries. CT scans are typically the imaging modality of choice following abdominal trauma in a stable patient; however, diagnosing gallbladder injury can be challenging due to atypical images. Therefore, the diagnosis is often delayed and only confirmed by surgery. We report a ruptured gallbladder in an 18-month-old girl as a result of blunt abdominal trauma due to domestic violence. She was hospitalized in septic shock and developed chylous ascites in later period. The patient was underwent a surgery because of persistent chylous ascites that did not respond to conservative treatment. Gallbladder injury was confirmed and successfully managed with laparoscopic surgery.

## Ultrasound accuracy for diagnosis of biliary atresia

**Dwiki Afandy** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Hermis Arseno** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Audric Kenny Tedja** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Hesti Gunarti** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Akhmad Makhmudi** (Universitas Gadjah Mada, Yogyakarta, Indonesia), **Gunadi Gunadi** (Universitas Gadjah Mada, Yogyakarta, Indonesia)

**Aim:** Biliary atresia (BA) is a cholangiopathy caused by an obstruction of intrahepatic and extrahepatic bile ducts. This condition can lead to obstruction of bile flow. Early diagnosis of biliary atresia is associated with a good prognosis. Ultrasound (US) is commonly used in daily practices to evaluate the biliary system in BA. Therefore, this study aimed to evaluate the accuracy of US for BA diagnosis.

**Methods:** This study was a retrospective design using medical records of BA patients who underwent US examination. The results were compared with the gold standard of BA: intraoperative findings or cholangiography.

**Results:** The sensitivity of gallbladder absence in US findings is 71.42 %, while the specificity is 91.67%. It has an 89.29% positive predictive value (PPV) and 76.74% negative predictive value (NPV). Meanwhile, if the triangular cord was found in US examinations, it has 14.28% sensitivity, 100% specificity, 100% PPV and 76.74% NPV. Both findings in the US examination have 82.85% sensitivity, 91.67% specificity, 90.63% PPV, and 84.61% NPV.

**Conclusions:** US can be used as a first-line tool to diagnose BA in an infant presenting with cholestasis because of its high diagnostic value. It has no radiation exposure and can be used easily in daily practice.

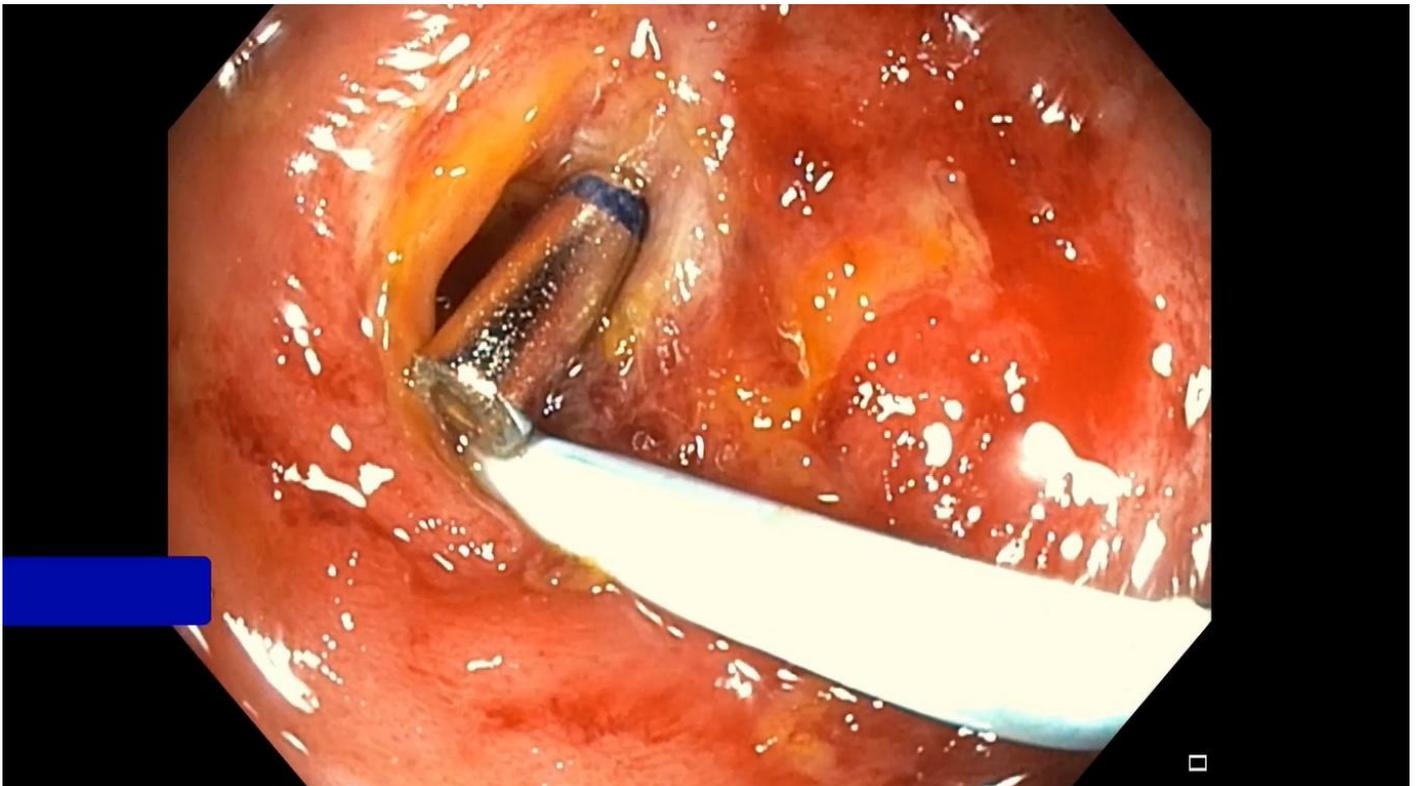
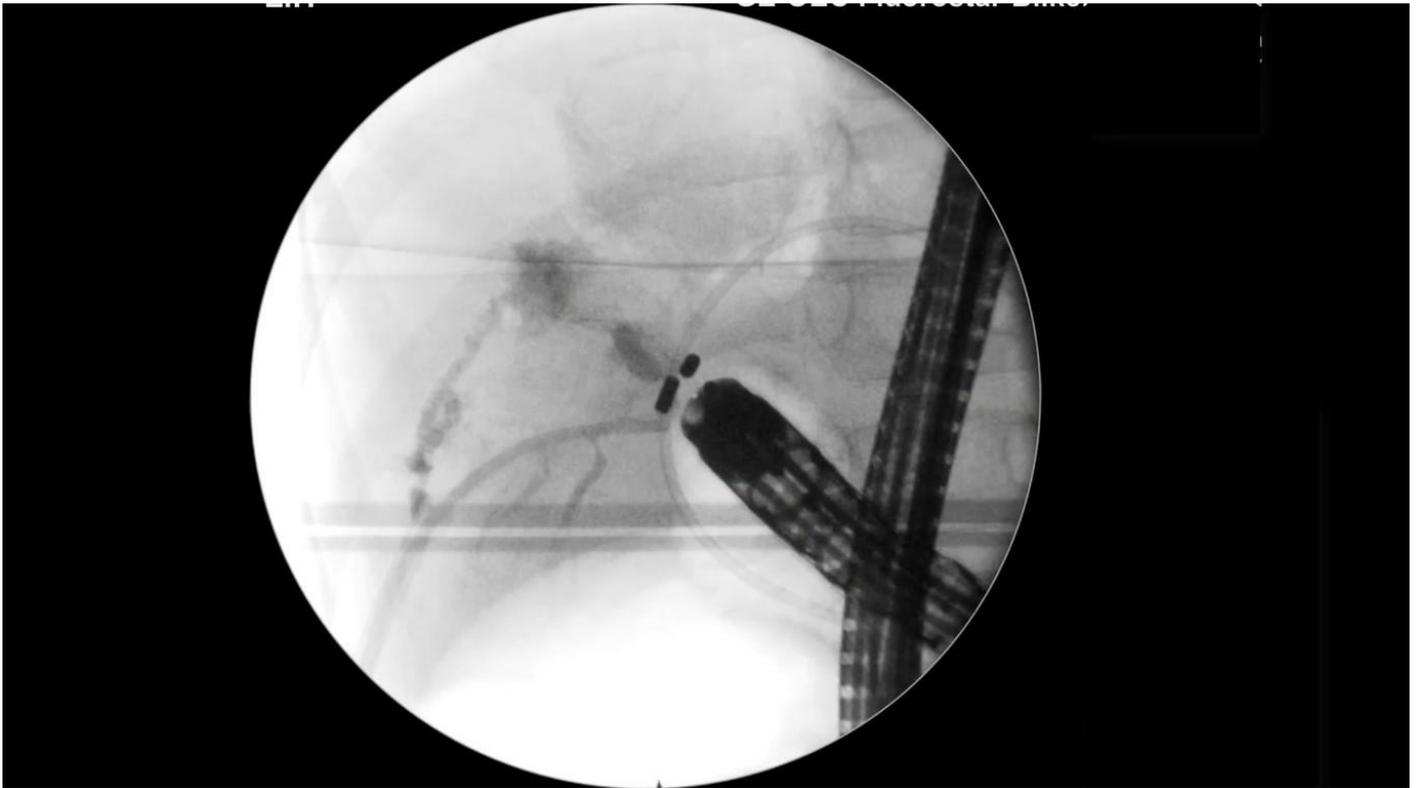
## Treatment of hepaticojejunostomy anastomotic stenosis by endoscopic MCA technique in a child

**Bülent Ödemiş** (Department of Gastroenterology, Ankara City Hospital, Ankara, Turkey), **Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Sabri Demir** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital, Children Hospital, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Ankara Yildirim Beyazıt University, Faculty of Medicine, Ankara, Turkey)

**Aim:** The basic approach in the treatment of biliary occlusion after Hepatocic-jejunostomy (HJ) is generally percutaneous transhepatic cholangiography (PTC). On the other hand, magnetic compression anastomosis (MCA) is a novel, mini-invasive and alternative technique in the treatment of BBS(Benign Biliary Stricture). We present the successful treatment of a child patient with aberrant biliary duct obstruction after hepaticojejunostomy using MCA technique.

**Case description:** An 8-year-old girl who was operated on for a type-4 choledochal cyst two-years ago presented with the complaint of intermittent abdominal pain in the postoperative period. As a result of the evaluation of the patient, elevated serum transferase and cholestasis enzyme, and dilatation in the intrahepatic bile ducts are detected in the ultrasonography and MRCP. Then, PTC procedure was performed, the right posterior branch to the hepatico-jejunostomy line. Re-canalization of the anastomosis with PTC and enteroscopy from the hepatobiliary arm of Roux-en-Y was attempted, but not successful. Then, MCA was chosen as a minimally invasive procedure for re-canalization of the occluded anastomosis. The HJ anastomosis line was reached with enteroscopy. A N45 magnet (Neodymium, 2 mm) was advanced up to the anastomosis proximal by using a 7 Fr pusher over the percutaneous biliary drainage by the interventional radiology team. Simultaneously, second N45 magnet (Neodymium, 2 mm) was advanced to the distal part of the obstructed segment with the through-the-scope method, and it was observed that the magnets were aligned. In the control x-rays, it was seen that the magnets adhered, and passed into the intestinal lumen 72 hours after the procedures. During the PTC, the cholangiography showed that the radiopaque material passed into the jejunum.

**Conclusion:** MCA is an effective and less invasive procedure for postoperative bilio-enteric anastomotic obstruction in a selected group of patients with a short stricture length and appropriate anatomy.



## POSTER WALK 24

## Trauma 1

## Injury to the distal tibiofibular syndesmosis in the growing skeleton

**Tomas Pesl** (Department of Pediatric and Trauma surgery, 3rd Faculty of medicine, Charles University in Prague, Thomayer Teaching Hospital, Prague, Czech Republic), **Petr Havranek** (Department of Pediatric and Trauma surgery, 3rd Faculty of medicine, Charles University in Prague, Thomayer Teaching Hospital, Prague, Czech Republic), **Lukas Kramar** (Department of Pediatric and Trauma surgery, 3rd Faculty of medicine, Charles University in Prague, Thomayer Teaching Hospital, Prague, Czech Republic), **Martin Cepelik** (Department of Pediatric and Trauma surgery, 3rd Faculty of medicine, Charles University in Prague, Thomayer Teaching Hospital, Prague, Czech Republic)

**Aim:** Distal tibiofibular syndesmosis (TFS) consisted of tibia, fibula and trinity of ligaments: anterior tibiofibular ligament (ATFL), posterior tibiofibular ligament (PTFL) and interosseal tibiofibular ligament (ITFL). Injury to this structure is common in adults but rare in the growing skeleton. In children ligaments are five times stronger than the surrounding bone structures thus the skeletal injury is much more frequent than the ligament injury. Equivalent of ATFL injury in the growing skeleton is the juvenile Tillaux fracture. Equivalent of the PTFL injury is mostly represented by triplane fracture of the distal tibial epiphysis. Equivalent of injury to the ITFL – tibial mortise fracture – is extremely rare and we focused our interest just at it.

**Methods:** Retrospective clinical cohort of all injured children treated in author's institution for injury of distal tibiofibular junction during the five-year period (2017-2021) was reviewed. The type of injury, method of treatment and results were observed. All patients after physiological physeal cessation were excluded.

**Results:** 108 patients were treated during this period because of injury of distal tibiofibular junction. Juvenile Tillaux fracture was observed in 30 (27,8 %) cases, Triplane fracture in 75 (69,4 %) cases. Three cases (2,8 %) of rare injury to the TFS were observed: bony disruption of the tibial mortise due to tension of ITFL. We found three types of such injury according to its displacement on CT scan: subcortical disruption, fracture without displacement and displaced fracture. The first two types were treated nonoperatively, the last one was treated by open reduction and osteosynthesis. All three patients healed without sequels.

**Conclusion:** The fracture of the tibial mortise in the growing skeleton is very rare but occurs. In case of undisplaced fracture nonoperative treatment is possible. If osteosynthesis is needed, we find the transsyndesmal extraphyseal compression screw as usable and useful.



## Simultaneous bilateral femoral fracture in children

***Somkieta F Ouedraogo*** (Pediatric surgery department of the Pediatric Hospital center and University of Ouagadougou, Ouagadougou, Burkina Faso), ***Malick Diallo*** (Pediatric surgery department of the Pediatric Hospital center and University of Ouagadougou, Bobo Dioulasso, Burkina Faso), ***Toussaint W Tapsoba*** (Pediatric surgery department of the Pediatric Hospital center and University of Ouagadougou, Ouagadougou, Burkina Faso), ***Koundia F Thiombiano*** (Pediatric surgery department of the Pediatric Hospital center and University of Ouagadougou, Ouagadougou, Burkina Faso)

**Aim:** Bilateral Femoral Fractures in Children (BFFC) [KKB1] is an uncommon condition. Only a few cases were reported in the literature. The frequency and outcome in low-setting facilities are unknown. Through our eight cases in ten years, our study aims to describe our experience in the management of the BFFC.

**Patients and methods:** A ten-year ongoing study spanning from 2010 and 2020 was held in a level-1 pediatric facility. We included all cases of BFFC on a bone-free disease with at least ten months of follow-up time. Data were collected and analyzed with statistical software.

**Results:** A total of eight patients among ten cases of BFFC were collected. It was mainly boys (n=7/8) around about 8 years old, received after a road traffic accident (n=4), a fall from height (n=3), been crushed by a falling wall (n=1). Associated injuries were frequent (n=6/8). Patients were managed non-operatively in (n=5 cases) and by elastic intramedullary nails in (n=3 patients). After 6.11 years of mean follow-up time, all fractures healed. The outcome was excellent and good in 7 cases. One patient sustained knees stiffness.

**Conclusion:** Non-operative management of BFFC showed satisfactory outcomes. Early surgical care must be developed in our low-income settings to reduce in-hospital stay and early weight-bearing.

## Prophylactic role of acyclovir in prevention of eczema herpeticum in pediatric burn patients

**Ahmad Hassan** (Pediatric surgery and pediatric burn department, King Edward Medical University/Mayo Hospital Lahore, Lahore, Pakistan), **Fatima Naumeri** (Pediatric surgery and pediatric burn department, King Edward Medical University/Mayo Hospital Lahore, Lahore, Pakistan), **Muhammad Sharif** (King Edward Medical University/Mayo Hospital Lahore, Lahore, Pakistan), **Hafiz Muhammad Arif** (King Edward Medical University/Mayo Hospital Lahore, Lahore, Pakistan), **Muhammad Shakeel Khan** (King Edward Medical University/Mayo Hospital Lahore, Lahore, Pakistan)

**Objective:** To compare efficacy of the prophylactic acyclovir and placebo in preventing eczema herpeticum in pediatric burn patients.

### Materials and Methods

**Study design:** Randomized control trial.

**Setting:** Pediatric burn unit Mayo hospital Lahore

**Duration:** 1<sup>st</sup> October 2019 to 30<sup>th</sup> September 2020.

**Data collection procedure:** After informed consent from parents, patients were allocated randomly in two groups by a computer generated table. Group A patients were given intra venous acyclovir for 7-14 days during their stay. Group B patients were given normal saline as placebo for 7-14 days. Patients were observed for developing signs of eczema herpeticum and Tzanck smear was done every 10<sup>th</sup> day. The drug was labeled as efficacious if no eczema herpeticum developed. Patients who develop eczema herpeticum were isolated and were treated with injection acyclovir 15-30 mg/kg/day 10 to 14 days.

**Results:** In this study mean age of patients in Group-A and in Group-B was  $5.86 \pm 3.22$  and  $6.50 \pm 2.68$  years. Male patients were more as compared to female patients (Group-A = Male: Female 75%:25% and Group-B= Male: Female 62.5%: 37.5%). In Group-A the most frequent burn type was scald burn (43.75%) followed by flame burn (37.50%) and similar trend was seen in Group-B patients (Scald burn: 68.75% and Flame burn: 15.63%). Based on clinical response and Tzanck smear test, efficacy after 7 days of discharge was higher for Group-A patients (only one patient developed eczema herpeticum) as compared to Group-B patients (three patients developed eczema herpeticum) with statistical significance p value (Group-A: 96.88% vs. Group-B: 90.63%, p-value=0.303).

**Conclusion:** This study demonstrated that prophylactic acyclovir is effective in preventing eczema herpeticum in pediatric burn patients as compared to placebo.

## Ulnar nerve sparing osteosynthesis of supracondylar humeral fractures

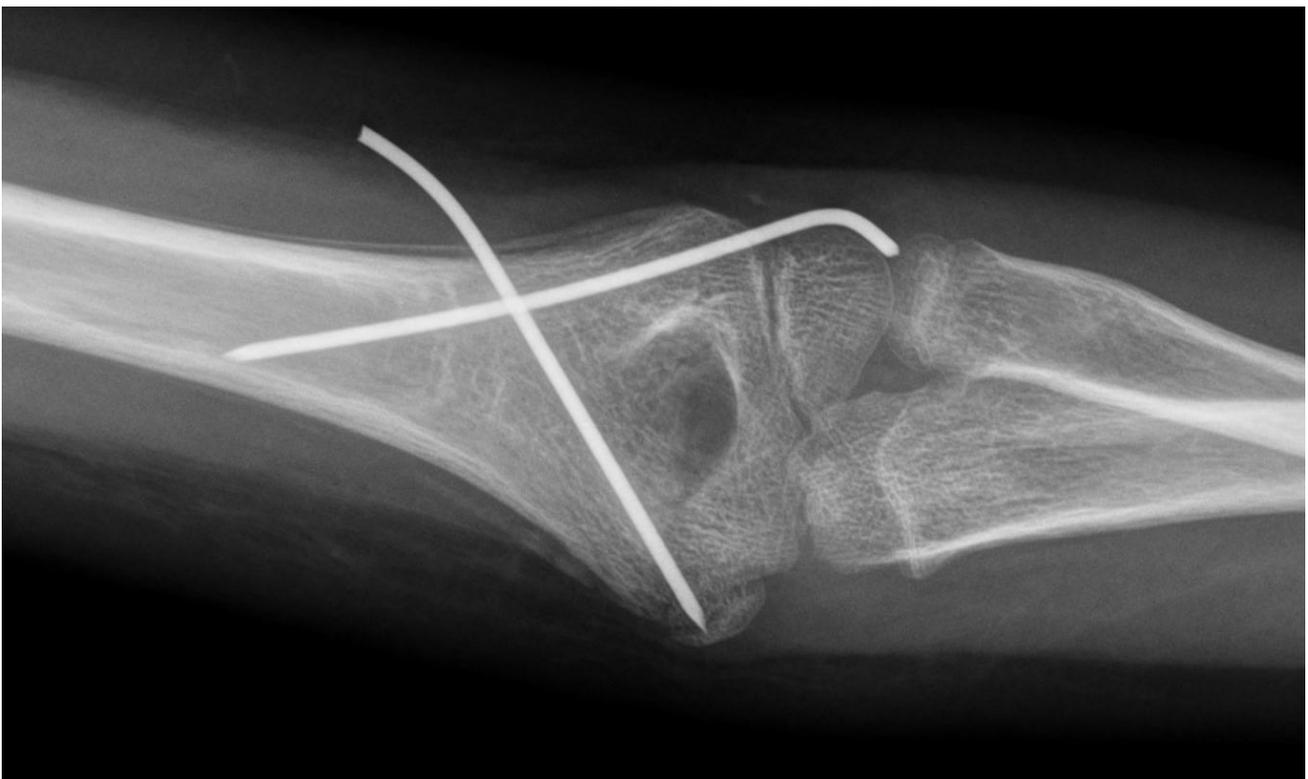
**Petr Havranek** (Department of Pediatric and Trauma Surgery, Charles University, 3rd Faculty of Medicine, Thomayer University Hospital, Prague, Czech Republic), **Jan Hendrych** (Department of Pediatric and Trauma Surgery, Charles University, 3rd Faculty of Medicine, Thomayer University Hospital, Prague, Czech Republic), **Martin Cepelik** (Department of Pediatric and Trauma Surgery, Charles University, 3rd Faculty of Medicine, Thomayer University Hospital, Prague, Czech Republic), **Tomas Pesl** (Department of Pediatric and Trauma Surgery, Charles University, 3rd Faculty of Medicine, Thomayer University Hospital, Prague, Czech Republic)

**Aim:** Therapeutical method of choice in displaced supracondylar humeral fractures (SCF) is closed reduction and percutaneous stabilization by Kirschner wires. Ulnar nerve can be impaired during wire insertion from medial side. Alternative ways of implant insertion sparing ulnar nerve are searched. Possibilities and disadvantages of alternative methods are discussed.

**Methods:** Lateral insertion of implants was tested using several methods: lateral retrograde percutaneous pinning (CRLPP), Dorgan's method and external fixation (EF) in less displaced fractures. Seriously displaced and comminuted fractures were stabilized by crossed wires (CRCPP) or its modification, i.e. using also medial approach.

**Results:** During 6 years (2016-2021) 1.573 SCF were treated, 965 from them were displaced and operated on. In 79 of the latter children CRLPP was performed, in 12 Dorgan's operation and in 3 EF, all in less displaced fractures (grade II). Other 871 SCF were stabilized by CRCPP or its modification using medially inserted pins. Overall neural injury was recorded in 261 children (16,6%), ulnar nerve being afflicted most often (211). It was not reliably possible to distinguish primary traumatic and iatrogenic injury. All children with traumatic neuropathy healed uneventfully without subsequent operation. In group of ulnar nerve sparing methods we registered only one child with ulnar nerve palsy in comminuted fracture stabilized by EF (1,06%). Two patients from CRLPP cohort had to be reoperated for lack of stability.

**Conclusions:** Insertion of implants in SCF from lateral side only can spare ulnar nerve but cannot secure sufficient stability in comminuted and extensively displaced fractures.



## Management of extremely wide agricultural trauma in teenage boy: case report

**Marius Siksnius** (Pediatric surgery department, Klaipeda Children's Hospital, Klaipeda, Lithuania), **Arturas Kilda** (Pediatric surgery department, The Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania), **Mindaugas Berzanskis** (Pediatric surgery department, The Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania), **Ausra Lukosiute-Urboniene** (Pediatric surgery department, The Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania), **Vidmantas Barauskas** (Pediatric surgery department, The Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania)

**Aim:** To describe a case when patient fell into straw pellets machine, survived after excessive tissues loss and lives a good quality life.

**Case description:** A 17-year-old male was brought to paediatric intensive care department from incidence place, where fell in a straw pellets machine. Patient's vital functions were evaluated according to an ABC sequence. Examination: a large lacerated wound in right thoracolumbar region was found. Diaphragm shredded in 15cm length, lower lung lobe rolled out through an opening. Air came out through three holes in lower and middle lobes of right lung. Right VIII-X ribs were crushed into pieces. Right palm and forearm were lacerated in ulnar side. Traumatic amputations of IV–V fingers were diagnosed. V metacarpal and knucklebones were seen in bottom of wound. Right ulna distal end fractured with dipping. In front of right thigh middle large, deep, lacerated wound from skin to muscles was found. Surgery was started from recovering thoracic cavity. Lung defects closed. Crushed ribs eliminated by oscillating saw, branches rounded. Diaphragm sutured to thoracic wall. Two drains inserted to right pleura and plugged to Bobrow machine. Revision of peritoneum and retroperitoneal cavity's performed through lumbar wound. Haematoma of right kidney and rupture in 7-8 segments of liver were found. Liver rupture about 4 cm length and 1 cm depth was coagulated. Drains in retroperitoneal cavity were inserted. Ileum fractures removed. Defect closed by live muscles and skin flaps. Ulna bone reposition and fixation with Kirschner wires was performed. Medial phalange of right IV finger. Proximal part of ulnar artery and ulnar nerve was ligated. Knucklebones and ulna was covered with healthy muscles and skin flaps. Crushed IV-V fingers parts was removed.

**Conclusion:** An early evaluation of the lesions and decision to perform surgery are important elements towards eventual successful outcome of the treatment.



## Treatment options for pediatric tibial spine fractures

**Narcis F. Tepeneu** (University of Medicine and Pharmacy "V. Babes" Timisoara, Timisoara, Romania)

**Aim:** Pediatric fractures of the tibial spine are relatively rare and controversy remains around how these injuries are best managed.

**Methods:** A retrospective study in the period 01.01.2012-31.12.2021 was conducted on cases that were managed by the author of the article. A total of 11 cases were identified. A review of literature was also conducted.

**Results:** There were 6 male and 5 female patients, mean age of 10,2 years.

3 patients suffered a bicycle fall, 6 patients had skiing accidents, one patient suffered a fall after a slip on wet grass during a football match, one patient suffered a fall from a ladder.

The fractures were classified according to Myers and McKeever classification.

6 patients had Type I one fractures and were successfully managed by conservative treatment in a cast.

2 patients had a Type II fracture and closed reduction and casting of the knee in hyperextension was successful at reducing the fracture. The patients were also managed by conservative treatment in a cast, the follow-up radiographs did not show any secondary displacement.

The last 3 patients had a Type III fracture and were managed by knee arthrotomy via an open medial parapatellar approach, open reduction and osteosynthesis with 2 cannulated epiphyseal screws and washers.

All cases had a favorable outcome with a full recovery of knee range of motion (ROM), good Tegner Lysholm score and good stability of the knee joint.

**Conclusions:** Isolated type I paediatric tibial spine fractures can be successfully managed non-operatively in a cast. An open knee arthrotomy or arthroscopy should be used to reduce and fix displaced fractures. This protocol has the potential to reduce the need for unnecessary imaging and surgery.

## Supracondylar-humerus fractures treated with Blount-Slings: Secondary dislocation as a rarity in a high-volume paediatric-surgical centre

***Sophie Kathrin Marlene Maasewerd*** (Kinderchirurgie, Klinik für Kinderchirurgie, St.-Marienhospital Bonn, Germany, Bonn, Germany), ***Wolfram Götz*** (Kinderchirurgie, Klinik für Kinderchirurgie, St.-Marienhospital Bonn, Germany, Bonn, Germany), ***Andreas C Heydweiller*** (Kinderchirurgie, Klinik für Kinderchirurgie, St.-Marienhospital Bonn, Germany, Bonn, Germany), ***Christina Oetzmann von Sochaczewski*** (Sektion Kinderchirurgie der Klinik und Poliklinik für Allgemein-, Viszeral-, Thorax- und Gefäßchirurgie, Universitätsklinikum Bonn, Bonn, Germany)

**Aim:** Paediatric orthopaedic surgical literature often cites high rates of secondary dislocations up to 30% in children treated via Blount's method for a supracondylar humerus fracture. As this is far from being congruent to our own clinical experience, we aimed to verify this using our cohort.

**Methods:** 291 eligible patients were treated for supracondylar fractures between January 2018 and April 2021 in our department. Besides demographics, we analysed fracture grade according to the AO classification, initial degree of dislocation and during follow-up in lateral x-rays. Correlation was analysed by Pearson's R.

**Results:** We included 37 children managed with Blount's sling, of which 17 were male, and all but one fractures resulted from a fall. Their mean age was 4.7 (95% confidence interval (CI): 4.1–5.3) years. The majority of patients, 31, had a grade II fracture, 4 had a grade I, and 2 a grade III fracture with a mean degree of dislocation 17° (95% CI: 14–20) initially. 11 patients required closed reduction in theatre. Mean duration of treatment with a Blount sling was 17 days (95% CI: 15–19) and not linked to the initial degree of displacement ( $R=0.18$ , 95% CI:  $-0.17-0.49$ ,  $P=0.32$ ). This was also the case for the total duration of therapy ( $R=-0.12$ , 95% CI:  $-0.44-0.22$ ,  $P=0.492$ ). In our own primarily treated cohort, we did not see any secondary dislocations, but had to operate a referral from an orthopaedic surgical department for secondary dislocation in a 2 years old infant treated with closed reduction and Blount sling for a grade III fracture with 42° of initial dislocation.

**Conclusion:** Secondary dislocations following conservative treatment of supracondylar humerus fractures with Blount's sling are a rarity and did not occur in our high-volume centre. Appropriate experience for patient stratification might play a role and requires further attention.

## The study of clinical and radiological profile in patients of head injury

**Navdeep Singh Dhoat** (Hod Paediatric Surgery, All India Institute of Medical Sciences (AIIMS), Bathinda, India), **Charitesh Gupta** (Neurosurgery, Himalayan University, Dehradun, Uttarakhand, India), **RK Verma** (General surgery, Himalayan University, Dehradun, Uttarakhand, India), **RK Srivastava** (Radiology, Himalayan University, Dehradun, Uttarakhand, India)

**Aim:** To evaluate the clinico-radiological profile and outcome of patients in TBI.

**Methods:** This was hospital based case control prospective study conducted on 224 cases in emergency, ward, OPD and ICU of HIMS, Dehradun. TBI on basis of GCS was classified as mild, moderate and severe. Evaluation of clinical and radiological profile was done and managed as per protocol. Demographic Profile, etiology, mode of injury and transport including all other parameters were recorded. Outcome was measured as hospital stay duration, deficits, mortality and effect of early physiotherapy.

**Results:** Males (83.9 %) outnumbered females (16.1 %), upto 10 years (15.2%) TBI was more than 11 to 16 years (9.4%). Fall from height was the main cause of TBI in Paediatric age group (29 cases) whereas Road traffic accidents were more in adults. Maximum number of patients were admitted within 24 hours (15 min – 48 hours). Mild, moderate, and severe grade of basis of GCS scale was seen in 37%, 32.2%, and 29.9% of cases, respectively. The average duration of hospital stay was lesser when physiotherapy and rehabilitation were started early.

**Conclusions:** In India, injuries in children were on account of being dropped, battered, climbing trees, fall from roof tops, playground injuries & traffic accidents. Early initiation of physiotherapy results in good outcome.

**Key words:** Traumatic brain injury, Fall from height, Glasgow coma scale

## Open abdominal trauma: beware of occult lesions

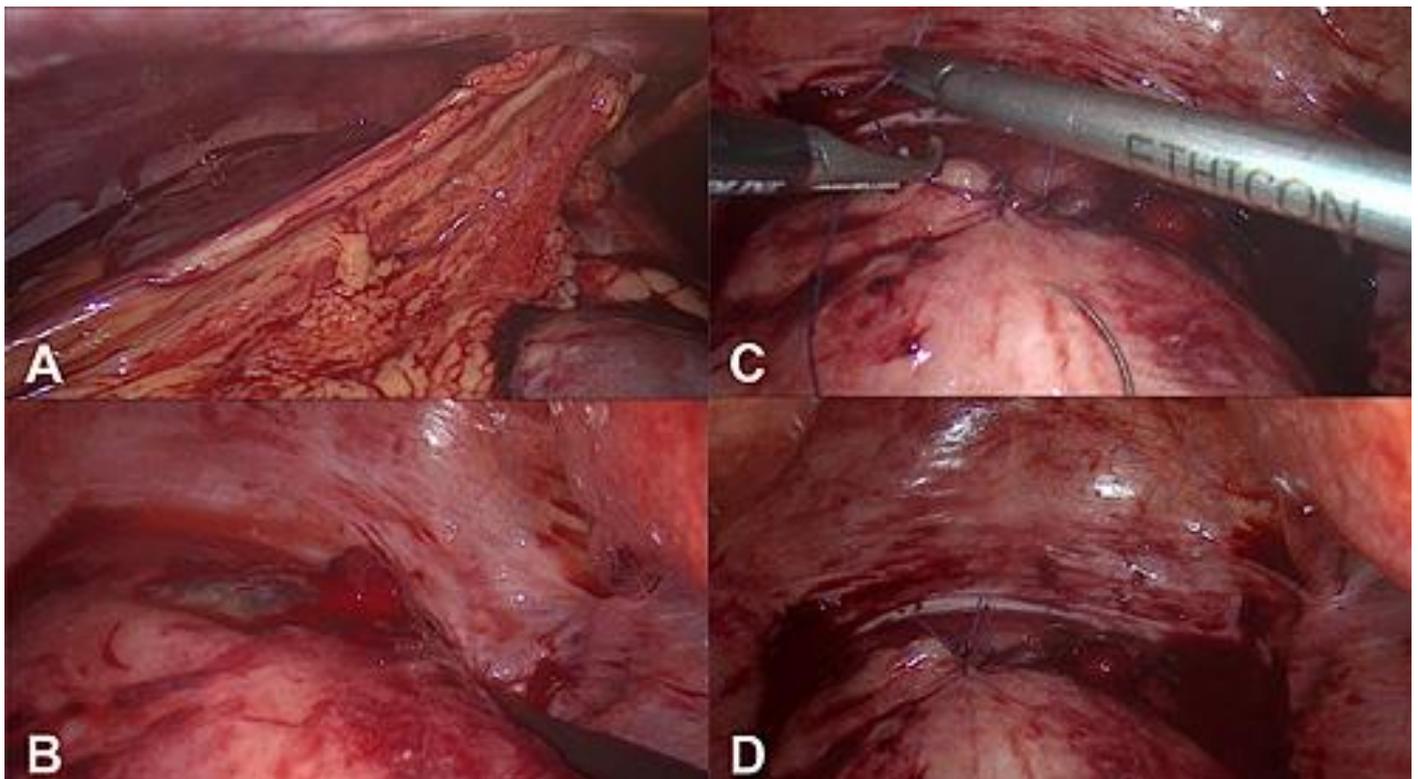
**Carolina Soares-Aquino** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Joana M Monteiro** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Tiago Tuna** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal), **Mariana Borges-Dias** (Paediatric Surgery Department, Centro Hospitalar Universitário de São João, Porto, Portugal)

**Aim:** In this video we aim to describe a case of colonic perforation due to open abdominal trauma sustained in an accident with a bicycle handlebar.

**Case Description:** A 16-year-old boy was admitted to the emergency department due to a bicycle accident with abdominal trauma. He suffered a direct impact from the handlebar to his lower abdomen, and had a wound on the left lower quadrant. At admission he presented pale, sweating, but conscious and cooperant. He was haemodynamically stable and without any signs of difficulty breathing. On the abdominal exam he had a tender abdomen diffusely, with guarding in the lower abdominal quadrants. The exploration of the wound revealed a rupture of the muscular wall, in continuity with the peritoneal cavity, and epiploon exteriorising. An abdominal CT revealed a small volume haemoperitoneum, without active bleeding or pneumoperitoneum. He was submitted to an exploratory laparoscopy that revealed a moderate volume haemoperitoneum and a perforation of the sigmoid colon (figure 1). The lesion was sutured laparoscopically. The external wound was closed. He was admitted to the ward for 8 days after surgery. No postoperative complications occurred.

**Conclusions:** Most abdominal traumas are of blunt type, but open trauma is an important cause of intestinal perforation. A cautious exploration of the wound and associated lesions is essential to detect occult and possibly life-threatening conditions. Laparoscopy is a safe and efficient method for lesion assessment in a stable patient, while allowing the treatment of colonic perforation with a minimally invasive approach.

Figure 1. A – Epiploon exteriorising from anterior abdominal wall wound. B – Sigmoid colon perforation. C and D – Suture of the lesion by laparoscopy.



## POSTER WALK 25

### Trauma 2

#### Treatment of paediatrics femoral diaphyseal fractures

**Lukáš Hlouch** (Clinic of pediatric surgery, orthopaedics and traumatology, University Hospital Brno, Brno, Czech Republic), **Ladislav Plánka** (Clinic of pediatric surgery, orthopaedics and traumatology, University Hospital, Brno, Czech Republic), **David Starý** (Clinic of pediatric surgery, orthopaedics and traumatology, University Hospital, Brno, Czech Republic)

**Aim:** Femoral fractures are the quite common trauma leading to hospitalization of paediatric patient. In total 68 patients younger six years with diaphyseal femoral fracture were reviewed by using prospective longitudinal study during years 2013–2017.

**Methods:** Subjects of monitoring were mainly: age and weight of patient in day of trauma, type of fracture, used treating method, presence of complications and discrepancy of leg length. In this study following methods of treatment were used – spica cast, Bryant vertical traction and ESIN.

**Results:** From 68 patients, 50 (73,5%) of them were 0-3 years old, 18 (26,5%) patients were older than three years. In group of patients younger than three years were 44 (88%) patients treated conservatively by spica cast or traction. From remaining 18 patients older than three year 15 (83%) were treated by ESIN. Even more clearer results are in group of patients, whose weight is higher than 20 kg. From this group all 11 patients (100%) were treated by ESIN. If we compare therapeutic method in context with type of fracture, we get these results: fracture type 32-D/4.1 were treated conservatively 36 patients (86%), fracture type 32-D/5.1,5.2 were treated by ESIN 14 patients (67%). We did not have any limbs – threatening acute complications. Leg length discrepancy was 3,6 mm on average, modus was 0.

**Conclusions:** This study confirms global trend of treatment femoral diaphyseal fractures in paediatric population. Patients with weight under 20 kilograms should have been treated conservatively to avoid risk of complications of anesthesia. Patients with higher weight than 20 kilograms should have been treated by ESIN, which allows them to start with the rehabilitation sooner. Child's age seems to be more relative in indication of ESIN.

## Case reports of pediatric electrical finger burn injuries' management and late-onset complications

**Gergő Józsa** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology, Pécs, Hungary), **Aba Lőrincz** (Department of Thermophysiology; Institute for Translational Medicine, Medical School, University of Pécs, Pécs, Hungary), **Anna Lamberti** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology, Pécs, Hungary), **András Garami** (Department of Thermophysiology; Institute for Translational Medicine, Medical School, University of Pécs, Pécs, Hungary), **Zsolt Oberitter** (Medical Centre, Department of Paediatrics, Division of Paediatric Surgery, Traumatology, Urology and Paediatric Otolaryngology, Pécs, Hungary)

**Aim:** Pediatric electrical injuries are rare; they only constitute 2–10% of all burn causes. Determination of their actual severity may be challenging due to their small entry and exit wounds. Deep necrosis develops during electrical burns in most cases. These injuries can damage the skin, soft and bone tissues, and in children, the growth plate, which may cause secondary deformities. The objective of these case reports was the presentation of paediatric electrical finger injuries' management and late-onset complications.

**Case description:** A 15-year-old boy touched an electric wire while changing a lightbulb, which caused a burn injury on his right index finger. During the physical examination, a 25x14 mm, third-degree burn was identified volarly, above the distal interphalangeal joint as an entry wound, and an 8x7 mm exit site occurred dorsally at the nailbed's lateral edge. Necrectomy and cross finger flap surgery were performed. The cross flap was separated three weeks after the primary reconstruction. Throughout the follow-up examinations, the ulnar deviation of the distal digit was observed. X-ray confirmed the bone atrophy of the distal phalanx base. A two-year-old girl inserted a nail into the power outlet, causing third-degree burns on her thumb around the interphalangeal joint and hypothenar region. After necrectomy, the thumb's skin defect was reconstructed with a rotated flap, while the donor site received full-thickness skin graft transplantation. The follow-up of the child is still ongoing.

**Conclusions:** Long term follow-up of these patients is necessary to identify and treat late-onset complications.

## Is conservative management of suprahepatic pseudoaneurisms possible?

**Cristina Perez Costoya** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Angela Gomez Farpon** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Francisco Fernandez Oliveros** (Department of Pediatric Surgery, Hospital Universitario La Paz, Madrid, Spain), **Veronica Soto Verdugo** (Department of Radiology, Hospital Universitario Central de Asturias, Oviedo, Spain), **Carmen Garcia Bernardo** (Department of General Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain), **Victor Alvarez Muñoz** (Department of Pediatric Surgery, Hospital Universitario Central de Asturias, Oviedo, Spain)

**Aim:** Suprahepatic and inferior vena cava (IVC) pseudoaneurisms are exceptional in children. The natural history of this lesion is unknown due to its low prevalence. The majority of adult cases are managed surgically. In children, traumatic lesions are often approached conservatively based on their higher capacity for regeneration and the aim to keep vital organs.

**Case description:** A 7 years-old girl remitted to the Emergency Room after an unwitnessed abdominal trauma caused by a horse. The patient lost conscience for several seconds. After a saline expansion, she stayed haemodynamically stable. At physical examination she showed a lower right thoracic ecchymosis, abdominal pain and tenderness. Haemoglobin level was 9.1 g/dL. An urgent abdominal CT enlightened an hepatic laceration at the VIII-V segments and a venous pseudoaneurism of 3x2.3 cm at the junction of the IVC with the medial-left suprahepatic veins; surrounded by a subcapsular collection suggestive of active bleeding but content by the capsule. Conservative management was chosen due to: haemodynamical stability, risk of rupture with the endovascular treatment, no signs of bleeding at the 24 hours CT, high surgical risk and the hypothesis that, since suprahepatics are a low flow venous system, thrombosis and fibrosis would be the expected evolution. A cavography after 10 days was normal. She stayed hospitalised for 32 days in complete rest. Progressive involution of the lesion was observed at the CT controls after 1-3 months, 1 and 1.5 years, where the lesion was no longer observed.

**Conclusions:** Suprahepatic/IVC pseudoaneurisms are rare in children, usually post-traumatic. Due to the high risk of rupture, close observation in a tertiary-level hospital with a hepatic transplant team is recommended. Inicial management consists in complete rest, vital signs and haemoglobin monitorization, and serial imaging until stabilization of the lesion. In case of hemodynamical instability, emergency surgery is required.

## Current practice of scrotal trauma: a case series and review of literature

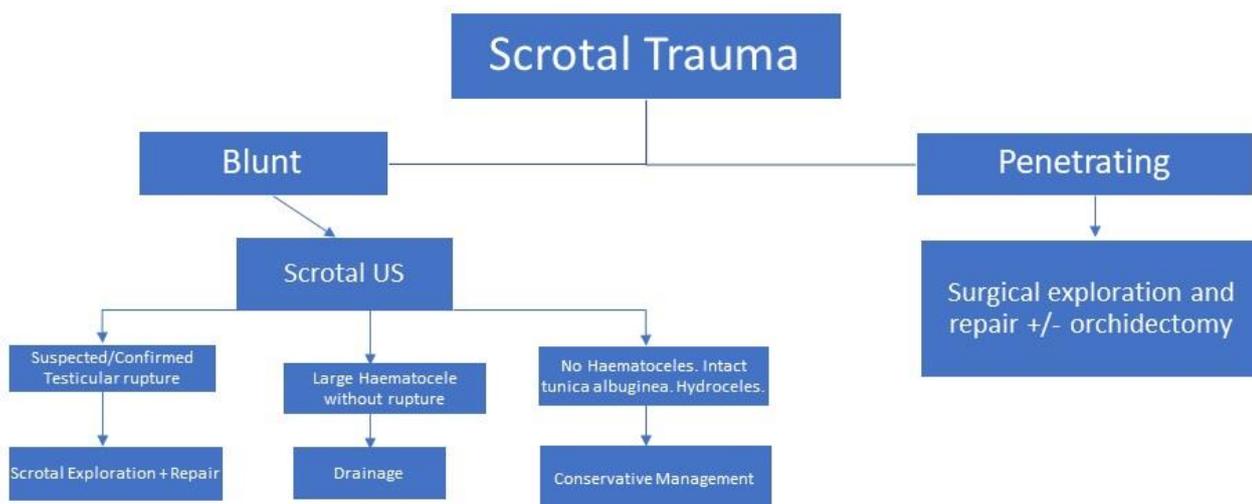
**Saverio Francesco Bianco** (Paediatric Surgery, Mater Dei Hospital, Mosta, Malta), **Mohamed Shoukry** (Paediatric Surgery, Mater Dei Hospital, Msida, Malta), **Julie Galea** (Paediatric Surgery, Mater Dei Hospital, Msida, Malta)

**Aim:** Scrotal Trauma (ST) is an unusual event in the spectrum of pathologies involving the genitourinary system. Children who present with ST pose a challenge to surgeons. ST accounts for less than 1% of all trauma in children every year. Such trauma can lead to physical, psychological, and social consequences to boys and their families, depending on the outcome. This study will look into current experiences/practices applied in our hospital, with the aim to minimise complications following ST.

**Methods:** A retrospective study, spread over a one-year period (2019-2020), which includes records of boys who sustained ST. Endpoints will include: age, mechanism of injury, physical examination findings (photos) and imaging modalities (USS/CT). Conservative or surgical management plans were reviewed. Patients with a high index of suspicion for associated injuries including testicular injury, were flagged up. Case notes of six boys were compiled, with a mean age of 9 years and a range of 6-13 years. All patients sustained acute scrotal trauma with different mechanisms of injury. History and clinical findings were collated. A scrotal ultrasound (SUS) was performed routinely with doppler mode, followed by other imaging including computed tomography (CT) abdomen/pelvis as described in one case.

**Results:** 2 patients required urgent scrotal exploration due to testicular rupture and degloving scrotal injury. No associated penile injuries were reported. Hospital stay for either post-operative care or conservative management ranged between 3-7 days. None of the patients had testicular atrophy in the 18 month follow up period.

**Conclusion:** Given its rarity, ST remains a challenge for surgeons. Immediate scrotal exploration and repair is necessary to reduce the rate of testicular atrophy and subsequent need for orchidectomy. Ultimately, long-term follow-up is essential to assess testicular growth in the child. Guidelines should be designed, allowing for prompt identification and management of scrotal trauma, especially in blunt injury.



## Type of Injury -

### Blunt trauma:

#### Testicular

Rupture

Heterogenous echotexture within testes; testicular contour abnormality; disruption of tunica albuginea; reduced perfusion on Doppler.

Fracture

Linear hypoechoic and avascular area within testes; may or may not be associated with tunica albuginea rupture.

Dislocation

Empty hemiscrotum.

Torsion

Complete absence of blood flow within the testes; reduced perfusion on Doppler. \*

Haematoma

Hyperacute phase: isoechoic or diffusely heterogenous echotexture.  
Chronic phase: hypoechoic ---> anechoic; reduction of testicular size; absence of internal vascularity. \*\*

Pseudoaneurysm

Anechoic area within the testes; *ying yang sign* \*\*\*

Extra testicular Haematoma

Echogenic (acute) ---> anechoic (chronic); septa and loculations develop; calcified extra testicular mass.

Scrotal wall Haematoma

Echogenic focal wall thickening; complex fluid collection within the wall.

Traumatic epididymitis

Heterogenous and enlarged epididymis with increased vascularity.

Epididymal fracture &  
Haematoma

Ill-defined epididymis with heterogenous echotexture; absence of blood flow on Doppler.

Spermatic cord Haematoma

Heterogenous well defines avascular mass located superior to the testis.

\*homogenous testicular parenchyma without necrosis or infarction indicates salvageability of the testis.

\*\*on colour Doppler imaging chronic testicular haematomas may mimic neoplasms.

\*\*\*mosaic of colours and turbulent flow pattern on colour Doppler imaging.

## US Findings

## Current approach to child splenic injury – our experience

**Tereza Límprechtová** (Klinika dětské chirurgie a traumatologie 3. lékařské fakulty Univerzity Karlovy, Fakultní Thomayerova nemocnice, Prague, Czech Republic), **Tomáš Pešl** (Klinika dětské chirurgie a traumatologie 3. lékařské fakulty Univerzity Karlovy, Fakultní Thomayerova nemocnice, Prague, Czech Republic), **Dagmar Sovadinová** (Klinika dětské chirurgie a traumatologie 3. lékařské fakulty Univerzity Karlovy, Fakultní Thomayerova nemocnice, Prague, Czech Republic)

**Aim:** Our previous retrospective studies showed, that children with blunt spleen trauma after seven days of rest in bed since the injury or the last transfusion certainly did not have bleeding complications and therefore gradual mobilization is possible. The aim of this prospective study is to verify the results of previous study.

**Methods:** Prospective study. A group of pediatric patients treated at our department in 2015-2020 for blunt spleen injury. Specified regimen: seven days after injury or last blood transfusion bed rest with USG monitoring, then mobilization followed by USG examination, discharge three days after mobilization after USG control. The monitored parameters were gender, age, mechanism of injury, degree of injury according to The American Association for the Surgery of Trauma, need for transfusion, length of hospitalization and complications.

**Results:** Thirty-three patients were enrolled in our study. Twenty four boys and nine girls. The average age at the time of the injury was 10.86 years. According to the American Association for the Surgery of Trauma classification, we treated two patients with spleen contusion, one laceration grade I, six laceration grade II, thirteen laceration grade III and eleven laceration grade IV. All were treated conservatively. Ten patients required a transfusion to achieve hemodynamic stability. The median length of hospital stay decreased from twenty days to twelve days after the protocol was changed. No patient experienced complications in terms of delayed bleeding.

**Conclusions:** The recommended length of hospital stay for pediatric patients with injured spleen according to American Pediatric Surgical Association guidelines is between two and six days. In our experience, this time is short. However, in a prospective study, we verified that the regime criteria set by us for conservative therapy of blunt spleen injury are safe and do not represent an increased risk of delayed bleeding.

## Spectrum of paediatric abdominal trauma at a tertiary care centre in Egypt

***Abeer Aboalazayem*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt),  
***Monica Bassem*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt),  
***Sherif Kaddah*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt), ***Aly Shalaby*** (pediatric surgery department, Kasralainy School of Medicine, Cairo University, Cairo, Egypt)

**Aim:** To provide an overview of paediatric abdominal trauma presenting to a University Teaching Hospital in Egypt.

**Methods:** Retrospective analysis of the data from all injured children (<14 years of age) who needed hospital admission and listed on the trauma registry from May 2021 to March 2022. Children with abdominal trauma that was either isolated or part of polytrauma were included. Data were analysed using descriptive statistics.

**Results:** One hundred and ten children, 82 (74.5%) male and 28 (25.5%) female were identified. The median age was 6 years (range 1–14). The principal mechanisms of injury were road traffic accidents (43.6%), falls (40.9%), blunt trauma to the abdomen (8.2%) and penetrating trauma (7.3%). The most frequently affected abdominal organ was the spleen (33.6%) followed by the liver (26.4%). Twenty patients (18.2%) underwent surgery and the rest (81.8%) were managed conservatively. The overall in-hospital mortality rate was 8.2% and the median length of stay was 4 days (range 1-25). The highest mortality was among run over injuries (20%) and among patients with hollow viscus injury (60%).

**Conclusions:** The patterns of injury in the paediatric trauma population are comparable to other African paediatric trauma centres. Road traffic accidents remain the commonest cause of injury. Operative management is similar to international standards. Mortality is high compared to High Income Countries and some Low-Medium Income Countries as well.

**Keywords:** Children, Injury, Abdomen, Africa

## Outpatient burns in children: single pediatric burn center experience

**Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital, Children's Hospital, Ankara, Turkey), **Sabri Demir** (Pediatric Surgery, Ankara City Hospital, Children's Hospital, Ankara, Turkey), **Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital, Children's Hospital, Ankara, Turkey), **Gökhan Demirtaş** (Pediatric Urology, Ankara City Hospital, Children's Hospital, Ankara, Turkey), **Can İhsan Öztoran** (Pediatric Surgery, Yildirim Beyazıt University Medical Faculty, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Yildirim Beyazıt University Medical Faculty, Ankara, Turkey), **Şükriye Demirkaya** (Pediatric Surgery, Health Science University Medical Faculty, Ankara, Turkey), **Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital, Children's Hospital, Ankara, Turkey), **Müjdem Nur Azılı** (Pediatric Surgery, Yildirim Beyazıt University Medical Faculty, Ankara, Turkey), **Emrah Şenel** (Pediatric Surgery, Yildirim Beyazıt University Medical Faculty, Ankara, Turkey)

**Aim:** Burn injuries are an important health problem and the third most common cause of childhood trauma. While most burn injuries are outpatient, few studies report outpatient data. We aimed to evaluate and share our data on outpatient pediatric burns in terms of etiology, demographic data.

**Methods:** Electronic medical records of patients who were applied to our Pediatric Burn Center and were treated as outpatients between 2014 and 2020 were reviewed. Their demographic data, total burned body surface area (TBSA-burned), location, etiology, number of outpatient clinic visits, non-surgical treatment and surgical intervention, and whether they were immigrants were evaluated. Statistical analysis was done by SPSS, P<0.05 was considered significant.

**Results:** Four thousand five hundred twenty-four victims were included in the study. Of these 54.5% were male. The mean-age was 4.52 ( $\pm$  4,5) years. Average TBSA-Burned was 2.82% ( $\pm$ 1,61). The most common cause of burns (81.3%) was scald-burns, followed by contact-burns (12.5%), flame-burns (4.6%), electrical injury (1.2%), sunburns (0.4%), and chemical burns (0.2%). Hand burns were the most common 16.3%, followed by the upper-limbs (15.7%), the trunk (15.4%), the feet (14.6%), and the lower-limbs (10.7%). Hand and upper-limbs coexistence were most common in multiple burns (4.4%). While 4.3% of the patients required intervention under anesthesia, 1.2 % needed grafting. 6.5% of the patients were refugee/asylum seekers who had to leave their homes from neighboring countries due to the civil war, others were Turkish.

**Conclusion:** Although the number of outpatient victims is higher than inpatients scarce written data exists. While scald-burns are the most common type in pediatric outpatients, contact-burns are much more common than in in-patients. Some outpatient victims may need interventions under anesthesia. Therefore, they should be followed closely in experienced centers. Since almost all pediatric burns are preventable home accidents, the education of parents is critical for the prevention.

## Effect of PRP + SVF on EGF and bFGF Serum Level During Anal Trauma Healing in Rat Model

***Sulmiati Sulmiati*** (Pediatric Surgery, RSUP Dr Wahidin Sudirohusodo Makassar, Makassar, Indonesia), ***Ivanna Sirowanto*** (General Surgery, Universitas Hasanuddin Makassar, Makassar, Indonesia), ***Ricko Sadli Sujana*** (General Surgery, Universitas Hasanuddin Makassar, Makassar, Indonesia), ***Muhammad Faruk*** (General Surgery, Universitas Hasanuddin Makassar, Makassar, Indonesia), ***Fonny Josh*** (Plastic and Reconstructive Surgery, RSUP Dr Wahidin Sudirohusodo Makassar, Makassar, Indonesia), ***Andi Alfian Zainuddin*** (Public Health and Community Medicine Science, Universitas Hasanuddin Makassar, Makassar, Indonesia)

**Aim:** The administration of PRP+SVF aids the healing process by boosting the levels of EGF and bFGF. Using an anal trauma model in Wistar rats, this study examines the effect of PRP +SVF on EGF and bFGF levels.

**Method:** Wistar rats were formed in 3 group. Groups A and B had their anal trauma and repair adjusted surgically; Group A received a PRP + SVFs local injection, group B received placebo. On days 1, 7, and 14, we looked at EGF and bFGF levels in both group. Group C were sacrificed on day 0 to acquire baseline data on EGF and bFGF levels.

**Results:** On every experimental day, the EGF and bFGF levels were higher in Group A than in Group B. A one-way ANOVA test result showed significantly increased EGF levels on days 7 ( $p = 0.038$ ) and 14 ( $p = 0.018$ ), and showed a significant increase in bFGF levels on day 1 ( $p = 0.000$ ), day 7 ( $p = 0.000$ ), and day 14 ( $p = 0.000$ ). Based on the linear regression test results, we found that PRP+SVF after anal repair on an anal surgical trauma model can increase the EGF and bFGF level (group A 36.9% and 96.2% more than that of group B, respectively).

**Conclusion:** In the Wistar rat model, PRP+SVF can boost EGF and bFGF levels during anal damage repair.

## Subcutaneous emphysema, pneumomediastinum, pneumoretroperitoneum and pneumoscrotum by an air compressor: a case report

**Serdest Teğın** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Tahsin Onat Kamçı** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Bahattin Aydoğdu** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Mehmet Hanifi Okur** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey)

**Aim of Study:** To present the case of Subcutaneous Emphysema, Pneumomediastinum, Pneumoretroperitoneum, And Pneumoscrotum which is occurred after a dangerous joke.

**Case Description:** An 8-year-old boy was admitted to the emergency department due to fever, abdominal pain, headache, and tachycardia. Taking patient history, two hours ago, his brother placed the beak of an air compressor in the perianal area of the patient. At admission, fever: 38,5 °C, blood pressure: 120/85 mmHg, sPO<sub>2</sub>: 98, pulse rate: 125, respiratory rate: 12. The patient hadn't nausea or vomiting. On physical examination, the abdomen was minimally distended without any evidence of tenderness and rebound. There was a 2 cm of laceration at the perianal area. The rectal examination has performed neither melena nor anorectal fistula. The laboratory results were normal. An abdominal CT scan revealed subcutaneous emphysema, pneumoretroperitoneum, pneumoscrotum, and paracaval free air. CT scan of the thorax showed subcutaneous emphysema, pneumomediastinum, and pericardiac free air (fig: 4). In the radiograph, the subcutaneous emphysema was clearly observed (fig: 5). According to the physical examination and all radiological studies, there was no evidence of intestinal perforation and any intestinal ischemia and necrotizing process. Thus, the management was a non-operative treatment. The patient was discharged without any complications.

**Conclusions:** Should be alerted and known for certain if there is any sign of perforation in the patient who is suffering from a joke with an air compressor or industrial injury. Examination and radiologic studies should be performed daily on these patients.

**Keywords:** perianal trauma, air compressor, children



## Invisible osteosynthesis

**Andrej Dolnak** (National Institute of Children's Diseases, Bratislava, Slovakia), **René Jáger** (National Institute of Children's Diseases, Bratislava, Slovakia), **Ľubomír Sýkora** (National Institute of Children's Diseases, Bratislava, Slovakia), **Jan Chochol** (National Institute of Children's Diseases, Bratislava, Slovakia)

**Aim:** The pandemic situation since 2020 has also brought limitations in healthcare – reduction of bed capacity, personnel and financial resources, outpatient controls... These circumstances also motivated us to widen new methods and materials in the surgical stabilisation of the fractures of immature skeleton. There are specific indications in treatment because of good remodelling capacities of bones and presence of growth plates. Bioresorbable materials are using to a lesser degree also due to general vigilance and limited literature sources.

**Methods:** In this retrospective study (2019-2021) from our Institute in Bratislava we are analyzing indications, types of resorbable implants, methods of its insertion and finally the healing results and complications.

**Results:** Biodegradable materials in form of screws, pins and nails are reserved only for certain types of fractures of the growing skeleton. It is implanting strictly extraphyseally. For example fractures of distal tibia (triplane, Tillaux fr.), condylar fractures of femur, tibia and humerus, periarticular and avulsion fractures in various parts of the long bones, calcaneus, talus and navicular fractures are treated with these materials at our clinic. After closure of the growth plates (in later adolescence), the spectrum expands to the entire area of the mature skeleton.

We can state that during 3 years period of this study, we didn't notice failure of osteosynthesis, pain, prolonged healing or pseudoarthrosis, refracture, signs of osteomyelitis, no internal or external complications in the periimplant region in any of the almost 40 patients.

**Conclusion:** This method has some undeniable advantages: no extraction of implant and thus no second anesthesia is needed. It is reducing the stress of the child patient. A d last but not least saving financial resources.

Disadvantages: X-ray transparency of the material – need of surgical erudition (learning curve), implant has hardness like human bone (lower than steel or titanium alloy).

## Non-Firearm Related Penetrating Thorax and Abdomen Trauma: Experiences of a tertiary pediatric trauma center

**Elif Emel Erten** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Süleyman Arif Bostancı** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Vildan Selin Şahin** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Ahmet Ertürk** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Doğuş Güney** (Pediatric Surgery, Ankara Yıldırım Beyazıt University Faculty of Medicine, Ankara, Turkey), **Fahri Akkaya** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Sabri A Demir** (Pediatric Surgery, Ankara City Hospital Children Hospital, Ankara, Turkey), **Can İhsan Öztoran** (Pediatric Surgery, Ankara Yıldırım Beyazıt University Faculty of Medicine, Ankara, Turkey), **Müjdem Nur Azili** (Pediatric Surgery, Ankara Yıldırım Beyazıt University Faculty of Medicine, Ankara, Turkey), **Emrah E Senel** (Pediatric Surgery, Ankara Yıldırım Beyazıt University Faculty of Medicine, Ankara, Turkey)

**Aim:** We aimed to evaluate the epidemiological data and treatments of children with non-firearm related penetrating thorax and abdomen trauma.

**Methods:** Between January 2015 and December 2021, children who were admitted to the pediatric trauma center with non-firearm related penetrating thorax and abdomen trauma and hospitalized in the pediatric surgery intensive care unit, were retrospectively analyzed in terms of demographic data, mechanism of injury, injured organs, applied treatment and length of hospital stay as a single center experience.

**Results:** 71 patients were included in the study. The mean age was  $13.61 \pm 2.75$  years and 63 (88.7%) were male and 8 (11.3%) were female. Forty-nine (69%) patients were injured by intentional injury, and 22 (31%) patients were injured by accident. The type of injury was knife injury in 61 patients. In 10 patients, injuries were caused by other sharp objects (skewers, wire, iron, scissors, broken glass, bull-horn). There were thoracic injuries in 33 patients. They were treated by thoracoscopic surgery in 3 patients, by tube thoracostomy in 16 patients, and by conservatively primary suturing of the incisions in 14 patients. 38 patients had abdominal injuries. Laparotomy was performed in 8 patients due to hemodynamic instability, and laparoscopic exploration was performed in 14 patients. The mean of hospital stay was  $4.83 \pm 2.75$  days. The mean of hospital stay was  $6.71 \pm 2.53$  days in patients who underwent surgery, and  $4.25 \pm 2.63$  days in those who underwent conservative treatment ( $p < 0.05$ ). There was no mortality in the follow-up period.

**Conclusion:** In our study, we found that non-firearm penetrating injuries occurred more frequently in adolescent boys as intentional knife injuries. Although laparoscopy and thoracoscopy are the most common applications in the treatment of penetrating thoracic and abdominal injuries, conservative treatment can be applied safely in appropriate patients in terms of reducing the length of hospital stay and cost.

## POSTER WALK 26

## Pediatric Surgical Training and Global Pediatric Surgery 3

## A Rare Presentation of Inguinal Hernia in children: Ureteroinguinal Hernia

**Mehmet Hanifi Okur** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Mustafa Azizoğlu** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Tahsin Onat Kamçı** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Erol Basuguy** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey), **Bahattin Aydoğdu** (Pediatric Surgery, Dicle University Medical School, Diyarbakir, Turkey)

**Aim of Study:** Our purpose was to report two cases of a rare presentation of inguinal pathology that was diagnosed with a ureteroinguinal hernia perioperatively.

**Case Description:**

**Case 1:** A 6-month-old boy was admitted to our department due to a bulge in his right groin area. Physical examination revealed a bulge in the right inguinal region which was reducible and non-tender and cough impulse was positive. The patient had been diagnosed and treated for posterior urethral valves plus hydronephrosis. The patient underwent inguinal hernia repair via open technic. Preoperative laboratory values were unremarkable. Perioperatively, we found herniated right ureter in the hernia sac. The patient underwent herniorrhaphy and the ureter was protected safely. Two years of the follow-up period for hernia and urinary system pathologies were uneventful.

**Case 2:** A 15-month-old boy was admitted to our department due to a bulge in his left groin area. Physical examination revealed a bulge in the right inguinal region which was reducible and non-tender and cough impulse was positive. The patient had a follow-up for urethral diverticulum (corrected surgically) and bilateral hydronephrosis (diagnosed with bilateral vesicoureteral reflux). The patient underwent inguinal hernia repair via open technic. Preoperative laboratory values were unremarkable. Perioperatively, we found herniated left ureter in the hernia sac. The patient underwent herniorrhaphy and the ureter was protected safely. 30 months of the follow-up period for hernia was uneventful.

**Conclusion:** Ureteroinguinal hernia is a very rare condition that should be treated meticulously and should be closely observed and investigated in terms of urinary system pathologies.

**Keywords:** Ureteroinguinal Hernia, Ureter, Inguinal Hernia



## Antenatal bowel obstruction about 30 cases

**Leila Jarray** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Yosra Ben Ahmed** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Intissar Chibani** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia), **Tarek Boukesra** (Paediatric Surgery Department “B”, Bachir Hamza, Children’s Hospital of Tunis., Tunis, Tunisia)

**Introduction:** Antenatal diagnosis of neonatal obstruction is based on ultrasound supplemented if necessary by MRI. It allows planning the reception and care of the newborn at birth. This

The aim of this study is to clarify the contribution of imaging in the antenatal diagnosis of neonatal occlusion.

**Methods:** It is a retrospective monocentric study during a 10 –year period between January 2012 and December 2021 in which we included all the patients who had suspicion of neonatal occlusion.

**Results:** 30 cases were included with predominantly male (sex ratio= 1,5)

Antenatal ultrasound founds: hydramnios in 9 cases, digestive distension in 23 cases (14 cases of intestinal distension, 2 cases of gastric distension, 4 cases of duodenal atresia, 2 cases of distal small bowel atresia, 1 case of jejunal distension) and 3 cases with an abdominal mass.

The prematurity had occurred in 20 cases. The average age at surgery was 4 days.

Preoperative findings were distributed as follows: 6 cases of duodenal atresia, 8 cases of proximal small bowel atresia, 3 cases of distal small bowel atresia with small bowel volvulus complicating meconium cyst, 10 cases of multiple grelic atresia. The apple peel syndrome was found in 6 of our patients. The pyloric atresia, colic atresia and intestinal perforation were found in only one patient each.

Surgical exploration was normal in a single newborn.

The postoperative course was simple in 25 patients. 4 newborns presented an acute bowel obstruction on a band within 30 postoperative days requiring revision surgery. Only one patient died.

**Conclusion:** Antenatal ultrasound plays an important role in the diagnosis of neonatal occlusion, it is what improves the management and the prognosis on the one hand and on the other hand, it makes it possible to prevent complications.

## Analytical interpretation referring diagnostic parameters of acute appendicitis among patients applying with abdominal pain

**Y. Doruk Bilgili** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Bilgili, Turkey), **Duygu Tatli Ucarci** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey), **B. Haluk Guvenc** (Dept. of Pediatric Surgery, Zonguldak Bulent Ecevit University Health Application and Research Center, Zonguldak, Turkey)

**Aim:** Accurate diagnosis of acute appendicitis in children presenting with abdominal pain is a challenging task. Diagnostic accuracy of complicated appendicitis on the contrary is mostly reliable. Numerous studies have failed to find the precise parameter to avoid unnecessary surgery or severe outcome from missed diagnosis. We have conducted an analytical interpretation of basic parameters available in any hospital for a decisive diagnostic outcome of acute appendicitis.

**Methods:** A retrospective study concerning 657 appendectomy cases (female 38.3%, male 61.7%) amongst 1200 patients hospitalized suggestive of acute abdomen is conducted, in a tertiary hospital between 2012 and 2020. Study group is selected from clinical files of 12126 patients who applied with complaints of abdominal pain. Variables such as signs, symptoms, laboratory findings and ultrasound screening were analyzed for specificity, sensitivity and predictive value.

**Results:** Histopathological analysis revealed negative appendectomy in 12.3% and complicated appendicitis in 15%, with no perforation under the age of three. Pyrexia, tenderness in right lower quadrant and CRP proved insignificant in diagnosis. Abdominal tenderness was significantly common in the non-surgical group. WBC, neutrophil count and neutrophil lymphocyte rate were statistically significant ( $p < 0.001$ ). ROC analysis showed that the AUC (cut-off) values were 0.62 ( $\geq 14500$ ), 0.769 ( $\geq 9.6$ ), 0.689 ( $\geq 4.89$ ) respectively. Positive predictive value of ultrasound was 90%, with a negative predictive value of 17% in our center.

**Conclusions:** Physical examination and ultrasound screening is dependent on the experience of performing physician. WBC, neutrophil count and neutrophil lymphocyte rate, presence of periappendiceal fluid and mesenteric heterogeneity in ultrasound screening are highly predictive in diagnosis.

## An experience on crystallized phenol treatment for pilonidal sinus in the children during COVID-19 pandemic period

**Yusuf Atakan Baltrak** (Pediatric Surgery, Health of Science University Kocaeli Derince Education and Research Hospital, Kocaeli, Turkey), **Yusuf Atakan Baltrak** (Derince Eğitim Ve Araştırma Hastanesi, Kocaeli, Turkey)

**Introduction:** Pilonidal sinus (PD) can be cured with surgical and non-surgical methods. Approximately fifteen different surgical techniques were identified for PD treatment. The current study aimed to present short-term outcomes of Crystallized Phenol (CP) therapy which is a feasible and cost effective treatment method with rapid recovery period and without need for hospitalization in the paediatric age group during Covid-19 pandemic which affects the globe.

**Method:** Six-month follow-up outcomes of the patients who received CP therapy due to the diagnosis of PD in Paediatric Surgery Clinic between March, 2020 and July, 2020, during Covid-19 pandemic were reviewed retrospectively. The patients who had previous surgery for PD, those with number of sinuses over 3, and the patients who have not given consent for participation were excluded. Age, height, weight, gender, body mass index, number of sinus orifices, width of sinus orifice, sacral concavity distance, and cyst diameter (by ultrasound) and pilonidal sinus area measurement were evaluated.

**Results:** The patients who have received CP therapy included 15 (71.4%) males and 6 (18.6%) females. Median age of the patients was 16 (14-17.5) years. There were 13 (61.9%) patients with single sinus orifice and 8 (38.1%) patients with multiple sinus orifices during the first examination at admission. The width of the sinus orifice was  $\leq 3$  mm in 12 (57.1%) patients, and  $> 3$  mm in 9 (42.8%) patients. Mean sacral hollowness was  $9.76 \pm 1.76$  mm.

**Conclusion:** CP therapy should be considered as an acceptable method which may be performed by every surgeon with shorter hospitalization period, application at polyclinic conditions under local anaesthesia, lower complication rates and lower costs for adolescents at school age during a special period that planned surgical procedures were postponed due to Covid-19 pandemic.

## The impact of the preoperative given information on parental anxiety and satisfaction of consultation: a prospective study

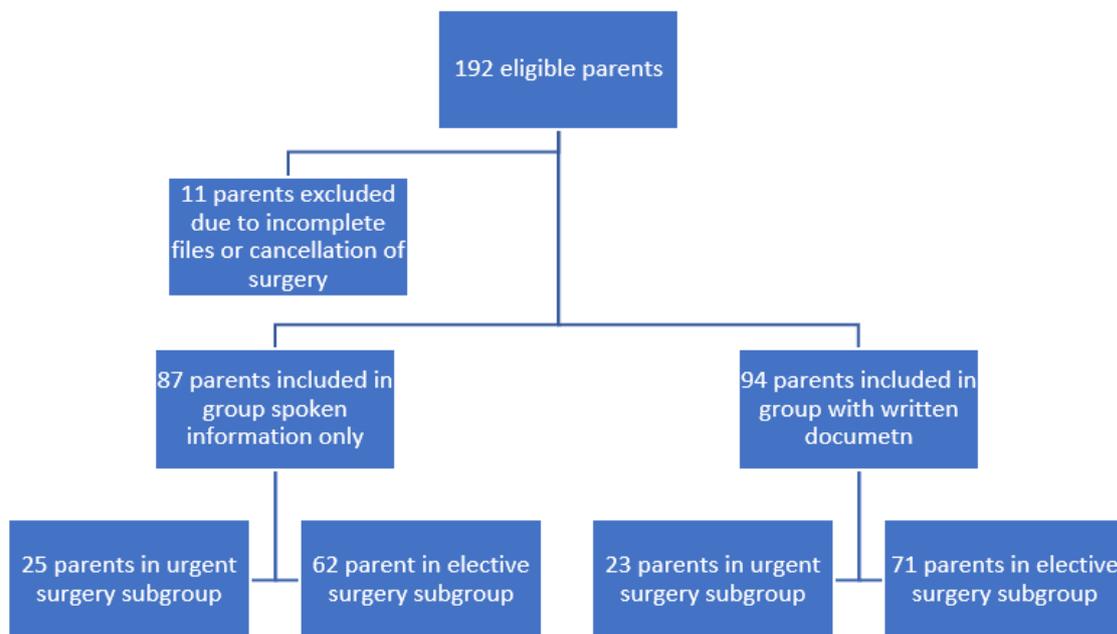
**Deividas Nekrosius** (Department of Pediatric surgery, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania), **Roberta Dievine** (Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania), **Ausra Lukosiute-Urboniene** (Department of Pediatric surgery, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania), **Inga Dekeryte** (Department of Pediatric surgery, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania), **Vidmantas Barauskas** (Department of Pediatric surgery, Hospital of Lithuanian University of Health Sciences Kaunas Clinics, Kaunas, Lithuania)

**Aim:** Our aim was to determine the main causes of parental anxiety before child's surgery and to measure the impact of the patient information booklet on the comprehension and satisfaction of the given preoperative information.

**Methods:** In this prospective study 181 legal guardians of the children (age 0-15 yrs) were randomized in two groups: verbal preoperative information only (group 1) versus verbal information supported by preoperative information booklet (group 2). Parent's anxiety was evaluated with the Visual Analog Scale, Amsterdam Pre-operative Anxiety and Information Scale. Possible factors for anxiety (urgency of the surgery, child's previous operations, prematurity, demographic characteristics) were analysed. Satisfaction with the quality of the given information was evaluated through a numerical scale. Memorization of the given information was evaluated with standard multiple-choice questionnaires.

**Results:** Multiple regression analysis showed that younger child's age ( $p=0.004$ ), urgent surgery ( $p=0.009$ ) were independent factors for higher anxiety level on the operation day. Analysis indicated that written document had no influence for parental anxiety level on the operation day ( $p=0.572$ ). However, parental satisfaction with the quality of preoperative information was higher in the group using the written document: 9.62/10 against 9.23/10 for group 1,  $p = 0.01$ . If the surgery was urgent, parents were even more dissatisfied when they did not get the preoperative information booklet (8.44/10 versus 9.39/10,  $p < 0.001$ ). On the operation day, the average score of the multiple-choice questionnaire was significantly lower in the group 1 compared for the group 2 (8.06/10 and 8.70/10,  $p=0.012$ ). The memorization score was even lower for parents, who did not receive a leaflet and their child underwent urgent surgery (7.65/10).

**Conclusion:** Younger child's age and urgent surgery were associated with higher levels of parental anxiety. The information booklet significantly increased parental satisfaction with preoperative consultation and memorization of the given information.



**Fig. 1. Flowchart.** <Spoken information only> group = group 1, N = 87. <Spoken information supported by booklet> group = group 2, N=94. Both groups were divided into subgroups of urgent and elective surgeries.

Table 1. Assessment of factors important for parental anxiety levels before surgery using multivariate regression analysis model

Predictive factor	B-values (95% confidence interval)	Significance (p value)
Urgent surgery	14.86 (3.78 – 25.94)	0.009
Child's age	-1.70 (-2.84 - -0,56)	0.004
With booklet	-2.46 (-11.05 – 6.13)	0.572
Educational level >12 years	-5.62 (-15.61 – 4.38)	0.268
Satisfaction with preoperative consultation	-2.38 (-6.43 – 1.66)	0.246

## THINK: Long-term neurocognitive sequelae of paediatric mild traumatic brain injury in LMICs – preliminary results

**Vered Lack** (Paediatric Surgery, University of the Witwatersrand, Chris Hani Baragwanath Academic Hospital, Johannesburg, South Africa), **Miriam Close** (Psychiatry, Akeso Crescent Clinic, Johannesburg, South Africa), **Kokila Lakhoo** (Paediatric Surgery, Oxford University Hospitals, Oxford, UK), **Jerome A Loveland** (Paediatric Surgery, University of the Witwatersrand, Chris Hani Baragwanath Academic Hospital, Johannesburg, South Africa), **Enid Schutte** (Psychology Department, University of the Witwatersrand, School of Human and Community Development, Johannesburg, South Africa)

**Aim:** Our institution admits approximately 1200 paediatric trauma cases per year, of which about half involve traumatic brain injuries. Most (82%) are classified as mild (mi-TBI). The literature is divided over the long-term effects of these injuries in children with respect to future functioning and behaviour. Due to poverty, malnutrition, and chronic illness even minor deficits incurred in intellectual functioning may have far reaching effects in later life with regards to school performance, joining the work-force and interpersonal relationships. Hence the THINK Trial (Traumatic Head Injury: Neurocognitive and Behavioural Assessment and Management in Kids) was designed to assess long-term outcomes of mi-TBI in a LMIC population.

**Methods:** Prospective quantitative between-subject design comparing psychometric performance of a sample of mi-TBI children (a minimum of 12 months post-injury) and age-matched, neurotypical, previously uninjured children as controls, all aged between 6 and 12 years old. Each participant completed a psychometric test battery drawn from the NEPSY-II, the Weschler Intelligence Scale for Children, and supplemented with additional independently selected measures. Descriptive and inferential statistics were applied.

**Results:** Ninety-eight clinical cases and 67 neurotypical controls were included over a 2-year period (August 2017-November 2019). There was a statistically significant difference between the mi-TBI and neurotypical groups regarding speed of cognitive processing ( $p < 0.05$ ). There was a difference in performance for gender (males), and patients who had a longer time since injury fared worse in general. Processing speed deficit may hold negative functional implications for higher cognitive skills such as attention and memory and other applied tasks which rely on these fundamental skills.

**Conclusion:** Mi-TBI in this population can incur detrimental long-term consequences, which over time may be cumulative. With further data analysis, targets for rehabilitation therapy may be identified so that appropriate post-injury care and follow-up can be designed to mitigate long-term effects.

## Long term follow up of neonatal internal jugular vein catheterization: Patency and thrombosis

**Mahdi Parvizi Mashhadi** (Pediatric Surgery, Mashhad Medical University of Science, Mashhad, Iran), **Leila Ameri** (Radiology, Chamran poly clinic, Mashhad, Iran), **Reza Shojaeian** (Pediatric Surgery, Mashhad Medical University of Science, Mashhad, Iran)

**Introduction:** Maintaining a vascular access is a common procedure in neonates specifically for those who need prolonged hospitalization or intensive care support. This situation may happen several times among those with complex congenital anomalies therefore patency of central vein is a major concern at the time of re-cannulation. We evaluate the patency of internal jugular vein after previous open catheterization in this study.

**Material and Method:** All term neonates with documented internal jugular vein catheterization during 2008-2018 were enrolled in our study. Patients were followed for more than a year after catheter removal and internal jugular vein (IJV) patency was assessed by Doppler ultrasound.

**Results:** 87 neonates were undergone central venous catheterization while just 18 were participated in our study protocol successfully. Mean age at the time of catheterization was  $16.22 \pm 8.14$  days. Doppler ultrasound assessment was arranged meanly  $29.2 \pm 6.53$  months after catheter removal. Doppler ultrasound studies revealed normal patency in 38.9%, stenotic in 27.8% and occluded in 33.3% of cases. Mean age of catheterization was significantly lower in occluded IJV group while no meaningful correlation was detected between venous thrombosis and patient gender or catheter maintenance time. IJV occlusion rate was not related to the indication of catheterization.

**Conclusion:** It is necessary to keep in mind the probability of IJV thrombosis and occlusion among those patients with the history of early neonatal ICU admission and CV catheterization. Ultrasound evaluation could be helpful while re – cannulation will be the best option for those with patent IJV to save the contra lateral venous patency.

## Peer-led sessions for research education using E-learning in Sudan

**Hani Elhaj Abdalla Bilal Omer** (Council of pediatric surgery, Sudan medical specialisation board, Khartoum, Sudan), **Wala Mohamed Rahma** (Council of pediatric surgery, Sudan medical specialisation board, Khartoum, Sudan), **Abdulhakam Abulbashar Yousuf** (Pediatric surgery, Sudan medical specialisation board, Khartoum, Sudan), **Nosyba Hasab Alnabi Omer** (Pediatric surgery, Sudan medical specialisation board, Khartoum, Sudan)

**Aim:** The aim of the sessions was to raise the research and evidence-directed thinking and practice, beside providing a social support to the quarantined personnel during the pandemic and to boost research culture in Sudan.

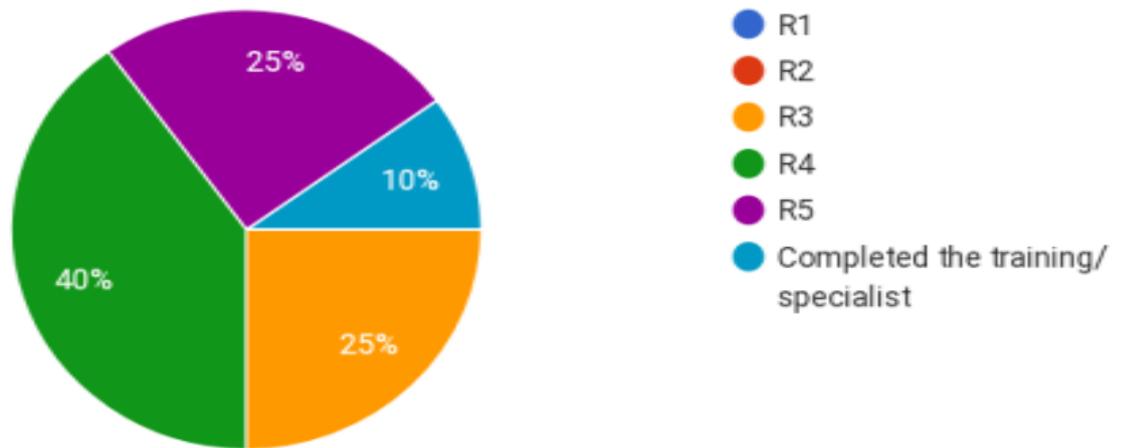
**Methods:** The experience of online sessions led by pediatric surgery fellows came in the time of lockdown due to the pandemic in 2020, two parallel activities, academic and research sessions. There were no regular previous similar activities in Sudan. A weekly session using the JITSi meet application, every session had a chosen article, specialty-related topics were selected, the article then appraised before the session highlighting the new terminologies, a checklist for appraisal was distributed with the intended article via social media applications to the fellows before the session, Two moderators then leading the session, one of the committee members following the appraisal, a senior specialist monitoring the scientific material, a volunteer resident then begin to explain the study design, another one is assigned to apply the appraisal checklist. an online survey using google forms targeted the attendees was done to evaluate the experience and for future development as well. Likert scale was used to assess the level of satisfaction with the experience.

**Results:** Total of 21 responses. 76.5% were strongly satisfied with the sessions, 17.6% came as satisfied, 5.9% were neutral, no response came as unsatisfied with the sessions. 58.8% preferred the research activities to be conducted both online and physical attendance, with only 35.5% preferred them to continue online.

**Conclusions:** Emerging distance learning in the training in Sudan, building capacities. Our experience made the research, evidence-based thinking and critical appraisal skills to improve. trainees recently participated in regional and international conferences. The Sudan experience is pioneering others worldwide experiences that the sessions were led and facilitated by the pediatric surgery fellows themselves.

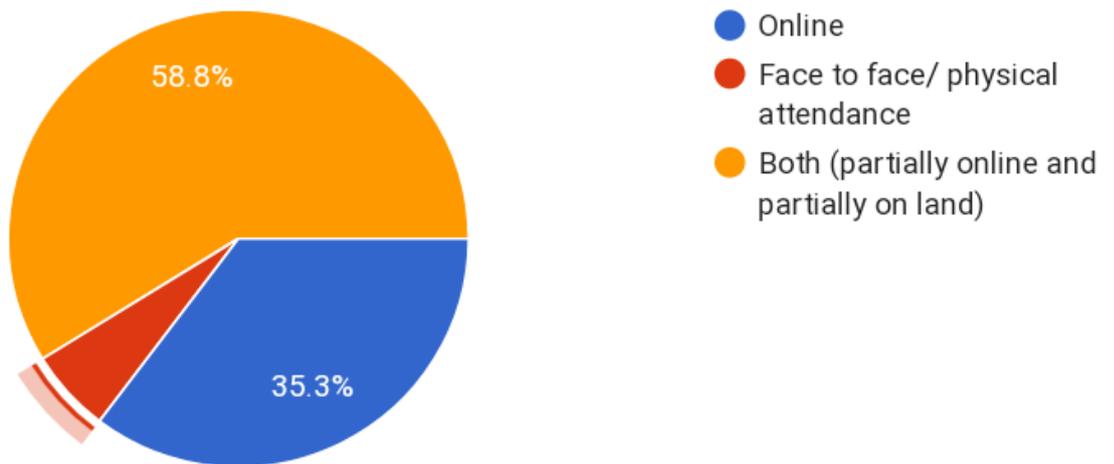
## Rotation year: (required)

20 responses



## In the future, how do you prefer the sessions to be conducted?

17 responses



## Pelviureteric Junction Obstruction (PUJO) in Children: Our experiences in Bangabandhu Sheikh Mujib Medical University (BSMMU)

**A M Shahinoor Shahinoor** (Department of Paediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh), **Shoheli Alam Shoheli** (Paediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh), **Umme Habiba Dilshad Munmun Munmun** (Paediatric Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh)

**Aim:** Pelviureteric junction obstruction (PUJO) is an important cause of upper urinary tract obstruction. It can cause marked impairment of renal function, especially in bilateral cases, if not diagnosed and treated promptly. Surgical intervention is currently the mainstay of treatment. We aimed to review the pattern of presentation and management outcomes of patients diagnosed with PUJO.

**Methods:** A retrospective observational study conducted by the Paediatric Surgery Department of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, who presented with PUJO between 1st January 2016 and 31st December 2020. Demographic characteristics, clinical presentation, investigations, and treatment modalities and follow up protocol were extracted from case notes. Data were analysed using SPSS version 20.

**Results:** The age range of the 63 patients was 47 day-14 years, with a median age of 2.7 years. There were 48 males and 15 females. Male-to-female ratio of 3.2:1. Most (90%) PUJO was unilateral and bilateral was 9%. Among the unilateral, Right sided was in 19 (30%) patients and left sided was in 38 (60%) patients. Occasional flank swelling with associated pain was the commonest symptom (n= 52; 83%), while 17% of patients had a urinary tract infection at presentation. All patients had normal renal function at the time of surgery, and dismembered Anderson–Hynes pyeloplasty with D-J stent in situ was performed. Post-pyeloplasty diuretic renogram showed improved drainage with improved function in 60 (95%) patients and only 3(5%) patients required nephrectomy.

**Conclusion:** PUJO is common cause of urinary obstruction in children. Most of our patients underwent Anderson–Hynes pyeloplasty with satisfactory outcomes.

**Keywords:** PUJO, Children.

## Trainees satisfaction with paediatric surgery online sessions during COVID-19 period

***Maisoon Tagalsir Hassan*** (Paediatric surgery, University of Khartoum, Khartoum, Sudan), ***Faisal Abdulgalil Nugud*** (Paediatric surgery, University of Gezira, Khartoum, Sudan)

**Background/Aim:** During the time of Covid-19 pandemic it was difficult and risky to run face to face sessions, and the online sessions were the safest and easiest way to deliver the academic program. These sessions are presented on weekly basis by the trainees and attended by trainers in Sudan and abroad. The aim of the study was to asses trainees satisfaction with online sessions.

**Methods:** data was collected and analyzed using Google forms.

**Results:** total number of candidates was 39. All are paediatric surgery trainees. 31.6% are attending the sessions always, 31.6% are attending sometimes, 26.3% are attending rarely, while 10.5% never attended these sessions. Regarding the presented material, 55.9% of the trainees thought it was very good, 29.4% thought it was excellent, 11.8% thought it was fair, and only one candidate thought it was poor (2.9%). The level of discussion was rated as very good by 47.1%, excellent by 41.2%, and fair by 11.8%. The time of the session was considered convenient by the majority of trainees (82.4). 88.2% of the trainees stated that the sessions added a lot to their knowledge, while 11.8% thought it added little to their previous knowledge. The vast majority of trainees thought the sessions were attractive (94.1%). 97.1% of the trainees thought that the sessions were helpful in improving their presentation skills. And the same percentage (97.1%) found the sessions motivating for them to study. Attendance of the trainers was stated as fair by 44.1%, very good by 20.6%, and poor by 35.3%. The efficiency of net services during sessions was rated as fair by 44.1%, poor by 47.1%, very good by 5.9%, and excellent by 2.9%.

**Conclusion:** online sessions are the most common and safe way in the time of Covid-19 pandemic.

## Neonatal surgical skills course by local faculty

***Maisoon Tagalsir Hassan*** (Paediatric surgery, University of Khartoum, Khartoum, Sudan), ***Haitham Dagash*** (Paediatric surgery, Leicester University hospitals, Leicester, UK)

**Background/Aim:** This was the third Hugh Greenwood course to be run in Khartoum. And because of the Covid-19 pandemic restrictions, the course was run entirely by a local faculty.

**Methods:** There were 20 candidates, all paediatric surgical trainees. The faculty consisted of 13 consultants and specialists, with one visiting specialist from Doha. We managed to prepare the bowel for all the procedures the day before the course. On the day, the candidates managed to perform bowel anastomosis, Stamm gastrostomy, duodeno-duodenostomy, OA+TOF repair as well as a pyeloplasty. The candidates were then asked to answer a questionnaire.

**Results:** The usefulness of the course was rated as very good by 55% and good by 45%. An overwhelming 90% would recommend the course to others. Bowel anastomosis and gastrostomy were rated as very good by 75% respondents. 65% of the participants thought the DA model was very good. The OA+TOF model was rated as very good by 30% and good by a further 40%. The results for pyeloplasty were similar. The venue was rated as very good by 65% of candidates and the catering was deemed very good by 60% of those assessed.

**Conclusion:** The HG course can be run by a local faculty successfully and with a high degree of satisfaction.

## Risk factors for death on newborn with gastroschisis treated at a reference center on Amazonia

**Salime Saraty Malveira** (Pediatric Surgery, Hospital Regional Abelardo Santos, Belém, Brazil), **Salma Saraty** (Neonatology, Fundação Santa Casa de Misericórdia do Pará, Belém, Brazil), **Juliana T M Lima** (pediatric surgery, Fundação Santa Casa de Misericórdia do Pará, Belém, Brazil), **Tháís O Santos** (Centro Universitário Metropolitano da Amazonia, Belém, Brazil), **Marcello O Santos** (Centro Universitário do Estado do Pará, Belém, Brazil), **Eduarda Bastos** (Centro Universitário do Estado do Pará, Belém, Brazil), **Ana Carolina Matos** (pediatric surgery, Fundação Santa Casa de Misericórdia do Pará, Belém, Brazil)

The aim of this study was to identify mortality risk factors on newborns with gastroschisis. A retrospective cohort was accomplished based on the analysis of gastroschisis neonates records who were born, diagnosed and received surgical treatment in a public referral hospital on Amazonia, from January 2014 to December 2017. Ninety nine neonates with gastroschisis were identified. Overall lethality was 41,4%. The foremost risk factor for death in newborns with gastroschisis was the requirement for surgical re-approach (77.3%,  $p < 0.000$ ). Staged surgery (62.5%,  $p < 0.003$ ) and prematurity (68.2%  $p < 0.004$ ) are also predictors of mortality on these newborns. Babies with very low birth weight (80.0%), those delivered vaginally (57.1%), patients with complex gastroschisis (52.6%), neonates who underwent surgery after 6 hours of life (50.0%), newborns who acquired nosocomial infection (44.3%) and females newborns (43.8%) either evidenced higher mortality, although these data did not demonstrate statistical significance. The occurrence of death in newborns with prenatal diagnosis of gastroschisis was similar to those without a diagnosis. Concluded that single-stage surgery seems to be a surgical treatment with better outcomes, and that prematurity, the need for surgical re-operations and staged surgeries increase the mortality of newborns with gastroschisis.

## POSTER WALK 27

## Innovations

## Neonatal Giant Neural tube defects: Challenges and lesions learnt

**Nitin Sharma** (Pediatric Surgery, Pt JNM Medical College and Associated DKSPGI, Raipur, Chhattishgarh, India, Raipur, India), **Shipra Sharma** (Pediatric Surgery, Pt JNM Medical College and Associated DKSPGI, Raipur, Chhattishgarh, India, Raipur, India), **M Amin Memon** (Pediatric Surgery, Pt JNM Medical College and Associated DKSPGI, Raipur, Chhattishgarh, India, Raipur, India), **Mini Sharma** (Pt JNM Medical College, Raipur, Chhattishgarh, India, Raipur, India)

**Background:** management of neural tube defects is associated with challenges and outcome is demanding. Large defects are difficult to close and have associated wound related issues. The purpose of this study is to discuss the challenges in wound closure and lesions learnt.

**Aims:** to analyze the outcomes in operated cases of giant neural tube defects.

**Material and methods:** The data between the period of June 2017- March 2021 was analyzed. Those with incomplete data or lost to followup were excluded. All the cases underwent closure of defect using primary closure or double Z plasty. Dura closure was achieved with native dura augmented with thoracolumbar fascia. All the cases were assessed for associated hydrocephalous and underwent shunt surgery prior to meningomyelocele repair if associated hydrocephalous was present. All the cases operated received mannitol in the post operative period. The outcome was analyzed with respect to duration of surgery, blood loss, requirement of Z Plasty for closure, Wound infection, blackening of the flaps, CSF leak and features of sepsis.

**Result:** A total of 43 cases were operated. Mean age at presentation and surgery was 4 days (range 0–28 days). Mean duration of surgery was 1.15 hours (Range 0.45-3.15 hours). VP shunt was required in 34 cases. Closure with double Z plasty was required in 36 cases. Post operative wound infection and blackening of the flap was seen in 13 and 1 case respectively. These cases were managed with dressings. CSF leak was seen in none of the cases. Sepsis was seen in 28 cases in the preoperative period and all were managed with long term antibiotic therapy. Average duration of stay required was 14 days (Range: 6-24 days).

**Conclusion:** Management of large defect requires closure with adequate planning. CSF shunting and closure using Z plasty is often required in these cases.



## Voiding Urosonography as first choice in paediatric vesico-ureteral reflux diagnosis

**Irene Diequez** (Pediatric Urology, Hospital Universitari i Politècnic La Fe, Valencia, Spain), **Jose A March** (Pediatric Urology, Hospital Universitari i Politècnic La Fe, Valencia, Spain), **Adrià Costa-Roig** (Pediatric Surgery, Hospital Universitari i Politècnic La Fe, Valencia, Spain), **Agustín Serrano** (Pediatric Urology, Hospital Universitari i Politècnic La Fe, Valencia, Spain)

**Aim:** voiding urosonography (VUS) is a dynamic imaging technique which evaluates the lower urinary tract by introducing sonographic contrast into the bladder. Presence of vesicoureteral reflux (VUR) or urethral anomalies is studied. Our goal was to examine the advantages and limitations of VUS in paediatric patients.

**Methods:** cross-sectional study carried on patients under 15 years old with a VUS taken between November 2013-2020. Sex, age, indications (dilated lower urinary tract (DLUT), infection, duplex collecting system (DCS)), results (presence/absence of VUR, its classification and side) and complications were analysed. A multivariate analysis was performed to evaluate the ability of the “indications” to predict RVU. Qualitative variables were expressed as absolute frequency and percentage, and quantitative ones as median and inter-quartile range. Version 25 of SPSS program was employed (statistical difference  $p < 0,05$ ).

**Results:** 415 VUS were completed satisfactorily (52% (N=215) male)); Median age 7,33 (3,1 – 15,3) months). VUR was diagnosed in 34,7% (n=144) of the patients, 58,3% (n=84) unilateral and 41,7% (n=60) bilateral, being moderated the most frequent classification. Male patients and those with previous DCS presented more VUR ( $p=0,044$  y  $p=0,017$  respectively).

**Conclusions:** VUS is a thriving technique used in the diagnosis and follow up of paediatric patients with VUR, being a safe and effective tool. A male patient or a previous history of DCS are the clinical indicators with higher correlation with VUR diagnosis.

## ERAS protocol in pediatric colorectal surgery: survey of polish tertiary centers

**Michał Pasierbek** (Department of Children's Developmental Defects Surgery and Traumatology, Medical University of Silesia, Zabrze, Poland), **Anna Modrzyk** (Department of Children's Developmental Defects Surgery and Traumatology, Medical University of Silesia, Zabrze, Poland), **Wojciech Korlacki** (Department of Children's Developmental Defects Surgery and Traumatology, Medical University of Silesia, Zabrze, Poland)

**Aim:** The changes taking place in recent decades in general surgery include, among others, ERAS protocol (Enhanced Recovery After Surgery) – a protocol for modern perioperative care. This complex set of principles improves treatment outcomes, and therefore its application shortens the hospitalization period without increasing the complication rate. This suggests looking for similar solutions in pediatric patients. The aim of the study is to present ERAS protocol and to assess preparation of Polish pediatric tertiary centers for its implementation in colorectal surgery.

**Methods:** A survey was prepared. 19 tertiary centers from Poland were invited to participate, based on publicly available e-mail addresses. 7 centers responded. The study included 4 general questions about the assumptions and the possibility of implementing ERAS, and detailed questions about the actual completion or planning to meet the 23-point protocol referring to stoma reversal.

**Results:** Five out of seven centers confirmed the knowledge of the protocol assumptions. Two centers proceed with ERAS protocol. None of the respondents complete all the points of the protocol. The fewest completed procedures among the respondents were 6, and the most were 18 out of 23. The arithmetic mean of completed interventions was 11.4. When assessing the completion of the most important interventions, it was found that no center had implemented the "zero fluid balance" principle, yet five out of seven ruled out preoperative starvation. Three centers have ruled out mechanical bowel preparation, and two of them use a carbohydrate drink prior to anesthesia. Three respondents implemented oral nutrition early in the postoperative period.

**Conclusions:** The ERAS protocol is becoming more and more widely used in the world. Based on the answers obtained, one can conclude that the ERAS protocol will find its place in Polish pediatric surgery and this new approach will replace the standard treatment method.

## Use of stoma bag for initial care of abdominal wall defects: A simple and safe option

**Rambha Rai** (Pediatric surgery, Singhealth, Singapore, Singapore), **Jayne Chiang** (Pediatric surgery, Singhealth, Singapore, Singapore), **Anette Jacobsen** (Singhealth, Singapore, Singapore)

**Aim:** Aim of this study is to report the use of a stoma bag in the initial care of abdominal wall defect (AWD) in newborn with gastroschisis, omphalocele or other kind of umbilical defects.

**Methods:** A clean and sterile stoma bag was used to cover the extruding viscera in gastroschisis (n =5), omphalocele sac (n=3), and other umbilical defects (n=3) immediately after birth during resuscitation. The appropriate size stoma bag was pasted on the abdomen around the defect covering and protecting the viscera to avoid hypothermia, trauma, sepsis and desiccation of the content while awaiting definitive procedure. A soft roller crepe bandage was wrapped around the base to give additional stability of sac in larger defects.

**Results:** There was no complication associated with the use of stoma bag for babies with AWD. It protected the exposed viscera and allowed a careful visualization of the contents to ensure good perfusion and viability. In comparison to our old method of using cling wrap or gauze to cover the exposed organs, this method was well accepted in our department. Further it avoided problems such as peritoneal fluid leakage, sepsis and invisibility of contents.

**Conclusion:** Use of stoma bag is a better and safe option for protection of protruding viscera in gastroschisis and omphalocele with thin and fragile sac in immediate postnatal period while awaiting definitive repair. In resource-restrained centers, it can also be a good method to support the delicate viscera, enabling safe transfer of these newborn to tertiary care facilities.





## Foot salvage reconstructive surgery after injuries

***Dominika Krakowczyk*** (Child Health Center in Katowice, Pediatric Surgery and Urology, Pani, Gliwice, Poland), ***Agnieszka Wiernik*** (Pediatric Surgery and Urology, Child Health Center in Katowice, Katowice, Poland), ***Tomasz Koszutski*** (Pediatric Surgery and Urology, Child Upper Health Center, Katowice, Poland), ***Łukasz Krakowczyk*** (Oncological and Reconstructive Surgery, National Research Institute of Oncology, Gliwice, Poland)

**Aim:** The introduction of innovative techniques of reconstructive surgery in children, made it possible to significantly increase the number of limb-saving procedures, both for oncological and traumatic indications. Management of complex foot injuries including skin, tendons, vessels, bone, with soft tissue defects is considered as a surgical challenge. Microsurgical free flaps provide the best solution in such cases.

**Methods:** Four children, three male and one female, were treated for total degloving injury of the foot. Patients were between 13 years and 17 years of age. All injuries involved the total foot and in one case foot and ankle. In 3 cases the foot was covered with soft tissue free flap in after radical debridement and in one case the iliac crest free flap was used for reconstruction of the pseudoarthrosis in the following operation.

**Results:** All the free flaps survived. The involved bone fracture was united after 3 months. No evidence of osteomyelitis was noted. there was noted a decubitus once on reconstructed heel, which was treated conservatively. Full weight bearing was restored 2 months post-operatively. All patients were satisfied with the cosmetic appearance and functional capacity of their operated limbs, however 3 of them required following corrections of their free flaps.

**Conclusion:** Reconstruction surgery using microvascular free flaps is a good solution for reconstruction of complex ankle and foot injuries.





## A safe and reliable technique of neonatal and infantile bowel anastomosis

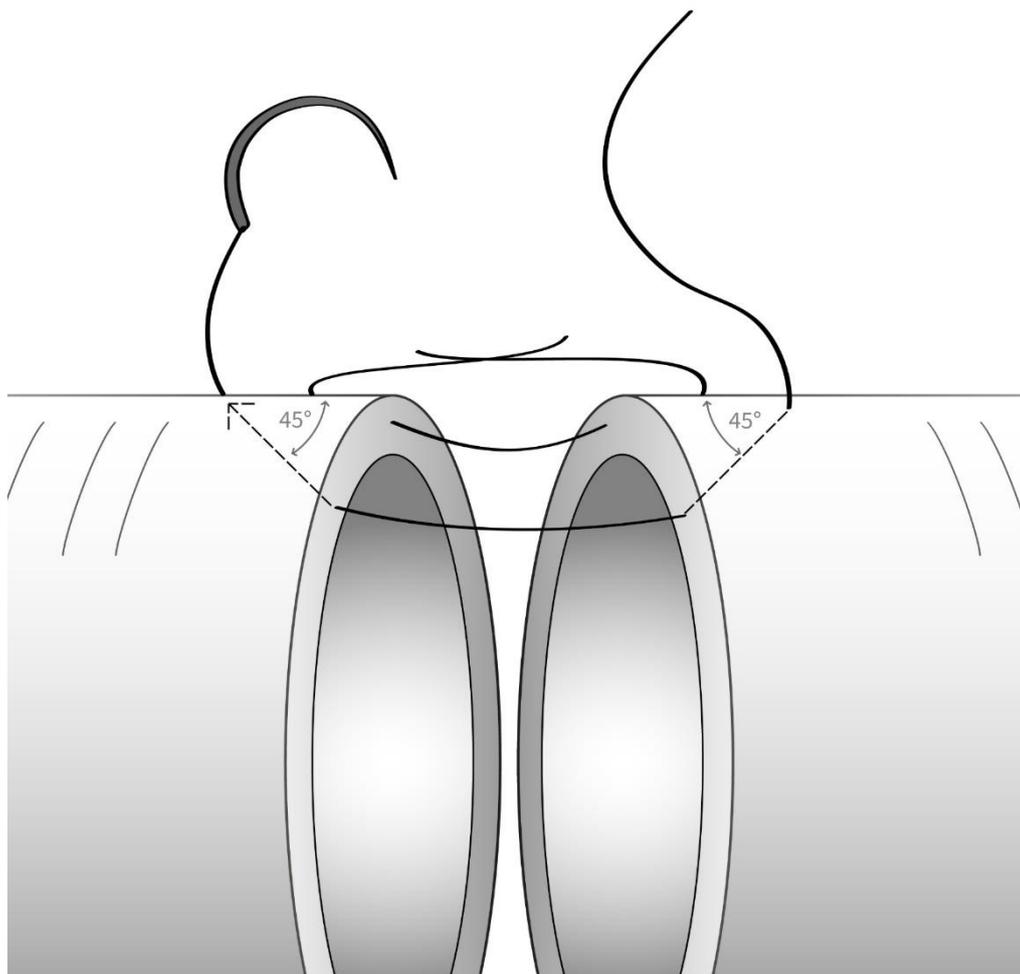
**Tristan Boam** (Nottingham Children's Hospital, Nottingham, UK), **Ashok Daya Ram** (Norfolk and Norwich University Hospital, Norwich, UK)

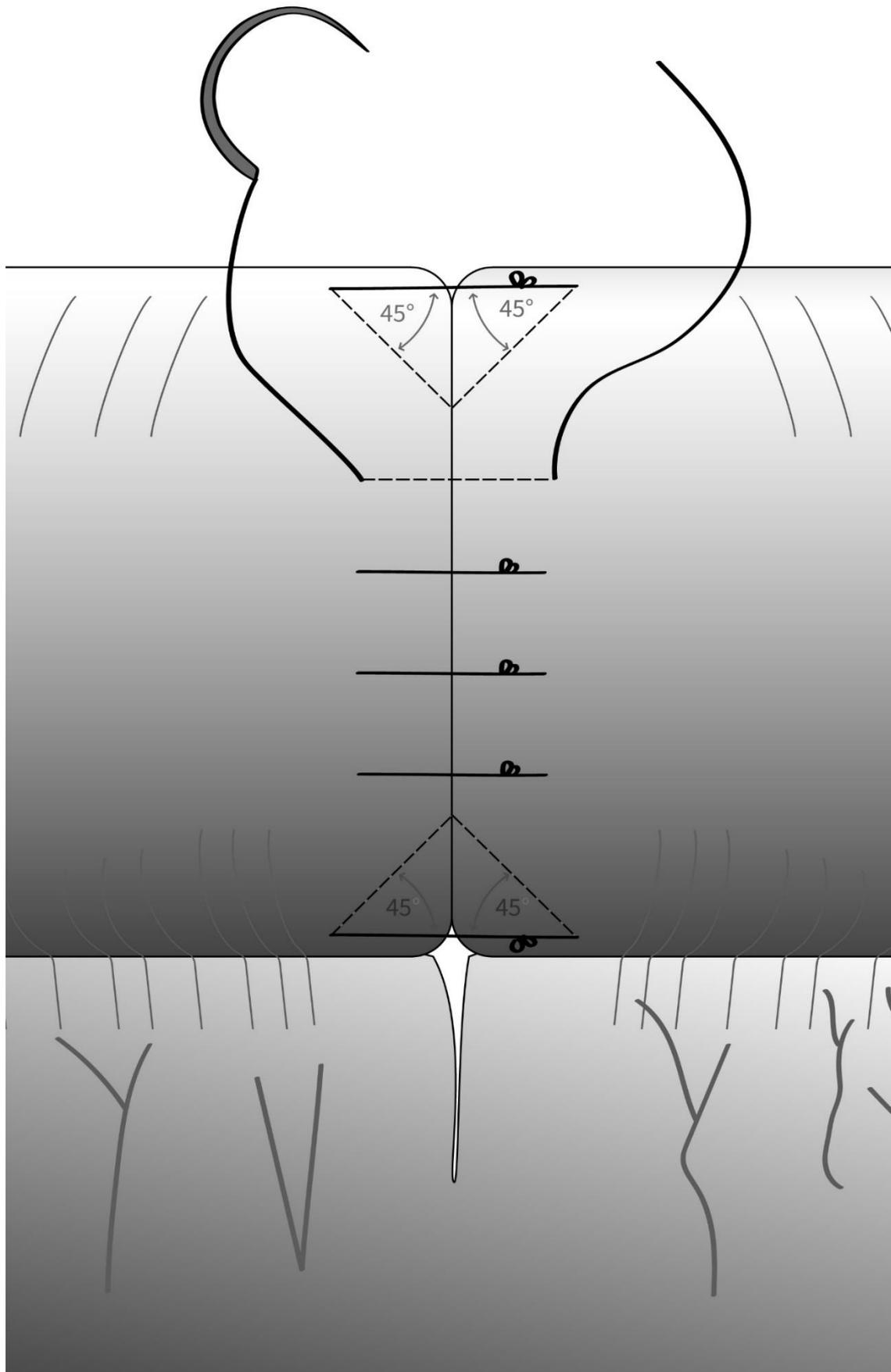
**Aim:** Neonatal and infant bowel anastomoses are hand sewn; because of the small calibre and delicacy of the tissues, they are prone to leaks and strictures. We describe a technique that minimises these risks.

**Methods:** Mesenteric and anti-mesenteric stay sutures are placed first. On either side of the bowel and very close to the stay sutures, 4 sero-submucosal stability sutures are placed. The needle first comes outside in at the angle of 45 degrees from the edge of one side of the bowel and then inside out back at the angle of 45 degrees to the other edge of the bowel thus making a 90 degree angle towards the stay sutures. (Fig1) The rest of the bowel is sutured in the conventional perpendicular fashion. (Fig2)

**Results:** We have performed this technique in 30 neonatal and infant anastomosis, including a patient with a weight of 652g, with no anastomotic complications. All had uneventful post-operative recoveries, and no late complications during a follow up range of 6 months to 2 years.

**Discussion:** The authors believe this technique achieves two purposes: 1. Tightly closes the mesenteric and anti-mesenteric corners which are the commonest site of leakage. 2. The edges are pulled apart keeping the lumen open even through the immediate post-operative period and beyond, avoiding a narrowing at the anastomosis. It is a safe technique with no extra cost, or operative time and is therefore ideal for surgery in low income settings. The authors highly recommend this effective technique for all neonatal and infant bowel anastomoses.





## Biocompatible Dressing For Pediatric Hypospadias Repair

**Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Ashwini K Agarwal** (Indian Institute of Technology, New Delhi, India), **Varun Arora** (Indian Institute of Technology, New Delhi, India), **Arul Selvi** (Lab Medicine (Pathology), All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Bhawna Bhawna** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Joginder Singh** (Indian Institute of Technology, New Delhi, India), **Minu Bajpai** (All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Manjeet Jassal** (Indian Institute of Technology, New Delhi, India)

**Introduction:** The ideal choice for dressing following Hypospadias repair is a surgeons dream. We aimed to develop a hypoallergenic optimized biocompatible dressing (BD).

**Method:** BD had a multi-layered structure, with Hydrophilic treated Polypropylene with three-layered technologies, Absorbent layer -Spun lace Hydroentanglement of polyester & viscose blend, outer fabric of Polypropylene, Polyester, Acrylic, and Spandex, along with super Absorbent Polymer and Acrylic adhesive. A Wistar rat model of abdominal wound was made. Rats were divided into two groups; Control (normal gauze piece dressing with adhesive) and Study (BD).

**Results:** Average mass: thickness of BD was  $626.74 \pm 5.63 \text{ g m}^{-2}$ :  $2.60 \pm 0.015 \text{ mm}$ . Absorption was  $1425.17 \pm 127.56\%$ . The percent loss of solution A from the dressings expressed as percentage desorption at 24 h was  $395.02 \pm 21.13 \%$  and at 40 h was  $1335.18 \pm 101.41 \%$ . BD was hydrophilic with no particles/residue after immersion and pH neutral. Average value for air permeability was  $11.58 \pm 1.59 \text{ cm}^3/\text{cm}^2/\text{sec}$ . Tensile testing showed average value of force between 180-220 N with extension on breaking point at 45 mm. BD was superior in terms of sticking quality (4.5 vs 3), absorption (4.5 vs 3), ease of removability(5 vs 2.5), and sustenance (5 vs 1.5) in five rats combining results on days 5 and 10. The wound was assessed for healing 4.5 vs 3, redness (0.5 vs 3), edema(0.5 vs 3), bleeding(0 vs 1), infection(0 vs 1.5) and dehiscence(0 vs 1.5). Histopathology grading for Healing was better with BD on day 6(3.3vs1.3),12(3.3 vs2.3),14(3 vs 2),20 (3.7 vs 1.3)

**Conclusion:** BD had better desirable quality and demonstrated better wound healing with less signs of inflammation compared with the control normal dressing.

## Experimental verification of intraoperative method of intestinal viability measurement

**Tatiana Zebrova** (The Chair of Surgical Diseases of Children and Adults, Samara State Medical University, Samara, Russian Federation), **Margarita Barskaya** (The Chair of Surgical Diseases of Children and Adults, Samara State Medical University, Samara, Russian Federation), **Elizaveta Kargina** (Samara State Medical University, Samara, Russian Federation), **Igor Kozin** (Cardiovascular Surgery, Clinics of Samara State Medical University, Samara, Russian Federation), **Dmitriy Zebrov** (Samara State Technical University, Samara, Russian Federation), **Daria Zakharova** (Samara State Medical University, Samara, Russian Federation)

**Aim:** The goal of the study is optimization of the method of intraoperative intestinal viability verification in order to improve the outcomes of urgent surgeries performed due to intestinal pathology.

**Methods:** 12 rats (breed: Wistar) aged 6-18 months 250–350 grams (6 male and 6 female) were investigated. The animals were divided into 2 groups: 8 animals – experimental group, 4 – control group. Each day the study was performed on 2 rats from experimental group and 1 rat from control group. After laparotomy intestinal loops were brought in the operative field in order to make the first measurements. After that, conditions for ischemia development were created by ligatures on 2-3 branches of arteria mesenterica superior in the rats of experimental group. The vessels of the control group rats were left intact. The loops were brought back to the abdominal cavity for a fixed period of time (30 minutes, 60 minutes, 90 minutes, 120 minutes and 180 minutes). At the end of the expectation period the loops were brought outside again to do the measurements of viability at different areas of healthy and ischemic tissue. All the measured fragments were resected and taken for histological investigation and verification. At the end of the surgery the animals were withdrawn from the experiment. The study passed the ethical approval of the Ethical Committee of the University.

**Results:** As a result, the reference values were defined and proved with the help of histological and immunohistochemical verification.

**Conclusions:** This experiment proves the validity of the method of intraoperative instrumental verification of intestinal viability, which can be further implemented in the practical urgent abdominal surgery. We believe that this method could significantly decrease the number of postoperative complications in such cases and generally improve the outcomes.

## On the Way to Tissue Engineer Small Intestine–Novel Tubular Scaffold

**Marshall Z. Schwartz** (Regenerative Medicine/Urology/Surgery, Wake Forest Institute for Regenerative Medicine/Wake Forest School of Medicine, Winston-Salem, North Carolina, USA), **Mubashra Zehra** (Regenerative Medicine, Wake Forest Institute for Regenerative Medicine, Winston-Salem, North Carolina, USA), **Cole Peeler** (regenerative Medicine, Wake Forest Institute for Regenerative Medicine, Winston-Salem, North Carolina, USA), **Anthony Atala** (Regenerative Medicine/Urology, Wake Forest Institute for Regenerative Medicine/Wake Forest School of Medicine, Winston-Salem, North Carolina, USA)

**Aim:** This study focused on developing a tubular scaffold capable of peristalsis to be used in tissue-engineering small intestine. This has never been accomplished. Constructing a tubular scaffold for this purpose required tubular integrity for 10–16 weeks and then dissolve (no scaffold has been developed to meet these criteria), develop a blood supply; and support the growth of smooth muscle and neural progenitor cells.

**Methods:** We chose to develop a 4 cm X 6 mm tubular scaffold. An electrospinning device was chosen to create the tubular scaffold because it allows the fibers to be a certain diameter and aligned circumferentially. However, there are eight possible parameters to achieve this outcome and there are dozens of polymers to choose that will determine the long-term integrity of the scaffold.

Many options and many months went into defining the right polymers and electrospinning parameters before we achieved our goal. The scaffolds were seeded with human small intestine smooth muscle and neural progenitor cells and placed in a bioreactor for 3 days. Through a midline laparotomy, the scaffolds were wrapped in the omentum and placed in athymic rats, and the incision closed (N=4).

**Results:** At four weeks the seeded scaffolds demonstrated a blood supply). Follow-up at 12 weeks demonstrated persistent integrity of the scaffold structure and proliferation of the seeded cells involving approximately 60% of the scaffold wall. At 24 weeks, the integrity of the scaffold wall was gone, and cell proliferation had encompassed all of the remaining structure.

**Conclusions:** These preliminary studies have shown: 1) for the first time, a scaffold with properties of prolonged wall integrity (12 weeks with dissolution before 24 weeks) had been developed; 2) the components of the scaffold would support the growth of human smooth muscle and neural progenitor cells with the potential for peristalsis.

## New concept of liver transplantation in pediatric patients – the upside down method

**Petra Dubská** (Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic), **Libor Janoušek** (Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic), **Jiří Froněk** (Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic)

**Aim of the study:** Liver transplantation (LTx) in pediatrics has become an accepted modality for the treatment of end-stage liver disease and irreversible acute liver failure. Left lateral segment (LLS) graft from a donor hepatic split are commonly used in pediatric patients. However, the implantation of LLS grafts can pose problems. This is due to the adhesions after previous surgical interventions, which cause a graft shift to the right side of the epigastrium. To alleviate this problem, we implemented a novel “upside-down” technique to position the LLS graft in the right subphrenic space.

**Methods:** A total of 9 LLS liver graft transplantations were performed using the “upside-down” method in 9 pediatric patients (3 male, 6 female) from the period of 1/2017 to 12/2021. Patients were aged 0.6 years to 9.2 years and weighed between 5.9 kg and 37.5 kg. The indications for the LTx were biliary atresia, metabolic disease, idiopathic liver failure, and tumor of the liver. In contrast with the classical approach, the position of the graft in our case was in the right subphrenic space with the SII located ventrally, the SIII dorsally, and the gastric impression cranially.

**Results:** Overall, 9 children underwent transplantation using an LLS graft and the novel “upside-down” technique. A total of 7 of those 9 children are alive today and have good liver graft function. The remaining two patients died at 12 months posttransplantation and 1 day posttransplantation. In all cases, we observed that positioning the liver graft into the more spacious right subphrenic area allowed an easier graft fit with diminished adhesion problems.

**Conclusions:** The new “upside-down” technique allows us to position a liver graft in the right subphrenic space in a pediatric recipient. This method minimizes the risk of graft shift or rotation.

## POSTER WALK 28

## Miscellaneous 2

## Virginal Breast Hypertrophy: Too Much, Too Soon?

**Esther A Saguil** (Surgery, Philippine General Hospital, Manila, Philippines), **Ronnellee Paclibar** (Surgery, Philippine General Hospital, Manila, Philippines), **Francisca Velcek** (Surgery, Philippine General Hospital, Manila, Philippines), **Eric Perpetuo Arcilla** (Surgery, Philippine General Hospital, Manila, Philippines)

**Aim:** Three successive cases of virginal breast hypertrophy (VBH) in young pubertal females were managed in the Philippine General Hospital in one year. We present the successful management of this rare condition through a collaborative multi-disciplinary approach.

**Case description:** Three young females aged 10-12 years were brought in for massive and rapid breast enlargement, all occurring within one year from consult. Two already had their menarche before the rapid breast enlargement started, while one had her menarche five months after the breasts started growing rapidly. The patients' symptoms ranged from shoulder and back pain, heaviness, impaired mobility, overlying skin excoriations and ulcerations, and poor body image. Endocrinological workup, which included determination of serum TSH, prolactin, cortisol, and estradiol were all normal. Peri-operative psychological evaluation and counselling was carried out to ensure the well-being of the patients, who exhibited varying degrees of shame and depression due to their condition. Surgery was opted because of the massive breast sizes. With the collaboration of pediatric and plastic surgeons, bilateral partial mastectomy, with breast and nipple reconstruction was performed in all three patients. The excised breast tissues ranged from 2.0 to 6.5 kilograms each and histopathologic examination all revealed juvenile macromastia. The patients were discharged within four days, and all expressed satisfaction with the surgical outcomes on follow up after six months.

**Conclusions:** VBH is a rare condition that is best managed expeditiously using a multi-disciplinary approach. Psychological support should be offered to ensure the girls are able to cope with their altered body images, Long term surveillance is necessary to detect recurrence and determine future lactation potential.

## Acute appendicitis treatment algorithm in children and it's possible future directions

**Timurs Zurmutaī** (Department of Pediatric Surgery, Riga Stradins University, Riga, Latvia), **Arnīs Engelīs** (Department of Pediatric Surgery, Riga Stradins University, Riga, Latvia), **Astra Zviedre** (Department of Pediatric Surgery, Riga Stradins University, Riga, Latvia), **Mohit Kakar** (Department of Pediatric Surgery, Riga Stradins University, Riga, Latvia), **Paulis Laizans** (Department of Pediatric Surgery, Riga Stradins University, Riga, Latvia), **Jurijs Bormotovs** (Department of Doctoral Studies, Riga Stradins University, Riga, Latvia), **Aigars Petersons** (Department of Pediatric Surgery, Riga Stradins University, Riga, Latvia)

**Aim:** Increased clinical interest in non-surgical treatment of acute appendicitis in children brought an issue of distinguishing between acute complicated (AcA) and non-complicated (AnA) appendicitis. Our aim was to develop and later improve diagnostic algorithms of acute appendicitis (AA) and to define suitable biomarkers for early recognition and differentiation between AcA and AnA in children with abdominal pain.

**Methods:** Multiple studies of patients aged 7 to 18 years with acute appendicitis were performed from 2010 to 2020 in a tertiary pediatric surgery clinic. Prospective case-control study of 57 patients from 2010 until 2013. Retrospective review of treatment results of 865 patients from 2014 to 2016. Retrospective internal audit review of 100 patients of 2018. Prospective cohort study of 153 patients from 2017 to 2020. All studies were conducted with approval of appropriate ethical committees.

**Results:** First local version of AA diagnostic and treatment algorithm was introduced in 2017. After retrospective audit a second revision of algorithm was introduced in 2020. Implementation of algorithms has led to a significant decrease of proportion of AcA from 37.54% in 2017 to 20,06% in 2020. Serum Neutrophil Gelatinase-Associated Lipocalin (NGAL), Interleukin-6 (IL-6) and Leucine-rich alpha-2-glycoprotein-1 (LRG1) biomarkers showed feasibility in diagnostics of AcA and AnA on the onset of the disease. Amount of collected patient data and number diagnostic tests is ever increasing. Further complication of diagnostic algorithms may complicate their use in clinical setting. Machine learning is already introduced as a help in differentiating AA.

**Conclusions:** Introduction of diagnostic scores and algorithms standardizes and improved the diagnosis of paediatric AA. Implementation of new diagnostic tests with higher sensitivity and specificity may improve the accuracy of diagnostic algorithms. Increasing number of tests and input data may facilitate need for ML algorithms to help surgeons in more precise AA diagnostic.

## Cutaneous ciliated cyst: an unfamiliar entity in an unusual location

**Michail Anastasakis** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Ioanna Gkalonaki** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Anna Maragou** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Panagiota Michou** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Parthena Kampouridou** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Christina Panteli** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Ioannis Patoulis** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece)

**Aim:** Cutaneous Ciliated Cyst (CCC) is defined as a rare, well-defined cystic lesion frequently located on the lower extremities of young girls after puberty. Cases in men are rarely reported. The cyst is surrounded by pseudostratified ciliary epithelium. **This remarkable entity should be included in the differential diagnosis of every medical doctor, when a palpable mass is concerned.**

**Case description:** A 16-month-old otherwise healthy girl presented to our hospital, reporting a palpable mass on the left suprascapular region. This growth was detected during the first months of her life. Since then, it has remained asymptomatic and stable on its dimensions. Physical examination revealed a soft-textured, fluctuating, mobile and painless formation, with no further indications of local inflammation. Ultrasonography showed a well-demarcated round mass, measuring 1,3 cm x 0,8 cm, with internal hyperechogenic regions. The mass was totally excised, under general anesthesia, for both diagnostic and therapeutic purposes. On histopathologic investigation, the cystic lesion was covered by pseudostratified ciliary epithelium, resembling the epithelium of Fallopian tube, surrounded by a smooth muscle layer. Immunohistochemical studies identified the cyst epithelium as having cytokeratin (CKAE1/AE3) expressions, despite the negative immunostaining findings on Estrogen and Progesterone Receptors (ER & PR). The patient had no recurrence on 6-months follow-up.

**Conclusions:** CCCs are asymptomatic, rarely observed cystic lesions, that are usually benign. Most of them have been regarded as Müllerian remnants. They are primarily observed in young girls approaching reproductive age and most frequently observed in lower extremities. Our case report is concerning a CCC of an unusual position, in the suprascapular area. **After a thorough review of the international literature, we have concluded that this is the second published case, regarding this special location. To our knowledge our patient is the youngest diagnosed with cutaneous ciliated cyst.**

## Currarino Syndrome Presenting as a Right Gluteal Abscess

**Rene Gatsinga** (MOH Holdings Singapore, Singapore, Singapore), **York Tien Lee** (Paediatric Surgery, KK Women and Children's Hospital, Singapore, Singapore), **Amos H. P. Loh** (Paediatric Surgery, KK Women and Children's Hospital, Singapore, Singapore), **Marielle V Fortier** (Diagnostic and Interventional Radiology, KK Women and Children's Hospital, Singapore, Singapore), **Anette S Jacobsen** (Paediatric Surgery, KK Women and Children's Hospital, Singapore, Singapore), **Rambha Rai** (Paediatric Surgery, KK Women and Children's Hospital, Singapore, Singapore)

**Aim:** We report a case of Currarino syndrome that initially presented as right gluteal cellulitis with abscess formation. We also discuss the diagnostic and therapeutic challenges faced when managing such case.

**Case description:** A 7-months old girl with no significant past medical history presented with a recurrent right gluteal abscess and fever for which underwent 2 incision and drainage procedures. She subsequently returned with severe fecal loading, right gluteal abscess recurrence, and septic shock. After adequate resuscitation, extensive workup, including contrast enema and MRI, revealed a sacrococcygeal tumor, causing anal stenosis with multiple fistula tracts and abscesses in pelvic, perianal, and gluteal regions. Genetic testing later confirmed the diagnosis of Currarino syndrome. Treatment comprised of multiple staged procedures: a diverting colostomy creation, followed by resection of sacrococcygeal tumor, drainage of abscesses, excision of fistula tracts, and serial anal dilatation. She had multiple local soft tissue infections requiring prolonged antibiotics courses in between procedures, delaying her recovery pace. She is now 19 months old, on close multidisciplinary surveillance, awaiting reversal of colostomy.

**Conclusion:** Currarino syndrome is a rare congenital disease characterized by the presence of a sacral defect, a presacral mass, and anal atresia or stenosis. Atypical presentations of this syndrome can be difficult to diagnose. They often require extensive workup and multidisciplinary care.

## Effect of bleomycin injection in pediatric patients with lymphatic malformation occurring in the base of the tongue

**Fatma Ozcan Siki** (Pediatric Surgery, Selcuk University Faculty of Medicine, Konya, Turkey), **Mehmet Sarikaya** (Pediatric Surgery, Selcuk University Faculty of Medicine, Konya, Turkey), **Tamer Sekmenli** (Pediatric Surgery, Selcuk University Faculty of Medicine, Konya, Turkey), **Metin Gündüz** (Pediatric Surgery, Selcuk University Faculty of Medicine, Konya, Turkey), **Ilhan Ciftci** (Pediatric Surgery, Selcuk University Faculty of Medicine, Konya, Turkey)

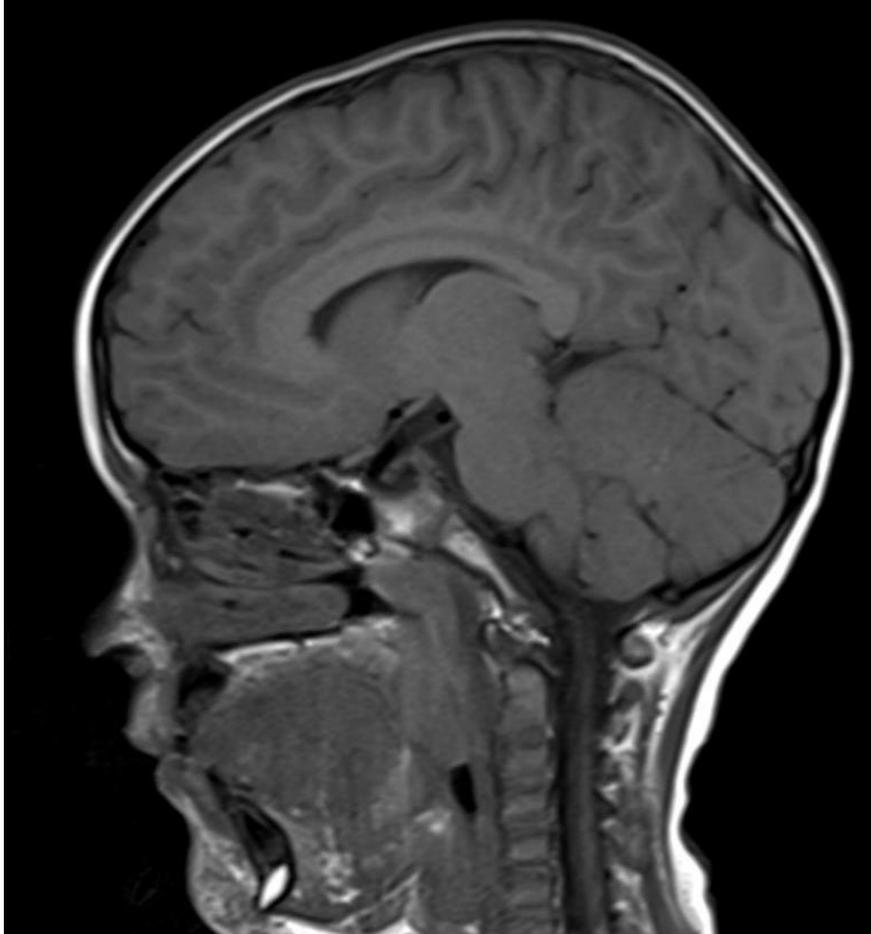
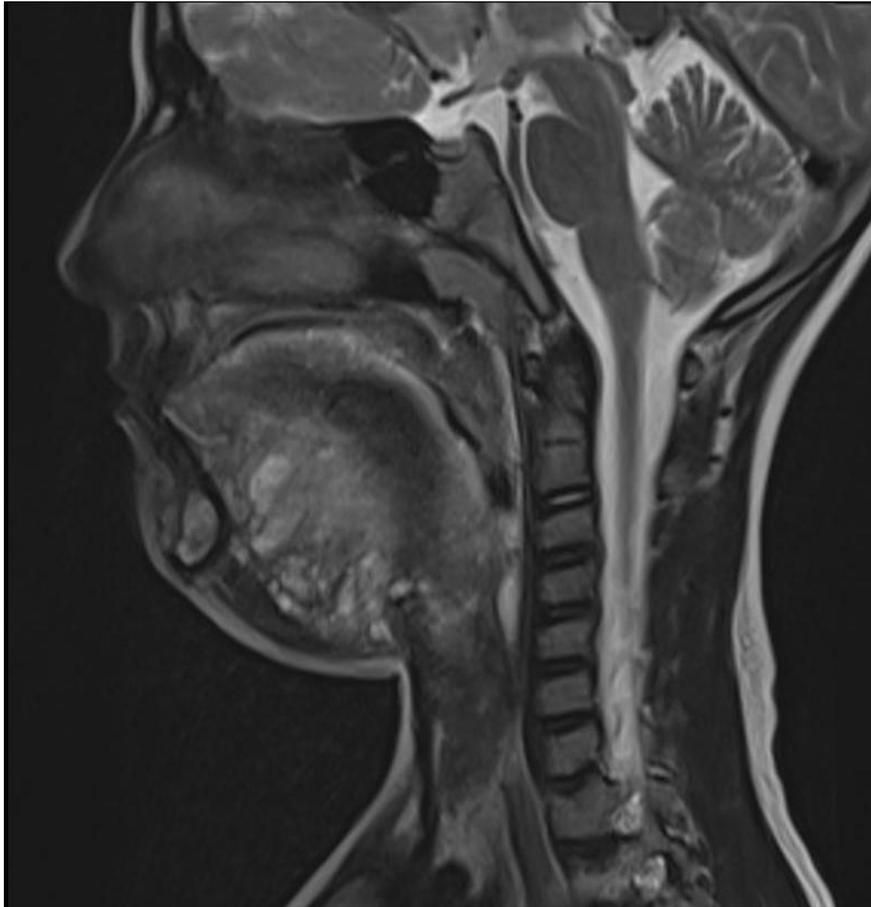
**Aim:** Lymphatic malformations (LM) are rare congenital anomalies. The traditional treatment is surgical excision, but intralesional sclerosing agent (bleomycin) injection is now preferred because of the high complication rate, frequent recurrences after surgery and poor cosmetic results. The results of sclerosant injections made in various localizations have been shared in the literature, but the information about the injection to the tongue root and its results is very limited, especially in children. We present our results of sclerosant injection into the LM at the neck and the base of the tongue.

**Methods:** We analyzed the children who were treated for LM occurring in the root of the tongue. The lesion sizes of the patients who underwent sclerosing agent (Bleomycin) injection under general anesthesia were recorded before and after the treatment.

**Results:** There were two patients who underwent sclerosing agent injection to the neck and base of the tongue. Patient 1; An 9-year-old male patient presented with LM on the tongue base and left side of the neck. The patient had speech difficulties. With the repetitive sclerosing agent injection, there was a decrease in the size of the LM and regression in his complaints. Patient 2; A 7-month-old male patient had LM at the base of the tongue and under the left mandible on the left side of the neck. The patient was unable to feed orally and had growth retardation due to the mass. With the repetitive sclerosing agent injection, there was a decrease in the size of the LM and regression in his complaints.

**Conclusions:** Root of tongue LM, which is a very rare site in children, can be successfully treated with intralesional sclerosant injection by experienced professionals.

**Keywords:** lymphatic malformation, sclerotherapy, bleomycin, tongue



## Breast tubular adenoma in a female adolescent

**Ioanna Gkalonaki** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Michail Anastasakis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Christina Panteli** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioannis Patoulis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece)

**Aim of the study:** Breast tubular adenoma (BTA) is a rare, benign, usually round lesion, formed by proliferation of tubular structures composed of typical epithelial and myoepithelial cell layers. Growing in size, despite being asymptomatic, constitutes an indication for surgical intervention. Surgical excision of BTA is indicated for the establishment of final diagnosis and to prevent continuing growth. Herein we present a case of a BTA in a 13-year-old female adolescent.

**Case description:** A 13-year-old girl was referred to the outpatient department of our clinic due to a painless, pulsatile mass in the lower-outer quadrant of the right breast, which was observed by the patient two years prior. An ultrasound examination was performed, which highlighted the presence of a solid, hypoechoic, well-defined mass, with the presence of vascularization and without calcifications, with dimensions of 45 x 42 mm, located in the lower-outer quadrant of the right lobe. Complete surgical resection of the lesion was performed, under general anesthesia. The diagnosis of tubular adenoma was substantiated histologically.

**Conclusions:** Breast tubular adenoma is a rare, benign tumor, usually found in women of reproductive age. No association with breast cancer development has been reported. Surgical resection is indicated, even in the absence of symptoms, to prevent further increase in its size, as well as compression effects. Finally, the histopathological examination establishes the diagnosis in most cases.

## Giant lung abscess successfully managed conservatively: a case report

**Michail Anastasakis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioanna Gkalonaki** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Christina Panteli** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece), **Ioannis Patoulis** (First Department of Pediatric Surgery, General Hospital “G. Gennimatas”, Aristotle University of Thessaloniki, Thessaloniki, Greece)

**Aim of the study:** Lung abscesses are managed surgically when the conservative treatment fails or in case of congenital or acquired pathology, large abscess size (> 4 cm), sepsis, worsening infection, massive hemoptysis and ARDS development.

The purpose of this study is to share our experience in the successful conservative treatment of a lung abscess with a diameter of 6.5 cm in a six-year-old boy.

**Case description:** A 6-year-old boy was admitted to our clinic due to a large radiopaque formation at the height of the right upper and middle lobe. The patient was already hospitalized in a pediatric department due to a lower respiratory infection. Contrast-enhanced CT is performed, to achieve diagnosis. A thick-walled cavity of 6.5 x 4.1 x 5.6 cm in the upper and middle lobe of the right lung is found, with the presence of an air fluid level, without underlying pathology in the pulmonary parenchyma. The inflammatory markers were affected, while pneumococcal antigen was not detected in the urine.

Aggressive conservative treatment with intravenous ceftriaxone and vancomycin along with respiratory physiotherapy followed.

The patient’s clinical, laboratory and imaging improvement was remarkable since day 5 of hospitalization. The patient was discharged on day 21, with complete elimination of the abscess.

**Conclusions:** After comprehensive research of the relevant literature, there are very few published cases of large abscesses treated conservatively. Keys to a successful outcome were the ability to remove secretions by coughing, respiratory physiotherapy assistance, and the endobronchial drainage of the abscess, allowed by adequate communication with the bronchial tree.

## The results of selection of tactical approaches in treatment of splenic cyst in children according to remote monitoring changes

**Vasyl P. Prytula** (pediatric surgery, Bogomolets National Medical University, Kyiv, Ukraine), **Andriy S. Kuzyk** (pediatric surgery, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine), **Faizullah S. Hussaini** (pediatric surgery, Bogomolets National Medical University, Kyiv, Ukraine), **Taras G. Gutor** (Danylo Halytsky Lviv National Medical University, Lviv, Ukraine), **Andriy Y. Nakonechnyy** (pediatric surgery, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine)

**Aim:** evaluate results of selection of tactical approaches (surgical correction or conservative management) in treatment of splenic cyst SC in children according to remote monitoring changes.

**Methods:** A retrospective analysis of 265 children with SC was done who underwent diagnosis and treatment, aged 1 month to 18 years (mean age  $11.25 \pm 4.21$  years). 175 ( $66.04 \pm 2.91\%$ ) patients were operated, and 90 ( $33.96 \pm 2.91\%$ ) were treated conservatively.

**Results:** 119 (68.00%) laparotomic and 56 (32.00%) laparoscopic interventions were performed in patients with different segmental localization of SC. From 190 Laparotomic approach in 12 partial cystectomy, partial cystectomy with capitonage in 36, partial resection of spleen in 70 and splenectomy (for total cystic lesions of the spleen) in 1 child. Recurrence of cyst was observed in 2 (1.68%), which was corrected by redo laparotomy with partial cystectomy and capitonage. From 56 with laparoscopic approach partial cystectomy in 31, partial cystectomy with capitonage in 21 and partial resection of spleen in 5 children. Cyst recurrence was noted in 3 (5.36%). Which required redo surgery in one case we corrected laparoscopically and in 2 – by laparotomic surgery. In 9 (7.56%) after laparotomy and in 7 (12.50%) – after laparoscopic correction of SC in remote period there was a minimal residual cavity of cyst, which regressed in dynamics monitoring for 1-2 years. In general, after surgical correction or conservative management, residual cyst was detected in  $46.42 \pm 3.06\%$  of patients, which underwent complete regression within 1-3 years. Residual cyst of small size (which persisted after surgical correction) regressed much faster than small SC ( $p < 0.05$ ) which were managed conservatively.

**Conclusion:** The results of selection of tactical approaches (surgical correction or conservative management) in treatment of SC in children depend on location, size, relationship to architecture of main vessels and type of lesion of splenic parenchyma.

## Intestinal salvage in a complex case of multiple small and large intestinal atresias

**Devin Hosein** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, Brooklyn, USA), **Billie Borden** (Pediatric surgery, Lenox Hill Hospital, New York, USA), **Sanjana Balachandra** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, Brooklyn, USA), **Crystal Kyaw** (Pediatric surgery, Lenox Hill hospital, New York, USA), **Adam Pihokken** (Pediatric surgery, Lenox Hill Hospital, New York, USA), **Ahmadreza Alizadeh** (Radiology, Lenox Hill hospital, New York, USA), **Kim Williams** (Neonatology, Lenox Hill hospital, New York, USA), **Maryam Saeed** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA), **Francisca Velcek** (Pediatric surgery, SUNY Downstate medical sciences center, Brooklyn, New York, New York, USA)

**Aim:** This case highlights the feasibility of performing judicious bowel resection and anastomoses to prevent short-gut syndrome in a patient with atresia affecting multiple segments of bowel. In cases of colonic atresia, Hirschsprung's disease must be ruled out.

**Case description:** A 32 week gestation baby presented with scaphoid abdomen and bilious nasogastric drainage. Prenatal ultrasound demonstrated distended bowel loops suggestive of intestinal atresia. Abdominal X-ray demonstrated a triple bubble sign, with no progression of contrast from dilated jejunum on upper gastrointestinal series. (Figure 1) Following resuscitation and gastric decompression, laparotomy revealed a very dilated proximal jejunum with types 1, 2, 3A and 4 jejunal atresia, type 4 ileal atresia, absent ileocecal valve with only left micro-colon present with a proximal blind end. (Figure 2) A tapering enteroplasty of dilated proximal jejunum and resection of the blind ends of the atretic segments with primary end to end anastomosis and end ileostomy were performed. A rectal biopsy demonstrated normal ganglion cells, excluding Hirschsprung's disease. Post operative course was satisfactory and rectal irrigation was performed to distend the remaining left colon. Subsequent laparotomy revealed another area of atretic colon which was resected with end-end anastomosis with the prior blind end brought out as a mucus fistula. Ileostomy drainage was fed through the mucus fistula for development and absorption. Contrast enema demonstrated improvement of the microcolon. Finally, an ileocolic anastomosis was performed to re-establish intestinal continuity. Post-operative course was satisfactory and one year follow up, the patient is thriving well.

**Conclusion:** Multiple segment intestinal atresia poses a challenge to prevent short gut syndrome. In such a case every attempt must be made to preserve intestinal length, which may include performing multiple anastomoses. Meticulous surgical technique and excellent peri-operative care, including attention to nutrition is paramount for a successful outcome.



## Acute myelogenous leukemia presenting as acute lower limb ischaemia in a six year old boy

**Michail Anastasakis** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Christina Panteli** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Maria Tachtsi** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Chrysa Nalpantidou** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Emmanouel Hatzipantelis** (General Hospital of Thessaloniki, AHEPA, Thessaloniki, Greece), **Ioannis Patoulis** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece), **Dimitrios Sfoungaris** (General Hospital of Thessaloniki, G. Gennimatas, Thessaloniki, Greece)

**Aim:** Acute lower limb ischemia (ALLI) is one of the most common vascular emergency events. Hematological conditions, especially in pediatric patients, are manifested with a variety of clinical signs and symptoms. Cases of hematological malignancy initially presenting as ALLI in children are scarce.

**Case description:** A six-year old otherwise healthy boy with a recent history of Covid-19 infection presented to our ER complaining of intermittent pain and discolouration in the distal part of his right foot. On examination, the big toe appeared remarkably cyanotic and was cool on palpation. Muscle strength and neurosensory testing of the right foot were normal. On palpation of pulses there was a weak popliteal pulse whereas the dorsalis pedis pulse was absent. A diagnosis of the recently described “covid toes” was initially considered; however triplex Doppler showed absent flow into the anterior tibial, peroneal and dorsalis pedis arteries. White blood cell and platelet count were decreased while d-dimers were remarkably elevated. Subsequently, CT angiography confirmed arterial occlusion of the popliteal artery and parts of the anterior, posterior tibial and peroneal arteries. Low molecular weight heparin was initiated; the patient was closely monitored and treated conservatively. A high index of suspicion of haematological malignancy led to further investigation. Bone marrow aspiration established the diagnosis of acute myelogenous leukemia (AML) type M3, HLA DR negative. The boy is currently receiving chemotherapy while the foot is greatly improved and has required no vascular intervention.

**Conclusions:** AML first presenting with ALLI is uncommon. Only three cases of pediatric patients have been published from 1980 to 2022. To our knowledge our patient is the youngest reported worldwide. ALLI in children, in the absence of known etiology, should raise suspicion of serious underlying pathology. Management by a multidisciplinary team is essential in order to achieve optimal results.

## Rebound of facial hemangiomas after successful treatment with propranolol

**Ulrike Metzger** (Department of Pediatric and Adolescent Surgery, Paracelsus Medical University Hospital, Salzburg, Austria), **Armin-Johannes Michel** (Department of Pediatric and Adolescent Surgery, Paracelsus Medical University Hospital, Salzburg, Austria), **Mircia-Aurel Ardelean** (Department of Pediatric and Adolescent Surgery, Paracelsus Medical University Hospital, Salzburg, Austria), **Roman Patrick Metzger** (Department of Pediatric and Adolescent Surgery, Paracelsus Medical University Hospital, Salzburg, Austria)

**Aim:** Facial hemangiomas (nose, eye lid, lips, region of the parotid gland) have a risk of damage of the surrounding tissue. Therapy is indicated if rapid growth is observed. Because of the potential side effects of LASER- and cryotherapy, propranolol is preferred as first line therapy.

Rebound rates between 13 and 29% are reported. The aim of the study is to differentiate the type of hemangioma with rebounds.

**Method/Patients:** Between 2014 and 2022 we treated 164 children with propranolol, 97 (59.4%) of them in the face, 23 patients were excluded. Our treatment regimen includes lesional ultrasound, cardiological consultation and initiation of propranolol under clinical observation with 1-2mg/kg per day. The dosage is adapted in our outpatient's clinic. Therapy was continued until end of proliferation phase.

**Results:** The overall rebound rate was 17.9 % (n=25/145), 76% concerning facial hemangiomas (n=19/25). Three children had segmental facial hemangioma. 16 patients with rebound showed subcutaneous hemangioma. The treatment was finished between the 10<sup>th</sup> and 17<sup>th</sup> month of age, the rebound occurred between 1 to 5 months after. Three patients received a second course of propranolol without effect. Two patients underwent Nd:YAG-LASER treatment with minimal effect.

**Conclusion:** Rebounds appear seldom if therapy is proceeded until the end of proliferation phase in a controlled concept. 64% of rebounds in this series affected patients with a subcutaneous facial hemangioma.

Propranolol was started early between 3 and 6 months of age, so the onset of treatment is probably not the reason for rebound. All hemangiomas showed an excellent regression during the treatment with propranolol.

Subcutaneous hemangiomas of the face need a good clinical evaluation. The combination of Nd:YAG-LASER treatment and propranolol might be useful. The initiation of propranolol and LASER therapy could be applied during the initial hospital stay. A comprehensive information of the parents is advisable.

## Are ovarian torsion, fallopian tube, and adnexal torsion all the same?

**Aneta Piotrowska-Gall** (Department of Pediatric Surgery, Urology and Traumatology, Regional Hospital in Kielce, Kielce, Poland, Collegium Medicum, Jan Kochanowski University of Kielce, Kielce, Poland, Kielce, Poland), **Piotr Cierniak** (Regional Hospital in Kielce, Kielce, Poland, Kielce, Poland), **Przemysław Karol Wolak** (Department of Pediatric Surgery, Urology and Traumatology, Regional Hospital in Kielce, Kielce, Poland, Collegium Medicum, Jan Kochanowski University of Kielce, Kielce, Poland, Kielce, Poland)

**Aim:** This study aims to present the characteristic presentation of patients suffering from ovarian (OT), fallopian tube (FTT), and total adnexal torsion (AT) and to analyze the differences.

**Methods:** We conducted a retrospective analysis of patients treated for adnexal torsion in a single pediatric surgery center between 04-2008 and 03-2022. We included 79 girls aged 0-17 (median:12 years old).

**Results:** Majority of cases (n=43) were diagnosed intraoperatively with OT, 29% had AT (n=23) and FTT in 16.5%(n=13). The median age of AT was 11, OT 10.5, and FTT 13 years old. Seven children had torsion in utero, where the only clinical sign was palpable abdominal mass—the remaining girls presented with abdominal pain in 97%, vomiting in 58%. Additionally, two cases with AT presented with constipation, and one girl with FTT had urinary symptoms – which resolved after surgery. In cases of OT, symptoms lasted on average 146.9h (6 days), while in AT 45.7h and 36.2h UTT. Data of performed sonography (US) was available on 71 children. In 28 cases, repeated US was performed. The cystic lesions were visible in 64.7% of AT, 65.8% OT, and 100% FTT. The abnormal flow was detected in 52.9% AT, 44.7% OT and 7.7% FTT. Additionally, asymmetry was detected in 11.8% of AT, 28.9% of OT.

TA was correlated with poorer outcomes. In 43 cases, follow-up US was available, and a functioning ovary was observed in 72.7% of AT and 92% of OT. There were no studies performed for the assessment of fallopian tubes patency. Two girls suffered from repeated OT.

**Conclusions:** There are no significant differences in clinical presentation between OT, FTT, and AT. US studies are an invaluable help in determining the diagnosis of torsion. However, only surgery may provide a distinction between torsed structures. This topic requires further studies, with an analysis of long-term results and risks of infertility.

## Bleomycin-Electrochemotherapy enables a more effective treatment of venous and lymphatic malformations with a lower dosis of bleomycin than conventional sclerotherapy

**Özlem Cangir** (Kinderchirurgie – Zentrum für Vasculare Malformationen (Pediatric Surgery – Center for Vascular Anomalies), Werner Forßmann Krankenhaus, Eberswalde, Germany), **Lutz Meyer** (Kinderchirurgie – Zentrum für Vasculare Malformationen (Pediatric Surgery – Center for Vascular Anomalies), Werner Forßmann Krankenhaus, Eberswalde, Germany), **Susanne Hengst** (Radiologie (Radiology), Werner Forßmann Krankenhaus, Eberswalde, Germany)

**Aim:** Bleomycin-Electrochemotherapy (ECT) is used for the treatment of cutaneous and subcutaneous nodules / metastases in dermatology and in tumorthrapy of the liver. In slow-flow vascular anomalies sclerotherapy with bleomycin is a common approach. Since 09/2020 we treated 100 children with lymphatic (LM) and venous malformations (VM) with ECT and could show a more effective sclerosis and reduction of the disease than with the conventional treatment.

**Methods:** 0,05-0,3 mg/kgBW bleomycin were applicated either into the disease-region in a saline solution or intravenous. After intravenous application 8 minutes were to be waited before performing the electroporation via electrodes to create a pulsed, high-intensity electric field in the malformed tissue. This led to a temporarily increased permeability of the cell membrane for about 40 minutes. In this time bleomycin could flow into the malformed cells.

**Results:** In all cases the volume of the malformed tissue was reduced 4 months after the treatment. Especially in venous malformations the efficacy was impressive in comparison to classical methods of sclerosing.

**Conclusion:** The dosis of bleomycin can be reduced by using ECT for sclerotherapy of slow-flow vascular anomalies which is important to provide lung-damage. Less number of treatments per patient is needed to reduce the malformation in comparison with conventional sclerotherapy.

## POSTER WALK 29

## Miscellaneous 3

## Veil in mouth

**Abirami Krithiga Jayakumar** (Pediatric Surgery, Rainbow Children's Hospital, Chennai, India), **Harish Jayaram** (Pediatric Surgery, Rainbow Children's Hospital, Hyderabad, India), **Mainak Deb** (Pediatric Surgery, Rainbow Children's Hospital, Hyderabad, India)

**Aim:** To present a rare congenital anomaly which can cause feeding issues and failure to thrive.

**Methods:** We present 3 cases of oral synechia. Patients presented in the newborn period with poor mouth opening. The synechiae were divided using cautery with local anaesthetic spray. Case 1 had membranous band between the gums. Case 2 had thick fibrous bands between the incisor region and molar region of the gums, the child had associated cleft palate and micrognathia. Case 3 presented late at 2 months of age with failure to thrive and poor mouth opening. The infant was found to have thick bands in the molar region of the gums. The patients were fed in the immediate post operative period.

**Results:** Case 1 is on 4 year follow up and thriving well. Case 2 and 3 are tolerating oral feeds and are on 2 year follow up.

**Conclusions:** Oral synechiae are a rare presentation. They need a high index of suspicion. They can be managed using local anaesthesia as these patients are high risk for general anaesthesia. Feeding is established early. They need long term follow for cleft palate, Temporomandibular joint anomalies.

## Challenges in Managing Extra- abdominal Desmoid Fibromatosis in children

**Mohd Kamarul Safie** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz UKM, Kuala Lumpur, Malaysia), **Azrina Syarizad Khutubul Zaman** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz UKM, Kuala Lumpur, Malaysia), **Marjmin Osman** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz UKM, Kuala Lumpur, Malaysia)

**Aim:** Desmoid Fibromatosis (DF) is a benign soft tissue tumour, which is locally invasive, does not metastasize but has a high potential rate of recurrence. We report a rare case of extra- abdominal desmoid fibromatosis within the gluteal region.

**Case presentation:** An 8 year old boy presented with a painless left gluteal swelling noticed incidentally. The duration and progression of swelling is uncertain. He denied any associated bowel or bladder symptoms. Physical examination revealed presence of 1 x 2 cm non tender mobile mass on the medial aspect of the left gluteal fold with no skin changes. Ultrasound showed; a well-defined heterogeneous hypoechoic lesion limited to subcutaneous region, measuring 1.4 x 1.8 x 1.4 cm. Cystic areas and vascularity are demonstrated within the mass with arterial waveforms, which may represent a vascular or a soft tissue tumour. MRI showed a subcutaneous nonspecific, likely benign soft tissue tumour, abutting the overlying skin with no deeper extension. He underwent excision of the lesion. A well-circumscribed lump measuring 2 x 2 cm was removed. Histopathological examination revealed a well-circumscribed nodular lesion with a focal infiltration into adjacent fatty tissue. The lesion has low to moderate cellularity and is composed of broad sweeping fascicles of neoplastic spindle cells with an abundantly collagenized background with foci of myxoid change. The characteristic of the neoplastic cells which are relatively uniform, containing vesicular nuclei, fine chromatin pattern, indistinct cellular borders with diffusely positive SMA and Beta-catenin immuno- stain, support the diagnosis of desmoid fibromatosis tumour. The patient has made a good postoperative recovery and has not shown evidence of recurrence 6 months postoperatively.

**Conclusion:** This case highlights the challenge in managing desmoid fibromatosis as usually tissue is required for diagnosis as imaging is often non diagnostic. However with surgical intervention there is a higher risk of recurrence especially in extra-abdominal desmoid fibromatosis.

## A case study of plausible larsen's syndrome at the Yaounde Gyneco-Obstetric and Pediatric Hospital (YGOPH)

**Florence O Obono Ebo** (Yaoundé Gynaecobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Gacelle Fossi Kamga** (Yaoundé Gynaecobstetric and paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Caroline E Dikongue Dikongue** (Yaoundé Gynaecobstetric and Paediatric hospital, Cameroon, Yaoundé, Cameroon),  
**Faustin Félicien Mouafo Tambo** (Surgery and sub-specialties, Yaoundé Gynaecobstetric and paediatric hospital, Cameroon; University of Yaoundé I, Yaoundé, Cameroon)

**Aim:** This study aimed to highlight diagnostic and therapeutic constraints in the setting of a low-income country and to add this rare African case to the world literature.

**Case description:** A 3-days old male newborn presented to us with complaints of malformations of both lower limbs noticed at birth. He was born at term, firstborn to non-consanguineous parents with a birth weight of 3000g. The pregnancy was uneventful. On physical examination, he was found to have multiple bilateral large joints dislocations (hips, knees, elbows); severe bilateral club feet, hyperextension of the legs with the feet over the shoulders at rest, and dysmorphic facial features including hypertelorism and a flat midface. He had neither cleft palate nor spinal dysraphism. Subsequent anteroposterior radiographs of the involved joints confirmed clinical findings. Magnetic resonance imaging and genetic analyses had not been performed. Screening for associated malformations was unremarkable. Treatment commenced by casting both legs with the knees at 90° to correct the bilateral hyperextension of the knee. This strategy was followed by serial casting to correct the club feet as per Ponseti protocol. We proceeded with bilateral tendon Achilles lengthening by Z-plasty for the equinus component and concomitant triple capsulotomy of the ankle and subtalar joints for the varus deformity. After surgery, a long-leg cast in maximal ankle dorsiflexion, external rotation, and forefoot abduction was applied for three weeks followed by stretching of the feet, and nighttime wearing normal shoes on the opposite foot. We prescribed daytime back-carrying of the child to correct the bilateral hip dislocations.

**Conclusions:** Larsen's syndrome should be considered in case of congenital multiple large joints dislocation and confirmed by an imaging study. Orthopedic management should be attempted in the first instance.

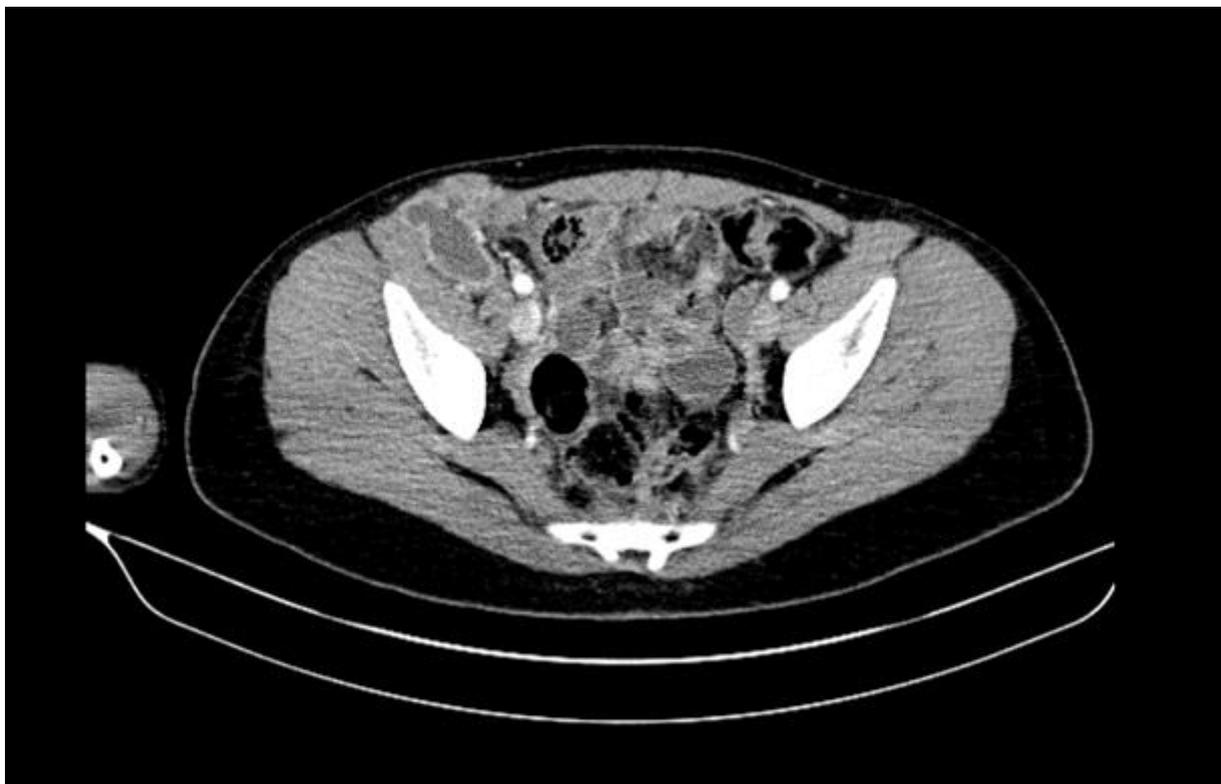
## An unusual presentation of hepatic hydatid cyst: cystosubcutaneous abscess in inguinal region

**Selin Ural** (Pediatric Surgery, Akdeniz University, Antalya, Turkey), **Cem Boneval** (Pediatric Surgery, Akdeniz University, Antalya, Turkey), **Gungor Karagüzel** (Pediatric Surgery, Akdeniz University, Antalya, Turkey), **Mustafa Melikoglu** (Pediatric Surgery, Akdeniz University, Antalya, Turkey)

**Introduction:** Parietal complications of hydatid disease (HD) are rare which involve the subcutaneous tissue and eventually result in cutaneous fistulization. We present a patient with an unusual hepatic HD with a stage 2 parietal subcutaneous abscess in the inguinal region through a retroperitoneal tract.

**Case Description:** A 14-year-old female was examined for progressive abdominal pain on the right side and a painful swelling in the right inguinal region. On physical examination, a mass from the upper right quadrant was palpated which continued to form a mass in the right inguinal region. Abdominal CT showed a 43 x 33 mm hydatid cyst in the 6th segment of the liver forming a tract lateral to the psoas muscle, in the retroperitoneal region resulting in an abscess in the right inguinal region. With serologic tests positive for echinococcus albendazole treatment was started. A drainage catheter was placed into the abscess cavity under ultrasound guidance and 500 ml of purulent fluid was drained. Patient was hospitalized for antibiotic treatment and daily irrigations of the catheter. A high output of 300 ml per day continued until the catheter came out on day 21. Follow up ultrasounds showed no change in size. An elective laparotomy was performed with partial cystectomy and omentopexy. The retroperitoneal tract was partially excised. Drains were placed in subhepatic and inguinal regions, and removed on day 5 and 4 respectively. Early postoperative control after discharge showed no recurrence.

**Conclusions:** Since there are no specific guidelines for the treatment of parietal complications of HD, treatment options should be individualized considering the location of the cyst and the complication itself. As percutaneous drainage was not successful in our patient, surgical treatment may be the initial management strategy in such cases.





## Strangulated ileus due to congenital mesenteric hernia complicated by ovarian cyst torsion in a 3-month-old infant

**Matej Gura** (Clinic of Pediatric Surgery, University Hospital in Martin, Jessenius Medical Faculty in Martin, Comenius University in Bratislava, Martin, Slovakia, Martin, Slovakia), **Marian Molnar** (Clinic of Pediatric Surgery, University Hospital in Martin, Jessenius Medical Faculty in Martin, Comenius University in Bratislava, Martin, Slovakia, Martin, Slovakia), **Kamil Biringer** (Clinic of Gynecology and Obstetrics, University Hospital in Martin, Jessenius Medical Faculty in Martin, Comenius University in Bratislava, Martin, Slovakia, Martin, Slovakia)

**Aim of the study:** Ovarian cysts represent the most common intraabdominal cystic lesions in neonatal period easily diagnosed by ultrasonography, in contrast to congenital internal hernias as rare conditions, usually diagnosed intraoperatively. Although they can be asymptomatic for long period of time, both are associated with high risk of acute complications. Authors tend to emphasize that various combination of congenital anomalies can occur in clinical practice.

**Case description:** We present a case of a 3-month-old infant followed-up for postnatally identified ovarian cyst scheduled for an elective extirpation based on its growth progress. Due to acute development of ileus clinical signs, an emergency laparotomy was conducted. A Treves' field mesenteric defect with herniation of small bowel loops was identified with torqued left ovarian cyst included. Unexpectedly, long ovarian cord as a strangulation band of the herniated bowel was discovered within the defect. Bowel loops reduction, mesenteric defect closure and left adnexectomy due to presence of necrotic changes were done. Due to coincidental finding of malrotation with Ladd's bands a Ladd's procedure was performed. Finally, right ovarian simple cyst was fenestrated. The following postoperative course was uneventful.

**Conclusions:** Our experience supports assumption that congenital internal hernia is predisposed to develop because of anomalies in the intestinal rotation and peritoneal attachments formation. Surgery can be the only way to establish a clear anatomic diagnosis. To the best of our knowledge, it is the first reported case proposing particular unusual combination of congenital anomalies leading to acute intestinal obstruction.

## Infant Enteric Duplication Cysts Should Be Managed Urgently to Avoid Increased Risk of Emergency Surgery

**Joshua J Cave** (Department of Paediatric Surgery, Norfolk and Norwich Hospital, Norwich, UK), **Lipa Lucky** (Department of Paediatric Surgery, Norfolk and Norwich Hospital, Norwich, UK), **Ashish Minocha** (Department of Paediatric Surgery, Norfolk and Norwich Hospital, Norwich, UK), **Yew Wei Tan** (Department of Paediatric Surgery, Royal Manchester Children's Hospital, Manchester, UK)

**Aim:** The clinical presentation of duplication cysts is unpredictable and delayed management can result in morbidity and require emergency intervention. We aimed to determine the incidence of emergency surgery for duplication cysts and its risk factors.

**Methods:** Retrospective review of histopathologically confirmed cases of enteric duplication cysts in the last 11 years was performed. Primary end point was need for emergency surgery and secondary end points were risk factors for emergency surgery: age at diagnosis and antenatal diagnosis. Fisher's exact test was used where appropriate.

**Results:** 10 patients were identified. 7 of these patients were female, 7 of the cysts were jejunoileal. 3/10 cases were diagnosed antenatally though all cases presented symptomatically with either obstruction, bleeding or pain. The duplication cyst was demonstrable on ultrasound in all, though 2 went onto have an MRI. Half of resected cysts contained gastric mucosa and 3 were found to be continuous with bowel lumen.

Overall, 60% of patients underwent emergency surgery with median time to surgery from diagnosis of 7.5 days (1–390). Diagnosis in infancy was associated with higher risk of emergency surgery though this did not reach significance (66% vs. 25%,  $P=0.52$ ). Furthermore, of those managed expectantly there was a significant minority of 28% needing emergency surgery during median follow up of 13 months (3–108). Similarly, of patients diagnosed antenatally, 33% needed emergency surgery. There were no major operative complications in this series.

**Conclusions:** All enteric duplications carry a risk of needing emergency surgery and this is highest when diagnosed in infancy, therefore all children with a duplication cyst should be considered for expedited surgery.

## Routine Pathological Examination of Inguinal Hernial Sacs in Children: Is It Necessary?

**Sara Al-Adawi** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Farman Ali** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Hilal Al Miskry** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Dhruva N Ghosh** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Zainab Al Balushi** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Asma Al Shehi** (Pathology, Sultan Qaboos University Hospital, Muscat, Oman), **Rana Al Maqbali** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Mee-rah Al Hinai** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Salama Al Khanjari** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman), **Bashar Dawud** (Surgery, Sultan Qaboos University Hospital, Muscat, Oman)

**Introduction:** Hernial sacs are being routinely sent at our hospital for histopathological examination despite the rarity of finding abnormalities that alter the course of treatment in the paediatric population. The purpose of this study is to assess the incidence of abnormal findings on histopathology examination of hernial sacs and analyse the cost effectiveness of this practice.

**Methods:** Medical records of all children aged 0-12 years that underwent inguinal hernia or hydrocele repair at the Sultan Qaboos University Hospital between 1<sup>st</sup> of January 2009 and 31<sup>st</sup> of December 2018 were reviewed. Final histopathology reports of all the hernial sac specimens from these surgeries were analysed for significant abnormal finding. The cost of processing a hernial sac for histopathology was estimated along with the time taken to process a report.

**Results:** A total of 737 inguinal herniotomies were performed on 454 patients between 1<sup>st</sup> of January 2009 and 31<sup>st</sup> of December 2018. Five hundred and seventy two (71.8%) sacs were sent for histopathology. Histopathological findings were reported in 80 sacs (14%). The abnormalities included mesothelial hyperplasia, granulation tissue, lipoma and a dermoid. None of the sacs had any malignant or dysplastic changes.

The estimated time taken for producing a histopathological report was 65 minutes. The estimated cost of producing a histopathology report for one specimen as per purchasing power parity was 312.90 USD.

**Conclusion:** Routine histopathology examination of hernia sac in children does not seem to be necessary as no significant pathological findings were found in our cohort. The costs and time saving to the hospital as well to the patient could be significant.

The decision to submit the specimen for histopathology should be based on abnormal intra-operative findings.

## Perforated Acute Appendicitis Presenting as Pneumoperitoneum in a Pre-Term neonate

**Ghaida AlAbidi** (KSMC, Riyadh, Saudi Arabia), **Mohammed Mallick** (KFMC, Riyadh, Saudi Arabia), **Abdulrahman AlWahbi** (KSMC, Riyadh, Saudi Arabia), **Ali AlAmeer** (KFMC, Riyadh, Saudi Arabia)

**Aim:** To improve the outcomes of the neonatal appendicitis. To keep high index of suspicion and to consider acute appendicitis in the differential diagnosis in neonatal age group.

**Case description:** Appendicitis is a common cause of acute surgical abdomen in children and adults but very rare in infants and neonates. Preoperative diagnosis of acute appendicitis is difficult in the neonatal age group, and it's associated with high morbidity and mortality. If perforated, it rarely presents with a significant pneumoperitoneum in the radiograph. We report a 15 days old premature female presented clinically with irritability and abdominal distention. In plain abdominal x-ray, there was notable pneumoperitoneum. At the operating room, the surgical exploration revealed perforated acute appendicitis

**Conclusions:** Acute appendicitis is a rare entity in the neonatal period, and it has a vague clinical presentation which makes the timely clinical diagnosis challenging. Delayed diagnosis and management may lead to high morbidity and mortality.

## Prevalence of child sexual abuse and sexual abuse in society – anonymous survey during public lecture

**Bhawna Bhawna** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India), **Shilpa Sharma** (Pediatric Surgery, All India Institute of Medical Sciences, New Delhi, New Delhi, India)

**Introduction:** Child abuse occurs in all cultural, ethnic, and income groups. Child abuse can be physical, emotional – verbal, sexual or negligent. However, sexual abuse is kept under wraps. Very little research is being done in this area. A Public Lecture /CME /CNE on child abuse was held on 12<sup>th</sup> November 2019 by the Department of Pediatric Surgery, All India Institute of Medical Sciences, New Delhi. We aimed to know the prevalence of sexual abuse in the society.

**Method:** A survey was circulated to know the prevalence in the society.

**Results:** A total of 268 people answered the questionnaire. There were 40 males and 228 females. The population was Urban: Rural in 193: 75. An incident of abuse was reported in 100 people out of 268 (38%). The abuser was a relative: friend: unknown: neighbour in 13: 05: 73:16. The minimum to maximum was 1–27 years. 221 had travelled by local bus and 88(40%) had faced abuse while travelling. 113/268 (43%) had been stalked. 57/224 (26%) who travelled by metro train had experienced abuse. 76/268 (30%) had faced abuse in local markets. 34/268 (13%) had faced abuse in schools. While only 38/268 people felt their city is safe, 115/268 (43%) felt unsafe in the city and 71 did not know what to answer. When asked what they felt was the scenario 10 years back, 23 felt it must have been safe earlier, 89 (34%) felt must have been unsafe while 152 did not know the answer. When asked whether they themselves had been guilty of abuse, 14 /268 (6%) answered in affirmative, 248 negated and 6 did not answer.

**Conclusion:** Child sexual abuse is prevalent in society up to 38%. Public awareness lectures are an important means to eradicate this menace.

## Pulmonary hydatidosis: Are complicated cysts associated with higher post-operative morbidity?

**Nesrine Chebil** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yasmine Houas** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Senda Houdi** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Ghada Habachi** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Nada Sghairoun** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia)

**Aim:** The lung is the most common location of hydatid cyst in children. Delay in diagnosis can cause complications. We aimed to compare post-operative complications between patients with intact cysts and those with complicated ones.

**Methods:** We performed a retrospective study including patients treated for pulmonary hydatidosis in pediatric surgery department "A" of the Children's Hospital "Béchir Hamza" of Tunis between January 1st 2005 to December 31st 2018. Demographic data, clinical features, radiological findings, surgical techniques, outcomes and complications were reviewed.

**Results:** One hundred and fifteen patients were included with a male predominance (sex-ratio = 1.94). The average age was 7 years and 6 months [3–15 years]. Cough (61%) and chest pain (59%) were the most common clinical features. The hydatid cyst was fortuitously discovered in 5.2% of cases. The physical examination was non-specific. Chest x-ray confirmed the diagnosis in 78.2% of patients. The cysts were complicated in 31.3% of cases. All our patients had a conservative treatment with capitonnage and drainage. Postoperative complications were observed in 23 patients (20%). Eighteen patient developed a pneumothorax (78.2%). Three among them required a drainage. An atelectasis was observed in 3 patients (13%). One of our patients has developed a subcutaneous emphysema. A chylothorax was noted in one patient and was managed conservatively. The study of correlation between characteristics of the cyst and postoperative course showed that complicated hydatid cysts were significantly associated with longer hospital stay (9[7-14] vs 20[9-58]p=0.0008), longer post-operative stay (6 [5-7] vs 15 [5-32]p=0.001) and longer drainage duration (8 [4-14] vs 13[4-21], p=0.01). Whereas, there was no significant difference in complication rate (10 vs 13 p=0.6) and recurrence (4 vs 2 p=0.8) between patients with intact and complicated cysts.

**Conclusions:** According to our data, complicated cysts are not significantly associated with higher post-operative morbidity.

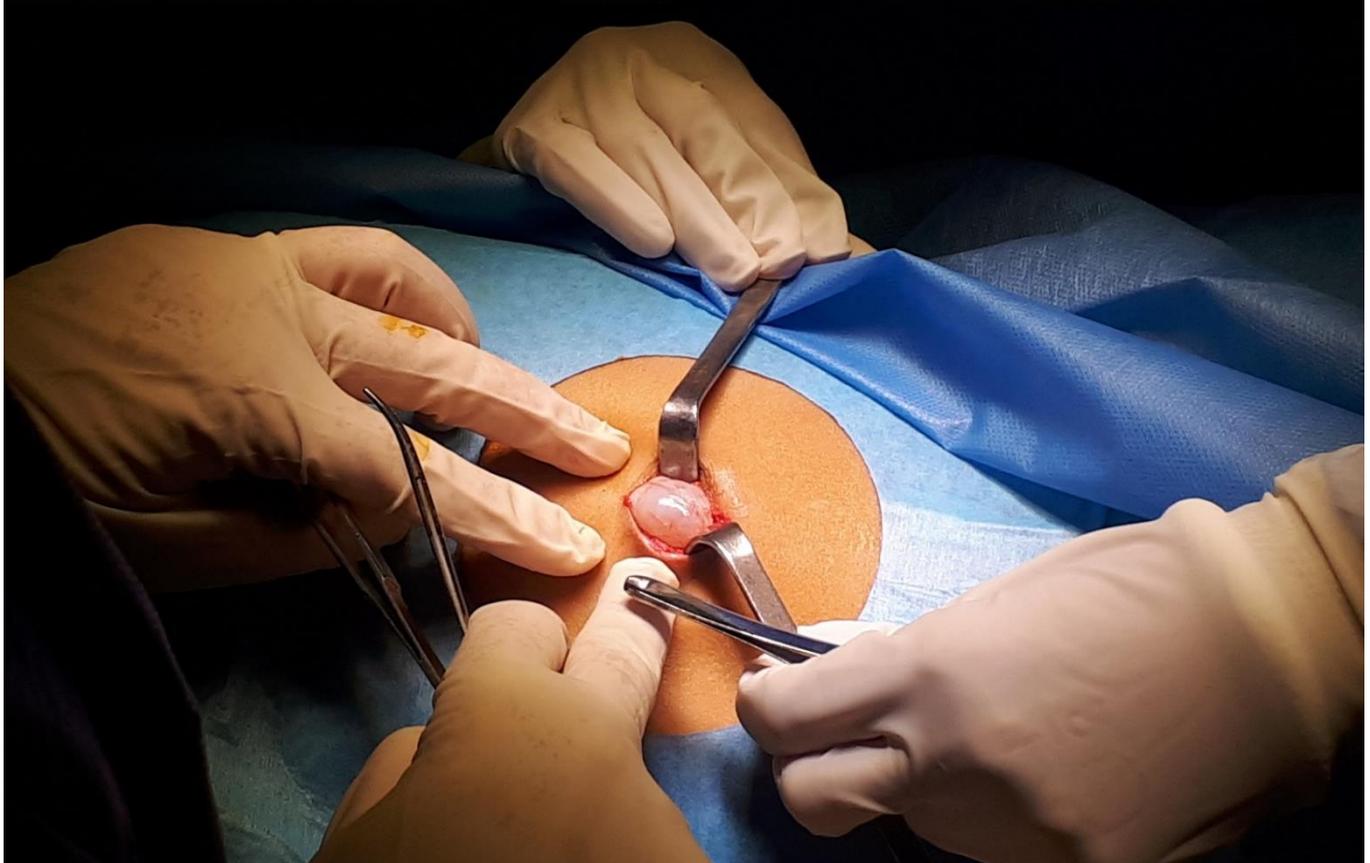
## A very unusual localization of hydatid cyst in a child

**Nesrine Chebil** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Nada Sghairoun** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yasmine Houas** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yosra Mansouri** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Yosra Kerkeni** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia), **Riadh Jouini** (Pediatric surgery A, Children's hospital Bechir Hamza of Tunis, Tunis, Tunisia)

**Aim:** Hydatidosis is an endemic parasitic disease in Tunisia. In children, lungs and liver are most commonly involved, while involvement of other sites in the body is uncommon. Herein we report the case of a hydatid cyst of the trapezius muscle in a 9-years old girl revealed by a mass.

**Case Description:** A 9-year-old girl otherwise healthy was referred to our department for slow-growing painless mass of the right shoulder. Physical examination found a well-defined oval swelling of 4 centimetres. This mass was non-tender and firm. The skin was normal; no signs of inflammation were noted. Ultrasonography examination showed a unilocular cystic mass located in the right trapezius muscle strongly suspicious of a hydatid cyst. This formation was non vascularized and had double membrane (figure 1). Chest x-ray was normal. An abdominal ultrasonography was performed and showed a hepatic hydatid cyst. Thus, the diagnosis of hydatidosis with double localization was confirmed. One stage surgery was performed. Trapezius cyst was operated first. The patient was initially placed in left lateral position. A complete surgical resection of the cystic was performed with careful dissection as to avoid cyst rupture (figure 2). Hepatic cyst was operated secondary as the patient was placed in supine position. The postoperative course was uneventful and the patient was discharged from hospital on day 4 post-operatively. No recurrence occurred after 12 months of follow-up.

**Conclusion:** Muscular localization of hydatid cyst is very rare, yet, it must be suspected in endemic countries. Complete surgical resection of the cyst is crucial to prevent recurrence.



## Treatment of perforated appendicitis in children: multicentric study

**Klára Borůvková** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Charles University, 3rd Faculty of Medicine, Prague, Czech Republic), **Vojtěch Dotlačil** (Department of Paediatric Surgery, Charles University and Motol University Hospital, Second Faculty of Medicine, Prague, Czech Republic), **Dagmar Sovadinová** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Charles University, 3rd Faculty of Medicine, Prague, Czech Republic), **Barbora Nováková** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Charles University, 3rd Faculty of Medicine, Prague, Czech Republic), **Rebeka Pechanová** (Department of Pediatric Surgery, National Institute of Children's Diseases, Comenius University in Bratislava, Bratislava, Slovakia), **Robert Macháček** (Department of Pediatric surgery, Orthopaedics and Traumatology, Masaryk University and the University Hospital Brno, Faculty of Medicine, Brno, Czech Republic), **Milan Machart** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Charles University, 3rd Faculty of Medicine, Prague, Czech Republic), **Tomáš Pešl** (Department of Pediatric and Trauma Surgery, Thomayer University Hospital, Charles University, 3rd Faculty of Medicine, Prague, Czech Republic)

**Aim:** Comparison of the experience in treatment and a determination of a suitable algorithm for the care of patients with perforated appendicitis in order to minimize postoperative complications.

**Methods:** A multicenter prospective study that evaluated the treatment of children with a perforated appendicitis between 1/07/2020-31/12/2021. Four addressed pediatric surgery centers from the Czech and Slovak Republic were included on our study. The study rated the grade of perforated appendicitis, antibiotic treatment, surgical technique (with/without primary drainage), postoperative inflammatory complications (Clavien-Dindo classification) and follow-up.

**Results:** Ninety-four patients in the study were divided into two groups. The first group consisted of 64 (68%) patients with the standardized antibiotic protocol arranged due to previous studies. Postoperative inflammatory complications in the sense of intraabdominal abscess (IAA) were detected in 5 cases (7,84%). None of them undergo primary surgical drainage. The second group included 30 patients who were treated with antibiotics according to the customs of the pediatric surgery centers. A postoperative complication (IAA) occurred in 6 patients (20%). Primary surgical drainage was used in 4 cases. The grade of the perforated appendix did not affect the formation of the IAA. All patients with IAA were treated by antibiotics without the need for surgery. After one month of follow-up intraabdominal complication (IAA in regression) persisted in one patient.

**Conclusions:** In our study we did not find the effect of primary surgical drainage on development of postoperative inflammatory complications. However, it seems that the management of antibiotic treatment is more important for minimizing these complications.

## Do Sonographically Measured Cavity Characteristics Effect Outcome in Pilonidal Sinus Disease in Adolescents?

**Ergun Ergun** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Bilgesu Ergun** (Department of Radiology, Ankara University School of Medicine, Ankara, Turkey), **Sumeyye Sozduyar** (Department of Pediatric Surgery, Elazig City Hospital, Ankara, Turkey), **Kader Gucenmez** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Ufuk Ates** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Meltem Bingol-Kologlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Aydin Yagmurlu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Murat Cakmak** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey), **Suat Fitoz** (Department of Pediatric Radiology, Ankara University School of Medicine, Ankara, Turkey), **Gulnur Gollu** (Department of Pediatric Surgery, Ankara University School of Medicine, Ankara, Turkey)

**Aim:** A number of methods have been described for treatment of pilonidal disease phenol application is one of the minimally invasive methods. In this study, it was aimed that evaluating role of cavity volume measuring by ultrasound preoperatively on predicting primary healing and recurrence in adolescents who underwent phenol application due to pilonidal disease.

**Methods:** Children with pilonidal disease who underwent phenol application were included in the study between 2019–2021. Demographic data, height, weight, body mass index, history of abscess, drainage, antibiotic usage were recorded. Ultrasound was performed for cavity measurements preoperatively and postoperatively. Primary failure and recurrence were evaluated during postoperative period. Logistic regression analysis was performed for predictive factors for primary failure.

**Results:** Fifty children were included in the study. Twenty- nine children were boys and 21 were girls. The mean age was 15.5 years and mean weight was 79 kgs. Total closure of the sinus was achieved 29 children (58%). Children who had primary failure had higher mean body weight, higher mean preoperative cavity volume on the ultrasound and higher mean of horizontal length (Table 2). Horizontal length of the cavity ( $\geq 3$  cm) was the independent positive predictive factor for primary failure in logistic regression analysis ( $R^2=0.53$ , O.R=7.8). Cavity disappeared in nine children on the ultrasound one month later following the procedure. The mean follow up was 15 months (6–36 months). Recurrence was occurred in six of them.

**Conclusions:** Volume of the cavity on the ultrasound especially horizontal length of the cavity may be a useful parameter to predict the outcomes of phenol application treatment in pilonidal disease.

## POSTER WALK 30G

## Various 3

## Anorectal Malformation with A “Twist”

**Gilbert Peh** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia), **Mohd Khairulnauar Shaari** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia), **Muhammad Azri Iskandar** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia), **Azrina Zaman** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia), **Rufinah Teo** (Anaesthesiology, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia), **Erica Yee Hing** (Radiology, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia), **Marjmin Osman** (Paediatric Surgery, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, Malaysia)

Anorectal malformation (ARM) is a commonly encountered congenital anomaly and can present with a wide range of associated conditions. We present a case of anorectal malformation associated with a rotational anomaly where a dilated sigmoid colon was found to be fixed to the right lateral abdominal wall, displacing the floating caecum towards the left of the abdomen.

A term newborn male infant born with imperforate anus with no perineal fistula. Antenatally, there was dilated distal bowel with beaking towards buttock region noted. There was no meconuria up to 24 hours of life when he underwent a planned diversion sigmoid colostomy. A left lower quadrant incision was made. Intraoperatively the dilated caecum was noted to be occupying the left lower quadrant instead. The incision was extended to a full laparotomy to rule out associated rotational anomaly. He was found to have a significantly dilated sigmoid colon extending up to the right upper quadrant and fixed to the right lateral abdominal wall pushing the caecum to the left, resulting in a twisted configuration of large bowel similar to situs inversus (figure 1). The duodenojejunal junction was in normal position and the small bowel was not dilated. Incidentally he was noted to have a patent urachus (figure 2) and a rectourethral fistula was identified during urinary catheter insertion. The large colon was mobilized and repositioned to normal configuration. Caecopexy was performed at right lower quadrant after appendicectomy and a loop sigmoid colostomy was created in left lower quadrant. Patent urachus was excised and patient was discharged on post operative day 5.

This case highlights the rarity of anatomical variant in congenital anomalies such as anorectal malformation where an abnormal fixation of the sigmoid colon resulted in a closed loop obstruction of the distal bowel, necessitating a laparotomy to complete the mobilization and decompression.

