ABSTRACT BOOK

ESPES

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Hospital Germans Trias I Pujol

ABSTRACT BOOK

XII ESPES ANNUAL CONGRESS

SESSION I GASTROINTESTINAL 1

CHAIRMEN: MANUEL LOPEZ (ES) AND LUCAS MATTHYSSENS (BE)

08.15 - 08.20

(87) **Endoscopic treatment of duodenal membrane in one year old boy.** Barbora Spakova, Marian Molnar, Dalibor Murgas, Michal Demeter. Department of Pediatric Surgery, University Hospital Martin. Martin. Slovakia.

Introduction: CPDO (congenital partial duodenal obstruction) is a rare congenital condition with an estimated incidence of 1:10 000 - 40 000 live births. It is believed to be caused by alteration of the mechanism of recanalization of duodenum during embryonal development between 8th and 10th week of gestation. The most common site of obstruction is the second portion of duodenum. The size of the aperture within the membrane can vary causing variable degrees of obstruction. Diagnosis of partial duodenal obstruction is often delayed, as symptoms can mimic other conditions. Traditional management of this anomaly is surgical – bypass or resection of the mucosal membrane. Although endoscopic treatment has been reported as a successful treatment option lately.

Methodology: The authors present a case report of one year old boy with hematemesis after gastroenteritis and abnormal passage through the gastrointestinal tract with stagnation of content in the duodenum, according to imaging studies a duodenal membrane was suspected. With surgical team on a standby, endoscopic stricturoplasty was performed in combination of balloon dilatation and membrane incision. Postoperative course was uneventful, peroral feeding started the same day, the patient was discharged on the 3rd post op day.

Discussion: Natural Orifice Endoluminal technique (NOEL) is defined as any endoscopic technique to treat CPDO without the need of laparoscopic or open surgery. It was first performed in child by Okamatsu in 1989. Since then, several techniques have been reported, including using sphincterotome, laser ablation, impedance controlled bipolar diathermy. NOEL technique is currently considered effective, safe, and feasible in the majority of children without the need to open or laparoscopic approach thus avoiding the risks involved in surgical treatment.

08.20 - 08.25

(55) **Laparoscopic Roux-en-Y cysto-jejunostomy in a complicated Pancreatic Pseudocyst following SARS-CoV-2 virus pancreatitis in a child.** Mehmet Arda, Araz Huseynov, Huseyin Ilhan. Eskisehir Osmangazi University, Faculty of Medicine, Department of Pediatric Surgery. Eskisehir. Turkey.

Introduction: Pancreatic pseudocyst (PPC) is the rare complication of pancreatitis. Unlike to adults, it is ensued due to malunion of pancreatic ducts, autoimmune or frequently post-traumatic. During follow up although PPC might resolve by conservative treatment, interventional approaches may be necessary. Recently, endoscopic or percutaneous drainage have been the first line treatment, however, in case of >6 cm or complicated cyst, surgery may be inevitable. In this study laparoscopic Roux-en-Y cysto-jejunostomy (LRYCJ), to complicated PPC that did not respond to percutaneous drainage, has been presented.

Presentation: A 15-year-old boy had been admitted to state hospital with the complains of vomiting, epigastric pain two weeks after SARS-CoV-2 (SARSC2) virus infection. He has been following due to Autism.
Initially he had been treated conservatively due to pancreatitis. One month after, PPC (20 mm) distal to pancreas had been specified. He was referred to our department as the cyst got bigger (75 mm) with recurrent complains. No ductal connection was identified however thrombosis of splenic vein, dilated collateral and distal esophageal variceal veins was detected. Ultrasound guided percutaneous drainage has been performed however two weeks after, 95*75 mm PPC at the same location was detected.

LRYCJ was performed with four ports via suspending stomach and transvers colon. While Roux-en-Y has been performed through expanded umbilical incision cysto-jejunostomy was intracorporeally performed. Penrose drain was left close to cysto-jejunostomy. Oral feeding has begun on postoperative day two, drain was removed on day 3. Fullfed and discharged on postoperative day 4. Patient did well after a follow up of 3 months.

Consequently, our case is the first reported PPC following pancreatitis owing to SARSC2 virus infection. Even endoscopic or percutaneous drainage is the most preferred approach for PPC, in case of large cyst or complicated ones, cysto-jejunostomy could be applied by minimally invasive approach in children also.

08.25 - 08.32

(36) **“Forme Fruste” Choledochal Cyst: Is Laparoscopic Hepatico-jejunostomy Feasible and Safe?** Ankur Mandelia, Rohit Kapoor, Pujana Kanneganti, Pratibha Naik, Anju Verma. SGPGIMS. Lucknow. India.

Objectives: Forme fruste choledochal cyst (FFCC) is defined by minimal dilatation of the common bile duct (CBD) with pancreatico-biliary malunion (PBMU). Treatment of choice for FFCC is complete excision of extra-hepatic biliary tree, followed by Roux-en-Y hepatico-jejunostomy (HJ), which eliminates persistent pancreatico-biliary reflux and prevents complications. We describe a case of a 5-year-old boy with FFCC who underwent laparoscopic HJ.

Methods: A 5-year-old boy presented with recurrent episodes of pancreatitis for the past 6 months. Ultrasonogram (USG) and MRCP showed prominent CBD with 2 calculi at lower end without significant upstream dilatation; with PBMU with long common channel (>2 cm). ERCP balloon sweep with stone retrieval with biliary stenting was performed. The boy was discharged home in healthy condition on oral antibiotics.

Results: A repeat USG after 6 weeks showed a prominent CBD with no upstream dilatation with no calculi in CBD or gallbladder with stent in situ. The patient underwent laparoscopic intra-op cholangio-pancreatography (IOC) which confirmed mild fusiform dilation of CBD with PBMU with a long common channel. Laparoscopic excision of FFCC with Roux-en-Y HJ was performed using 4 ports. Diameter of biliary-enteric anastomosis of 1 cm was achieved by cheatling the common hepatic duct (CHD). Operating time was 380 minutes with minimal blood loss. Post-operatively, the boy was allowed oral feeds from POD 2. Drain was removed on POD 5 and he was discharged home on 5th post-op day. At 3 months follow up, he is asymptomatic with normal liver function tests and USG with hepato-biliary scintigraphy showing normal clearance.

Conclusions: The treatment of choice for FFCC in children is excision of CBD with HJ. Laparoscopic management of FFCC has not been reported in literature previously. Our case demonstrates that laparoscopic treatment for FFCC is feasible, safe and effective. There is minimal surgical morbidity if performed carefully.

08.32 - 08.39

(39) **Laparoscopic Heller's Myotomy with Dor Fundoplication for Achalasia Cardia in Children: Surgical Technique and Preliminary Results.** Ankur Mandelia, Pratibha Naik, Pujana Kanneganti, Rohit Kapoor, Anju Verma. SGPGIMS. Lucknow. India.

Aims: To evaluate the safety and efficacy of laparoscopic Heller's myotomy with Dor fundoplication for achalasia cardia in children.

Methods: 6 children with achalasia cardia (median age & weight: 168 months and 25 Kgs; 3 boys and 3 girls; median duration of symptoms: 30 months) underwent laparoscopic Heller-Dor procedure (LHD) between July, 2021 and March, 2022. The diagnosis was confirmed by upper gastrointestinal contrast series, endoscopy and manometry in all. Only one patient had been previously treated by pneumatic dilatation. LHD procedure was performed using 5 ports. After exposing 6 to 7 cm of the lower esophagus, myotomy was performed using hook cautery for about 6 cm above the GE junction and onto the gastric wall for about 2.0–2.5 cm. An anterior partial 180 degree (Dor) fundoplication was then performed using non absorbable sutures. Naso-gastric tube was removed at the end of the procedure and patients were fed on the morning of the first post-operative day.

Results: Median operating time was 145 minutes. There were no intra-operative complications or conversions. All patients resumed normal diet within 60 hours. Intra-venous analgesia could be stopped within 24 hours in all children. Median hospital stay was 48 hours. At a median follow-up of 4 months, there was no residual dysphagia or GER in any patient. On comparison of data between patients who underwent laparoscopic vs. open procedures (2014-2021) in our unit, no significant difference was noted in intra-op complications or outcomes. However, patients undergoing LHD procedure had significantly shorter time to full feeds, lesser requirement of analgesia and shorter hospital stay.

Conclusions: LHD procedure for achalasia cardia is feasible, safe and effective in children with good short term outcomes. With documentation of good long term outcomes, minimally invasive techniques may be adopted as first line approach in treatment of children with achalasia cardia.

08.39 - 08.46

(42) **Heller-Dor procedure in the treatment of pediatric achalasia: long-term outcome from a tertiary referral center.** Rebecca Pulvirenti, Miriam Duci, Luca Provenzano, Renato Salvador, Francesco Fascetti Leon, Stefano Merigliano, Mario Costantini, Piergiorgio Gamba. Pediatric Surgery Unit, Department of Women's and Children's Health, Padua University Hospital. Padua. Italy.

Background: Esophageal Achalasia is a rare condition, scarcely affecting the pediatric population. Endoscopic or surgical treatment is usually required, yet its effectiveness can be hampered by inherited esophageal motility disorders. Thus, long-term follow-up is mandatory to diagnose recurrences and related morbidities. This retrospective study aimed to assess the long-term outcome of children underwent Laparoscopic Heller Dor (LHD) at a tertiary referral Centre.

Material and Methods: Clinical data of children up to 16 years of age and who underwent LHD between January 1996 and December 2020 were prospectively collected in a maintained database. Symptoms were recorded and scored using a dedicated survey. Barium swallow, esophageal manometry and endoscopy were performed before and after the surgical procedure. A minimum follow-up of 12 months was considered.

Results: 27 children with a median age of 14 years (8-16) were included. One patient suffered intraoperative esophageal mucosal lesion, requiring surgical repair. No other perioperative complications were reported and no leak was detected at radiological control. Endoscopic postoperative evaluation was performed in 19 patients; a positive pH-monitoring or presence of esophagitis was found in 2/19 patients (10.5%), without clinical correlation. 23/27 patients (85.2%) reported absence of symptoms at a median follow-up of 49 months (13-232). Due to symptoms recurrence, one patient was successfully treated with pneumatic dilation, while three patients started antiacid oral treatment.

Conclusions: LHD seems to be a safe and long-lasting treatment for achalasia in the pediatric population, providing symptoms' relief and anti-reflux protection. Nonetheless, life-long follow-up is advisable to early diagnose and prevent related morbidities.

08.46 - 08.53

(62) **Minimally invasive splenectomy in children - from mini-laparotomy to use of ICG fluorescence: technical considerations after 25-years experience.** Ciro Esposito, Ugo De Luca, Mariapina Cerulo, Fulvia Del Conte, Sandra Coppola, Francesco Corcione, Benedetta Lepore, Alessandro Settimi, Fiammetta Korsch, Vincenzo Coppola, Maria Escolino. Federico II University Hospital. Naples. Italy.

Background: Different technical aspects of laparoscopic splenectomy (LS) remain controversial for unexperienced pediatric surgeons. This study aimed to review our 25-year experience with pediatric LS and describe tips, tricks, and technical considerations.

Methods: The records of 121 children, undergoing minimally invasive splenectomy in the last 25 years (1996-2021), were retrospectively reviewed. Median patient age was 10.2 years (range 7-17). The patients were grouped according to the period: G1 (1996-2005) included 31 patients undergoing open splenectomy using left subcostal mini-laparotomy (G1a) and 28 receiving LS using supine position (G1b); G2 (2006-2021) included 62 patients undergoing LS using lateral decubitus. A 5-trocar technique was adopted in G1b, with the spleen removed through a Pfannenstiel incision. In G2, we preferred to use lateral decubitus, 10-mm 30° optic, only 4 trocars, and sealing devices. In such cases, the spleen was placed into an endobag, finger-fragmented and extracted through the navel. Furthermore, indocyanine green (ICG) fluorescence was used in the last 4 G2 patients to identify the vascular anatomy.

Results: The median operative time was 65 minutes in G1a, 125 in G1b and 95 in G2. Complications occurred intra-operatively in 14 cases (11.5%): 5 bleedings during dissection (G1b), 4 endobag breakages during spleen removal (G2); 3 spleen capsule breakages during removal (G1a); 2 instrumentation failures (G2). No conversions occurred. Median hospital stay was 6 days in G1a, 4 days in G1b and G2.

Conclusions: LS is a standardized and effective procedure in children and is preferable to mini or conventional open splenectomy. Major complications may occur even in expert hands, mainly during hilar dissection or spleen extraction. Technically, sealing devices and ICG fluorescence were helpful to perform a safer and faster procedure. We believe that lateral decubitus and 30° optic are key points to provide excellent organ exposure and easier dissection of hilar structures.

08.53 - 09.00

(106) **Assessment of endoscopic recurrence and clinical activity after laparoscopic ileocaecal resection in children with Crohn's disease at our center.** Vivien Stercel, Orsolya Kadenczki, Laszló Sasi-Szabó. University of Debrecen, Clinical Center, Pediatrics Clinic, Pediatric Surgical Unit. Debrecen. Hungary.

Introduction: Incidence of pediatric Crohn's disease (PCD) is increasing worldwide. Young age, early need for surgery and inadequate response to biologic therapy are negative prognostic factors. However, indication of ileocaecal resection (ICR) is well-defined, but early and late-term outcome is less analyzed. The aim of the present study is to evaluate the rate of endoscopic recurrence and the changing of clinical activity and medical treatment in children who underwent laparoscopic ICR in our institution.

Patients and methods: We selected all patients with PCD who underwent laparoscopic ICR between 01.01.2014 and 01.11.2021 with at least 0.5 year of follow-up and a retrospective, single-institution study was conducted. Data analysis focused on preoperative and postoperative Pediatric Crohn's Disease Activity Index (PCDAI) values, need for anti-TNF-α therapy before and after the surgery, rate of reoperation and Rutgeerts score (RS). RS was developed to predict post-surgical recurrences at ileocolic anastomosis level via ileocolonoscopy after ICR.

Results: The study population included 11 children. RS was gained from the first postoperative endoscopy done within 5 years after surgery. There were 4 patients with I0, 4 children with I1 and 3 patients with I3 RS, so 7 children were in postoperative endoscopic remission. Preoperative PCDAI was measured 1-3 months before the surgical procedure and postoperative PCDAI was measured 3-5 months after surgery. The average of preoperative PCDAI was 20.5, postoperative average PCDAI was 6.8, which means an almost 15 points clinical improvement during the investigated period. 6 patients needed anti-TNF-α therapy before surgery and only 3 patients needed biologic therapy 3-5 months after surgical procedure. There were not any re-resections needed.
Conclusions: In case of appropriate indication for surgery, laparoscopic ICR is an effective and safe therapeutic choice according to our study. In the future, a prospective multicenter controlled study may confirm our initial favorable results.

09.00 - 09.45

SESSION II: UROLOGY 1
CHAIRMEN: JOSÉ MARÍA ANGULO (ES) AND BOGDAN SAVU (RO)

09.00 - 09.07

(153) **Standards in robotic surgery: ureteral reimplantation in the treatment of ureterovesical junction pathologies in children**. Girolamo Mattioli, Venusia Fiorenza, Marcello Carlucci. IRCCS G. Gaslini. Genova. Italy.

Purpose: To evaluate if the robotic-assisted laparoscopic ureteral reimplantation (RALUR) could represent an effective and safe procedure in the treatment of ureterovesical junction (UVJ) diseases in children.

Patients and Methods: Data about patients treated by dismembered (D-RALUR) or no-dismembered (ND-RALUR) reimplantation in our Unit between June 2020 and April 2022 were prospectively recorded. Data collected were demographic, preoperative, clinical and surgical details, complications and results at short-term follow-up.

Results: Seventy-six renal units (RU) in 58 patients were treated: 56 by D-RALUR and 20 by ND-RALUR. Indications for D-RALUR were: megaureter in 27 RU, VUR associated with diverticula, ureterocele, complicated duplex system or previous reimplantation in 29 RU; ND-RALUR was performed for primary VUR. Fourteen cases were bilateral. Mean age and weight were 3.6 years and 21 Kg. Mean operative time was 146 minutes and 4 robotic arms were used in 86% of cases. Ureteral remodelling was performed in 8 D-RALUR (14%). No intraoperative complications nor conversion were observed. Fifty-three patients (91%) presented complete data at a mean follow-up of 8.4 months. Among these, 39 patients (73.6%) had resolution, while, analysing by single RU, resolution rate was 68% (46/68 RU). Post-operative VUR happened in 12 RU after D-RALUR and were resolved by endoscopic treatment. UVJ obstruction was described in 10 RU: 7 after ND-RALUR (6 treated by ureteral stenting and 1 requiring a temporary ureterostomy) and after 3 D-RALUR (2 treated by ureteral stenting and 1 required a redo D-RALUR). All complicated cases had resolution after the second procedure.

Conclusion: RALUR showed to be feasible in paediatric patients; it maintains the orientation of the ureters, allowing them to be explored endoscopically, with all the advantages of minimally invasive extravesical surgery. The reported lower success rate may be due to a more complex learning curve than those described for other robotic procedures.

09.07 - 09.14

(148) **Ureteropelvic Junction Obstruction (UPJO) by crossing vessels. Long-term results of 41 patients in lower pole vessels transposition (Vascular Hitch). 27 years follow-up**. Cosimo Bleve, Valeria Bucci, Elena Carretto, Enrico Lapergola, Giuseppe Pulin, Marta Peretti, Paolo Cocco, Stefano Mazzoleni, Salvatore Fabio Chiarenza. Pediatric Surgery Unit, Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies AULSS 8 S. Bortolo Hospital. Vicenza. Italy.

Introduction: 'Vascular hitch'(VH) according to Hellstrom-Chapman is now considered a safe and effective alternative approach to pure extrinsic-UPJO with good results in short and medium term. We evaluated very-long term outcomes trying to confirm/to exclude a relation between surgery in childhood and development of hypertension and/or inferior polar hypotrophy during puberty and adulthood.

Material and methods: 338 patients(pts) were treated for UPJO in our Department from 1990 to 2015. 76 underwent to VH for extrinsic-UPJO. We were able to contact 54pts: 41(25males, 16females) accepted to be followed-up. Follow-up included US, MAG-3-scan and arterial blood pressure measurement. Collected data were compared with the preoperative ones by Student t-test. Mean follow-up time was 12,7years (range 6-27); mean age at the assessment was 22,2years (range 13-37). Patients before puberty were excluded. Success was defined by symptoms resolution with improvement in hydronephrosis.

Results: Procedures were performed through laparoscopy(26) or open approach(15)(OG). Mean operative time was 70' for OG, 120' for laparoscopic. Mean hospital-stay length was 6days for OG, 2,5days for Laparoscopic. 95% of US images and MAG-3-scan report were normal for wash-out and renal function(RF). 90% of patients were completely healthy. Arterial blood pressure was within normal range. 3-cases of hypertension were investigated excluding renovascular origin. 1 referred occasional episodes of flank pain but preserved RF. Mean ipsilateral RF at MAG-3-scan was 46% at the study point, compared to a mean value of 40% before surgery (p value <0,001). There was no evidence of parenchyma hypoperfusion of kidney lower pole.

Conclusions: There're few data about very-long-term outcomes after this kind of surgery. Our study represent the longer one reported with 41pts and a mean follow-up of 12,7years, confirming VH as an effective procedure in preserving RF without polar hypotrophy and hypertension in puberty or adulthood.

09.14 - 09.19

(32) **Monitoring Renal Oxygenation Status by Near-Infrared Spectroscopy during Endourological Procedures in Children.** Sema Sanal Bas, Cigdem Arslan Alici, Muzaffer Bilgin, Baran Tokar. Eskisehir Osmangazi University, School of Medicine, Department of Anesthesiology and Reanimation. Eskihesir. Turkey.

Background: Near-Infrared Spectroscopy (NIRS) monitoring demonstrates renal blood flow, perfusion, and oxygenation changes. This study aimed to evaluate the effects of pediatric endourological interventions (PEI) on renal oxygenation (RO) using renal NIRS monitoring.

Materials and methods: Patients having bilateral inguinal surgery (Group I), cystoscopy (Group II), and ureterorenoscopy (Group III), 20 patients in each group, were included in the study. NIRS values before induction (T0), surgical 5th minute (T5) to 30 minute (T30), and postoperative (T-end) were determined. The amount of irrigation fluid was recorded in groups II and III. The ureterorenoscopy group was also evaluated as two subgroups, as group III-R with patients having a "%20 ↓ rSO2" and as group III-NoR, not having a "%20 ↓ rSO2".
Results: The mean total volume of irrigation was higher in group III, but the difference was not significant between the subgroups III-R and III-NoR. Renal rSO2 decreased significantly in T25, T30, and T-end values in group III. "%20 ↓ rSO2" was seen in 1 patient in group II and 7 patients in group III. In the subgroups III-R, all patients had an obstructive pathology and significant preoperative hydronephrosis with a mean renal pelvis AP diameter of 21,1 ± 16,4 mm.

Conclusion: Although RO significantly improves postoperatively, our data may suggest that congenital and acquired obstructive pathologies with hydronephrosis, prolonged operative time with continuous irrigation, and instrument movement in a narrow lumen may increase intrarenal pressure and the risk of renal hypoxia in endourological interventions. Preoperative evaluation of kidney functions and a meticulously well-planned intervention can prevent possible complications.

09.19 - 09.26

(185) **Mininvasive treatment for Nutcracker Syndrome: initial experience with extravascular stent placement**. Elisa Zolpi, Paolo Magagna, Cosimo Bleve, Jacopo Dall'Acqua, Stefania Marconi, Fabio Salvatore Chiarenza. Pediatric Surgery Unit, Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies AULSS8 S. Bortolo Hospital. Vicenza. Italy.

Introduction: Nutcracker syndrome (NCS), is characterized by impeded outflow from the LRV into the inferior vena cava due to an abnormally narrow angle between the abdominal aorta (AA) and the superior mesenteric artery (SMA). At present, the treatment guidelines for NCS are unclear, and different therapeutic principles need to be applied in specific individuals depending on the severity of symptoms.

Material and Methods: We describe 4 patients diagnosed with NS with a mean of 4 years of follow-up at our department. All patients were diagnosed at pediatric age and the mean age at diagnosis was 16 years. The diagnosis of NCS relies on clinical manifestations, Doppler ultrasonography (DUS) and computed tomography (CT) results. DUS and CT angiography were performed for all patients for comprehensive assessments of the angle between the AA and SMA, the LRV diameter ratio (hilar to aortomesenteric), the peak velocity (PV) ratio (aortomesenteric to hilar), and hemodynamic characteristics. Three cases were treated surgically. The pre-operative kidney model of the patient was printed out to enable surgical planning. After that, the extravascular stent (EVS) was designed based on the LRV's primitive physiologic structure. The three patients underwent laparoscopic three-dimensional printed (3DP) EVS placement. The surgical procedure were designed for the placement of EVS, taking great care in positioning and fixing the stent.

Results: The mean duration of surgery was 240min. No intraoperative complications. Computed tomography examinations revealed that the pre- and post-operative angle between the SMA and the aorta ranged from 18.7°±4.3° to 55.0°±4.4; No side effects were observed in the 12 to 24 months following surgery.

Conclusion: The 3DP EVTS is a safe and effective minimally invasive alternative for the treatment of NCS. The results are good but a longer follow-up is needed.

09.26 - 09.33

(24) **Robotic approach to the vescico-ureteral junction in children: an international multicentric retrospective study.** Francesca Nascimben, Elisa Chiarella, Giulia Fusi, Camilla Todesco, Giovanni Cobellis, Olivier Abbo, Mario Messina, Rossella Angotti, Francesco Molinaro. Department of Medical Sciences, Surgery and Neuroscience, Section of Pediatric Surgery, University of Siena. Siena. Italy.

Aim is to show the efficacy of robot-assisted approach to vescico-ureteral junction in pediatric patients through the analysis of the experience of three Centers.

It is a multicentric international retrospective study including all pediatric patients affected by urological comorbidities and surgically treated with robot-assisted technique from 2016 and 2021 at Pediatric Surgery of Siena, Ancona and Toulouse. Demographic, operative, post operative data and outcomes (short an long term follow up) were analyzed.

26 patients, 3 (11,5%) primary obstructive mega-ureter, 2 (7,7%) multi-cistic kidney, 3 (11,5%) duplex collecting system, 18 (69,2%) primary vescico-ureteral reflux (VUR) were included in the study. Mean age at surgery was 6 years old. 21 (80,7%) had VUR at Voiding cystourethrogram (VCUG) and 15 of 23 (65,2%) performed Tc-99 renal scans were pathological. 22 (84,6%) underwent Lich Gregoire extravescical ureteral reimplantation, 4 (15,4%) nephroureterectomy. Mean operative time was 230 min. There were no conversions or intra-operative complications. Mean time of vescical catheter was 3 days, JJ Stent 49 and pelvic drainage 4. Median hospital stay was 4 days. 8 (30,7%) postoperative complications: 4 persistent VUR, refluxing megaureter, 1 paralytic ileus, 1 anastomotic dehiscence and 1 dorsal bedsore. 2 (7,7%) cases of redo-surgery. Improvement of clinical presentation and ultrasound findings were revealed at one and six months follow up.

Robot-assisted Surgery should be considered a safe and effective technique for treatment of Urological Comorbidities in Pediatric Patients. The procedure is easy to perform thanks to magnificence 3D view, 6 grades of freedom of robotic arms. It allows pediatric surgeons to approach both upper and lower ureteral ends without modifying trocars' placement. Despite of its high cost and the size of the instruments, it is associated to important advantages such as shorter hospitalization, good post operative pain control and excellent short and long- term outcomes.

09.33 - 09.38

(14) **Cystoscope-guided trans-anal Fistula-tract Laser Closure (FiLaC) of late onset recurrent recto-urethral fistula after neonatal ARM repair.** Henri Van Eecke, Daphne Arnold, Stijn Heyman, Paul Leyman, Dirk Vervloessem. ZNA Q Paola Childrens Hospital, department of Pediatric Surgery. Antwerp. Belgium.

Management of persistent and recurrent rectourethral fistula after primary treatment of anorectal malformations (ARM) is challenging. Various surgical techniques have been proposed and until today there is no consensus on the optimal approach. We describe a case of late onset recurrent rectourethral fistula after neonatal ARM repair, treated with a minimally invasive cystoscope-guided trans-anal Fistula-tract Laser Closure (FiLaC). A male patient suffering from ARM, type recto-urethral (bulbar) fistula, was treated with an anorectoplasty during the neonatal period. Post-operatively, no reoperations were needed and long term follow-up demonstrated good functional outcome according to the Krickenbeck classification with no signs of bowel dysfunction, sexual dysfunction or urinary tract infections. On the age of 19, the patient presented with complaints of anal urinary leakage during micturition. Voiding-cysto-urethrography and perineal NMR demonstrated a fistula tract between the bulbar urethra and the distal rectum. Given the lack of associated urinary tract infections or fecaluria and the absence of fecal or urinary incontinence in between micturition, we decided to perform a trans-luminal, non-surgical approach. By analogy with the minimally invasive laser treatment of peri-anal fistula in adults, we performed a FiLaC. To prevent post-operative urethral stricture, the procedure was performed under cystoscopic guidance. We observed a fast post-operative recovery with an excellent one-year follow-up, illustrated by the elimination of symptoms, absence of fistula opening on rectoscopy and disappearance of the fistula-tract continuity on voiding-cysto-urethrography. This case exemplifies the potential benefits of using minimally invasive FiLaC treatment for the management of recurrent and persistent recto-urethral fistula following primary treatment of ARM. Long term follow-up is awaited to confirm the value of FiLaC in this treatment setting.

09.38 - 09.43

(88) **Treatment of varicocele in the pediatric population: comparison of four techniques**. Beatrice Montanaro, Antonio D'Alessio, Maurizio Cheli, Eugenia Piro, Marta Brugnoni, Giulia Giannotti, Davide Dalla Rosa, Federico Rebosio, Daniele Alberti. UOC Chirurgia Pediatrica, ASST Papa Giovanni XXIII. Bergamo. Italy.

Aim of the study: to compare four techniques for the treatment of varicocele in the pediatric population. One-year follow-up was considered and two main complications, namely recurrence of varicocele (RV) and persistent hydrocele (PH) were analyzed.

Materials and methods: a multicentric retrospective study was conducted enrolling pediatric patients affected by grade III varicocele, according to Dubin-Amelar classification. The patients were treated in three large tertiary Pediatric Surgical Units in Northern Italy between January 2010 and December 2018. Subjects from center A (Spedali Civili, Brescia) underwent anterograde sclerotherapy according to Tauber. In center B (Ospedale di Legnano) laparoscopic Palomo varicocele ligation and ligation of spermatic veins according to Ivanissevich were performed. In center C (Ospedale Papa Giovanni XXIII, Bergamo) the percutaneous retrograde scleroembolization of the internal spermatic vein was the treatment of choice.

Results: 1148 patients, with a median age of 13.96 years, were involved. At one-year follow-up:

- In center A, among the 100 patients, 8% presented RV and 1.1 % PH;
- In center B, of the 216 patients that underwent the laparoscopic Palomo procedure 2.3% showed RV and 4.6% PH; of the 300 patients that underwent ligation of the spermatic veins according to Ivanissevich 5% presented RV and 4.3% PH;
- In center C, among the 532 patients, 7.14% showed RV and 1% PH.

Conclusions: laparoscopic Palomo ligation of the spermatic vessels resulted the best treatment in terms of recurrency rate. On the other hand, retrograde scleroembolization showed the lowest incidence of persistent hydrocele. Considering the complications analyzed in our study no technique proved to be significantly superior to the others.

10.45 - 11.30

SESSION III: THORAX 1
CHAIRMEN: JORGE CORREIA PINTO (PT) AND ARACELI GARCÍA VAZQUEZ (ES)

10.45 - 10.52 (184) **Surgical management of congenital pulmonary malformation: descriptive analysis of the national cohort study.** Sarah Amar, Naziha Khen-Dunlop, Arnaud Bonnard, Babak Khoshnood, Olivier Abbo, Rony Sfeir, Virginie Fouquet, Erik Hervieux, Guillaume Podevin, Christophe Delacourt, Frédéric Hameury. Service de Chirurgie Pédiatrique - Hôpital Femme Mère Enfant - Hospices Civils de Lyon. Lyon. France.

Aim of the study: to report management's results of children with Congenital Pulmonary Malformation (CPM) included in a representative national population-based cohort study.

Methods: Analysis of complete prospectively collected data, up to the age of 2, of live-born children of the 436 pregnant women included between March 2015 and June 2018 in 42 centers. Three groups are described: non-operated (NO), operated non-symptomatic (ONS) and operated symptomatic (OS).

Results: 316 patients were included. First CT scan was performed at a mean age of 3.9 months (NO:5.1, OS:3.7, ONS:3.3 months; p=0.002) showing 142 cystic forms (50%), 90 systemic vascularization (31.7%), 46 emphysema (16.2%).
In the overall study period, 148 children presented with respiratory symptoms: 29.1% were bronchiolitis, 2.9% were infections of CPM. CPM volume (CVR), neonatal respiratory distress, hospitalization for respiratory symptoms and CPM infection were significantly higher in the OS than in the ONS and NO groups (1.23, 53.2%, 42.6%, 8.5% vs 0.61, 11.7%, 8.2%, 2.3% and 0.48, 11.6%, 12.6, 1%, respectively).
Of the 221 children operated on (70%) at a mean age of 8 months (OS:7.7, ONS:8.7 months), 21% were symptomatic. Near 82% of cystic malformations were removed representing 60% of procedures. Thoracoscopy was performed in 66% (ONS:70%; OS:53.2%) with a conversion rate of 17%. The procedure was a lobectomy in 56.7% and an infra-lobar surgery in 39.8%, with similar rate of complications (15.8%).
Post-operative LOS and complication rate were lower in the ONS group versus OS (3.9±2.9 vs 11.6±13.3 days; p<0.001 and 12.3% vs 29.8%-NS, respectively) including pneumothorax (47.6% vs 71.4%; p<0.001).

Conclusion: This unique national study describe the current indications for CPM surgery in our country with high rate of thoracoscopy and low operative morbidity, even in the case of sparing surgery. These data confirm higher morbidity after surgery when patients experienced respiratory symptoms.

10.52 - 10.57 (165) **A single institutional short-term data of thoracoscopic congenital diaphragmatic hernia repair upon technical aspect.** Doğuş Güney, Elif Erten, Selin Çayhan, Süleyman Bostancı, Ahmet Ertürk, Sabri Demir, Can Öztorun, Müjdem Azılı, Emrah Şenel. Ankara Yıldırım Beyazıt University. Ankara. Turkey.

Background: Experience in thoracoscopic congenital diaphragmatic hernia (CDH) repair has expanded, yet efficacy equal to that of open repair has not been demonstrated. Despite the reports suggesting higher recurrent hernia rates after thoracoscopic repair, this approach has widely been adopted into practice. We report a single institutional experience with thoracoscopic CDH repair.

Methods: We reviewed the records of patients with CDH repaired between September 2019 and February 2022 at Ankara City Children's Hospital. Completely thoracoscopic repairs were compared with ones those converted to open approach. In addition, successful thoracoscopic repairs were compared with thoracoscopic repairs that developed recurrence.

Results: Thirty-five patients underwent attempted thoracoscopic repair, with five converted to open approach. The recurrence rate was 20% (n=7). Conversion to open approach rate was higher at right sided CDH (60% vs 13%; P =0.044). Mean APGAR score was lower and mean duration of operation was higher of the patients those converted to open approach than thoracoscopic completed ones (respectively P =0.005, 0.025). Mortality rate was lower in the thoracoscopic completed ones (0% vs 80%; P <0,001).

In comparing successful thoracoscopic repairs to those with recurrence, we found that the ones that were diagnosed prenatally, early symptomatic, with herniation of stomach, spleen, and with low APGAR scores were significantly prone to recurrence (respectively P =0.003, 0.009, 0.016, 0.026).

Conclusion: Conversion to open approach and recurrence of hernia are the most challenging complications for thoracoscopic CDH repair. Technical factors and a compelling learning curve for thoracoscopy may account for the higher recurrence rates. In an already-critic patient, performing the repair thoracoscopically with a higher risk of recurrence may not be advantageous. Nevertheless, technical skills should be improved, and novel applications should continue to be developed for the anatomically and physiologically selected patients with CDH.

10.57 - 11.04 (118) **Video Assisted Thoracoscopic (VATS) staged internal pouches traction for very long-gap Esophageal Atresia (EA): single center experience**. Marina Andreetta, Francesco Fascetti Leon. Pediatric Surgery Unit, Dept of women and children health, Padova University. Padova. Italy.

Aim of the study: to assess the feasibility and the outcomes of long-gap EA management, performing VATS internal pouch traction, also focusing on the staged traction technique for very long-gap atresia.

Methods: data of VATS internal traction performed in our center (period 2020-2021) were retrospectively reviewed.

Results: five babies born with very long-gap EA (2 with type A and 3 with type C EA), underwent internal pouch traction. Median birth weight was 2650 grams, 3 had other associated malformations. Gap length was initially assessed at time of first surgery (median age: 1 day of life) with tracheoscopy and fluoroscopy (median gap 3 vertebral bodies) but all patients also underwent exploratory VATS. Internal pouch traction was performed with 2 PDS suture marked with a small radio-opaque swab and locked with sliding knots and checked with x-rays. Relook surgery was done 7 days (median) post traction: definitive correction was judged not safe in 2 cases due to persisting pouches tension, therefor a further traction was applied. In one case, to avoid subsequent pouches tears, tension was increased passing a Prolene suture around the existing threads and exteriorizing it through the chest wall, anchoring it to the skin (internal-external traction). Definitive anastomosis was then possible in both these cases on post-operative day 7 and 12, but procedures had to be converted to open technique because of adhesions preventing from safe visualization. Surgery was uneventful in all 5 cases. Only one case presented an early complication with an anastomotic leak post staged-internal traction, surgically managed with anastomosis partial re-do because of conservative approach failure.

Conclusions: Despite a little experience, we can argue that staged traction is feasable and effective for very long gap EA, but definitive anastomosis for such cases likely requires the open approach

11.04 - 11.11 (107) **Rabbit Experimental Model for Thoracoscopic Pulmonary Lobectomy.** José Pedro Lopes, Inês Braga, Sofia Martinho, Alice Miranda, Jorge Correia-Pinto. Department of Pediatric Surgery, Hospital Pediátrico, Centro Hospitalar e Universitário de Coimbra. Coimbra. Portugal.

Thoracoscopic lung lobectomy is becoming the most common operative approach for elective lobectomy in infants with congenital lung malformations. Since it is a scarce and technically demanding technique with a long learning curve, there is the need for trainees to practice this advanced minimally invasive procedure in a controlled environment before heading to humans.

Several training models of pediatric thoracoscopic lobectomy have been developed, but the lack of realism, namely in stabilization and positioning of the lung tissue, interfere with a correct retraction, port placement and dissection.

A rabbit experimental model for pulmonary thoracoscopic lobectomy was created with subcommittee Ethics for Life and Health Sciences(SECVS004/2016), General Directorate of Food and Veterinary Medicine(DGAV 5296), Decree-Law113/2013, Directive2010/63/EU of European Parliament approval and under a designated Veterinary approved as competent for animal experimentation supervision. The rabbit model was on non-selective invasive ventilation through tracheostomy and positioned in lateral decubitus. The thoracic cavity was accessed using 4x5mm-ports.

A total of 15 lobectomies in 10 rabbits were performed. Rabbit lung replicated the human anatomy, with 3 right major lobes and 2 left lobes separated by deep fissures, with segmental vascular and bronchial branches which were dissected and ligated. Actually, the fragility of the lung parenchyma appears to be even greater than in human infants. This model allowed a trustworthy dissection training and suture ligation for the bronchus and large vessels, while smaller vessels were electrocauterized. In the video, we present the main steps of different thoracoscopic lobectomies with identification, dissection and ligation of the main structures.

The anatomical features of the rabbit lung, friability, small-sized structures and the scarcity of space seems to resemble the infant lung. Therefore, this model represents a very close-to-reality simulation of thoracoscopic pulmonary lobectomy in infants.

11.11 - 11.18 (163) **Short-, Cross-, and Sandwichbars - New Techniques in Pediatric Pectus Surgery**. Anja Weinhandl, Caspar Wiener, Mustafa Yüksel, Martin Metzelder, Winfried Rebhandl. Department of Pediatric Surgery, Medical University of Vienna. Vienna. Austria.

Introduction: Open procedures have been replaced by minimally invasive techniques (Nuss-procedure, MIRPE/MIRPC) in the correction of pectus excavatum (PE), pectus carinatum (PC) and combined forms of PE and PC (e.g. pectus concavo-convexus/crumpled chest wall). Herein, we report our experiences with the modified short bar-minimally invasive pectus excavatum- (MIRPE) and carinatum-repair (MIRPC), and the sandwich repair with external and internal bars for the repair of excavatum/carinatum complex.

Methods: Between January 2019 and May 2022, 39 patients (6 MIRPC, all male; 32 MIRPE, 25 male, 7 female; 1 combined PE/PC-repair, sandwich-technique) underwent minimally invasive correction of PE, PC or combined forms of PE and PC using the modified short bar-MIRPE/MIRPC. Besides the shorter bars, this technique allows the use of more than one bar, running crosswise or parallel, allowing correction of asymmetric or combined forms.

Results: All 39 patients tolerated the procedure well. Mean operation time was 140 minutes, the median hospital stay length was 4.5 days. A total of 72 bars were implanted as followed: 11 single-bars, 18 parallel bars, 9 cross-bars (6x3 bars: 1 parallel+2 crossed; 3x single-cross) and 1 sandwich-technique. Intraoperative complications were not recorded. Early complications were observed in 6 patients (15,4 %), and late complications were observed in 2 patients (5,1 %). The most common complications were metal allergy and pleural effusion. In one female patient bar dislocation occurred, leading to revision and bar replacement. No bar rotation war observed.

Conclusion: The modified short bar-MIRPE/MIRPC and the sandwich technique are safe and effective methods for treating chest wall deformities in children and adolescents. They provide excellent cosmetic and aesthetic results as well as subjective satisfaction with the outcome of surgical treatment. By using shorter bars and optionally more than one bar at the same time, asymmetric or combined forms can be treated effectively.

11.18 - 11.25 (182) **Totally minimally-invasive approach for Collis procedure and esophageal anastomosis is safe and feasible for infants with long-gap esophageal atresia**. Louise Montalva, Kouame Agbara, Alexis Mosca, Jérôme Naudin, Arnaud Bonnard. Robert-Debré Children University Hospital. Paris. France.

allenging long-gap atresia.

Background: Long-gap esophageal atresia (EA) repair remains a therapeutic challenge. When traction fails, most surgeons will revert to open approaches for esophageal repair. No previous reports of totally minimally-invasive approach for Collis procedure in infants with EA have been reported. The aim of this study was to describe the technique, assess the feasibility and outcomes of combined laparoscopic and thoracoscopic approach for Collis procedure in infants with long-gap EA.

Methods: We performed a retrospective review of all cases of children with EA that underwent a combined laparoscopic and thoracoscopic approach for Collis procedure (2018-2022). The first step was Collis gastroplasty using a laparoscopic approach (3mm operative ports). The second step consisted in a right thoracoscopic approach (3mm ports) that allowed the native esophagus dissection, distal esophagus and gastroplasty ascension into the thorax, and tension-free esophageal anastomosis.

Results: Five children underwent a thoracoscopic and laparoscopic Collis procedure, at a median age of 3.6 months and weight of 5kg. All had esophageal atresia type 1 or 2, with a prenatal diagnosis. Prematurity was associated in 60% (n=3). Surgical history included a median number of 1 abdominal surgery and 2 thoracic surgeries (range:1-3). Two children had undergone a previous esophageal anastomosis (40%), resulting in complete stenosis. A conversion by thoracotomy was necessary in 1 case, who had previously had 3 thoracic approaches. Children were discharged home 33 days after surgery (range: 22-43). Complications requiring surgical treatment occurred in 1 child (20%, esophageal diverticulum requiring resection 2.5 years later) and endoscopic treatment in 1 child (20%, stenosis requiring 2 dilatations 1 year later). At a median follow-up of 3 years, 60% have been weaned from enteral feeding.

Conclusion: Use of a totally minimally-invasive approach for Collis procedure is feasible and safe in order to achieve tension-free anastomosis in infants with challenging long-gap atresia.

11.25 - 11.30 (89) **Predictive factors of long-term respiratory function in congenital diaphragmatic hernia.** Eduje Thomas, Emanuela Di Palmo, Chiara Folchi, Simone D'Antonio, Giovanni Parente, Chiara Cordola, Marco Di Mitri, Andrea Pession, Mario Lima Department of Pediatric Surgery, IRCCS, University Hospital of Sant'Orsola. Bologna. Italy.

Introduction: Congenital diaphragmatic hernia is a rare congenital malformation, featuring an incomplete development of the diaphragmatic muscle, which determines a herniation of the abdominal contents in the thorax. Although it is possible to surgically close the diaphragmatic defect, the main concerns are the respiratory problems due to pulmonary hypoplasia, insufficient surfactant production and persistent pulmonary hypertension. The aim of this study is to assess long term respiratory function in relation to the surgical approach adopted and to the presence of a Gore-Tex patch, used to close the defect.

Materials and methods: An observational study was conducted including all patients operated for diaphragmatic hernia at our Centre between 2004 and 2018. We prospectively performed the respiratory functions tests (RFTs) and compared the results with the surgical approach and the presence of a patch. The results of the RFTs were normalized using GLI equations approved by the European Respiratory Society. The data were compared using chi-quare test and Fisher exact test. A $p<0,05$ was considered statistically significant.

Results: A total of 55 patients operated for congenital diaphragmatic hernia were included in the study. Of these 17 patients (31%) were approached with a minimally invasive technique, while 38 (69%) with an open traditional technique. In addition, in 12 (22%) patients a patch was used to close the defect, while in the remaining 43 (78%) patients a primary closure was obtained. No relevant statistical significance was found when comparing RFTs results in patients subjected to open or minimally invasive technique. No statistical significance was found also when the analysis was conducted in patients corrected with or without the patch.

Conclusion: The results of this study seem to suggest that the surgical approach and the use of a patch for the correction of congenital diaphragmatic hernia do not affect the long-term respiratory function outcomes.

11.30 - 12.15

SESSION IV: MISCELLANEOUS 1
CHAIRMEN: GUSEV ALEXEY (RU) AND AURÉLIEN SCALABRE (FR)

11.30 - 11.35 (162) **Laparoscopic technique for ovarian cortex preservation in girls.** María Dolores Blanco Verdú, Agustín del Cañizo López, Javier Ordóñez Pereira, Isabel Bada Bosh, Sara Monje Fuente, Laura Pérez Egido, María Antonia García-Casillas Sánchez, Julio Cerda Berrocal, Juan Carlos de Agustín Asensio. Hospital Gregorio Marañón. Madrid. Spain.

Introduction: Advances in treatments against onco-hematologic diseases in girls and adolescents have improved survival rates in recent decades. However, these treatments often involve late toxic effects on fertility. Cryopreservation of ovarian cortex for later reimplantation provides an opportunity to preserve the future reproductive capacity of this group of patients. Ovarian tissue extraction by laparoscopy also allows a minimally invasive and safe approach. Depending on the age, pubertal development and ovarian volume of each patient, a unilateral or bilateral ovarian cortex removal or a unilateral total oophorectomy will be chosen. We present the video of the ovarian preservation technique in a 9 year old patient in whom a unilateral ovarian cortex excision was performed.

Material and methods: 9-year-old patient with a diagnosis of sickle cell anemia who had previously suffered 5 episodes of vasoocclusion for which she had required hospitalization. She was in the HLA-identical donor marrow transplant program. Unilateral ovarian cortex excision was performed without incident prior to transplantation.

Results: Postoperative evolution without complications. She is discharged after 24 hours of admission with oxygen therapy in nasal goggles and serum therapy, according to the perioperative management protocol of the patient with sickle cell anemia of the SEHOP.

Conclusions: Ovarian tissue extraction by laparoscopy for subsequent cryopreservation and reimplantation in adult women has proven to be an effective, safe procedure with high reproductive performance rates, with a frequency of gestation around 45% and of newborns around 35%.

11.35 - 11.40

(65) **Management of ovarian pathology in neonates, children and adolescents: a 25-year experience from laparoscopy to robotics and ICG fluorescence imaging.** Ciro Esposito, Vincenzo Coppola, Mariapina Cerulo, Fulvia Del Conte, Fiammetta Korsch, Benedetta Lepore, Maria Escolino. Federico II University Hospital. Naples. Italy.

Background: This study aimed to show the evolution of minimally invasive surgery (MIS) over the last 25 years for the management of ovarian pathology in children.

Methods: The records of 147 patients, < 18 years old, who were operated in our unit for an ovarian pathology in the period 1996-2021, were retrospectively reviewed.

Results: The median patient age was 59 days (range 7 days-15 years). One-hundred and eleven newborns had follicular cysts and received laparoscopy. Thirty-six older patients had benign (n=30) or malign (n=6) tumors and were managed using laparoscopy (n=28) or robotics (n=8). We adopted sealing devices in older patients and indocyanine green (ICG) fluorescence in 20 cases. All the procedures were completed in laparoscopy or robotics. Positive tumor markers were noted in 3/30 (10%) patients with benign lesions and in 4/6 (66%) with malignant masses. A salpingo-ovariectomy was performed in cases with suspicion of ovarian malignancy. An ovarian-sparing surgery was performed in 80/111 (72%) patients with follicular cysts whereas an ovariectomy was needed in 31/111 (28%), in whom the ovarian parenchyma was not identifiable. At long-term follow-up, all patients receiving ovarian-sparing surgery, had a normal gonad on ultrasound.

Conclusions: Based on our 25-year experience, an ovarian-sparing procedure should be always performed in neonates. In teenagers, the decision-making strategy should be based on tumoral markers and morphology of the mass. Laparoscopy or robotics are the best ways to do it. Sealing devices are essential tools for bloodless dissection and ICG fluorescence is helpful to assess the resection margins in suspicion of malignancy.

11.40 - 11.45

(110) **Direct Ligation of the Internal Ring Incorporating the Medial Umblical Ligament (DIRIM); A New Modification for Laparoscopic Percutaneous Inguinal Hernia Repair in Children.** Beytullah Yağız, Ergun Ergun, Sertaç Hancıoğlu, Berat Demirel Ondokuz Mayıs University. Samsun. Turkey.

Background: Laparoscopic hernia repair have not gained widespread acceptance. Relatively high recurrence rate is a major cause. To reduce recurrence, we report a novel modification of laparoscopic percutaneous inguinal hernia repair in children by a retrospective cohort study.

Methods: Between February 2020 and August 2021, the children who underwent a laparoscopic percutaneous inguinal hernia repair with our modified technique are retrospectively evaluated. In our modification, we included the medial inguinal ligament in the suture line during percutaneous repair of the inguinal hernia. By doing so, the medial ligament is expected to act like a flap that reinforce the repair and prevent the peritoneal shearing and migration of the ligature.

Results: In total, 35 children are enrolled in the study with 23 boys and 12 girls. Right inguinal herni (n=23) was more common than left hernia (n=10) while bilateral cases (n=2) were less common. Median age of the patients was 38 months and median operative time was 30 minutes. An extraperitoneal hematoma is encountered in 1 patient that did not effect the postoperative course. No other intraoperative complication is encountered. No recurrence is observed during a median follow up of 1 month.

Conclusion: Our modification of laparoscopic percutaneous hernia repair is a simple and reproducible technique that may have a place in the armamentarium

11.45 - 11.50

(140) **Outcomes after 1000 Laparoscopic Hernia Repair closing Percutaneously the Internal inguinal Ring.** Inês Braga, Sofia Martinho, Catarina Barroso, Ruben Lamas-Pinheiro, Jorge Correia-Pinto. Serviço de Cirurgia Pediátrica, Hospital de Braga, EPE. Braga. Portugal.

Introduction: Inguinal hernia repair represents one of the most common procedures in pediatrics. Since the 90s, laparoscopic inguinal hernia repair has been established in pediatrics and has gained popularity all over the world. Extracorporeal percutaneous internal inguinal ring closure, leaving no peritoneal gaps has been our standard technique, promoting the physiologic inguinal hernia repair, regardless of the infant age with its minimal dissection over the spermatic cord, metachronous hernia eviction and almost scarless results. Our aim was to evaluate the performance of laparoscopic repair after 1000 repairs.

Methods: All patients with inguinal hernia were reviewed and analyzed retrospectively, from 2012 to 2022, and no gap extracorporeal percutaneous internal ring closure was the standard laparoscopic approach used, reproducing the peritoneum physiological closure.

Results: Over 10 years, 794 children were submitted to laparoscopic hernia correction by this technique; 67.5% were males with 3.8+3.6years at the time of surgery. 92.5% had a unilateral preoperative diagnosis. About 10% of ex-premature newborns were intervened in tis study as well as one acute incarcerated hernia. A total of 1000 closures were performed due to the fact that during surgery 48.5% presented contralateral patent processus vaginalis, avoiding re-interventions. Global intraoperative complications were 1.1%(vessels and intestinal loop puncture) and recurrence rate were about 1.7% with no metachronous hernia or testicular atrophy reported during 4.7+2.3 years of follow-up.

Conclusion: Over 1000 repairs, the laparoscopic percutaneous inguinal ligation seems to be the most physiological way to correct inguinal hernia in pediatric ages, allowing easy learning and feasibility in incarcerations and premature infants scenarios. This technique provides the accurate diagnosis and precise corrections of the defects and virtually eliminates the metachronous hernia.

11.50 - 11.55

(1) **Open vs laparoscopic inguinal hernia repair in children: are we minimizing future interventions?** Catarina Carvalho, Inês Braga, Catarina Barroso, Joana Sequeira, Mário Rui Correia, Fátima Carvalho, Jorge Correia-Pinto. Centro Hospitalar Universitário do Porto. Porto. Portugal.

Purpose: Inguinal hernia repair is one of the most common procedures in pediatric surgery. Open repair is the longstanding procedure of choice; however, laparoscopic repair is gaining supporters and may overcome the traditional technique. Our aim was to determine the advantages of laparoscopic repair over open by comparing recurrence rates and reintervention for metachronous hernia.

Methods: Retrospective, double-center review of all patients treated for inguinal hernia from January 2016 to December 2020. Each center has a preferred technique: center A uses open repair and center B laparoscopic repair. Two groups were created based on this difference: open (patients from center A) and laparoscopic repair (patients from center B); patients operated by the alternative technique were excluded of each group.

Results: Over the 5-year period, 685 patients were submitted to inguinal hernia repair: 316 by open approach and 369 by laparoscopy; 68% were males (n=464). Median age was similar in both groups (4.3 vs 4.5 years respectively, p= 0.545). No differences were noted regarding preoperative laterality (p=0.794). Eleven patients in the open repair group with unilateral hernias were reoperated for metachronous hernia (4%). In the laparoscopy group, ninety-two silent patent peritoneal processus vaginalis were identified and closed (26.9% of unilateral hernias). Surgical complications (wound infection, ascending testis, hydrocele and hernia recurrence) were technique independent. Reintervention for metachronous hernia was more common in the open repair group but failed to reach statistical significance (4.1% vs 1.3%; p=0.054).

Conclusion: Open and laparoscopic hernia repair are both safe and effective procedures with similar complication and recurrence rates. Laparoscopic surgery allows for contralateral side inspection and prevents most metachronous hernias. However, a patent processus vaginalis does not equal a symptomatic hernia; by closing any open inguinal ring we might be imposing unnecessary surgical morbidity.

11.55 - 12.00

(95) **Pediatric Adnexal Torsion, Primary and Secondary, Clinical presentation and Single incision Laparoscopic Surgery (SILS) Management.** Hanan Said, Bshaer Albaihani, Obada Alhalaq, Enas Ramel, Elshaimaa Mohamed. International Medical Center. Jeddah. Saudi Arabia.

Methods: A retrospective review of the files from June 2017 to June 2021 of total 19 patient aged from 30 months to 14 years. Files were screened for demographic and clinical data. These included clinical data, laboratory tests, radiology studies and laparoscopic/Surgical management.

Results: In this study analyzed 19 files of patients aged from 30 months to 14 years. 3 out of the 19 patients had primary ovarian torsion, 15 had torsion secondary to ovarian cyst and last one had Paratubal/Paraovarian torsion. Most of the girls presented with leukocytosis, vomiting and right lower abdominal pain. Urine analysis 47% had pyuria without bacteriuria. Ultrasound (US) confirmed ovarian cyst 15 out of the 19, and 3 primary torsion cases. The last one, US missed the diagnosis of the Paratubal/paraovarian torsion, Even the CT and diagnosed by MRI.

Fourteen out of 15 managed by SILS detorsion with safe cyst excision (4 Teratoma and 11 simple/hemorrhagic cyst). Only one case had open ovarian cystectomy (Single ovary and mother refuse laparoscopy).

In primary torsion, simple detorsion in one case and detorsion and ovarian suspension in 2 cases.

Conclusion: Ovarian/adnexal torsion should be well-thought-out/considered in any female in pediatric age with acute onset lower abdominal pain associated with vomiting. Pain is constant, does not typically migrate. Sterile pyuria in about half of the patients. US is the most important initial diagnostic modality, nevertheless the absence of flow in Doppler image is not constantly present. Ovarian preservation management with detorsion, cystectomy and/or ovarian suspension (in single ovary and recurrent torsion) is mandatory.

12.00 - 12.05

(113) **Using Kern's six step approach and simulation-based training in continuing professional development as framework for implementation of thoracoscopic esophageal atresia repair**. Kristine Hagelsteen, Helena Arnadottir, Erik Omling. Pediatric Surgery Dept. Lund. Sweden.

Background: Minimal invasive surgery for esophageal atresia (EA) with and without tracheoesophageal fistula (TEF) have proven to be safe and effective, with similar or better outcomes compared to thoracotomy in selected patients. Surgery for EA/TEF was centralized to two tertiary pediatric surgical centers in Sweden in 2018. Encouraged by promising results and increasing surgical volume, the transition from open repair to thoracoscopic repair became a part of the continuous professional development (CDP) plan in the department. A longitudinal CPD curricula using Kern's model with structured use of simulation-based training have not previously been described.

Aim: The authors aimed to combine an established curriculum development model with simulation-based training to tailor a continuous professional development plan for safe transition and implementation of a new advanced surgical procedure.

Method: The Kern's six-step framework for curriculum design was applied and a targeted needs assessment analysis of the department resources was conducted. Department, team and personal goals were identified. Identification of non-technical skills and resources were assessed. A suitable thoracoscopic simulator with TEF model was identified and a deliberate training plan in simulated environment as well as open surgery were formed. The educational strategies were formed and adapted to the identified goals and needs of the department, team and surgeons. A longitudinal implementation plan with several parallel tracks in the department was thus formed.

Preliminary results: The CPD plan for the department, team and individual surgeons were established. International surgical mentors were identified, contacted and collaboration initiated. Continuous revision of the CDP plan to adopt to local and international Covid19 effects and restrictions were needed.

12.05 - 12.10 (17) **Management of a Dieulafoy's lesion case related to oral ingestions**. Cristina Perez Costoya, Victor Alvarez Muñoz, Nataliz Vega Mata, Sonia Amat Valero, Laura Sanchez Pulido, Adrian Parada Barcia, Clara Calvo Penin, Angela Gomez Farpon. Hospital Universitario Central de Asturias. Oviedo. Spain.

Aim: Dieulafoy's lesion (DL) consists of a dilated submucosal vein that is exposed to the surface and endoscopically visualized as a bleeding point without surrounding erosions or ulcerations. It is more frequent in older population with comorbidities and very rare at the pediatric age. Around 70% of the cases are located in the stomach, at the fundus. DL is typically asympthomatic, but acutely it can present as massive hemorrhage, melena, hematemesis or hematochezia. An urgent endoscopy would be indicated, but diagnosis can be as low as 49%. Treatment options include electrocoagulation, sclerotherapy with ethanol or norepinephrine, and hemostatic clips.

Case description: A 12 years-old male presenting with coffe grounds like vomits and melenic stools. He had no history of illnesses or previous treatments. At physical exploration he appeared pale, with no signs of dehydration and slight tenderness at palpation of the epigastrium. Haemoglin level was 8.2 g/dL. After performing an urgent abdominal ultrasound, angio-CT and gastroscopy, no diagnosis was achieved. Because of the progressive decrease of haemogling levels everytime the patient was fed by mouth, a Technetium-99 gammagrahy, a colonoscopy and a laparoscopy were indicated. All were inconclusive. After reintroduction of oral feeding, a new gastroscopy was performed, finding this time a small gastric vascular lesion suggestive of DL. It was treated with clips. Afterwards, the patient remained asymptomatic and with correct haemoglobin levels.

Conclusions: DL is exceptional in healthy pediatric patients, but we should keep it in mind for the differential diagnosis of upper gastrointestinal bleeding. A bleeding that appears only after oral ingestion may be suggestive of this lesion. Endoscopy is diagnostic and therapeutic, but DL can slip by unnoticed if it is not performed when the acute bleeding is happening.

12.30 - 13.15

SESSION V: ROBOTICS AND INNOVATION 1
CHAIRMEN: CIRO ESPOSITO (IT) AND CARMEN SOTO (ES)

12.30 - 12.37 (91) **Robotic-assisted colectomy in children: a comparative study with laparoscopic surgery.** Garance Martin, Louise Montalva, Liza Ali, Julie Sommet, Clémentine Cholet, Arnaud Bonnard. Robert Debré. Paris. France.

Background: Although robotic-assisted surgery has been used for an increasing variety of pediatric interventions, few studies report robotic-assisted colonic resections. The aim of this study was to compare operative and post-operative data, as well as surgical cost, regarding laparoscopic and robotic-assisted colectomy.

Methods: All children who underwent a colectomy using a laparoscopic or robotic-assisted approach in our institution between January 2010 and February 2022 were retrospectively included. Demographic data, surgical data, and post-operative outcomes were compared depending on the surgical approach (laparoscopic or robotic). Data from the robotic group were prospectively collected while data from the laparoscopic group were collected retrospectively. Clavien-Dindo classification was used to assess the post-operative complications within 30-days. Additional cost for surgeries performed using the robotic-approach was calculated. Comparisons between groups (laparoscopy and robotic) were performed using contingency tables for categorical variables and Student t-test or Mann-Whitney test for continuous variables, when appropriate.

12.37 - 12.42

(194) **Preliminary Results with Robot-Assisted Gastric Pull-Up.** Zafer Dokumcu, Ulgen Celtik, Coskun Ozcan, Ata Erdener. Ege University Faculty of Medicine Department of Pediatric Surgery. Izmir. Turkey.

Aim: Minimally invasive gastric pull-up can be performed for in esophageal atresia and corrosive esophageal strictures, but robot-assisted gastric pull-up has not yet been published. We aimed to present the first series of preliminary results with robot-assisted gastric pull-up and the applicability of this technique.

Methods: A retrospective analysis was performed including demographics, indications, console time, intraoperative complications, start to oral feeding, length of hospital stay, and postoperative complications.

Results: 4 patients (M/F:3/1) underwent robot-assisted gastric pull-up through October 2020 to April 2022. Demographics, diagnosis, procedures and length of hospital stay were listed below. Esophagectomy for corrosive esophagus was performed with transhiatal approach in 2 and transthoracic approach in 1 patient. Median console time was 210 (150-250) minutes. There was only one conversion due to tracheal injury that occurred during suprasternal blind dissection (Patient 2). All patients fed orally but patient 1 within the postoperative period due to swallowing dysfunction. There was no further postoperative complication.

Age(year) / Diagnosis / Operation / Length of hospital stay (days)

1. 10/12 / Down Syndrome Esophageal atresia (Type A) / Gastric pull up / 43
2. 6 / Corrosive esophageal stricture / Transhiatal esophagectomy + Gastric pull up / 42
3. 4 / Corrosive esophageal stricture / Transthoracic esophagectomy + Gastric pull up / 10
4. 12 / Corrosive esophageal stricture / Transhiatal esophagectomy + Gastric pull up / 13

Conclusion: Robot-assisted gastric pull-up is safe and efficient in children with long gap esophageal atresia. The transthoracic approach seems safer for esophagectomy in patients with long segment corrosive esophageal stricture.

12.42 - 12.47

(200) **Robot assisted approach for Achalasia in Children.** Joseph Wiltshire, Naved Alizai. Leeds Children's Hospital. Leeds. United Kingdom.

Aim: Achalasia Cardia is a rare motor disorder of the distal oesophagus. Although there is emerging evidence that balloon dilatation can provide temporary to long-term relief, most surgeons would offer myotomy, with or without fundoplication.

The senior author performs the procedure with the assistance of the robot. We evaluated the outcomes of Robotic assisted Cardiomyotomy and anterior fundoplication, with particular stress on the ease of the procedure and additional evaluation of medium to long-term outcomes.

Method: We looked at all children presenting to the senior author with achalasia between Jan 2012 and Dec 2021 (n=8). The ease of the procedure was evaluated by senior author's own experience and the outcomes through follow-up clinic letters.

Results: Robot assisted approach provides a 3D magnified view and the dexterity of double jointed instruments, which is more versatile than the human wrist. The limitation of the laparoscopic myotomy, especially when dissecting the gastric muscle, where the surgeon has to cut towards him/herself, is greatly assisted by the robotic instruments.
The ease of suturing helps the multiple interrupted sutures required for the anterior fundoplication.
The medium to long-term results do not suggest the results to be any different from open and laparoscopic surgery.

Conclusion: Robot assisted cardiomyotomy is feasible and provides a far superior view and instrument dexterity to perform this technically challenging procedure.

12.47 - 12.54

(141) **Robot-assisted extravesical ureteral reimplantation (REVUR) in children by Lich-Gregoir approach for uni- and bilateral vesico-ureteral reflux (VUR): preliminary experience.** Sophie Vermersch, Aurélien Scalabre, François Varlet. University hospital. Pediatric surgery department. Saint-Etienne. France.

Purpose: The development of the robotic-assisted extravesical ureteral reimplantation (REVUR) has tracked a path searching for the optimal method in treatment of vesico-ureteral reflux (VUR). We have transposed our experience in the treatment of VUR by Lich-gregoir with the use of the DaVinci Xi robot.

Methods: This is a retrospective study including all children with VUR treated by REVUR in our institution from Frebruary 2020 to December 2021. Surgery was performed after the age of 12 months in cases with repeated urinary tract infection (UTI) and/or a deterioration of renal function on isotope renography.

Results: 16 children (13 girls, 3 boys) representing 21 ureters, were included (5 bilateral VUR and 11 unilateral VUR). Patients' median age was 4.5 years (range 1-8 years), median weight was 18 kilograms (range 13-30). The preoperative grade of reflux was III in 66.7% (14/21) and IV in 33.3% (7/21).

Median console operative time was 90 minutes (range 65-140) for unilateral REVUR and 120 minutes (range 85-135) for bilateral REVUR. No conversions or intra-operative complications were recorded. No patients had a bladder Foley catheter post-operatively. One patient required an "in and out" bladder evacuation after a bilateral REVUR. Median hospital stay was 1 day (range 0-4), the last three cases were outpatient procedures. Median follow-up length was 7 months (range 1-23). Three patients presented one febrile UTI after the first month.

Conclusion: REVUR is a safe and effective technique for treatment of VUR. The success rate is comparable to laparoscopic technique and can potentially be performed as a Day Case procedure. Our laparoscopic experience in Lich Gregoir procedure can be applied to REVUR technique. The high cost and the diameter of instruments remain the main challenges of robotics applications in pediatric urology.

12.54 - 13.01

(159) **Needlescopic Disconnection for Pediatric Inguinal Hernia Repair.** Sameh Shehata, Rafik Shalaby, Mohamed Elsawaf, Adham Elsaied, Sherif Shehata, Ahmed Bassiouny, Mohamed Negm. Alexandria Univeristy. Alexandria. Egypt.

Background: There are many laparoscopic techniques for pediatric congenital inguinal hernia repair. Needlescopic surgery was introduced recently in pediatric patients aiming at getting excellent cosmetic outcomes.

Purpose: The aim of this study was to describe a novel technique for needlescopic inguinal hernia repair in children.

Patients and methods: Needlescopic division of the hernial sac was carried out on 369 children in 6 pediatric tertiary centers during the period from August 2016 to May 2019. All hernias were repaired by a novel needlescopic procedure that replicates all the steps of the open herniotomy.

Results: A total of 369 patients with 410 hernias were included in this study. They were 232 (62.9%) males and 137 (37.1%) females, with a mean age of 3.58±1.26 (range=2 to 8 y) and a mean internal inguinal ring diameter was 13.65±3.85 mm (range=8 to 20 mm). The mean operative time was 23.36±4.67 minutes for bilateral and 14.28±2.98 minutes for unilateral cases. All cases were completed without conversion to conventional laparoscopy. All cases were followed up for a mean of 19.6±3.2 months. None of our patients developed recurrence or testicular atrophy and the scars were nearly invisible 3 months postoperatively.

Conclusions: Needlescopic pediatric inguinal hernia repair using disconnection of the hernia sac at the internal inguinal ring with purse-string suture closure of peritoneum is feasible and safe with no recurrence and with outstanding cosmetic results.

13.01 - 13.06

(202) **Introducing to Virtual Reality (VR) to improve minimally invasive training in pediatric surgery**. Sara Costanzo, Giulia Lanfranchi, Margherita Roveri, Ugo Maria Pierucci, Francesca Destro, Carlotta Canonica, Andrea Pansini, Gloria Pelizzo. Pediatric Surgery Department, "Vittore Buzzi" Children's Hospital. Milan. Italy.

Introduction: Virtual reality (VR) in surgical simulation offers to adult surgeons preoperative and intraoperative imaging for tracing surgical roadmaps.

Aim of this study: To provide an overview of VR system adaptation in pediatrics as a useful tool to implement an accurate and safe surgical approach to kidney and lung, enhancing the potential of minimally invasive techniques currently in use. We present an initial experience in virtual surgical planning at our Center and discuss possible applications in pediatric mini-invasive surgery training.

Methods: Starting from computed tomography (CT) images, VR head mounted display (HMD) technologies have been introduced to improve preoperative and intraoperative planning in a group of ten pediatric patients undergoing surgery for pulmonary and renal malformations or tumors. Surgical advantages and limits were detailed.

Results: The possibility to review the 3D models allowed a more thorough understanding of the vascular anatomy. We noticed excellent 3D rendering view of the hilar and segmental structures and vascularization. The opportunity of rotation and 360 degree view of critical anatomy helped the surgeons to plan the best surgical approach. One of the disadvantages is the lack of soft tissue physiological responses in the virtual model, such as inflation/deflation movements of lungs. We did not register any advantages on tissue sparing and manipulation.

Conclusion: VR approaches for image-guided surgery is proving to be one of the most important applications in the field of urology and lung surgery, allowing to plan a tailored approach. VR pathway can also improve decision making and teambuilding, serving as an important complement in pediatric surgery training curricula.

13.06 - 13.11

(54) **Mini-laparoscopic surgery with 2mm trocarless percutaneous instruments: preliminary experience in pediatric surgery.** Riccardo Guanà, Alessia Cerrina, Alessandro Pane, Federico Scottoni, Elisa Zambaiti, Fabrizio Gennari. Regina Margherita Children's Hospital. Turin. Italy.

Introduction: In recent years mini-laparoscopic procedures are gaining popularity among adult surgeons due to better surgical outcomes. The Mini Lap Percutaneous Surgical System with MiniGrip® handle (Teleflex Inc.), employees 2mm instruments and has been associated with decreased postoperative pain and improved cosmetic outcome; is a further step forward in mini-invasive surgery, and it is currently the first 2mm trocarless system available on the market.
The shaft diameter is 2.4mm and is armed with an integrated sharp tip, which allows direct percutaneous insertion. We present its initial application in pediatric surgery.

Patients & Methods: From April 2020 to April 2022, 22 patients underwent percutaneous laparoscopic surgery with the MiniLap® system. Procedures were the following: 2 cholcecystectomies, 1 Hirschsprung laparoscopic-assisted pull-through, 5 appendectomies, 2 ventriculoperitoneal shunts with peritoneal catheter salvage procedure, 3 ovarian cystectomies, 3 ovarian detorsions; 6 laparoscopic orchiopexies for non-palpable testis + associated Fowler-Stephens procedures. Patient's age varied from 1 year to 12 years (mean 4,2yo).

Results: The grip of the MiniLap® grasper was judged as adequate by all surgeons. The length of the intracorporeal segment and of the branches did not impend the movements of the instrument in the abdomen even in toddler and small children. No conversions and no complications were reported. Mean operative time was comparable to similar standard 5mm and 3mm laparoscopic procedures. The percutaneous access sites were easily closed with Steri-Strips™ (3M, St. Paul, MN, USA), and were hardly visible two weeks later.
We noticed some limitations: the instrument tip is not blunt, so the surgeon must pay attention in all bowel manipulation.

Conclusions: The MiniLap® system with the use of the MiniGrip® Handle seems to add to the benefits of traditional 5 mm or 3 mm laparoscopy, the advantages of reduced parietal trauma, quicker insertion of the instruments, good tissue handling and good cosmetic outcome.

14.45 - 15.30

SESSION VI: GASTROINTESTINAL 2
CHAIRMEN: JUAN CARLOS DE AGUSTIN (ES) AND HENRI STEYAERT (FR)

14.45 - 14.52

(61) **ICG-guided fluorescence for intra-operative diagnosis and management of aberrant ducts of Luschka: a potential risk for post-operative bile leak after laparoscopic cholecystectomy.** Ciro Esposito, Daniele Alberti, Mariapina Cerulo, Fulvia Del Conte, Vincenzo Coppola, Giovanni Boroni, Cristina Moglia, Benedetta Lepore, Fiammetta Korsch, Maria Escolino. Federico II University Hospital. Naples. Italy.

Background: Laparoscopic cholecystectomy (LC) may be complicated by post-operative bile leak. Aberrant subvesical ducts, commonly known as Luschka's ducts, represent the second most frequent cause of bile leakage following LC. This paper reported a multicenter experience about use of indocyanine green (ICG) fluorescent cholangiography (FC) for identification and management of Luschka's duct during LC in pediatric patients.

Methods: In the last 3 years (2018-2021), 87 pediatric patients (32 boys and 55 girls), with a median age of 14.3 years (range 5-17) and a median weight of 68.4 kg (range 16-103), received LC in 2 pediatric surgery units. All patients had symptomatic cholelithiasis and most (56/87, 64.4%) had idiopathic cholelithiasis. All LC were performed using ICG-FC. The study only included patients with finding of Luschka's ducts.

Results: Three out of 87 patients (3.4%) had Luschka's ducts discovered intra-operatively using ICG fluorescence and were included. In two patients, the aberrant duct was discovered incidentally using ICG technology and then clipped. The third patient, who developed biloma and biliary peritonitis following primary LC, was re-operated in laparoscopy on post-operative day 4th. The ICG fluorescence was helpful to identify the site of bile leakage originating from an injured Luschka's duct, that was repaired by suturing. The post-operative course was uneventful in all patients.

Conclusions: Aberrant Luschka's ducts are very rare biliary anomalies, with an incidence of about 2% in the pediatric literature. If not visualized during LC, their inadvertent injury is associated with life-threatening complications such as biloma or bile leaks and need for re-operation. The ICG-FC provided real-time identification of Luschka's ducts and their prompt treatment during LC and was very helpful for management of related complications. Pediatric surgeons should be aware of this rare biliary anomaly and check for its presence in every LC.

14.52 - 14.59

(132) **Is percutaneous endoscopic gastrostomy safe in children receiving peritoneal dialysis? A tertiary center experience and literature comparison.** Federica Fati, Rebecca Pulvirenti, Germana Longo, Luca Antoniello, Elisa Zambaiti, Piergiorgio Gamba. Pediatric Surgery Unit, Women's and Children's Health Department, University Hospital of Padua. Padua. Italy.

Introduction: Children with end stage renal failure and peritoneal dialysis (PD) are often malnourished and may require an adequate supplementation of nutrition via gastrostomy tube. Peritoneal dialysis guidelines from 2012 address laparoscopic/open surgical gastrostomy as safe approaches in children on PD, while discouraging percutaneous endoscopic gastrostomy (PEG) due to higher risk of major complications (e.g. peritonitis). Existing evidence on the safety of PEG is still controversial, therefore we report our surgical experience and compare it with similar studies.

Methods: We retrospectively reviewed the medical records from patients on PD, who underwent gastrostomy fashioning at a tertiary referral center between 2000-2020. Data on perioperative management, complications and outcomes were retrieved. An extensive literature search was performed; studies describing PEG placement and perioperative prophylaxis administration in patients on PD were used as a comparison for our cohort. Descriptive statistical analysis was conducted.

Results: 7 patients (5 M) were included. Median age at procedure was 30 months (6-68). PEG technique was used in all cases; in one patient conversion to open surgery was required. Perioperative antibiotic and antifungal prophylaxis were administered. Peritoneal dialysis and enteral nutrition were started within the first 48 hours in all cases. Both medical devices were simultaneously used for a median of 27 months (10 – 75). During this period 9 episodes of peritonitis were reported, yet none during the first postoperative month. No statistical difference was found between the rate of peritonitis before and after gastrostomy placement (p=0.2170). Patients' demographics and postoperative complications resulted to be in line with the existing studies (table n.1)Conclusion: In our experience, the use of antibiotic and antifungal prophylaxis in patients on PD resulted in a low incidence of PEG fashioning-related complications. In line with previous reports, this technique seems to be safe and effective, even in patients with end-stage kidney failure.

Conclusion: In our experience, the use of antibiotic and antifungal prophylaxis in patients on PD resulted in a low incidence of PEG fashioning-related complications. In line with previous reports, this technique seems to be safe and effective, even in patients with end-stage kidney failure.

	Patients cohort (n=6)	Schnakenburg V. C et al (n=8)	Kempf C. et al (n=8)	Variance analysis**
Age at PD (months)	1.56 (0-63)	11.4 (0.36 – 55.2)	6.1 (0.1 – 93.5)	p=0.658
Months of PD before PEG	11 (3 – 37)	7.6 (2.4 – 73.2)	5.22 (0.9 – 17.9)	
Age at PEG (months)	33.5 (6 – 68)	16.2 (6 – 88.8)	11.3 (5.1 – 104.8)	p=0.538
Perioperative antibiotics	Yes	Yes	Yes	
Perioperative antifungal	Yes	Yes	Yes	
Peritonitis after PEG (N)	0	1	1	p=0.91
Duration of PD+PEG (months)	31.5 (10-75)	18 (3 – 56)	12.1 (3.13 – 24.1)	

*Data are expressed in medians (range), unless otherwise is specified
**Kruskal-Wallis test was performed, p<0.5 was considered as significant

14.59 - 15.04

(75) **A case of double cystic esophageal duplication in VACTERL syndrome: first case and review of Literature**. Gabriele Vasta, Stefano Tursini, Carlotta Plessi, Vito Briganti. Pediatric Surgery Unit,San Camillo Hospital. Rome. Italy.

Background: Esophageal duplication cyst (EDC) is a rare developmental malformation derived from the embryonic foregut. VACTERL syndrome is a genetical disorder that affects many systems of the human body; We report the first case of VACTERL syndrome associated with asymptomatic double EDC.

Case report: A female with ano-rectal malformation and recto-vestibular fistula, kidney malformation and various vertebral defects came to our attention at birth. VACTERL disease has been diagnosed. She underwent Peña anoplasty at 4 months of life without complications. MRI was conducted at the age of 2 years old. It accidentally showed a double esophageal duplication (12x35x10 mm) at the level of D7-D9. We planned a thoracoscopy; previous intraoperative esophagogastroduodenoscopy showed an external compression of to the native esophagus. Two duplicated esophageal lesions were removed. The patient made uneventful recovery and was completely asymptomatic at long term follow-up.

Conclusions: VACTERL syndrome is still a not well-defined disease. Specific genetic mutation is unknown. In our knowledge this is the first case of a double esophageal duplication in a patient affected by VACTERL syndrome. In our opinion, thoracoscopic approach of esophageal duplications is safe in expert hands. A complete excision is possible even if the cyst shares a common muscular wall with the esophagus. For this reason, we advise the closure of muscular wall by simple interrupted suture.

15.04 - 15.09

(41) **The safety and effectiveness of laparoscopic pyloromyotomy using 3-mm electrocautery hook versus open surgery for treatment of hypertrophic pyloric stenosis in infants**. Zenon Pogorelić, Ana Zelić, Miro Jukić. University Hospital of Split. Split. Croatia.

Background: The aim of the present study is to compare the outcomes of treatment in infants with hypertrophic pyloric stenosis between traditional open approach and laparoscopic pyloromyotomy using 3-mm electrocautery hook.

Methods: A total of 125 infants, 104 (83.2%) males, with median age 33 (interquartile range, IQR 24, 40) days, who underwent pyloromyotomy because of hypertrophic pyloric stenosis, between 2005 and 2021, were included in the retrospective study. Of that number 61 (48.8%) infants were allocated to the open group and 64 (51.2%) to the laparoscopic group. The groups were compared in regards to time to oral intake, duration of surgery, the type and rate of complications, rate of reoperations, frequency of vomiting after surgery, and the length of hospital stay.

Results: No differences were found with regards to baseline characteristics between two investigated groups. Laparoscopic approach was associated with significantly better outcomes compared to open approach: shorter duration of surgery (35 min (IQR 30, 45) vs. 45 min (40, 57.5); p=0.00008), shorter time to oral intake (6 h (IQR 4, 8) vs. 22 h (13.5, 24); p<0.00001), lower frequency of postoperative vomiting (n=10 (15.6%) vs. n=19 (31.1%)), and shorter length of postoperative hospital stay (3 days (IQR 2, 3) vs. 6 days (4.5, 8); p<0.00001). In regards to complications and reoperation rates, both were lower in the laparoscopic pyloromyotomy group (p=0.157 and p=0.113, respectively). The most common complication in both groups was mucosal perforation (open group, n=3 (4.9%); laparoscopic group, n=2 (3.1%)) followed by wound infection in open group, n=3 (4.9%). No cases of wound infection were recorded in the laparoscopic group.

Conclusion: Open and laparoscopic pyloromyotomy are equally safe and effective in treatment of hypertrophic pyloric stenosis. Laparoscopic technique is associated with faster recovery, shorter duration of surgery and shorter duration of hospital stay.

15.09 - 15.14

(99) **Laparoscopically assisted management of Meckel's diverticulum.** Radoica Jokic Jelena Antic, Svetlana Bukarica, Ivana Fratric, Marina Milenkovic. Medical faculty, University of Novi Sad. Novi Sad. Serbia.

Meckel's Diverticulum (MD) is an embryological remnant that results from the failure of the omphalomesenteric duct closure. It can present as various clinical features with life threatening complications.

The aim of our study was to investigate the incidence, symptoms and treatment techniques of MD in the period 2017-2022.
Medical data from 32 patients with the diagnosis of MD were collected and analysed. The study was approved by the Institutional Ethical Review Board.

There were 25 boys and 7 girls (ratio 3.6:1) with the median age of 13 years (1-17, mean 11.34). Sixteen patients had a planned operation of MD after it was detected accidentally on the previous operations and 16 patients underwent emergency operations due to gastrointestinal bleeding in 5 patients, intussusception in 3 patients, perforation in 2 patients, intraluminal foreign bodies of the intestine in 2 patients, midgut volvulus with gangrenous changes of the bowel in one patient, strangulated ileus in 2 patients and one anastomosis insufficiency (reoperation). All patients underwent exploratory laparoscopy, with video-assisted segmental small-bowel resection, and primary anastomosis. Only six laparotomies had to be performed mostly due to the need for manual desinvagination or the finding of a gangrenous bowel changes. Heterotopic tissue was confirmed on histopathology in 85% of all patients enclosing gastric and pancreatic mucosae. No death was reported.

In this study bleeding and intestinal obstruction are much more frequent than inflammation. The Meckel's scan has not an absolute positive predictive value. Laparoscopically assisted technique is feasible and effective in all planned and emergency MD operations. Complete excision of the diverticulum and the adjacent intestine containing ectopic mucosa is crucial to minimize the chance of recurrent symptoms.

15.14 - 15.19

(196) **Monocentric experience of multidisciplinary approach for dysphagia management in neurologically impaired pediatric patients**. Emanuele Trovalusci, Chiara Costantini, Paola Moras, Stefano Doratiotto, Gianni De Polo, Andrea Martinuzzi, Maria Lisa Marcon, Luisa Grazian, Marco Gasparella, Paola Midrio. Pediatric Surgery Unit – Ca' Foncello Hospital. Treviso. Italy.

Aim of the Study: The frequency of feeding and swallowing disorders in children is increasing as medical advances improved the survival of many patients with neurological impairment. A multidisciplinary approach is fundamental to manage medical conditions of these patients, but surgical procedures still play a main role. Our team has been monthly working since 2015 to improve the management of these patients. Herein the experience is reported.

Matherial and Methods: Clinical data of all patients discussed by our team were retrieved and analysed, in particular gastroenterological and neurological examinations, instrumental studies, and surgical procedures. According to circumstances, patients followed different diagnostic pathway. Data were expressed as frequency and means.

Main Results: A total of 121 dysphagic patients (61 males and 60 females) with a mean age of 8.2 years (range: 0.2-18 years) were retrieved; 94.7% presented neuromuscular disorders. In 82.7% feeding and swallowing disorders were assessed with videofluoroscopic swallow study. Diagnostic esophagogastroduodenoscopy with biopsies and pH(impedance)-monitoring were performed in 19.7% patients, manometry in 2 patients. Swallowing disorders were diagnosed in 52.4% of patients, and gastroesophageal reflux in 36.9%. Sixty patients (49.6%) required a surgical procedure: 55 (91.6%) gastrostomy and jejunal tube placement (80.4% endoscopic, 14.3% laparoscopic-assisted, 5.4% open), 20 (33.3%) fundoplication (95% Nissen and 5% Toupet). Two patients required redo funduplication.

Conclusion: Most of neurological impaired children will develop gastroenterological and respiratory affections, in particular dysphagia, gastroesophageal reflux, and severe malnutrition. Conservative therapy is the first line approach, but endoscopic and laparoscopic procedures could be required to improve patients' and families' quality of life.

15.19 - 15.24

(160) **Laparoscopic three-point fixation for intractable rectal prolapse in children.** Sameh Shehata, Mohamed Abouheba, Ahmed Mokhtar. Alexandria Univeristy. Alexandria. Egypt.

Aim: Rectal prolapse in children is a common condition in infancy and early childhood that usually responds to conservative measures. Surgery is reserved only for refractory cases that fail to respond to conservative measures. This study was designed to evaluate the efficacy of the 3-point fixation concept (retrorectal dissection, rectopexy to the presacral fascia of the sacral promontory, and sigmoidopexy onto the anterior abdominal wall) in the treatment of complete rectal prolapse in children using laparoscopy.

Methods: This prospective study was conducted on 18 cases with persistent complete rectal prolapse who failed to respond to adequate conservative measures from July 2018 to July 2021. The technical details of the procedure are described. Patients were followed up for at least 6 months and were assessed clinically and radiologically for continence and constipation using the appropriate scoring systems.

Results: Eighteen patients were included, 12 females and 6 males, laparoscopic rectopexy and sigmoidopexy were done for all cases. Age ranged from 6-38 months (mean 18.4) The mean duration for surgery was 58.4 min. No intraoperative complications were recorded. One case (5,5%) had partial-thickness recurrence and 2 cases had skin stitch sinus. Three patients had constipation requiring laxatives after surgery.

Conclusion: The laparoscopic rectopexy and sigmoidopexy is an effective approach for the treatment of refractory complete rectal prolapse in children. The 3-point fixation proved efficient in preventing rectal prolapse in children with minimal complications.

17.15 - 18.15

POSTER SESSION 1

CHAIRMEN: FRANCESCO FASCETTI LEON (IT) AND MARIA GRAZIA SCUDERI (IT)

17.15 - 17.17

(166) **Morbidity related to major lung thoracoscopic resections in children**. Sara Ugolini, Lorenzo Tofani, Louise Montalva, Antonino Morabito, Arnaud Bonnard. Cardiothoracic Surgery Department, Wythenshawe Hospital, Manchester University NHS Foundation Trust. Manchester. United Kingdom.

Introduction: In paediatric thoracic surgery, reported predictors for higher risks are symptoms and active/previousinfections. We investigated the adverse events related to Video-Assisted Thoracic Surgery (VATS) in those above 12 months of age and aimed to analyse the relationship with predictors.

Patients and Methods: A retrospective analysis of consecutive cases operated by major lung VATS resections in 2008-2021 was conducted at two Institutions. We employed the American College of Surgeons paediatric surgical risk calculator to define each patient's preoperative predicted individualized risk. Postoperative complications were classified according to the Thoracic Morbidity&Mortality (TMM) system. The observed TMM rate and the predicted risk was compared. The analysis by predictors was tested by T, Satterthwaite's T, or Mann-Whitney tests, and the association between binary outcomes and risk factors was estimated with a logistic regression model.

Results: 22 patients (59% females) were included. Mean age and weight were of 9.2 years (±4.9) and 31.6 kg (±18.9). 81.8% had respiratory symptoms, 66.7% active infection and 81.8% history of infections. VATS procedures were n=19 lobectomies, n=2 segmentectomies, n=1 pneumonectomy. The conversion rate was 9%. The mean predicted risk was of 4.1% (±1.8). A higher mean predicted risk was associated with the presence of each predictor, though not statistically significant. The observed TMM rate of complication was of 54.5% with a median severity of II (I-III). A higher rate was associated with predictors, but the findings couldn't reach statistical significance. A significant difference between predicted risk and observed TMM rate was found.

Conclusions: Complications rate reflected the number of bronchiectasis patients in our series (41%) aligning with the hypothesis of "earlier and safer surgery". The risk calculator might underestimate VATS morbidity. Multi-centric studieswill clarify the correlation between inflammation and surgical adverse events.

17.17 - 17.19

(171) **Associated factors of recurrence in laparoscopic repair of Morgagni hernia in children: institutional experience and systematic review.** Anne Dariel, Mamane Oumarou, Alice Faure, Thierry Merrot, Nicoleta Panait. Hôpital La Timone Enfants, Assistance Publique des Hôpitaux de Marseille. Marseille. France.

Aim of the study: To report our experience with the laparoscopic repair of Morgagni hernia (MH) using extracorporeal subcutaneous knot tying and to perform a systematic review to search for risk factors of recurrence.

Patients and Methods: This retrospective single-centre study included patients less than 16 years of age who underwent laparoscopic surgery for MH without patch by using extracorporeal subcutaneous knot tying through the full thickness of the anterior abdominal, between 2013 and 2020 at our tertiary centre of paediatric surgery. A systematic review of the literature was performed using the MEDLINE database since 2000. Eligible articles with follow-up data available were included.

Results: Eight children were included with a median age at surgery of 12 months [1-183] and a median weight of 10.6 kg [3.6-65]. The defect was bilateral in 6 patients (75%) and right-sided in 2 (25%). Associated malformations were present in 3 children (38%) including 2 patients with Down syndrome and cardiac malformations. One child with Down syndrome and previous cardiac surgery had a recurrence at 17 months postoperatively. In our systematic review (26 articles) 156 patients were included and 10 had a recurrence (6.4%) (none with patch). Recurrence was statistically more frequent in patients with Down syndrome than without Down syndrome (27/36 versus 1/120; $p<0.0001$) and in case of surgical repair using absorbable sutures than non-absorbable sutures (2/4 versus 0/152; $p<0.0001$). The association between recurrence and cardiac surgery could not be studied because of missing data in published articles.

Conclusions: In our study and systematic review, recurrence was more frequent in case of Down syndrome and use of absorbable sutures. The use of a non-absorbable prosthetic patch should be specifically discussed in MH associated with Down syndrome and in patients who underwent previous cardiac surgery to perform a tension-free closure of the diaphragm.

17.19 - 17.21

(83) **Modification of laparoscopy assisted Morgagni-Larey Hernia repair: Mesh reinforcement of diaphragm and knots.** Mehmet Arda, Ergun Karkin, Furkan Karsli, Huseyin Ilhan. Eskisehir Osmangazi University, Faculty of Medicine, Department of Pediatric Surgery. Eskisehir. Turkey.

Aim: Morgagni-Larrey hernia (MLH) is about 2-4% of all diaphragm hernias that is diagnosed incidentally. Besides laparoscopic or open approaches, different types of knot technics have been defined. Laparoscopy assisted repair is frequently preferred. However, a wide range of 0 to 42% recurrence ratio is reported. Owing to scarce number of patient data is limited in the literature, the underlying reason is controversial. We believe that, besides the defective margin of diaphragm, stretched suture between diaphragm and anterior abdominal wall is the matter for recurrence. Therefore, here our mesh supported laparoscopy assisted repair modification is presented.

Material: Between 2010 to 2021 records of patients treated for MLH were evaluated. Type of MLH, associated anomalies, surgical approach, demographic details and postoperative complications and recurrence are extracted.

Modification: We placed a 2*2 cm square, non-absorbable polyester mesh to the abdominal side of diaphragm while performing extracorporeal subcutaneous "u" suture knot tying technic. By means of mesh support, while knots are reinforced, a secured second layer of diaphragmatic edge is also achieved.

Results: A total of 10 patients, ages ranging between 6 days to 9 years, was undergone MLH repair. While respiratory symptoms were predominant, cardiac anomalies were frequent concomitant anomaly and trisomy was specified in two.
All but two not recurred; one following thoracoscopic the other after laparoscopy assisted repair Furthermore, the latter had two recurrences. Thereafter, we have performed modified technic in three patients without complication.

Conclusion: Consequently, low amount of patient and retrospective nature is weak points of the study. However, no complication or recurrence after modification is detected. It could be speculated that, with the diaphragmatic second layer a powered knot achieved. And hence, besides limited number, modification is safe, reliable and promising for laparoscopy assisted MLH repair.

17.21 - 17.23 (31) **Enhanced Recovery After Surgery (ERAS) pathway for patients undergoing MIRPE (Minimally Invasive Repair of Pectus Excavatum): our experience**. Valeria Testa, Giulia Giannotti, Daniele Vavassori, Stefano Mariconti, Maurizio Cheli. Ospedale Papa Giovanni XXIII. Bergamo. Italy.

Introduction: Pectus excavatum is the most common chest wall deformity in paediatric age. Minimally Invasive Repair of Pectus Excavatum (MIRPE) is simpler and less morbid than open resection of costal cartilages. However, it is associated with severe post-operative pain due to the active stretching of the chest wall and intercostal nerves.
In our opinion the more the pain is under control, the better the course will be. In order to achieve rapid recovery, we standardized a protocol about the management of the patient in the perioperative period.

Materials and methods: Since 2002 to today 53 patients (47 boys and 6 girls) affected with moderate or severe pectus excavatum have undergone Nuss technique in our Centre. The mean age was 15 years. The hospitalization lasted 8 days on average.

Results: Preoperatively we underlined adequate bowel preparation, since post-operative analgesics promote constipation, and psychological counselling, to set patient expectations regarding the surgery.
In the post-operative period patients were treated with an epidural catheter containing local anaesthetic and opioid analgesic drugs plus intravenous infusion of paracetamol and NSAIDs as needed for the first 4 post-operative days. Gradual transition to oral medications was then carried out.

Patients were expected to sit in I post-operative day and to walk in II. Furthermore, we encouraged the patient to use a respiratory stimulator to promote lung expansion and avoid the onset of infections.
Pain control was effective and allowed rapid patient mobilization which we believe is essential to reduce complications and hospital stay.

Conclusions: We believe that an effective pain management protocol is the basis of the success of the Nuss procedure. But it is still more important to conceive and follow an enhanced recovery after surgery (ERAS) pathway that promotes a faster recovery and consequently a reduction of hospital stay.

17.23 - 17.25 (46) **Serious neurological complication after mini-invasive pectus excavatum correction in an adolescent.** Pavol Omanik, Igor Beder. Pediatric Surgery Department, National Institute of Children's Diseases. Bratislava. Slovakia.

Adverse reactions and complications in connection with mini-invasive pectus excavatum correction can range from minor to life-threatening. The authors present a unique case of a patient who developed a severe neurological deficit after mini-invasive correction of pectus excavatum.

A 16-year-old patient with symptomatic pectus excavatum, connected with compression of the right atrium and ventricle verified by cardiac workup, was indicated for Nuss correction. Mini-invasive surgery was performed with thoracoscopic assistance, under general anaesthesia with epidural analgesia, without complications. A weak triparesis developed, affecting both the lower limbs and the left upper limb on the first postoperative day. Immediate MRI revealed multi-segmental acute transverse myelopathy ranging from C1 to Th11, with maximal cervical involvement, without intraspinal haemorrhage.

n intravenous combination of antibiotics, virostatics, and anti-oedematous corticosteroids was used in the acute phase of treatment. Both infectious and autoimmune aetiology was ruled out by diagnostic lumbar puncture. The neurological status has gradually improved during intensive rehabilitation in a specialized centre, the patient is able to walk with support, but there is still a problem with micturition and defecation 6 months postoperatively. Follow-up MRI showed significant regression of signal changes as well as spinal cord oedema, reduced to the C5 - Th2 range.

Serious neurological complications associated with general anaesthesia and epidural analgesia in children are rare and their exact incidence is unknown. The causal factors may be iatrogenic occlusion of the anterior spinal artery, perioperative hypotension, the neurotoxic effect of a local anaesthetic, an autoimmune process, an infection or a hematoma in the epidural space. Individual case reports have been published in direct connection with thoracotomy in children, but never after surgical correction of the pectus excavatum so far. Unambiguous aetiology is usually not found (in up to 70% of cases), similarly to the presented case report.

17.25 - 17.27 (45) **The role of anthropologic measurements in pectus carinatum brace treatment evaluation**. Pavol Omanik, Katarina Kozlikova, Natalia Daumova, Veronika Schmidtova, Igor Beder. Pediatric Surgery Department, National Institute of Children's Diseases. Bratislava. Slovakia.

Objectives: Brace treatment in children with pectus carinatum has become the method of choice during the last decade. The authors evaluate the role of anthropometric measurements in diagnostic and treatment processes.

Methods: A prospective study, analysing a compressive brace treatment for pectus carinatum, performed between January 2018 and September 2020. Demographic data, anthropometric dimensions and indexes of the chest, data connected to an orthosis usage, as well as ongoing treatment outcomes were analysed.

Results: Forty-seven consecutive patients aged between 10 to 18 years with pectus carinatum were prescribed a compressive brace. Thirty- nine of them (83 %) reached clinically positive results while wearing the orthosis for 6 ± 3 months. An improvement in the sagittal chest diameter was 0.5 cm – 2.8 cm (mean 1.0 cm ± 0.5 cm) and an improvement of the Thoracic Index was 0.8 % – 25.1 % (6.4 % ± 4.5 %) by using the brace on average for (6 ± 2) hours a day.

Conclusion: Clinical anthropometric measurements can evaluate the dimensions of chest wall and treatment progress in patients with pectus carinatum precisely and thus replace the need for more complex examinations requiring X-rays.

17.27 - 17.29 (8) **Thoracoscopic repair of iatrogenic bronchial injury in a neonate during Bronchogenic cyst excision**. Kirtikumar Rathod, Revathy Menon, Arvind Sinha- AIIMS Jodhpur. Jodhpur. India.

Introduction: Thoracoscopic surgery in children including neonates is slowly gaining popularity. It was not previously embraced due to inappropriate instrumentation, technical challenge, lack of surgical experience. There is a paucity of literature regarding neonatal thoracoscopy, and the management of intraoperative complications in such cases. Iatrogenic bronchial injury is one such rare complication of thoracoscopy with limited availability of data regarding approach to its management.

Presentation of the case: A 25 day old boy, was referred for management of a cystic mediastinal lesion. He was taken up for thoracoscopic excision of the cyst during which injury was sustained to the left bronchus. The bronchial injury was managed successfully by thoracoscopic repair without requirement of conversion to open.

Discussion: Paediatric thoracoscopy has been considered to be safe and acceptable option. There are multiple advantages of thoracoscopy over thoracotomy including better cosmesis, less requirement of post-operative analgesia, shorter hospital stay. Exploration of feasibility of thoracoscopy is necessary at a larger scale especially in neonates so as to be accepted as a standard approach in the future.

Conclusion: Thoracoscopic surgery is safe and feasible in a neonate, and any complication faced maybe tackled without conversion to open provided the surgeon and anaesthetist are able to skilfully ensure adequate ventilation.

17.29 - 17.31 (114) **Minimal invasive approach in the treatment of intestinal atresia: our experience**. Roberta Patti, Maria Scuderi, Vincenzo Di Benedetto. Pediatric Surgery Department Catania University, Catania, Italy.

Introduction: The intestinal atresia is the most important cause of intestinal obstructing in the neonatal period. It includes the duodenal and the jejunal atresia. The presentation varies, based on the localization, but the most common symptom is the vomit that can be bilious or not, based on the type of pre o post-ampullary atresia. The prenatally diagnosis is possible primarily for the duodenal atresia thanks to the presence of dilated proximal small bowel and the polyhydramnios.
We report our experience in the management of the intestinal atresia by the using of minimal invasive approach, focusing on the intraoperative difficulties and follow up.

Material and method: From 2010 to 2022 we collected 30 cases of intestinal atresia, 11 duodenal e 19 jejunal atresia. We considered only 10 cases of pure intestinal atresia, that we treated by minimal invasive surgery (MIS).
The instrument used was a 10 mm 30° degree working camera. We prefer the use of a combined approach; in fact we used the working camera to individuate the point of the obstruction and then we exteriorized the atresia, through the umbilical incision, to do the anastomosis.

Result: We made the anastomosis without difficult thanks to the satisfactory exteriorization of the intestine, that we obtained in all cases. The post-operative course was uneventful. The patients didn't have episode of vomit and they started to eat on the 4° post-operative day. The aesthetic result is excellent, because the umbilical incision became invisible.

Conclusion: Based on our experience the MIS is a very important instrument for the treatment of the intestinal atresia. It permits a good vision of the abdomen, to individuate the eventually other anomalies present and the extension of the atresia, in particularly for the jejunal atresia. Moreover, MIS permits a better post-operative course and an excellent aesthetic result.

17.31 - 17.33 (168) **Unique Presentation of Ectopic Parathyroid Adenoma (EPTA) in Pediatric Patient: A case repor**t. Hanan Said, Enas Ramel, Bshaer Albaihani, Obada Alhalaq. International Medical Center. Jeddah. Saudi Arabia.

Background: Hyperparathyroidism (HPT) is a rare disease in pediatric age. Ectopic PTA is rare but should be considered in cases presented with hypercalcemia.

Case Presentation: A 13 years girl who presented with hypercalcemia and upper abdominal pain due to repeated mild pancreatitis. US neck is normal. CT neck & chest and Tc-99m scanning with single photon emission computed tomography/computed tomography (SPECT/CT) showed ectopic thymic parathyroid adenoma. The family of the patient also has history of Myasthenia gravis. Video-Assisted thymectomy with the ectopic intra-thymic EPTA. Pathology confirmed intra-thymic EPTA and patient's serum calcium level immediately normalized

Conclusion: Diagnosis of HPT and/or EPTA should be considered in any child presented with hypercalcemia. Vides-assisted resection of EPTA is the stander method of management.

17.33 - 17.35 (195) **Thoracoscopic Removal of a Thymic Cyst In Pediatric Age**. Sofia Martinho, Inês Braga, Diogo Galvão, Catarina Barroso, Mónica Recamán, Adelino Leite-Moreira, Jorge Correia-Pinto. Pediatric Surgery Department, Hospital de Braga. Braga. Portugal.

Thymic cysts are a rare and benign anomaly. Most cases are asymptomatic and occur in the anterior mediastinum. There is no consensus regarding the management and surgical indications and an accurate diagnosis before surgery is difficult to make.

A 16 years-old female with maternal history of Immune thyroiditis, presented with supra-sternal foreign body sensation, with no dysphagia or voice changes. On physical examination, a sternal jugular notch swelling with valsalva maneuver was noticed. Routine blood tests showed subclinical thyroiditis and serum carcinoembryonic antigen was normal. Cervical Ultrasound and Chest CT-Scan showed a cystic thymic mass with 42*32 mm in the sternal notch, following the anterior aspect of the brachiocephalic vessels with no signs of invasion of surrounding structures. The MRI showed stability of the mass and backed up the suspicion of a thymic cyst. Ultrasound Guided aspiration biopsy showed cytological study compatible with a cystic lesion and elevated level of CEA.

After this work-up and persistent complaints, a thoracoscopic thymic cyst removal was proposed.

A left thoracoscopy was performed with a 10 mm trocar and two 5 mm trocars. The anterior pleura was opened after identification and preservation of the left phrenic nerve and internal mammary vessels. Dissection was done using blunt dissection and a sealing device combined with Hem-O-Locks to ligate the larger vessels. The right lobe of the thymus was also dissected after right phrenic nerve identification. The lower left portion of the thymus was preserved. An 18Fr chest tube was left for 24 hours. The postoperative recovery was uneventful and the patient was discharged on the following day. Histologic examination revealed a multiloculated thymic cyst.

Thoracoscopic thymectomy is feasible and safe for thymic lesions. After preoperative study, the procedure is proposed for those who are symptomatic with impact on the quality of life.

17.35 - 17.37 (192) **Usefulness of 5 mm stapler for thoracoscopic ligation of proximal fistula in an infant with esophageal atresia and proximal fistula**. Sofia Martinho, Jorge Correia-Pinto, Inês Braga, Rodrigo Roquette, Miroslava Gonçalves. Pediatric Surgery Department, Hospital de Braga. Braga. Portugal.

Introduction: Esophageal atresia (EA) with proximal fistula is the least common type of EA. Its management is always a challenge. Minimally invasive thoracoscopic approach in EA grants a better anatomic visualization, allowing for a more detailed dissection, including these fistulas, otherwise difficult to identify and ligate.

Case report: We herein present in video the thoracoscopic ligation of a proximal fistula (PF) using 5 mm stappler in a late preterm (35+1 weeks), second-twin, low-birth-weight infant with Gross type B EA. The diagnosis of EA was suspected antenatally and confirmed in the immediate postnatal period. A Stamm gastrostomy was placed. The presence of a PF was suspected by the occurrence of a severe respiratory infection and confirmed by a preoperative esophagogram. A thoracoscopy was performed at 2 months of age, while weighing around 4 Kg. A 5mm stappler was used to perform the ligation. Primary anastomosis was not possible due to the long distance between proximal and distal pouches, so a staged repair with internal traction was decided.

Conclusion: In difficult cases with proximal fistula esophageal atresia, 5 mm stappler seems a safe and effective way for a successful ligation.

17.37 - 17.39 (25) **Refractory hyperhidrosis in the pediatric patient: T2-T4 VATS sympathectomy.** Javier Arredondo Montero, Pilar Guillén Redondo, Carlos Bardají Pascual. Complejo Hospitalario de Navarra. Pamplona. Spain.

Introduction: Hyperhidrosis is an infrequent entity in pediatrics that, in most cases, responds adequately to medical management. The refractoriness of the symptomatology to such treatments, which usually entails an important limitation of daily activities and a marked psychological affectation, is one of the indications to consider the surgical approach, consisting of a segmental thoracic sympathectomy.

Objectives: To present in detail the surgical procedure performed in a 14-year-old patient with palmar hyperhidrosis refractory to medical management, in whom a bilateral T2-T4 video-assisted thoracoscopic T2-T4 sympathectomy was performed.

Material and methods: The clinical case and an explanatory video montage detailing the fundamental surgical steps executed during the course of the intervention are presented.

Discussion: Hyperhidrosis is an infrequent entity in pediatrics and its surgical correction, although there is a well-established technique with good results, is uncommon. It is important to remember that among the side effects of this procedure is compensatory hyperhidrosis in other areas of the body, such as the back and soles of the feet.

17.39 - 17.41

(18) **Pleural Drainage VS Video-Thoracoscopic Debridment in children affected by Pleural Empyema: a Multicentric Retrospective Study.** Alberto Ratta, Rossella Angotti, Francesca Nascimben, Veronica Carlini, Camilla Todesco, Lorenzo De Biagi, Simona Straziuso, Francesco Italiano, Vincenzo Domenichelli, Mario Messina, Francesco Molinaro. Pediatric Surgery Unit, Infermi Hospital AUSL Romagna. Rimini. Italy.

To make a comparison between thoracic drainage and Video-Assisted Thoracic Surgery (VATS) in treatment of pleural empyema in pediatric patients through the analysis of a multicenter experience.

This retrospective multicenter cohort study includes all pediatric patients affected by pleural empyema treated from 2004 to 2021 in two Italian centers. Patients were divided in G1 (traditional approach) and G2 (VATS). Demographic and recovery data, laboratory tests, imaging, surgical findings, post operative management and follow up were analized.

A total of 70 patients, 40 male (57.2%) and 30 female (42.8%), with a mean age of 4.8 years were included. G1 included 12 patients (17.1%), G2 58 (82.9%). The median surgical time was 45 minutes in G1, 90 in G2 ($p<0.05$). The mean duration of thoracic drainage was 7.3 days in G1, 6.2 in G2 ($p>0.05$). Patients became afebrile after a mean of 6.4 days G1, 3.9 in G2($p<0.05$). The mean duration of antibiotic therapy was 27.8 days in G1, 25 in G2($p<0.05$). The mean duration of postoperative hospital stay was 16 days in G1, 12.1 in G2 ($p<0.05$). There were 4 cases (33.3%) of postoperative complications in G1,17 (29.3%) in G2 ($p>0.05$). 2 (16.7%) patients of G1 needed a second surgery with VATS, 1 (1.7%) in G2.

For diagnosis of Pleuric Empyema is essential performing US which is alusefull to identify the correct therapeutical strategy and its efficacy. PCR helps the clinicians to chose the best antibiotic, so itshoudl be always asked. VATS is an effective and safe procedure in treatment of Pleuric Empyma in children: it allows precise placement of the chest tube, removal of pleural fluid and peel on the surface of the lung. It is associated to reduction of chest tube drainage, duration of fever, hospital stay, time of antibiotic therapy and recurrence rate.

17.41 - 17.43

(68) **Thoracoscopic approach of a left accessory lobe associated with a Congenital Pulmonary Airway Malformation.** Fati Federica, Pani Elisa, Beretta Fabio, Corroppolo Michele, Mazzero Giosuè, Revetria Clara, Sadri Hamid-reza, Ciardini Enrico. Pediatric Surgery Unit, Women's and Children's Health Department, University Hospital of Padua. Padova. Italy.

I***ntroduction:*** Congenital pulmonary airway malformation (CPAM) is a rare disease due to abnormalities of lung embryogenesis development rarely associated with anatomical pulmonary variants, such as accessory cardiac bronchus (ACB) and tracheal bronchus (TB). No guidelines are validated to guide the management of these anatomical malformations. Preoperative knowledge of individual bronchovascular configurations is helpful to plan the surgical approach.

Methods: We present a rare case of left accessory lobe associated with CPAM, diagnosed during surgery. Data on perioperative management and outcome were retrieved.

Results: We present the case of an eight months old male with a prenatal diagnosis of CPAM. A CT scan at 3 months old that described a pulmonary malformation of the upper left lobe, with a well defined outline and a liquid content, with no systemic vascularization, no other anatomical characteristics were found. A minimally invasive thoracic surgery was performed identifying a lung's malformation completely apart from the upper lobe with its vessel and bronchus consequently removed en bloc. The pathology report described the presence of normal lung parenchyma with its own pleural sierosa associated with multiple cystic lesions of a few millimeters, compatible with the diagnosis of the accessory lobe with CPAM type 2 based on stoker classification.

Conclusions: The tracheal bronchus is an anatomical variation well known in adults and described as supernumerary when it coexists with a normal type of branching of the upper lobe bronchus. On the left side, this anatomical variant is rare and usually found incidentally during surgery. To our knowledge, this is the first case of left accessory lung associated with a CPAM in children. Due to the lack of information, it is possible to apply the same principles used for cystic lung malformations, to treat and even prevent complications.

17.43 - 17.45

(152) **Thoracoscopic pericardial window. How to approach pericardial pathology in the pediatric patient: review of the literature and presentation of a case.** Isabel Bada Bosch, María Antonia García-Casillas, Ramón Pérez Caballero, Agustín Del Cañizo, Laura Pérez Egido, Manuel De la Torre, Javier Ordoñez, María Dolores Blanco, Juan Carlos De Agustín. Hospital General Universitario Gregorio Marañón. Madrid. Spain.

Introduction: Minimally invasive surgery is currently the standard for performing pleuropericardial windows in adults, however, there are only 5 published cases of performing pericardial windows and 22 of thoracoscopic pericardiectomies in children.

Clinical case: We present the case of an 11-month-old girl with idiopathic chronic pericardial effusion in the context of Aymé-Gripp Syndrome which, after not responding to medical and interventional treatment, was resolved by this technique without incident or recurrence.

Discussion: The conventional approach to pericardial pathology in children is thoracotomy or median sternotomy. Both are aggressive and have high rates of respiratory, muscular and analgesic control complications. The subxiphoid approach has been presented as a less invasive alternative; however, the limited exposure it allows has important limitations, as well as a high recurrence rate. Thoracoscopy combines the advantages of both techniques with few disadvantages.

Conclusions: Despite its scarce representation in the scientific literature, thoracoscopy is a technique that is not only safe, but also provides multiple advantages over conventional approaches to perform pericardial windows in children.

17.45 - 17.47 (147) **Pulmonary sequestration and thoracoscopic resection: selected findings.** Jonathan Aichner, Steven Rothenberg, Philipp Szavay. Lucerne Cantonal Hospital. Lucerne. Switzerland.

Objective: Most congenital pulmonary airway malformations (CPAM) are diagnosed prenatal. As pulmonary sequestration (PS) is defined by a systemic feeding vessel and isolated from the bronchus, diagnostic work-up as well as intraoperative findings are not always as conclusive. Thoracoscopic resection of PS has meanwhile been established. We aim to present a case series with rather unusual findings.

Method: General approach for the thoracoscopic resection is in a lateral decubitus position with the use of a 5 millimeter (mm) thoracoscope and two 3 mm working ports.

Cases:

- Patient 1 (8 months): "Diaphragmatic duplication" was indicating a PS located atypical at the ventromedial right-sided thoracic wall and blood supply arising from a nearby ventral vessel.
- Patient 2 (6 years): PS was firmly attached to the left lower lobe. Dissection was achieved with a 5 mm linear stapler. Preoperative imaging could not define the blood supplying vessel.
- Patient 3 (2 days): Preoperative imaging showed an unclear hyperechogenic structure enclosed to a diaphragmatic herniation without any perfusion. In situ a PS with blood supply by a small vessel rising of the peritoneal coverage of the hernia could be detected and excised.
- Patient 4 (17 months) was suffering from a complex cardial anomaly with pericardial agnesia and a retrocardial PS. A thoracoscopic excision of the PS was achieved. Blood supply was provided by a vessel from the Truncus coeliacus.

Conclusion: Even though preoperative high-resolution imaging is available, intraoperative findings can differ. Special attention should be paid to careful dissection and identification of any unexpected blood supply. Previous operations on the chest are no exclusion criteria for VATS.

17.47 - 17.49 (137) **Successfully elective thoracoscopical resection of Complicate Extralobar Bronchopulmonary Sequestration after Intrafetal Vascular Laser Ablation Case Report: the paediatric surgeon's point of view**. Giulia Fusi, Agnes Sartor, Marion Groussolles, Solene Joseph, Julie Vial, Lea Rodotis, Christophe Vayssiere, Olivier Abbo. Department of Pediatric Surgery, Hôpital des Enfants de Toulouse, CHU Toulouse. France.

Extralobar bronchopulmonary sequestration (BPS) is a rare congenital lung malformation that can occasionally present with prenatal complication such as hydrothorax, ascites and hydrops, correlated to high incidence of foetal or neonatal death. In these cases, mortality and morbidity are considerably increased and prenatal treatment might be mandatory. Prenatal percutaneous ultrasound-guided laser ablation of the feeding artery has been attempted as an option to improve survival allowing the foetus to reach an acceptable gestational age, but not always resulting in lesion disappearance.

Since the first case of complicated foetal BPS was successfully treated with intrauterine ultrasound guided laser coagulation of the feeding artery in 2007, few reports of laser coagulation for foetal BPS have been published, essentially due to the rarity of the disease. Additionally, very few of the published studies focus also on the postnatal management, with results limited and partly controversial. To date post-natal treatment of residual malformation remains debated, hence the need to share our experience of a combined pre- and postnatal approach to complicated extralobar BPS.

17.49 - 17.51 (134) **Consecutive bilateral spontaneous pneumothorax with accidentally diagnosed CDH: the power of MIS; video case presentation**. Ede Biro, Barnabas Rozsai, Zsolt Oberritter, Peter Vajda. Department of Paediatrics, Division of Paediatric Surgery, University of Pecs. Pecs. Hungary.

Introduction: The management of the first episode of spontaneous pneumothorax (PTX) is controversial. Baseline principles of decision-making to determine the ideal initial curative intervention are still debated. The size of the PTX varies and may have a significant impact on successful management. Simple aspiration, chest tube drainage, or VATS are advocated as possible optimal treatment modalities.

Case presentation: A 15 years old boy with sudden onset right-sided stabbing chest pain was seen in the emergency department. Past medical history and family history were negative, there was no trauma is anamnesis. Chest X-ray showed a large, right-sided PTX. Chest tube insertion was performed under combined local analgesia and intravenous sedate-analgesia. Digital, „smart" chest drainage systems was applied to monitor air leak first at -5 cm of water, then from day 3 at -10 cm of water unsuccessfully. Chest HR-CT showed bilateral multiple bullae at the upper lung lobes. Right-sided biportal VATS wedge resection with pleurectomy was done using staplers. The patient was discharged on postop day 3. Six days later left-sided chest pain developed at rest. X-ray demonstrated left-sided PTX. Aspiration treatment was ineffective, thus VATS wedge resection with pleurectomy was performed as curative treatment. During the procedure, approximately 3 cm in diameter left-sided postero-lateral CDH was diagnosed. To repair percutaneous suturing technique was applied. The postop course was uneventful.

Conclusions: An ideal algorithm for the treatment of pediatric spontaneous pneumothorax is still missing. The unsuccessfully chosen first treatment can lead to prolonged hospitalization. However, a considerable portion of patients can be treated conservatively with no recurrence. Nowadays extensively growing application of MIS surgery with all of its benefits offers a competitive alternative to all other treatment modalities.

17.51 - 17.53 (177) **A safe and effective approach to bilateral thoracoscopic apical bullectomy.** Vanessa Coles, Vivek Gaikwad, Philip Hodgson, Jakub Kadlec, Ashok Ram. Norfolk and Norwich NHS Foundation Trust. Norwich. United Kingdom.

Background: Thoracoscopic bullectomy is a well-established practice for primary spontaneous pneumothorax. If bilateral procedures are needed, surgeons prefer to do one side at a time. We describe a situation where we safely performed a bilateral procedure as the patient's condition warranted.

Case Description: A 15-year-old boy was booked for an elective left sided thoracoscopic apical bullectomy and pleurectomy for recurrent bilateral pneumothorax and CT proven apical bullae. The larger and more numerous lesions were on the left and thus the plan to perform the left side first followed by the right a few months later. However, the day before his planned operation, he presented with a large right sided pneumothorax that required an emergency chest drain.

The decision was made to proceed with a bilateral thoracoscopic apical bullectomy.
The patient was anaesthetised in theatre and a left sided thoracostomy was performed at the time of intubation (the right side already had a chest drain). This is a crucial step to decompress the pleural spaces in anticipation of possible pneumothorax during the procedure.
The patient was placed in a supine position with both arms extended above the head to gain access to both thoracic cavities.
Single lung ventilation was used alternatively for each thoracic cavity.
Standard 3 port procedures were done on either side using LigaSure for apical bullectomy and pleural abrasion, followed by chest drains.
The procedure was uneventful with minimal blood loss and air leakage.
The patient recovered well and was discharged on day five after both drains had been removed. He continues to do well, with no recurrence of pneumothorax

Discussion: Bilateral thoracoscopic bullectomy can be done safely and effectively. Both pleural cavities must be decompressed at the start of the procedure. We aim to follow the technique for future patients needing bilateral procedures under one anaesthesia.

17.53 - 17.55

(119) **Smartphone App for the management of foreign bodies ingestion in pediatric age**. Marco Di Mitri, Giovanni Parente, Simone D'Antonio, Eduje Thomas, Chiara Cordola, Mario Lima. Department of Pediatric Surgery, IRCCS, University Hospital of Sant'Orsola. Bologna. Italy.

Background: Foreign bodies ingestion (FBI) is the most common cause of urgent esophagogastroscopy in pediatric age. Management of foreign bodies ingestion is a challenge for pediatricians and pediatric surgeon because of the characteristics of the foreign body (dimension, form) and little age.
From clinical point of view, FBI may result in asymptomatic cases but also in a potentially fatal event. To decide if to remove a foreign body, it's necessary analyze patient's age, type of foreign body (disk battery, magnet, vulnerable, food impaction and not vulnerable), localization, time from ingestion and comorbidity.
Latest technological progress allowed to develop smartphone applications to support and help doctors to patient's management. For this purpose, we developed a smartphone application for pediatricians and pediatric surgeon to give a guided way on management of foreign bodies.

The aim of this study is reviewed most important guidelines on management of foreign bodies in pediatric age, generating a diagnostic-therapeutic way for these patients. Moreover, we created an application for smartphone, downloaded on Google play store and Apple store, in which we inserted these guidelines to make information easily accessible to all and standardize treatment of child ingested foreign bodies.

Matherials and methods: This manuscript analyzes the most important guidelines for management of foreign bodies in pediatric age. The indication reported on guidelines were summarize trough flowcharts. Moreover, we developed an application for smartphone with such information.

Conclusion: This APP allow pediatricians and pediatric surgeons to have updated guidelines handy. Diffusion of APP will guarantee uniformity and standardization on treatment of child who ingested foreign bodies. FBI in children represent a diagnostic/therapeutic dilemma for pediatricians and pediatric surgeons. The introduction of smartphone application might allow a prompt use of update guidelines on the matter.

17.55 - 17.57

(58) **Ingestion or aspiration, how to manage? - Challenging cases**. Sertac Hancioglu, Basak Dagdemir Ezber, Beytullah Yagiz, Merve Celenk, Berat Demirel. Ondokuz Mayıs University, Medical School, Department of Pediatric Surgery. Samsun. Turkey.

Aim: Foreign body ingestion (FBI) and aspiration (FBA) are common emergencies especially in small children. We aimed to compile the examinations and interventions we performed on pediatric patients who applied to the tertiary center, who had no history, but whose symptoms were compatible with both FBI and FBA.

Methods: After IRB approval pediatric patients lower than 5 years of age, admitted to tertiary center between January 2011 and December 2020 with no witnessed history, however with symptoms associated both FBA and FBI were evaluated in terms of age, gender, history, symptoms, findings, intervention and underlying causes. Radiopaque FBs were excluded from the study.

Results: There were 78 patients (51 males, 27 females), with a median age of 1.5 (0.31-4.83). The median duration of symptoms was 10 hours (3-288). Cyanosis and flushing in 51 patients (65.4%), cough in 50 (64.1%) patients, respiratory distress in 27 patients (34.6%), drooling in 34 (43.6%) patients, retching and vomiting in 63 patients (80.3%) were noted. While unilateral respiratory sounds were decreased in 37 (47.4%), wheezing was detected in 47 patients (60.3%). While no finding was detected in 32 patients (41%) on chest X-ray, unilateral hiperaeration in 26 (33.3%), pneumonic infiltration in 15 (19.2%) and atelectasis in 5 (6.4%) patients were detected. All patients underwent bronchoscopy. Foreign body was removed in 20 patients (25.6%). Esophagoscopy was performed in 48 (61.5%) patients with suspected FBI. Food impact was removed in 5 patients who underwent esophagoscopy. Six patients who were thought to have swallowing dysfunction were referred to the Gastroenterology department.

Conclusions: FBI and FBA are conditions that require different interventions. Considering the general condition of young children, symptoms and signs, emergencies should be determined and the decision for intervention or follow-up should be planned without delay.

17.57 - 17.59

(125) **Tru-Cut ultrasound guided biopsy in pediatric oncology: a single centre study**. Perla Bonifazi, Anna Fagnani, Giulia del Re, Alessandra Preziosi, Anna Morandi, Anna Ierardi, Ernesto Leva. Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico. Milano. 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 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 rabdomiosarcoma, 1 ovaric fybroma, 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 (rabdomiosarcoma) a second US Tru-cut of the homolateral linfonodal region was performed for disease staging.

Conclusions: Our experience demonstrates 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.

17.59 - 18.01

(82) **The benefits of magnetic-assisted surgical procedures: a case report.** Isabel González-Barba Neira, Laura García Martínez, Ana Laín Hernández, Carlos Giné Prades, Rodrigo Maluje Juri, Manuel López Paredes. Hospital Universitario Vall d'Hebron. Barcelona. Spain.

Introduction: Magnetic devices are helping to overcome certain limitations encountered during minimally invasive procedures, such as triangulation and tissue mobilization. Magnetic anchor guided systems have been developed to assist endoscopic submucosal dissections and single-port laparo-thoracoscopic procedures. Other applications include the retrieval of retained surgical items and sharp ingested metallic foreign bodies. Our objective is to showcase the benefits of magnetic-assisted surgical procedures through a case report.

Case Report: A 5-year-old patient was referred with colic abdominal pain, emesis and a witnessed magnet ingestion two days prior to the onset of symptoms. Upon physical examination, the patient was stable and showed no signs of peritoneal irritation. The abdominal X-ray showed multiple radiopaque balls forming a rosette in the hypogastrium. The lack of progression on the serial x-ray warranted a surgical exploration. Initially, an exploratory laparoscopy was carried out, identifying a conglomerate of intestinal loops in the right lower quadrant. Given the nature of the ingested foreign body, an external abdominal magnetic exploration was carried out. The magnetic pull caused the balls to move along the digestive tract and out into the abdominal cavity through an entero-enteric fistula.

Through a mini-lap midline incision the abdominal cavity was carefully examined and the remaining 17 magnets were extracted through the perforated segments. A total of four entero-enteric fistulae were found in the terminal ileum, all located within twenty centimeters of the ileocecal valve.

The 4cm-ileal-segment that contained two of the fistulae was resected. An end-to-end anastomosis was carried out along with the simple suture of the remaining two fistulae. The patient was discharged after a five-day hospital stay without complications.

Conclusion: The benefits of magnetic-assisted surgical procedures are patent in this case report: the transabdominal magnetic exploration helped to identify an entero-enteric fistula and enabled a targeted laparotomy through a mini-lap incision.

18.01 - 18.03

(50) **Utility of IRIS (INFRARED ILLUMINATION SYSTEM) as a global positioning system (GPS) in pediatric thoracoscopic procedures**. Isabel González-Barba Neira, Ana Laín Fernández, Laura García Martínez, Carlos Giné Prades, Rodrigo Maluje Juri, Manuel López Paredes. Hospital Universitario Vall d´Hebron. Barcelona. Spain.

Introduction: Intraoperative navigation tools, such as infrared emitting probes, are helping to improve the precision and safety of minimally invasive procedures by outlining crucial anatomical structures.
There is limited experience with IR technology in pediatric thoracic procedures. In this case report we describe the use of Stryker's IRIS Ureteral Kit to identify a complex bronchoesophageal fistula vía thoracoscopy.

Clinical Case: An 11-year-old patient with a history of EA/TEF, who initially underwent a right thoracotomy and was subsequently subjected to a left thoracoscopy due to re-permeabilization of the TEF. Despite both surgical procedures, the patient presented multiple episodes of pneumonia and ongoing respiratory symptoms. Contrast-enhanced imaging, computed tomography, bronchoscopic and endoscopic examinations confirmed the presence of a bronchoesophageal fistula, involving the right upper bronchus. After an unsuccessful attempt of endoscopic fulguration and clip closure of the fistulous tract, surgical treatment via right thoracoscopy was planned.

Initially, an endoscopic examination was performed, identifying the fistulous orifice in the mid-thoracic esophagus. The fistulous tract was tutorized with the IRIS probe under direct endoscopic vision. Subsequently, a right thoracoscopy was performed. Guided by the infrared signal, the fistula was easily identified and dissected. Closure was achieved using the ENDO-GIA stapler. The suture was reinforced with a pleural flap. The patient was discharged after a six day hospital stay, without complications.

Conclusion: The IRIS probe served as a GPS and helped to easily identify a complex fistula vía thoracoscopy despite a history of open surgery and recurrent episodes of pneumonia.

18.03 - 18.05

(13) **Urachal Cysts are reasonable causes for unexplained abdominal pain – Case report in children and review of articles**. Sarah Ellul, Adrienne Marie Zerafa Simler, Mohamed Shoukry. Mater Dei. Msida. Malta.

Aim: Persistent Urachal cysts (UC) are rare congenital pathologies caused by failure of obliteration of urachal remnant. This may lead to potential morbidities including infection and fistula formation. Presentation of such pathology varies resulting in significant delay in diagnosis. This article reports mysterious presentations of UC in children were investigated for solely non-specific abdominal pain.

Case Presentation: Two cases presented to causality with worsening central abdominal pain associated with occasional vomiting for the previous 4-6 months.
Physical examination of both children revealed tenderness over the peri-umbilical area with no palpable masses. The girl had a normal white cell (WCC), neutrophil count and C-Reactive Protein (CRP), whilst the boy was noted to have an elevated WCC and neutrophil count but normal CRP. The radiological modality of choice was the ultrasound scan (USS), whereby incidental findings were visualised: 2cm cylindrical hypoechoic structure within the anterior abdominal wall, deeper to the abdominal recti and close relation to urinary bladder in the first case. However, a rounded, fibrosed lesion over the superior aspect of the bladder dome, with a fibrosed tract was visible in the second one.

Laparoscopic findings for first case, noted a UC with a visible midline patent tract connecting to urinary bladder; such connection was confirmed using injected saline. During the second case, the cystic structure, (close to the urinary bladder dome) was connected to the umbilical stump. In both cases, both the UC and tract were dissected off and completely resected.
Both had an uneventful post-operative recovery, with no further episodes of abdominal pain during their follow-up appointments.

Conclusion: Persistent UC could be easily mis-diagnosed with other commoner surgical abdominal pains. High suspension, careful examination and relevant radiological investigations, lead to an earlier diagnosis and proper surgical management.

08.00 - 08.45

SESSION VII: UROLOGY 2
CHAIRMEN: MARIA ESCOLINO (IT) AND BARAN TOKAR (TR)

08.05 - 08.10

(135) **Retrograde endopyelotomy in recurrent pyeloureteral obstruction.** María Dolores Blanco Verdú, Beatriz Fernández Bautista, Rubén Ortiz Rodríguez, Laura Burgos Lucena, José María Angulo Madero. Hospital General Universitario Gregorio Marañón. Madrid. Spain.

Introduction: The number of patients with recurrent pyeloureteral junction obstruction (PUJO) is small. However, treatment in these cases remains controversial. Repyeloplasty is the most used treatment for these patients. Endourological techniques are a minimally invasive alternative for failed pyeloplasty. The objective is to present our experience in the use of fiber laser retrograde endopyelotomy.

Material and Methods: We present three patients with recurrent ureteropelvic junction obstruction treated by retrograde endopyelotomy. All had been previously treated by dilation of the ureteropelvic junction with a high-pressure balloon with subsequent worsening of renal dilatation and obstructive curve in the renogram. The technique consists of initially performing a cystoscopy with placement of a high-pressure balloon over a guidewire in the obstructed ureteropelvic junction. Subsequently, a ureterorenoscopy is performed, locating the balloon and performing an endopyelotomy on the lateral and inferior margin to avoid vascular injuries.

Results: Three patients were included. The ages of the patients were 5, 3 and 2 years. The median surgical time was 50 minutes (42-65). Holmium fiber laser was used. A double J catheter exteriorized with thread was left in all patients for 5 days. Bladder catheterization time was 24 hours. The hospital stay was 24 hours. Mean follow-up was 1.5 years (1-2). There was an improvement on ultrasound in all patients.

Conclusion: Retrograde endopielotomy is minimally invasive technique and an effective technique to treat recurrent PUJO after failed pyeloplasty in children. In our experience, it reduces kidney damage without increasing complications.

08.10 - 08.15

(128) **Ipsilateral laparo-assisted ipsilateral uretero-ureterostomy for the treatment of ureteral ectopia in children.** Isabel Bada Bosch, Beatriz Fernández Bautista, Javier Ordoñez, Rubén Ortiz, Laura Burgos, Alberto Parente, José María Angulo. Hospital General Universitario Gregorio Marañón. Madrid. Spain.

Introduction: Inguinal uretero-ureterostomy has previously been reported to have good results in the treatment of pathology associated with duplex kidneys. We present our results using a video-assisted technique.

Methods: In the last 8 years we have treated 10 patients (11 ureters): 9 ectopic ureters, 1 ureterocele and 1 vesicoureteral reflux in a duplex system; all refractory or non-candidates to endoscopic treatment. Four underwent surgery due to increasing ureteral dilatation in imaging tests (asymptomatic), 3 had clinical symptoms of urinary incontinence and 2 had recurrent infections. Mean age at surgery was 4.23 years.

Firstly, a ureteral stent is placed in the non-ectopic ureter in order to facilitate laparoscopic localization and differentiation of the ureters. Subsequently, a 3-trocar laparoscopy is performed using 2 5mm incisions and a 10mm incision in the ipsilateral iliac fossa through which both ureters are exteriorized, thus performing an extracorporeal anastomosis.

Results: Median operative time was 99.5min and median postoperative stay was 2 days. In all patients a bladder catheter was left in place for 24-48 hours and a double J for a median of 33 days. One patient required early reoperation. In all patients ureteral dilatation disappeared postoperatively, and those who presented with clinical symptoms, were completely asymptomatic with a mean follow-up of 29.52 months.

***Conclusion*:** Video-assisted uretero-ureterostomy is a minimally invasive technique that allows us to combine the benefits of minimally invasive surgery with the technical ease of an open anastomosis. We present a small series of patients with good medium-long term results.

08.15 - 08.20 (139) **Voiding dysfunction after treatment of vesicoureteral reflux according to the laparoscopic Lich-Gregoir technique: comparison of unilateral and bilateral reimplantations.** Don-André Vincentelli, Sophie Vermersch, Manuel Lopez, Florence Lardellier, Claire Montmartin, François Varlet, Aurelien Scalabre. CHU Saint Etienne. Saint-Etienne. France.

Introduction: The aim of this study was to evaluate laparoscopic extravesical reimplantations with Lich Gregoir technique for the treatment of vesicoureteral reflux (VUR) with comparison of unilateral and bilateral reimplantations, and particular attention to possible voiding dysfunction.

Methods: This retrospective monocentric study included all children presenting with symptomatic VUR (recurrent urinary tract infection despite optimal medical treatment) and/or with deterioration of renal function on isotope renography, operated by laparoscopy between January 2011 and December 2019.

Results: 72 patients (56 girls and 16 boys) with a mean age of 3.9 years +/-2.5 were included with a mean follow-up of 3.4 years +/-2.6. 56 patients had unilateral and 16 had bilateral RVU. The mean age and grade of reflux were comparable between unilateral and bilateral VUR. Twenty were outpatient procedures.

The rate of postoperative acute urinary retention was significantly higher after bilateral reimplantation (18.8% vs. 1.8%, p=0.03). All 4 cases of urinary retention (3 in the bilateral group and 1 in the unilateral group) were treated by catheterism and resolved in 1, 3, 5 and 9 days without any long-term bladder paresis. The rate of postoperative pyelonephritis was not significantly different after unilateral and bilateral reimplantation (25% vs 16%, p=0.5).

Recurrence of VUR was assessed in 3 cases of unilateral reimplantation (treated by redo surgery in 2 and endoscopic injection in 1 case) and 1 case of bilateral reimplantation (treated by endoscopic injection). The overall recurrence rate of reflux was 5.5%.

Conclusion: The risk of voiding dysfunction is higher after bilateral laparoscopic extravesical ureteral reimplantation than after unilateral reimplantation. However, urinary retention is usually resolutive after of few days of catheterism and no long-term consequence. Dissection of the lower ureter should remain minimal to avoid any nervous injury.

08.20 - 08.25 (169) **Endourologic retrograde balloon dilatation of the ureterpelvic junction obstruction in children: results of a large series.** Javier Ordóñez, Rubén Ortiz, Parente Alberto, Laura Burgos, Beatríz Fernández-Bautista, Laura Pérez-Egido,Isabel Bada, José María Angulo. Hospital General Universitario Gregorio Marañón. Madrid. Spain.

Purpose: The objective is to analyze the effectiveness, complications and outcome of the patients with ureteropelvic junction obstruction (UPJO) treated by endoscopic retrograde balloon dilatation (ERBD) performed in our institution.

Materials and methods: Between July 2004 and September 2018, 112 patients with primary unilateral UPJO were treated by ERBD. Endoscopic treatment consisted on a retrograde balloon dilatation of the ureteropelvic junction (UPJ), through cystoscopy and under fluoroscopic guidance, using 4 to 7 mm high-pressure balloon catheters. In case of persistence in the balloon notch, a Cutting Balloon™ catheter was used (diameter of 2.5 to 5 mm). Double-J stent was placed after dilatation. Minimum follow-up was 18 months.

Results: Mean age at surgery was 13.1±21.3 months (mean±SD), 92 cases being younger than 18 months. Mean operative time was 24.4±10.3 minutes; hospital stay was 1 day in 82% of patients. No intraoperative complications occurred. UPJ was calibrated at time of stent removal with cystoscopy 39.1±13.7 days after dilatation. ERBD was not possible in 11 cases. An additional procedure was needed in 24 cases: second ERBD (n=11, 7 during the stent withdrawal), a third dilatation (n=3) due to persistent hydronephrosis, and percutaneous endopyelotomy (n=3) or open pyeloplasty (n=7) in cases of technical failure. Significant improvement in postoperative ultrasound measures were observed (p<0.05, T-test). Long-term success rate was 76.8% after one dilatation, and 86.6% in those who required up to 2 dilatations. Mean follow-up was 66.7±37.5 months.

Conclusions: In this report of HPBD in UPJO (the largest in the literature), we present this technique as a feasible and safe option. Long-term outcome is acceptable with a very low complication rate. Furthermore, this technique does not alter the external anatomy of the ureter or renal pelvis, so the surgical field is intact in case of needing a pyeloplasty.

08.25 - 08.32 (179) **Need of ureteric reimplantation after endoscopic dilatation of primary obstructive meagureters: risk and protective factors.** Sonia Pérez-Bertólez, Oriol Martín-Solé, Isabel Casal, Blanca Capdevila, Mar Carbonell, Xavier Tarrado, Luis García-Aparicio. Hospital Sant Joan de Déu. Barcelona. Spain.

Purpose: The high-pressure balloon dilatation (HPBD) of the ureterovesical junction with double-J stenting is a minimally invasive alternative for first line primary obstructive megaureter (POM) surgical treatment instead uretearl reimplantation or cutaneous ureterostomy. The aim of our study is to identify the risk factors associated with the need of ureteric reimplantation due to failure of HPBD.

Material and methods: Prospective data collection of patients who underwent HPBD for POM from 2007-2021 at a single institution. Collected data were: patients' demographics, diagnostic modalities, surgical details, results and follow-up. A multivariate logistic regression analysis was performed in order to identify risk factors for need of secondary ureteric reimplantation.

Results: Fifty-five ureters underwent HPBD for POM 50 children, with a median age of 6.4 months (IQR: 4.5-13.8). Nineteen patients (37.25%) underwent secondary ureteric reimplantation, a median of 9.8 months after primary HBPD (95%CI: 6.2 to 9.9). Median follow-up was 29.4 months (IQR: 17.4 to 71). Independent risk factors for redo-surgery in a multivariate logistic regression model were: progressive ureterohydronephrosis (OR=7.8; 95%CI: 0.77-78.6) and early removal of double-J stent. A risk reduction of 7% (95%CI: 2.2%-11.4%) appears per extra-day of catheter maintenance. The optimal cut-off point is 55 days (it predicts failure with a Sensitivity of 69% and Specificity of 68%, correctly classifying 69% of patients), ROC curve area: 0.77 (95%CI: 0.62-0.92). Sex, distal ureteral diameter, pelvis diameter, dilatation balloon diameter and preoperative differential renal function did not have an impact on the need of reimplantation.

Conclusions: The use of double-J stent for at least 55 days seems to avoid the need of a secondary procedure. Therefore, we recommend removing the double-J catheter at least 2 months after HBPD.

08.32 - 08.39

(180) **Local steroid injection: a novel treatment for idiopathic urethritis in children.** Sonia Pérez-Bertólez, Isabel Casal, Oriol Martín-Solé, Mar Carbonell, Blanca Capdevila, Xavier Tarrado, Luis García-Aparicio. Hospital Sant Joan de Déu. Barcelona. Spain.

Purpose: Idiopathic urethritis (IU) in children has an unknown etiology, it is difficult to manage and there is no recommended therapy. We aim to report our preliminary experience with local steroid injection for IU in children.

Material and methods: Prospective data collection of all male children diagnosed with IU over a period of 2 years. Visual confirmation of IU was obtained cystoscopically. In case of stricture (grade III), an internal urethrotomy was performed. Finally, 40 mg of triamcinolone acetonide was injected into the inflamed area under direct vision using a 3.7 Fr x 23G (tip) x 350 mm metal needle. Data were collected on patient demographics, laboratory and radiological investigations, cystoscopy findings, management, and outcomes. This study was approved by the corresponding ethics committee.

Results: A total of 7 male children were diagnosed with IU. The mean age was 12.7 (10–15) years. Presenting symptoms included frank hematuria in 4; dysuria in 2; penile pain in 1; weak urinary stream in 2 and urinary retention in 2 patients. Baseline laboratory blood tests, urine cultures, and ultrasound were normal in all patients. Cystourethroscopy revealed grade I urethritis in 2 (28.6%) patients, grade II in 3 (42.8%), and grade III in 2 (28.6%). Mean follow-up was 12.1 (2–23) months. Complete resolution of symptoms and signs occurred in 6 patients (85.7%). The remaining patient (14.2%) did not achieve total remission but did substantially improve symptoms and signs.

Conclusions: This small prospective series demonstrates that intraurethral injection of steroids seems to be a promising treatment option of IU in children.

08.45 - 09.30

SESSION VIII: THORAX 2
CHAIRMEN: PHILIPP SZAVAY (CH) AND XAVIER TARRADO (ES)

08.45 - 08.52

(111) **Embolization vs surgical approach: which is the preferential treatment of pulmonary sequestrations? report of a multicentric experience**. Ciro Esposito, Fulvia Del Conte, Ane Lehn, Mariapina Cerulo, Maria Escolino, Francesco Borgia, Francois Becmeur. Federico II University Hospital of Naples. Naples. Italy.

Aim: was to evaluate and compare embolization and surgical approach to treat pulmonary sequestrations in pediatric patients.

Methods: This is a retrospective multicentric study. Patients who received embolization or surgical treatment for pulmonary sequestration between January 2010 and December 2020 were included. Treatment indication was a principled choice.

Results: Forty-three patients were included and divided into two groups based on treatment received: G1 surgery (n = 29) and G2 embolization (n = 14). The median age at treatment was 14.5 months (range 3- 82.0) in G2, and 7.5 months (range 2 - 180.0) in G1 (P= 0.9). As for the weight, the median at treatment was 13.5 Kg (range 5.8- 24.0) in G2 and 8.2 Kg (range 5.7 - 52.0) in G1 (P=0.3). 29 patients were asymptomatic (67%), in the other cases presentation symptoms were recurrent chest infections (n=11 cases; 25%) , hemorrhage (n=1, 2%), respiratory distress (n=1, 2%), cardiocirculatory failure (n=1, 2%). In all cases a preoperative chest IRM or CT scan was performed. All procedures were performed under general anesthesia. We reported no intraoperative complications in G2. In the G1 all patients were approached by thoracoscopy but conversion to open was necessary due to intraoperative difficulties in 5 cases (17%). A chest drainage was necessary in all G1 patients. All patients were asymptomatic. Follow up was based on clinical and radiological (chest X-ray). Only G2 patients performed IRM or CT scan post-operatively to check the complete involution of the lesion. In 2 G2 cases (15%) the regression was not complete and required reintervention.

Conclusion: Both surgery and endovascular embolization are effective and safe treatments for pulmonary sequestration. However, surgical procedure, although if it is more invasive, guarantees a 100% resolution of the pathology without leaving inside the thorax sequestration tissue that has to be followed also in adult age.

08.52 - 08.59 (112) **Thoracoscopic approach for pulmonary sequestration: a ten years European multicentric experience**. Ciro Esposito, Fulvia Del Conte, Ane Lehn, Maria Escolino, Mariapina Cerulo, Louise Montalva, Liza Ali, Arnaud Bonnard, Francois Becmeur. Federico II University Hospital of Naples. Naples. Italy.

Aim of the study: To report an European multi-institutional experience in thoracoscopic management of children with pulmonary sequestrations.

Methods: Records of patients with pulmonary sequestration who underwent thoracoscopy in three European Pediatric Surgery units between 2010 and 2020 were retrospectively reviewed. Data regarding demographics, surgery, and outcome were collected and reported as median (range), or number (percentage).

Main Results: 54 patients (29 girls) with a median age at surgery of 6 months (range 2-180), were included. 27 cases presented an extralobar pulmonary sequestrations (ELPS) in 27. 51 patients (94,3%) were asymptomatic, whereas 2 (3,8%) presented recurrent pneumonias and 1 (1,9%) presented hemoptysis.

Surgical procedures included 47 sequestrations excisions and 7 lobectomies. In 5 cases (10%) conversion to open was reported. Median operative time was 98 minutes (range 76-180). A chest drainage was left in all cases: median time of drainage was 1 day (0-3).

Median hospital stay was 1 days (range 0-9): 21 (39%) cases were performed in day case surgery. Only one patient (1,9%) with an infected intralobar sequestration required surgical revision for persistence of cystic lesion on CT scan (Clavien IIIb) . All symptomatic patients reported complete symptoms resolution postoperatively. No long terms complications were reported.

Conclusions: Thoracoscopy is a safe and effective procedure for children with pulmonary sequestration. It can guarantee fast and safe recovering avoiding severe scars sequels. To reduce the risk of infection and make the procedure technically easier we suggest to plan surgery in these patients by the first year. The use of new technologies can simplify the learning curve and improve results.

08.59 - 09.04 (176) **Advantages of thoracoscopy in the management of children with a history of thoracotomy**. Stefano Mazzoleni, Elisa Zolpi, Maria Luisa Conighi, Cosimo Bleve, Francesca Vinci, Paolo Cocco, Salvatore Fabio Chiarenza. Ospedale San Bortolo. Vicenza. Italy.

Background: Thoracoscopy is quickly becoming the approach of choice in the management of many different congenital thoracic malformations, including Congenital Pulmonary Airways Malformations (CPAMs) or Esophageal Atresia (EA). On the other hand, there is no consensus on the use of thoracoscopy after a previous thoracotomic approach.

Materials and methods: We report the experience of a single center in Vicenza from 2014 to 2022. Data from 9 children who underwent a thoracoscopic procedure following a previous thoracotomy were retrospectively analyzed. The cohort consisted of 5 lobectomies for CPAMs (that were initially treated in another center with a thoracotomic wedge resection, which resulted in gross residual disease), 3 repair of recurrent tracheo-esophageal fistula (rTEF) for EA and 1 resection of a residual esophageal duplication after partial thoracotomic resection in another center.

Result: Patients' age raged from 6 months to 6 years. In all cases no conversion to open surgery was needed. No major intra or post-operative complication was recorded, all the operations were successful, no patient needed reoperation.

Discussion: according to our experience, thoracoscopy offers many advantages, especially in complex cases previously treated with a thoracotomy. Although the initial trocar placement, in the presence of adhesions, can be challenging, the better visualization and magnification obtained with a thoracoscopy cannot be overstated. In addition, thoracoscopy offers the advantage of controlling the whole hemithorax, from the apex to the base of the lung, since one can always move the camera between the trocars.

Conclusion: Our series shows the advantages of pediatric thoracoscopic surgery following previous open approach. Few reports were found in literature, focusing primarily on thoracoscopic surgery for rTEF, which showed results comparable with open surgery. Owing to the clear field during the operation, rapid patient recovery and esthetic results, the thoracoscopic approach could be a better choice for experienced pediatric surgeons.

09.04 - 09.09 (178) **Double-Lung ventilation in thoracoscopic surgery in newborns and small children: back to the future?** Maria Luisa Conighi, Elisa Zolpi, Cosimo Bleve, Lorella Fasoli, Liliana Petitto, Cosetta Rostirolla, Lara Zanin, Fabio Chiarenza. Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies San Bortolo Hospital. Vicenza. Italy.

Introduction: thoracoscopic surgery in newborns and small children represents a challenging procedure for both surgeon and anaesthesiologist. Patients may present significant respiratory compromise, surgery is technically difficult, surgeon needs lung collapse and this may affect cardiovascular and respiratory system. One-lung ventilation (OLV) has been introduced to facilitate surgical exposure, to protect healthy lung, to allow effective ventilation if there is an air leak. However, OLV presents instrumental limits (size), technical difficulties and potential risks (airways trauma, dislocation, obstruction). Traditional double-lung ventilation (DLV) in our experience still remains a safe and effective solution.

Material and methods: we retrospectively reviewed our thoracoscopic experience, during last 10years, with patients aged 0-6, evaluating both surgical and anaesthesiologic intraoperative perspective.

Results: 79 patients (39: 0-6 months; 19: 6-12 months; 7: 1-3 years; 14: 3-6 years) underwent thoracoscopic surgery (33 esophageal atresia, 4 diaphragmatic hernias, 18 congenital lung malformations, 19 empyema, 5 mediastinal masses). 59 right sided thoracoscopies, 20 left sided. Surgical space was created by initial CO2 insufflation up to 6-8mmHg, inducing lung collapse, then pressure was reduced to 1-2mmHg to maintain operative space. Mean surgical time: 133'. Two intraoperative complications (endotracheal tube obstruction by blood in a 1100g newborn; ventilatory difficulties in a 990g patient). No conversion rates. No mortality. In cooperation with anaesthesiologists, we analysed the most relevant ventilatory parameters (hypoxemia, hypercarbia, end-tidal CO2).

Comments: OLV is a relevant practice, but it still presents important limits due to lack of appropriate devices and limited operator experience because of low case numbers even in tertiary centers. On our opinion thoracoscopy in newborns, above all, and in young children can be safely conducted with DLV. According to the authors, DLV needs experienced team but doesn't compromise oxygenation/ventilation, ensure to the surgeon a good operative field, guarantees a lower intraoperative risk to the patient.

09.09 - 09.14

(197) **Surgery for anomalous pulmonary venous return and aberrant pulmonary arterial supply: Role of thoracoscopy.** Ulgen Celtik, Zafer Dokumcu, Osman Tuncer, Erturk Levent, Coskun Ozcan, Ata Erdener. Ege University Faculty of Medicine Department of Pediatric Surgery Division of Thoracic Surgery. Izmir. Turkey.

Aim: Anomalous pulmonary venous return (APVR) and aberrant pulmonary arterial supply (APAS) may lead to right cardiac failure due to increased preload in children. Treatment options include re-routing, intravascular embolization, surgical vascular ligation and lobectomy/pneumonectomy. We aimed to present our experience and role of thoracoscopy in these patients.

Methods: Hospital records of patients who were treated for APVR/APAS were reviewed. Demographics, complaints, radiological and echocardiographic findings, surgical methods, intraoperative or postoperative complications, and postoperative follow-up period were evaluated.

Results: Five (M/F:1/4) patients with median age of 7 years were treated. Demographics, clinical symptoms, CT-scan and echocardiography findings and surgical procedures are depicted in Table 1. Indications were clinical symptoms (n=3), right cardiac dilatation (n=3) in 4 patient, prophylactic intervention was performed in 1 patient. Thoracoscopic anomalous vessel ligation was performed in 4 patients with dual supply whereas lobectomy was needed in one patient with no normal pulmonary venous return. Two elder patients required decortication. There was no intraoperative and postoperative complication. Median follow up period was 44 (17-63) months. There was no adverse event in follow up period.

Conclusion: Thoracoscopic vessel ligation is feasible, efficient and safe for pulmonary vascular anomalies with dual supply.

09.14 - 09.19

(109) **Thoracoscopic treatment of post-traumatic pulmonary entrapment.** Fabio Beretta, Giosuè Mazzero, Hamid Reza Sadri, Enrico Ciardini. UOC Pediatric Surgery APSS di Trento. Trento. Italy.

Introduction and case description: Closed chest trauma is rarely complicated by entrapment of lung tissue (rib fractures are most frequently implicated in performative lesions of lung tissue by one or both fracture stumps).

We presente a 16-year-old girl with blunt thoracic trauma (bicycle handlebars) with anterolateral margin of the left V rib fracture, light pneumothorax, subcutaneous pneumatosis and left lower lobe atelectasia. No spontaneous pain was present (only during palpation), nor dyspnea; subcutaneous crackling was palpable. A thoracopulmonary CT-scan was performed to better evaluate the fracture scomposition and to better manage the conservative treatment. CT-scan showed presence of lung tissue entrapped between the two rib fracture stumps.

After evaluating the CT-scan reconstructions, we opted for a 5 mm torcar in V intercostal space under the scapular apex with a 30 degree 5 mm scope, and 2 operative trocars of 5 and 12 mm respectively in VII space in III intercostal space on the rear axillary. The portion of entrapped lung (left upper lobe lingula) was gently reduced but it appeared non viable so atypical pulmonary resection (along lingula's hystmus) was performed (endoGIA). The rib fracture was also reduced under thoracoscopic control. Chest drainage was removed in IV day p.o.; regression of pain after about 72 hours, a rapid resumption of nutrition and early established respiratory physiotherapy. The patient was discharged in VII day p.o.

Discussion and conclusions: Only 4 similar cases are reported in Literature. Most typical mechanism of action is small impact areas at high speed and Energy. Chest CT-scan in those cases should be considered, regardless of the symptomatology presented. Thoracoscopic approach is safe, feasible and with excellent out come. A good pre-operative planning based on CT-scan reconstruction is mandatory not being standardizable the approach because of the extremely rare and completely random traumatic condition.

09.19 - 09.24

(167) **Comparative study of thoracoscopic versus thoracotomy approach in diaphragmatic eventration.** Juan de Agustin, Sara Monje-Fuente, David Peláez-Mata, Pilar Vázquez-González, Marta Benito-Anguita. Gregorio Marañón Univ. Children Hospital. Madrid. Spain.

Introduction: Diaphragmatic plication is an effective treatment for diaphragmatic paralysis in children. The aim of this study is to evaluate the efficacy and safety of thoracoscopic diaphragmatic plication using a percutaneous needle technique compared to thoracotomy standard approach.

Methods: A retrospective study of thoracoscopic and thoracotomy plications performed in our centre between 2004 and 2018 was conducted. Comprehensive preoperative, surgical and postoperative data were reviewed, and treatment results were compared for both technical procedures.

Results: A total of 103 patients underwent surgery (92.2% following cardiac surgery): 32 with thoracoscopies and 71 with thoracotomies. The main indication was impossibility of extubation.

We found significant statistical differences in mean time to extubation: thoracoscopy 2.43±2.5 days vs thoracotomy 6.35±11.9 days ($p<0.05$). Differences found in time to withdrawal of respiratory support (23.8±24 days in the thoracoscopic group and 78±221.5 in the thoracotomy group) were clear but not significant ($p=0.2$).

A drainage was placed after surgery in 59.4% of thoracoscopic plications vs 82.6% of thoracotomies ($p<0.05$). No differences were found in the rate of intraoperative or postoperative complications.

Time to discharge was shorter in thoracoscopic plications (75.1±52.9 days vs 100.4±96.9), but without significant difference ($p=0.17$). Recurrence rate was 6.3% in thoracoscopic procedures and 18.6% in those performed by thoracotomy ($p=0.10$).

Conclusions: Thoracoscopy plication to the diaphragm is superior to thoracotomy, as: 1. it permitted an earlier extubation, 2. a lower need for postoperative drainage, promoting further respiratory progress and, 3. an earlier discharge from the hospital. The lower rate of complications shows that thoracoscopy is a safe approach to correct diaphragmatic palsy.

09.24 - 09.29

(164) **Thoracoscopic management of esophageal atresia, single center experiences an early report.** Doğuş Güney, Elif Erten, Selin Çayhan, Süleyman Bostancı, Ahmet Ertürk, Sabri Demir, Can Öztorun, Müjdem Azılı, Emrah Şenel. Ankara Yıldırım Beyazıt University. Ankara. Turkey.

Background: Thoracoscopic repair of esophageal atresia (EA) is gaining popularity worldwide. We presented our experience with thoracoscopic management of EA in our tertiary center hospital.

Methods: Between September 2020 and March 2022, management was performed in 27 EA patients at the Ankara City Hospital.

Results: A total of 27 patients (2 patients with type a, 1 patient with type b, 24 patients with type c) managed by thoracoscopic approach. Two of them were infants, whose first interventions (gastrostomy/ esophagostomy) had been performed at other centers, the rest of the patients were newborn. Patient weight ranged from 585 to 3600 g (mean 1900 g), where 55,6% patients were under 2 kg. Primary anastomosis could be performed at the first thoracoscopic exploration at 20 (74%) patients, no conversion to open approach had been needed. Seven patients who were either very small or unstable (gastric perforation), had been performed thoracoscopic fistula ligation with/without gastrostomy. After stabilization or gaining weight, esophageal anastomosis could be performed with second thoracoscopic approach at 4 of those patients. Three of patients died due to hemodynamically instability. All patients except one (585gr) underwent flexible bronchoscopy. The fistula location was at the level of carina in 15, supracarinal in 7, subcarinal in 2. A right descending aortic arch was detected peroperatively in 4 (14%) patients. Azygos veins were not ligated at any approach. Fistulas were ligated with clips in 9 patients and with nonabsorbable suturing in 15. Survival rate was 88%. Anastomotic leakage occurred in 8 patients (29,6%) Anastomotic stricture developed in 7 cases (25.9%). There was one (3,7%) recurrent tracheoesophageal fistula.

Conclusion: Thoracoscopic repair of EA+/-TEF is a feasible and safe procedure However, it remains a challenging procedure and should be performed only in pediatric centers with a vast experience in minimal invasive surgery.

09.30 - 10.00

POSTER SESSION 2
CHAIRMEN: EVA AMERSTORFER (AU) AND VINCENZO DI BENEDETTO (IT)

09.30 - 09.32

(49) **Total laparoscopic colectomy with Alexis wound retractor.** Elena Ruggiero, Alba Ganarin, Paola Midrio. Pediatric Surgery Unit, Cà Foncello Hospital. Treviso. Italy.

Background: Alexis ® wound retractor system is used in abdominal surgery to avoid extended incision. Few studies have been published on its use in pediatric patients. We report our experience of laparoscopic total colectomy in children performed through the Alexis® system.

Case description: From 2017, 4 laparoscopic total colectomies were performed in our Centre, 3 of them using the Alexis® system. Indications for total colectomy were: ulcerative colitis (2) and Crohn's disease (1). Median age was 12,7years (range 10-14). In all the procedures the Alexis®; system, size S, was placed in the umbilicus through which a 10mm camera was inserted. Other three 5mm operative trocars were placed respectively in the left and right flank, and left hypochondrium. Colectomy was performed with Ligasure and a 12mm EndoGIA™ inserted in the right flank trocar, after replacing the 5 mm with a 12mm trocar, or, in one case, in the left hypochondrium trocar. The colon was extracted through the Alexis® system without the need to perform an accessory laparotomy. In 2 patients a permanent ileostomy was performed and in one patient it was already in place. All patients had a regular postoperative course, with a length of hospital stay of one week, and an excellent final cosmetic results.

Conclusion: Alexis® system is a safe and effective option to retrieve the colon, avoiding any extra laparotomic incision or port's enlargement.

Discussion: Various hitches stitches described in pediatric literature are extracorporeal and unprecise, whereas in the clip and cling the traction and hitch sutures are precise and under surgeon's control in both laparoscopic and robot-assisted procedures, also aids in atraumatic handling of respective tissues, this technique can also be extrapolated in other specialties.

Conclusion: It is simple, effective, and easy to reproduce, cost-effective it can be used in other extrapolated in other specialties where the intracorporeal reconstruction is required.

09.32 - 09.34 (78) **Our experience with retrograde balloon dilation in the treatment of congenital ureteropelvic junction obstruction.** Julio Moreno Alfonso, Sara Hernández Martín, Javier Arredondo Montero, Lidia Ayuso González, Raquel Ros Briones, Pilar Guillén, Carlos Bardají Pascual. Hospital Universitario de Navarra. Pamplona. Spain.

Introduction: Dismembered pyeloplasty remains the gold-standard treatment of congenital ureteropelvic junction obstruction (UPJO). However, several minimal invasive techniques have been recently described in this field that have shown acceptable results, low rate of complication and inherent minor surgical aggression. Our aim is to describe our outcomes with retrograde balloon dilation (RBD) in the treatment of congenital UPJO.

Methods: Review of medical records of patients with congenital UPJO treated with RBD between 2015 and 2021 in our department. The procedure was accomplished by cystoscopic approach. An angioplasty balloon was retrogradely introduced across the ureter through a previously introduced hydrophilic guidewire of 0,018" to dilated pelvis. High-pressure dilation of the UPJO was performed under fluoroscopic. Balloon diameter varied from 3 to 6 mm according to the age of the patient. Finally, a double-J catheter was left. Depending on operative findings, a new dilation was performed by the time of the double-J removal.

Results: Twenty-five patients were found (68% male) requiring 1.6 interventions (SD ±0.9). Mean age was 11.9 ±15 months. The interval time between serial dilations was 29±9 days. The duration of the procedure was 40.9±14.7 minutes and hospital stay 24 hours. A febrile urinary tract infection was the only early complication reported. After a follow-up of 35±27.7 months hydronephrosis significantly diminished in 17 patients, from 25±10.6 mm preoperatively to 11±6 mm postoperatively. Drainage on diuretic renogram improved in 15 of them. The remaining 8 patients required pyeloplasty (32%). Subsequent pyeloplasty was not impaired by previous dilation.

Conclusions: In our experience, retrograde balloon dilation is a safe minimally invasive alternative in the treatment of congenital UPJO with acceptable outcomes and to be considered as a first line treatment.

09.34 - 09.36 (117) **Robot-assisted retroperitoneoscopic pyeloplasty for ureteropelvic junction obstruction in infants weighing less than 10 kg : where is the limit?** Pauline Lopez, Filippo Incerti, Elisabeth Carricaburu, Anne-Emmanuelle Colas, Alaa El Ghoneimi, Annabel Paye Jaouen. Pediatric Surgery and Urology, Robert Debré University Hospital, AP-HP, University of Paris, National Reference center for rare urinary tract malformations (MARVU). Paris. France

introduction: Development of robot-assisted surgery has led pediatric surgeons to rethink technics. Most of surgeons prefer transperitoneal robotic approach to treat ureteropelvic junction obstruction (UPJO) and in the few studies reporting retroperitoneal robotic approach, children weight required to undergo this technique was at least 12 kg (sufficient working space for deployment of the instruments). We report a case of pyeloplasty with robot-assisted retroperitoneoscopy for the treatment of UPJO in a 5-month-old infant weighing 7.1 kg.

Material and methods: The patient was full-term child, with a prenatal diagnosis of a right pyelocalyceal dilatation (20mm), with postnatal confirmation of the diagnosis of UPJO with functional uro-MRI (increase of the pyelic dilatation to 32mm, obstructive curve, relative renal function lowered to 25%). Robot-assisted retroperitoneoscopy used the Da Vinci Xi robot with a left lateral decubitus set-up with three 8mm robotic trocars and one 3mm assistant trocar. The distance between the tip of the 12th rib and the anterior superior iliac spine was 4 cm.

Results: Operative time was 201 minutes, 43 minutes from incision to docking; console time was 142 minutes and 16 minutes for closure. Postoperative drainage was a Blue Stent, removed after 10 days. Trocar ports were infiltrated with local anesthesia. Patient was discharged the day after the procedure. No intraoperative complication was observed. After a 6-months follow-up, patient is asymptomatic and anteroposterior diameter of the pelvic decrease to 11 mm.

Conclusion: In a team with a large experience of retroperitoneoscopy it was possible to perform a right pyeloplasty with robot-assisted retroperitoneoscopy without any technical problem related to the size of the instruments and the position of the robot, in a 7.1 kilogram infant. The possibility of placement for trocars should be carefully evaluated preoperatively.

09.36 - 09.38 (158) **Laparoscopic lateral ureterocalicostomy for complicated ureteropelvic junction obstruction in a girl.** Laura Burgos, Ruben Ortiz, Beatriz Fernández, María Blanco, Javier Ordóñez, Alberto Parente, Jose Angulo. Hospital Infantil Gregorio Marañón. Madrid. Spain.

Background: Terminal ureterocalicostomy has been performed as the first choice of treatment for ureteropelvic junction obstruction (UPJO) in patients with anatomic anomalies or as an alternative in case of recurrent UPJO. We report a pediatric case of laparoscopic lateral ureterocalicostomy as a surgical alternative in patients with complicated UPJO.

Case presentation: A 13 year-old girl came to the emergency department due to abdominal and left lumbar pain. Ultrasound showed very dilated left pelvicaliceal structures and renogram proved an obstructive elimination curve. She underwent endoscopic balloon dilatation with double J placement without complications. Once double J was removed, clinical and ultrasound worsening occurred. Computed tomography demonstrated an intrarrenal pelvis and very dilated lower pole calyx with parenchyma thinning. Laparoscopic lateral ureterocalicostomy was performed and postoperative course was uneventful.

Two years later the patient remains asymptomatic and renogram shows good elimination curve and renal function preservation.

Conclusion: Laparoscopic lateral ureterocalicostomy is a safe and effective alternative in hampered UPJO. Preoperative exhaustive study is necessary in such cases to determine the surgical approach.

09.38 - 09.40 (57) **Video-assisted retroperitoneal uretero-ureterostomy: an alternative for patients with obstructed renal duplication**. Julio Moreno Alfonso, Ada Molina Caballero, Javier Arredondo Montero, Raquel Ros Briones, Alberto Pérez Martínez. Hospital Universitario de Navarra. Pamplona. Spain.

Aim of the study: To describe a two-port video-assisted ureteroureterostomy technique as an alternative to open or retroperitoneoscopic techniques.

Case description: A 19-month-old girl was referred to our outpatient clinic for repeated pyelonephritis. She presented complete duplicity of the right renoureteral system with ureterohydronephrosis of an upper moiety with preserved function. The ureter corresponding to this pyelon drained into the intrasphincteric bladder neck. The lower ureter drained orthotopically, without reflux or dilatation. We decided to preserve the upper moiety and resolve the obstruction by video-assisted ureteroureterostomy.

The technique consisted of cystoscopic tutoring with a double J catheter of the right lower orthotopic healthy ureter. Through an umbilical incision, we introduce intraperitoneally a 0° and 5 mm optic and a 2 cm modified Gibson incision in the right iliac fossa, which included all planes except the peritoneum. Assisted by laparoscopic vision, the right ureters were identified and mobilized extraperitoneally and exteriorized through the lateral incision. An extracorporeal termino-lateral uretero-uterostomy was performed and the accessible distal ureteral end was excised. The patient evolved favorably, with good aesthetic outcome and progressive improvement of the upper moiety hydronephrosis.

Conclusions: This video-assisted technique is a minimally invasive alternative for the treatment of ectopic ureters in duplicated kidneys with preserved function of both pyelons. It combines the safety and simplicity of the open technique with a better cosmetic result, reduced postoperative pain and the visualization of a laparoscopic approach.

09.40 - 09.42 (173) **Laparoscopic nephrectomy for a case of Wilms' tumor.** Jayakumar TK, Kirtikumar Rathod, Avinash Jadhav, Shreyas K, Arvind Sinha. All India Institute of Medial Sciences. Jodhpur. India.

Introduction: The role of minimally invasive surgery in the management of pediatric tumors is gaining popularity. Here we report a laparoscopic nephrectomy done in a case of Wilms tumour after initial course neoadjuvant Chemotherapy.

Case: Our patient is a 3 year old girl who presented to us with an abdominal lump. CECT revealed renal mass suggestive of right sided Wilms tumour with IVC thrombus. We gave her neoadjuvant chemotherapy (DD4A regime). After 5 cycles she underwent repeat CECT which showed a reduction in the size of the tumour and absent thrombus in IVC.

She underwent laparoscopic radical nephroureterectomy. The specimen was retrieved by a Pfannenstiel incision without any tumor spillage. Intraoperative bleeding was minimal and post-operative period was uneventful with rapid recovery. She received a complete course of adjuvant chemotherapy. During the two years follow up, she has been tumour free.

Conclusion: Laparoscopic Nephrectomy for select cases of Wilms' tumor is feasible and safe. Its benefits include a shorter hospital stay, pain and cosmetically acceptable incisions. Extensive muscle cutting involved in the open procedure can be prevented.

09.42 - 09.44 (28) **Submucosal marking with methylene blue to improve the injection technique of intravesical botulinum toxin.** Javier Arredondo Montero, Raquel Ros Briones, Julio Cesar Moreno Alfonso, Ada Yessenia Molina Caballero, Alberto Pérez Martínez. Hospital Universitario de Navarra. Pamplona. Spain.

Introduction: Intradetrusor injection of botulinum toxin represents an alternative treatment in children with refractory neurogenic bladder. To achieve the therapeutic effect, it is important to properly deposit the drug within the bladder wall. Bleeding after the first injections may hinder the cystoscopic visualization. Moreover, the anatomical alteration of the bladder architecture due to the underlying pathology constitutes an additional technical challenge. In such situations, achieving a proper and even distribution of the toxin can be difficult.

We describe the use of methylene blue to facilitate the intravesical administration of botulinum toxin.

Methods: Cystoscopic bladder marking was performed using submucosal methylene blue injections along the midline of the posterior bladder wall at 1 cm intervals, starting above the level of the trigone. Visualization of the dye through the bladder mucosa served as a reference for the homogeneous and symmetrical administration of the toxin to each side of the posterior bladder wall.

Results: The proposed technique was performed during 3 botulinum toxin injection procedures. It helped guide the successive injections permitting the procedures to be completed with increased precision. There were no complications or side effects associated with the technique.

Conclusion: Submucosal marking with methylene blue is simple and may help facilitate proper and effective intravesical administration of botulinum toxin, especially in cases of poor visibility due to bladder bleeding. Future prospective studies are required to validate the use of this technique in the pediatric population.

09.44 - 09.46 (127) **Endourological management of ectopic ureterocele. our last 15-years experience**. Isabel Bada Bosch, Andrea De Palacio, Beatriz Fernández Bautista, Javier Ordoñez, Rubén Ortiz, Laura Burgos, Alberto Parente, José María Angulo. Hospital General Universitario Gregorio Marañón. Madrid. Spain.

Aim: To assess the efficacy of endourological management of ectopic ureteroceles in children in a large series with long-term follow-up.

Methods: Retrospective study of the ureteroceles treated in our center in the last 15 years. We treated 45 patients (75% female) of which 5 were orthotopic ureteroceles. 55% were left-sided and 5% bilateral. Mean age at diagnosis was 4.97 months and 54.1% were diagnosed prenatally, the rest were diagnosed because of urinary tract infections. All but one patient underwent endourological puncture of the ureterocele. Mean age at the time of surgery was 6.96 months.

Results: Surgery was outpatient in 94.9% of patients. No perioperative complications were recorded. A single procedure solved the urinary obstruction in 97.5% of the patients. Preoperative VCUG was not performed in the last 30 patients. Postoperative vesicoureteral reflux (VUR) was present in 72.5% of patients (62% to upper moiety, 27.5% to lower moiety, 20.7% bilateral, 6.9% contralateral), but was cured with a single endoscopic procedure in 48.1% of cases (65% with two procedures). VUR was not resolved endoscopically in 3 patients who required ureteral reimplantation. Six patients required heminephrectomy (n=3) or nephrectomy (n=3) for kidney function loss and infections.

Conclusion: Endourological management of ectopic ureterocele is a minimally invasive technique that achieves resolution of the obstruction in an outpatient setting, reducing the risk of bladder surgery (if necessary) by postponing it after the neonatal period.

09.46 - 09.48 (151) **Laparoscopic vesiculectomy in children for the treatment of Zinner triad.** Isabel Bada Bosch, Jose María Angulo, Alberto Parente, Laura Burgos, Rubén Ortiz, Beatriz Fernández Bautista, Javier Ordoñez. Hospital General Universitario Gregorio Marañón. Madrid. Spain.

Introduction: Zinner Syndrome results of a congenital mesonephric duct anomaly including the following triad: unilateral renal agenesis, seminal vesicle cystic dilatation and ejaculatory duct obstruction. It is a rare pathology usually asymptomatic until adulthood, being its diagnosis during the pediatric age exceptional. Although most authors favor conservative management in asymptomatic cases, long-term complications, including the development of poor-prognosis malignant tumors have been described. We present our operative approach for his pathology using minimally invasive surgery.

Methods: The patient is positioned in supine position with an urethral catheter. We perform a three-trocar laparoscopy using two 5mm ports in both iliac fossae and a 10mm trocar in the umbilicus. The procedure starts by opening the peritoneum overlying the bladder. The dissection proceeds until important structures have been clearly identified (vas deferens, ectopic ureter and dilated seminal vesicles). The seminal vesicles are resected using vessel sealing devices. We present two patients, 14 months-old and 14 years-old, in which this technique was used.

Results: Mean operative time was 150min. Median length of hospital stay was 2.5 days. Median follow-up time was 8.5 years. Both of them remain asymptomatic and did not experience complications.

Conclusions: Due to the low morbidity of laparoscopic vesiculectomy and ureterectomy, in our experience, we support surgical management of Zinner triad.

09.48 - 09.50 (15) **Laparoscopic seminal cyst excision in an adolescent with Zinner syndrome.** Catarina Carvalho, Bernardo Lobão-Teixeira, Armando Reis, João Ribeiro-Castro, Ana Coelho. Centro Hospitalar Universitário do Porto. Porto. Portugal.

Purpose: Congenital seminal vesicle cysts with renal malformations are a rare association and are referred as Zinner syndrome. Patients may be asymptomatic or may complain of urinary symptoms and pain. We report the case of a patient with a right symptomatic seminal vesicle cyst and right renal agenesis, submitted to laparoscopic vesicle cyst excision.

Patient and methods: A previously healthy 13-year-old male was sent to our pediatric urology department for a symptomatic retrovesical cystic lesion, identified on transabdominal ultrasound. The patient complained of recurrent suprapubic pain; other symptoms, such as urinary or gastrointestinal were denied. Physical examination was normal. Abdominopelvic CT scan and MRI were performed; a right pelvic cyst, compatible with seminal cyst, and right renal agenesis were identified.

Results: We conducted a laparoscopic right seminal cyst excision. Total operative time was 140 minutes. Given the indissociability of the cyst from its ipsilateral vas deferens, vasectomy was required for total lesion removal, after contralateral vesicle and vas inspection for normality. Histological examination was compatible with the suspected diagnosis of seminal cyst. After surgery, the patient experienced preoperative pain resolution and remains asymptomatic after four months.

Conclusions: Congenital seminal cysts are rare lesions that may cause troublesome symptoms. Zinner syndrome is suspected when associated with renal agenesis. Laparoscopic treatment of these lesions is a safe and effective procedure. Given the possible involvement of the vas deferens, caution is advised to carefully inspect the contralateral seminal vesicle to safeguard future fertility.

09.50 - 09.52 (143) **Ectopic prostatic tissue in bulbar urethra in a pediatric patient- endoscopic resolutive treatment: a case report.** Luciano Sangiorgio, Federico Leoni, Sara Casella, Alessio Pini Prato. Pediatric Surgery and Urology, Children Hospital "C.Arrigo". Alessandria. Italy.

Introduction: Ectopic prostatic tissue is a rare condition and it is already reported in urinary tract in adult population, but no cases are described in the pediatric one. This lesion arises as a polyp shape, affecting young males and the average presentation is hematuria, hemospermia and lower urinary obstruction symptoms. Endoscopic excision and electrofulguration is described as adequate and resolutive treatment.

Materials and Method: We report the case of a fourteen years old patient with a history of dysuria with urethral stenosis-like symptoms, constipation, abdominal pain in hypogastric and left hypochondrium region since five years before, and hematuria since one year before. A bladder enlargement and also splenomegaly at two months of life ultrasound were noticed. Moreover, the patient presented recurrent fevers of unknown origin resolving after urination. Suspecting an immune cause, autoimmunity and genetic analysis were done, only resulting in a HLA B51 positivity and c.991G>T p.(Ala331Ser) variant of LPNI2 gene, related to periodic fever. At the cystourethroscopy examination, a rounded, dyschromic and fully obstructing polyp lesion of about 10x9x4 mm was noticed over the very distal portion of the verumontanum in an inflammation subset with white cords along the urethra, as chronic urethritis, till the urogenital diaphragm. The bladder was trabeculated, with a thickened detrusor muscle, nor vesicoureteral or vescicoseminal reflux was shown at the intra-operatorial cystourethrography. We proceed with complete exeresis of the lesion through toothed pliers, then electrocoagulation of polyp plant base was administered in order to re-establish complete urethral canalization. The lesion was fixated and colored and further histological examination revealed urethral epithelium with prostate glands within the stroma, compatible with ectopic prostate tissue. A urinary catheter was maintained for 3 weeks and antibiotic therapy was administered for 3 months. No further symptoms were referred over 2 years follow-up.

09.52 - 09.54 (70) **Cystoscopy-Guided Robotic approach of Prostatic Utricle: case report and review of the literature.** Fati Federica, Pani Elisa, Beretta Fabio, Corroppolo Michele, Mazzero Giosuè, Revetria Clara, Sadri Hamid-Reza, Ciardini Enrico. Pediatric Surgery Unit, Women's and Children's Health Department, University Hospital of Padua. Padova. Italy.

Introduction: Prostatic utricle (PU) results from incomplete regression of Mullerian duct structures and occurs most frequently in males with disorders of sexual differentiation. Surgical excision is the gold standard and there is no consensus about the best surgical approach for this condition due to its rarity and it is challenging anatomical position.

Methods: We report a case of PU treated with a surgical combined cystoscopy- robotic technique. Data on perioperative management, complications and outcomes were retrieved and an extensive literature search was performed.

Results: A 2-year-old patient with a diagnosis at birth of DSD presents an incidental finding of PU during surgical correction of the hypospadias. Due to episodes of urinary tract infection (UTI), we propose a resection of PU with a robotic assisted technique. Thanks to the cystoscope being left inside and the indocyanine green, we were able to isolate and remove it. We sacrificed the vas deferens during the dissection because their outlets ended at the proximal part of the PU. At the end of surgery, the cystoscopy showed the correct closure of the utricle and a regular anatomy of the urethra.

Conclusion: Surgical excision is the gold standard in symptomatic patients but there is controversy about the best surgical approach due to the high risk of damage to the adjacent structures crucial for fertility and the risk of remnants being left in place. The robot-assisted laparoscopic excision of prostatic utricle has recently been described in fews reports as a feasible and safe approach, permitting to visualize the anatomy and move in a restricted and deep working place as the pelvic site. Moreover a combined cystoscopic and robotic approach is useful in this patient's population, in order to identify and dissect safely the PU thanks to the counter-traction movement.

09.54 - 09.56 (146) **Laparoscopic Mitrofanoff procedure with modified Shanfield anastomosis**. Muhammad Abdul Jalil Bepari, Pankaj Mishra, Arash Taghizadeh. Guy's and St Thomas' NHS Foundation Trust. London. United Kingdom.

Purpose: Mitrofanoff is a well-known form of continent catheterisable channel. We are presenting a case of laparoscopic Mitrofanoff procedure.

Patient and methods: A 16 years old girl with background of four limbs motor disorder, status post selective dorsal rhizotomy, epilepsy on anticonvulsants. Large capacity bladder with detrusor underactivity, high residual after voiding and failure of CIC training.

Laparoscopic Mitrofanoff procedure was performed using 3 ports (5mm umbilical and two 3mm working ports. Stoma site was selected in right iliac fossa. Detrusor tunnel in bladder was made. Appendix spatulated and modified Shanfield anastomosis of appendix into bladder (with U stich) was created. Skin lined appendico-cutaneous stoma created in the right iliac fossa by double U technique.

Results: Post operative recovery was uneventful. The CIC through the Mitroff was commenced at 4 weeks and worked nicely.

Conclusion: Laparoscopic Mitrofanoff procedure significantly decreases the morbidity of the surgery. The modified Shanfield anastomosis simplify the appendico-vesicostomy procedure.

09.56 - 09.58 (51) **Robotic bladder augmentation. our first case.** Carmen Soto-Beauregard, Jaime Alarcón, Eva Domínguez, Juan Manuel Gómez-Cervantes, Isabel Galante, Luis Felipe Ávila. Hospital Clínico San Carlos. Madrid. Spain.

Bladder augmentation (BA) continues to be the most effective therapeutic resources for the treatment of low accommodation bladders which do not respond to intermittent catheterization (IC) and/or anticholinergic medication.

The aim is to convert the bladder into an efficient reservoir, with low pressure and great capacity, in turn protecting the superior urinary tract and improving continence.

The first laparoscopic enterocystoplasty was reported in 2002.

We present our first completed BA performed entirely by using a robotic-assisted approach.

A 12 year-old boy with neurogenic bladder still presented urine incontinence despite IC. As such he was considered a candidate for enterocystoplasty. Firstly, both ureters were canalized with stents. Afterwards, the patient was positioned in the steep Trendelenburg position to help reposition the bowel and proceed with the transperitoneal placement of four robotic trocars and 5 and 12 mm auxiliary trocars. At 15 cm of ileocecal valve, we measured 15 cm of ileal loop. We rebuilt the intestinal continuity by using a standard side-to-side anastomosis with an endoscopic stapler. A horizontal cystotomy was then performed and the isolated bowel segment was detubularized and reconstructed in the standard S-shaped configuration.

We proceeded with fixing the ileal patch at the 6 and 12-o'clock positions and completed the ileal-bladder anastomosis in quadrants with 4/0 barbed sutures. To improve the urinary flow, a bladder and a urethral catheter were inserted and a perivesical drain was placed. The procedure was completed in 6,33 hours.

The removal of the ureteral stents was done on the seventh day. Vesical filling for vesicostomy catheter was also performed on the fourteenth day to check for leaks.

At 9 months since the surgery and with clean intermittent catheterization every four hours, the child is dry.
In conclusion, the robotic approach is safe and eases minimal invasive procedures in complex surgeries.

09.58 - 10.00

(3) **Endometrial implantation as a cause of recurrent hematuria**. Beatriz Fernández-Bautista, Laura Burgos, Rubén Ortiz, Isabel Bada, María Fanjul, Jose María Angulo. Gregorio Marañón University Hospital. Madrid. Spain.

Introduction: Endometriosis is a benign condition that affects 15 to 20 % of women in fertile state. Urological endometriosis is a rare pathology, its most frequent location is the bladder. The clinical manifestations are cyclical (pain, voiding syndrome). However, cyclic hematuria only appears in 20% of cases.

Material and Methods: We present the case of a 13-year-old patient with a history of cloaca intervened and left primary obstructive megaureter with posterior ureteral dilation and reimplantation. Nephrectomy was performed for recurrent infections and functional anulation in 2008.

Subsequently, she presented an episode of urinary tract infection with hematuria. Due to compatible clinical symptoms, we initially treated ureteral stump syndrome. However, the patient continued with episodes of cyclic hematuria. An ultrasound and MRI demonstrated the presence of a bladder injury.

Cystoscopy and biopsy of the lesion in the left ureteral remnant were performed. The result was an endometriosis implant, so a scheduled complete resection of the implant was carried out by cystoscopy with holmium fiber laser.

Results: The surgery time was 35 minutes. There were no postoperative complications. Hospitalization stay was less than 24 hours. No new episodes of hematuria or recurrences were described. The follow-up time was 2 years.

Conclusion: Bladder endometriosis is a rare entity, its description is exceptional in ureteral remnants. It should always be suspected in case of cyclical hematuria in adolescent girls.
Endoscopic management is a minimally invasive alternative for its treatment, with good results in the patient presented.

10.00 - 10.02

(199) **Is there a role for Minimal Access Surgery in trauma?** Joseph Wiltshire, Naved Alizai. Leeds Children's Hospital. Leeds. United Kingdom.

Aim: Our hospital is a Major Trauma Center. The aim of the study was to see if there is a role for Minimal Access Surgery (MAS) in Paediatric major blunt abdominal trauma.

Method: We included patients under the senior author who had undergone MAS following major blunt trauma over a 7 year period (April 2015-April 2022).

Results: 2 patients underwent MAS following major trauma over the period.

Patients (7yr and 13yr) had blunt abdominal trauma with grade 4 liver lacerations and bile duct injuries. Both patients were managed conservatively at the acute stage. One patient required an ERCP and Stent for a large bile collection. She had to undergo Robotic extraction of migrated stent. The second patient underwent laparoscopic evaluation and removal of organized haematoma and parts of necrotic avascular liver to reduce diaphragmatic splinting, to help extubation. The patients avoided laparotomy, liver resection or any biliary reconstructive procedures. They recovered fully, with no long-term consequences.

Conclusion: MAS can be useful to help evaluate the patient and deal with the sequel of trauma and in managing post trauma complications.

11.30 - 12.15

SESSION IX. GASTROINTESTINAL 3

CHAIRMEN: ALIZAI NAVED (UK) AND SAMEH SHEHATA (EG)

11.30 - 11.37

(40) **Clipless/sutureless Harmonic scalpel laparoscopic appendectomy in children - Is it possible?** Zenon Pogorelić, Vedran Beara, Miro Jukić, Hayssam Rashwan, Tomislav Šušnjar. University Hospital of Split. Split. Croatia.

Background: The aim of this prospective study was to investigate Harmonic scalpel performance in laparoscopic appendectomy for sealing the base of the appendix in children.

Methods: The patients were divided in two study groups in regard to technique used for appendiceal base closure. In the first group (n = 197) the appendiceal base was secured using a polymeric clip while in the second group (n = 115) the Harmonic scalpel was used for sealing the base in a stepwise manner, without placing clip or suture. Outcomes of treatment, including complication rates, duration of surgery and length of hospital stay were compared between the groups.

Results: A total of 312 patients with a median age of 11 years (IQR 8, 15) were included in study. Of these, 191 were males (61.2%). A total of 10 (5.1%) postoperative complications (postoperative abscess n=7 and ileus n=3) were recorded in the polymeric clip group while none of the patients from the clipless group had postoperative complications (P=0.015). In the group who received a polymeric clip appendectomy, fever lasting 0–72 h and >72 h was recorded in 16 (8.1%) and 12 (6.1%) children, respectively, while in the clipless group, it was observed in 2 (1.7%) and 5 (4.3%) children, respectively (P=0.048). Significantly shorter surgical times were found in the clipless group compared to the polymeric clip group (21 min (IQR 18, 25) vs. 30 min (IQR 22, 40), P<0.0001). Length of hospital stay was significantly shorter in the clipless group (2 days (IQR 2, 3) vs. 3 days (IQR 2, 4), P<0.0001).

Conclusion: Clipless harmonic scalpel laparoscopic appendectomy is a safe and effective method for treatment of acute appendicitis in children with lesser number of complications and shorter duration of surgery compared to laparoscopic appendectomy in which the appendiceal base is secured with clip.

11.37 - 11.42

(19) **Complete bowel exploration and polypectomy combining laparotomy and sequential intraoperative enteroscopy in Peutz-Jeghers syndrome: a case report**. Raquel Ros Briones, Julio Moreno Alfonso, Javier Arredondo Montero, Ada Molina Caballero, Alberto Pérez Martínez. Complejo Hospitalario de Navarra. Pamplona. Spain.

Introduction: Although the hamartomatous polyps in Peutz-Jeghers syndrome are typically benign, they can still cause significant complications. The existence of multiple polyps in various locations hinders a complete treatment, classically requiring multiple laparotomies and bowel resections. The technique described here allowed overall inspection of the bowel and resection of multiple polyps through three enterotomies, in a patient needing a surgical procedure to resolve a small bowel polyp-related complication.

Case: A 12-year-old male with Peutz-Jehgers syndrome presented to the emergency department due to abdominal pain. An abdominal ultrasound showed an ileo-ileal intussusception without secondary ischemia. The patient was admitted and a follow-up ultrasound on the third day revealed two more intussusceptions, one of them ileocolic. Hence, an exploratory laparotomy was indicated.

The intussusceptions were manually reduced through a McBurney incision. A large polyp was identified near the head of the ileocolic intussusception, but many others were palpated throughout the bowel. To avert multiple enterotomies, minimize trauma and examine the entire small intestine, a 9-mm gastroscope was inserted through three enterotomies performed at 2-meter intervals. The endoscope was advanced bunching up the intestine like the sleeve of a shirt to shorten it, progressing the instrument further into the bowel. The same procedure was performed bidirectional, one meter distal, and one meter proximal to each incision, for total bowel inspection. Eight polyps were resected. At the end of the procedure, an upper endoscopy and colonoscopy were performed to complete the intestinal exploration.

The patient had no postoperative complications and was discharged 6 days after the procedure. The pathological examination confirmed the hamartomatous nature of the polyps.

Conclusions: We believe this combined surgical-endoscopic technique can be a useful, less aggressive option for both diagnosis and treatment in patients who suffer intestinal polyposis.

11.42 - 11.49

(80) **Short and long-term outcomes of surgery for duodenal atresia: a single center experience and literature review.** Alessandra Preziosi, Francesca Galbiati, Anna Morandi, Antonio Di Cesare, Martina Ichino, Giorgio Fava, Ernesto Leva. Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico. Milan. Italy.

Aim of the Study: To evaluate short and long-term outcomes of patients with duodenal atresia (DA) and compare open and minimally invasive (MI) approach.

Methods: A retrospective study was conducted, including patients operated between 2011 and 2021. 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) were recorded. Literature review was conducted.

Main results: Seventeen patients were operated in our Center during the study period. 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. Median time at feeding start was 10 (17-15) days, at FEF 20 (13-46). Neither anastomotic stenosis nor dehiscence were recorded.

We compared our data with literature about MI approach. Van der Zee reports 28 laparoscopic cases: 4/28 (14%) required conversion; 5/28 (18%) had leakage, 1/28 (3%) stenosis; median operative time at surgery was 145 minutes. Kay et. al report 17 laparoscopic cases: neither conversion nor post-operative complications occurred. Average operative time was 105 minutes. Average time at feeding start was 8 days, at FEF 12. Jensen et. al report 20 laparoscopic cases, with conversion rate of 35%. No leakage occurred. One (5%) patient had stenosis. Median operative time was 145 minutes. Average time at feeding start was 10 days, at FEF 15.

Conclusion: Open diamond-shaped duodenoduodenostomy remains a safe and effective technique, with low incidence of complications. MI technique has similar outcomes to open approach, but longer operative time and a non-neglectable rate of conversion.

11.49 - 11.54

(201) **Laparoscopy for intussusception: A 10-year experience at tertiary center.** Miroslava Funakova, Daniela Trepacova, Pavol Omanik, Pavol Sinka, Miroslava Tatarkova, Igor Beder, Jozef Babala. Pediatric Surgery Department, National Institute of Children's Diseases and Faculty of Medicine, Comenius University. Bratislava. Slovakia.

Background: Intussusception is the most common cause of intestinal obstruction and abdominal emergency in infants and young children. Surgery is indicated mainly in cases of hydrostatic reduction failure, presence of pathologic leadpoint, bowel necrosis or perforation. Authors present a retrospective study from a tertiary center comparing open and laparoscopic approach for operated intussusception patients.

Methods: Retrospective analysis of all intusussception patients from January 2012 to December 2021 was taken. The admission notes, and operative records were reviewed. Patient demographics, duration of symptoms, operative findings, presence of pathologic leadpoint and postoperative course were recorded. Statistical analysis were performed using MS Excel for Mac 2011.

Results: 324 patient were treated for intussusception at tertiary hospital during the study period. All stable patients underwent ultrasound examination and hydrostatic reduction under general anaesthesia. Laparoscopy was performed in 20 patients (35,7%) from overall 56 surgically treated patients. No complications after laparoscopy were observed. Conversion to laparotomy was unevitable in 4 cases (20%) due to necessity of bowel resection. One laparoscopy was finished by minilaparotomy due to bleeding after resection of Meckel 's diverticulum.

Conclusion: Laparoscopy is a feasible method of choice in stable patients with intussusception after unsuccessful hydrostatic reduction, as well as useful diagnostic tool in conditions demanding intestine resection and anastomosis.

11.54 - 11.59

(56) **Video-assisted gastrostomy: an effective alternative to percutaneous access**. Julio Moreno Alfonso, Ada Molina Caballero, Javier Arredondo Montero, Raquel Ros Briones, Alberto Pérez Martínez. Hospital Universitario de Navarra. Pamplona. Spain

Introduction: Percutaneous endoscopic gastrostomy is the procedure of choice for long-term enteral nutrition. In recent years the incidence of non-surgical pathologies, mainly neurological, requiring this technique has increased. We describe a series of cases in whom, due to their clinical and anatomical particularities, an alternative video-assisted gastrostomy technique was performed.

Methods: Under general anesthesia and with the patient in supine position, we introduced a 5 mm umbilical trocar for the laparoscope by means of an open technique. After identifying the gastric body, a 1 cm supraumbilical left paramedial transverse laparotomy is performed, through which a Babcock forceps is introduced and under direct vision the ideal site for the gastrostomy in the anterior wall of the stomach is selected. The Babcock is pulled until the stomach is exteriorized and maintaining the traction, the gastric wall is fixed to the muscle-aponeurotic plane with 4 cardinal sutures. The gastrotomy is performed in the center of a seromuscular purse-string suture and the gastrostomy button is introduced. The purse-string suture is knotted and the retention balloon is filled. Methylene blue is injected through the button which is retrieved by nasogastric tube confirming its correct placement in the stomach. Laparoscopically it is verified that there is no vascular compromise or intestinal loop interposition.

Results: Seven patients were operated on with a mean age of 1.9 years ± 0.5. The operative time was 35 minutes ± 10, starting gastrostomy feeding at 12 hours postoperatively. No complications were recorded.

Conclusion: Video-assisted gastrostomy is a simple, minimally invasive procedure, providing the safety of open surgery and constituting a complementary or alternative technique to the classic percutaneous techniques. According to the patient's comorbidities, it can be performed under epidural anesthesia, through a single incision and without pneumoperitoneum.Jul

11.59 - 12.04

(37) **Laparoscopic modified Swenson's procedure for long segment Hirschsprung's disease: video demonstration of technique and early results.** Ankur Mandelia, Anju Verma, Pratibha Naik, Rohit Sharma, Pujana Kanneganti. SGPGIMS. Lucknow. India.

Objectives: We aim to report the surgical technique and early results of laparoscopic modified Swenson's procedure (LmSw) for long segment Hirschsprung's disease (HD) in children.

Method: From July 2019 to December 2021, 16 children with biopsy-proven Hirschsprung's disease (HD) underwent LmSw. 3 patients were identified to have long segment disease on seromuscular biopsy mapping. Patients were placed in lithotomy position and 3 ports were used. Superior rectal, left colic and inferior mesentric vessels were divided while preserving the marginal arcade. Colon was mobilised beyond splenic flexure till mid transverse colon to ensure adequate length for pull through. Distal circumferential rectal dissection was continued below the peritoneal reflection, down to the pelvic floor. The perineal part of the procedure involved a full-thickness circumferential rectal incision 1 cm above the dentate line. Dissection was performed close to the rectal wall till it joined with the laparoscopic plane of dissection. The colon was then drawn out, avoiding twisting of the pull-through segment. The colo-anal anastomosis was performed using absorbable sutures.

Results: All 3 patients with long segment HD had a right transverse colostomy done as the first stage procedure. Median age and weight at operation was 4 years and 18 kg, respectively. The median operating time was 280 minutes and median length of resected bowel was 32 cm. The median time to full feeds and hospital stay was 30 hours and 3 days, respectively. Median follow up duration is 9 months. All patients have undergone stoma closure with no fecal or urinary incontinence. 1 patient had 2 episodes of post-operative enterocolitis which was managed conservatively. Another patient had high stool frequency initially which improved over time.

Conclusions: LmSw is a feasible, safe and effective procedure for the laparoscopic management of long segment HD in children with acceptable short term results.

12.04 - 12.09

(38) **Laparoscopic colectomy with rectal Hartmann's procedure for a case of juvenile polyposis coli: tips and tricks for multi-quadrant abdominal surgery.** Ankur Mandelia, Pujana Kanneganti, Anju Verma, Rohit Kapoor, Pratibha Naik. SGPGIMS. Lucknow. India.

Objectives: We aim to demonstrate the surgical technique of laparoscopic total colectomy with rectal Hartmann's procedure for a case of juvenile polyposis coli.

Methods: A 7-year-old boy presented with painless bleeding and polypoidal mass protruding per rectum for past 18 months. Serum hemoglobin and albumin was 6.5 gm% and 2.4 gm%, respectively. Colonoscopy revealed multiple polyps throughout the colon and rectum. Pre-operatively, anaemia and hypoproteinemia were corrected. As a first stage, laparoscopic total colectomy with rectal polypectomy and Hartmann's procedure with end ileostomy was done.

Results: Patient was placed in lithotomy position. 5 ports were introduced in a star shaped configuration to access all quadrants. The position of the operating surgeon, the camera assistant, the patient and monitor had to be changed sequentially to dissect the colon from rectum to caecum. Lateral peritoneal attachments were divided starting with the left colon. Gastrocolic & spleno-colic ligaments were then taken. Inferior mesenteric, middle colic, right colic and caecal branches of ileo-colic vessels were dissected, doubly clipped & divided. Rectum was divided around 5cm above peritoneal reflection with Endo GIA 60mm x 3.5mm stapler. Right lower quadrant port was enlarged to deliver the colectomy specimen and end ileostomy was fashioned. All medium to large polyps were removed per anally with harmonic. Operating time was 300 mins with minimal blood loss. Post-operative course was uneventful. Full feeds were resumed within 48 hours and patient was discharged after 72 hours. At 3 months follow up, patient was asymptomatic with good weight gain and underwent laparoscopic restorative proctocolectomy with ileal J pouch - anal anastomosis.

Conclusions: Laparoscopic total colectomy in children is feasible, safe and effective. However, it requires advanced surgical skills as it involves dissection in all quadrants of the abdomen with limited working space available for maneuvering.

12.09 - 12.14

(23) **Systemic Inflammatory Index: a new pathway in the diagnosis of pediatric acute appendicitis.** Javier Arredondo Montero, Giuseppa Antona, Mónica Bronte Anaut, Raquel Ros Briones, Natalia López-Andrés, Carlos Bardají Pascual, Nerea Martín Calvo. Hospital Universitario de Navarra. Pamplona. Spain.

Background: Analysis of ratios between different parameters of the blood count and basic biochemistry have sometimes yielded promising results in the context of pediatric acute appendicitis (PAA). To our knowledge, the diagnostic performance of a systemic inflammatory index (SII) (neutrophils x platelets/lymphocytes) has not been assessed yet.

Material and methods: We analyzed the diagnostic yield of SII in a prospective cohort of 147 patients. 51 patients with nonsurgical abdominal pain (NSAP) comprised the control group, and 96 patients diagnosed with AAP comprised the case group. The Kolmogorov-Smirnov test was used to assess the normality of the variables. Comparative statistical analysis was performed using the Mann-Whitney U test. To calculate its discriminative capacity, receiver operating characteristic (ROC) curves were analyzed. A p-value of <0.05 established statistical significance. The results were expressed as medians and interquartile ranges. Statistical analysis was performed with STATA 15.0 (StataCorp LCC).

Results: SII values were 656.2 (354.8-1161.7) (NSAP) and 2381.9 (1359.6-3599.9) (PAA). The area under the curve was 0.85 (IC 95% 0.78-0.92) (p<0,01) and the cut off was established at 1806, with a sensitivity of 66% and a specificity of 82%.

Conclusions: the SII has a good diagnostic performance in PAA. Its implementation is simple and inexpensive, and can be useful for routine clinical practice.

12.15 - 13.00

SESSION X. MISCELLANEOUS 2
CHAIRMEN: JOZEF BABALA (SK) AND PHILIPPE MONTUPET (FR)

12.15 - 12.22

(191) **Pelvic floor rehabilitation in perineal MIS indications and new perspectives of studies.** Ugo Maria Pierucci, Carlotta Canonica, Sara Costanzo, Francesca Destro, Giulia Lanfranchi, Margherita Roveri, Dario Rizzo, Milena Meroni, Lorena Canazza, Giorgio Selvaggio, Elettra Vestri, Costantino Zamana, Gloria Pelizzo. Pediatric Surgery Department, "Vittore Buzzi" Children's Hospital. Milan. Italy.

Introduction: Pelvic floor rehabilitation is a fundamental step in short- and long-term follow – up of children submitted to colorectal, urological and pelvic surgery. It consists of different techniques aimed to give autonomy and independence to the child, in order to grant the best Quality of Life (QoL) level possible.

Materials and methods: In our Centre's Rehabilitation Clinic we treat pelvic floor disfunction with different methodic, tailored on the child's need and on medical history; we report preliminary data about efficacy and QoL improvement of 2 rehabilitation programs (RP) employed on pediatric patients over a 2-year period: PTNS (percutaneous tibial nerve stimulation) and a combined approach involving biofeedback, behavioral re-education and fisiokinesis.

Results: Of a total of 33 patients treated, with a median age of 9,9 y.o. (range 5 – 17 y.o.), 3 had been previously submitted to minimally invasive procedures (2 endoscopic treatment of VUR, 1 VLS approach for ARM). They underwent a RP with both PTNS (1) and combined approach (2). Mean number of sessions needed were 11.6, and mean QoL improvement according to PG-I questionnaire was 2 (considering 0 = very improved and 6 = very worsened). These results were in lineif compared with the total study population.

Conclusion: According to these results, we believe that specific perineal rehabilitation protocols could be realized to treat patients approached with minimally invasive surgery, taking in consideration the different base pathology and the characteristics of the child. A combined approach seems to be more effective in complex patients, considering the efficacy and the plasticity of the process.

12.22 - 12.29

(27) **Complications in laparoscopic appendicectomy in children - a national paediatric study in Malta.** Gabriel DeGiorgio, Mohamed Shoukry. Mater Dei Hospital. Msida. Malta.

Aim: Laparoscopic appendicectomy (LA) is recognised as the standard in managing acute paediatric appendicitis (APA) as supported by numerous meta-analyses. Few articles have however studied its complications. This national study presents all peri-operative and post-operative complications encountered when treating APA with LA.

Methods: Retrospective cohort study of 70 out of 98 cases which underwent LA between October 2017 and March 2022 whose case notes were available. Patients' demographics, duration of hospital stay, peri-operative and post-operative complications, incidental findings and management were noted.

Results: Age at surgery ranged from 4-15 years. Male to female ratio of 1.8. None were converted to open. Perforated appendicitis was found in 22 cases. Hospital stay ranged from 1-17 days (median=4, interquartile range 2-7). Intra-operative complications included laparoscopic working port bleeding (n=2), omental haematoma (n=1), omental infarction (n=1) and mesoappendix haematoma (n=1). Post-operative complications included umbilical wound stitch sinus (n=3), surgical site infection (n=3), intra-abdominal collections (n=3), pain (n=2), allergy to skin glue (n=1) or antibiotics (n=1), umbilical port seroma (n=1) and lower respiratory tract infection (n=1). These complications were managed accordingly with stitches, balloon compression, clipping, antibiotics, drainage or conservatively. Intraoperative findings also included diagnoses separate from appendicitis; parasitic infection (n=3), enlarged ovarian functional cyst (n=2) and perforated Meckel's diverticulum (n=1).

Conclusions: LA is widely accepted in paediatric surgical centres. Multi-centre collaboration and education is fundamental to overcome reported complications. Suitable management strategies are essential to minimise the burden of adverse outcomes on health authorities and to reduce related patients' distress.

12.29 - 12.36

(150) **Outcomes of laparoscopic nephrectomies for renal tumours in children: indications need to be updated.** Morgan Pradier, Sabine Irtan, Hubert Ducou Le Pointe, Sophie Vermersch, Aurore Haffreingue, Julien Rod, Pascale Philippe-Chomette, Matthieu Peycelon, Florent Guerin, Marc-David Leclair, Hubert Lardy, Aurélien Binet, Frederic Lavran, Aurore Bouty, Raphael Moog, François Becmeur, Arnaud Verschuur, François Varlet, Aurelien Scalabre. University Hospital of Saint-Etienne, department of pediatric surgery. Saint-Etienne. France.

Introduction: An increasing number of teams are performing laparoscopic nephrectomies for renal tumours in children, although its indications are currently very restrictive. This study evaluates the results of this minimally invasive procedure and compliance with the SIOP-Umbrella protocols criteria.

Method: This multicentre retrospective study includes children operated on by laparoscopic total nephrectomy for renal tumour before 2020. Imaging was reviewed centrally.

Results: 59 patients (28 girls and 31 boys) with a mean age of 3.5 years were included. 14 tumours were metastatic at diagnosis (23.7%). The mean operative time was 213 +/-84 min. There were 9 conversions (15.3%) and 6 intraoperative complications (diaphragmatic wounds - 10.2%). There were 50 nephroblastomas (low risk: 4, intermediate risk: 37 and high risk: 9), 1 tubulo-papillary carcinoma, 1 clear cell sarcoma, 1 rhabdoid tumour and 6 nephrogenic rests. The mean number of nodes removed was 6 (0-32). Local stage III was confirmed in 9 cases (15.3%), 3 for tumour rupture (one intraoperatively), and 4 for positive margins. Only 1.6% of the procedures corresponded to the SIOP-Umbrella indications for laparoscopy. The criterion " central tumor with rim of normal renal tissue" was met only once. Conservative surgery would have been possible in 11 cases (18.6%). Tumour extension beyond the ipsilateral border of spinal column after chemotherapy was associated with an increased risk of conversion (p=0.004). After a mean follow-up of 5.2 ± 4.0 years, there were no local recurrences, but 2 deaths due to metastatic progression at 15 and 31 months postoperatively.

Conclusion: The treatment of renal tumours in children is feasible by laparoscopy without any particular risk of local recurrence. Its indications should be updated within the SIOP-Umbrella protocol.

12.36 - 12.41

(60) **Pediatric Endoscopic Pilonidal Sinus Treatment (PEPSIT) versus open approach for surgical treatment of pilonidal sinus disease in pediatric patients: long-term outcomes and considerations**. Ciro Esposito, Clara Massaguer, Mariapina Cerulo, Fulvia Del Conte, Vincenzo Coppola, Fiammetta Korsch, Benedetta Lepore, Maria Escolino. Federico II University Hospital. Naples. Italy.

Background: In the era of minimally invasive surgery, recent studies encouraged the use of endoscopic approach as the most effective way to treat pilonidal sinus disease (PSD). We analyzed our 13-years' experience aiming to compare the results of open and endoscopic approach in the pediatric population.

Methods: Between 2008 and 2020, 135 patients with PSD were operated in our Unit. Patients were grouped according to surgical techniques: G1 included 20 patients receiving open approach over a 9-years period (2008-2016) and G2 included 115 patients undergoing endoscopic technique (PEPSiT) over a 4-years period (2017-2020). Following outcomes were evaluated: length of surgery (LS), length of stay (LOS), healing time (HT), long-term recurrence rate (LTRR), patients' satisfaction (PS).

Results: Median LS was 55 minutes (range 25-90) in G1 and 23 minutes (range 15-40) in G2 [p=0.001]. Median LOS was 5 days (range 3-7) in G1 and 1.5 days (range 1-2) in G2 [p=0.001]. Median HT was 55 days (range 40-75) in G1 and 28 days (range 20-41) in G2 [p=0.001]. LTRR was 25% (5/20 patients) in G1 and 3.4% (4/115 patients) in G2 [p=0.0003]. Regarding PS, patients undergoing PEPSiT were extremely satisfied compared to G1.

Conclusions: PEPSiT should be considered the gold standard to treat PSD, providing several advantages including shorter surgical length and hospitalization, lower recurrence rate, faster healing time, higher patient satisfaction and good aesthetic results. These advantages justified the higher number of patients operated with PEPSIT every year compared with open surgery. However, a randomized controlled trial needs to confirm our data.

12.41 - 12.46

(30) **Endoscopic pilonidal sinus treatment (EPSiT): a double-centre retrospective case study.** Valeria Testa, Fabiola Colombini, Antonio D'Alessio, Annalisa Pasqualetto, Giulia Giannotti, Pietro Betalli, Maurizio Cheli. Ospedale Papa Giovanni XXIII. Bergamo. Italy.

Introduction: Pilonidal sinus disease (PD) is an acquired condition related to the ingrown hair in the natal cleft which can lead to complications including infection and abscess formation. Different approaches have been proposed until in 2013 Meinero described an Endoscopic Pilonidal Sinus Treatment (EPSiT) for adult practice. Classical excision is associated with high recurrence rates and serious impairments of quality of life. Since we have to take into account the young age of the patients and their active life, in paediatric field it is essential to prefer a minimally invasive technique. We want to present a double-centre case study about endoscopic pilonidal sinus treatment (EPSiT).

Materials and methods: We enrolled 183 patients who underwent EPSiT in the paediatric surgery units in Bergamo and Legnano (Italy) from September 2016 to September 2020. We recorded demographic data, operation time, hospital stay, complications and healing time.

Results: A total of 183 patients (124 boys and 59 girls) were enrolled with a mean age of 15 years. The procedure was performed under mild sedation and local anaesthesia and it lasted 40 minutes on average. The mean hospital stay was 1 day. Complications led to reoperation in 15% of patients and we achieved an overall resolution rate of 88%. The average healing time was 1 month from surgery.

Conclusions: According to our experience, EPSiT guarantees a short period of hospitalization, low morbidity, low risk of relapse and minimal discomfort for the patient, leading to a high success rate and a better quality of life, which is crucial especially in paediatric patients. As a result, we believe that EPSiT can be considered a valid therapeutic option for PD in children.

12.46 - 12.53

(175) **Mini invasive partial or total adrenelectomy in children: transperitoneal or retroperitoneoscopic approach?** Nicoleta Panait, Souleyman Diaby, Audrey Aschero, Carole Coze, Anne Dariel. Timone Children's Hospital. Marseille. France.

Objective: To compare the transperitoneal and the retroperitoneoscopic approaches in partial and total laparoscopic adrenalectomy in children.

Methods: In this unicenter retrospective study, children under 16 years who underwent laparoscopic adrenalectomy between 2016 and 2022 were included.

Results: Twenty-three children (13 girls; 8 antenatal diagnosis) between 2 months and 16 years were included. Seventeen underwent a transperitoneal approach and 6 a retroperitoneoscopic approach (2 bilateral adrenalectomies). Partial adrenalectomy was feasible (2 transperitoneal, 1 retroperitoneoscopic). Starting 2020 we chose the retroperitoneoscopic approach for simultaneous bilateral adrenalectomy or for patients with previous abdominal surgery (6 cases, 2 bilateral). Anatomopathological analysis reported 11 neuroblastoma, 3 ganglioneuroma, 2 adrenocortical tumors, 2 adenoma, 3 hematoma or fibrosis, 1 relapse of paravertebral rhabdomyosarcoma and 1 bronchogenic cyst. The left side was most frequent (12 cases). The median tumor size was 28 (10-60) mm and the median duration of the surgery was 120 (50-210) minutes without differences between the 2 approaches. No conversion was noted. The average length of hospitalization was 1 day in the retroperitoneoscopic and 3 days in the transperitoneal approaches 48 hours without significant difference. The median follow-up time was 31.5 months. No postoperative complications related to the surgery were recorded. One locoregional and metastatic recurrence at 3 months for undifferentiated neuroblastoma stage L1 at initial surgery (transperitoneal) with complete remission at 57 months was recorded. One metastatic recurrence at 6 months for a stage 4 ganglioneuroblastoma at initial surgery (retroperitoneal) was noted and the patient died at 12 months despite pre and postoperative chemotherapy.

Conclusion: The transperitoneal and retroperitoneal approaches for benign and malignant lesions of adrenal gland are a safe, feasible and reproducible techniques without any statistical differences in our study. Larger studies are needed to demonstrate the benefits of the retroperitoneal laparoscopic approach (shorter operative time and hospital stay, lower complications).

12.53 - 12.58

(67) **Retrograde balloon dilatation of esophageal stenosis in epidermolysis bullosa.** A. Tupilenko, M. Lokhmatov, A. Gusev, V. Oldakovskiy, S. Yatzik, E. Dyakonova. FSAI "NMRC of children health" MH RF. Moscow. Russian Federation.

Objective: One of the most common EB complications is the occurrence of an esophageal stricture, which becomes clinically apparent with dysphagia. The aim of our research is to optimize the treatment tactics for esophageal strictures using intraluminal methods and to develop measures to prevent restenosis.

Description: we reviewed the treatment of esophageal strictures in 40 patients with the dystrophic form of EB by method of balloon dilatation (BD) and oral budesonide administration in the postoperative period (20 patients) for 3 years. The method performance evaluation was carried out immediately after the treatment, and 3 and 6 months afterwards. The change in the diameter of the esophagus in the area of narrowing was assessed according to the stricture index: SI = (A-a)/A, with A – diameter of esophagus above stricture, and a – diameter of esophagus in the area of stricture.

Results: The stricture index in the BD only group 6 months later was 0.26±0.02, in the budesonide group it was 0.09±0.02 ($p<0.01$). THINC-scale nutritional risk before treatment was scored as 63.8±2.8 and 60.2±2.8 – severe. As a result of the treatment it credibly ($p<0.001$) lowered in both groups to moderate–47.8±2.8 and 33.8±2.8. In esophageal strictures treatment by means of BD plus budesonide recurrence occurred in 5.0% of cases, when in treatment by BD only in 30.0%. The recurrence rate is credibly ($\chi2=7.2$, $p=0.02$) related to both type of pathology and the selected treatment modality. No adverse events or complications were found.

Conclusion: Balloon dilatation was shown to be safe and effective method for intraluminal recanalization of the esophagus in EB patients. Administration of budesonide in the postoperative period allows for sustained remission and avoids more invasive manipulations.

13.15 - 13.45

POSTER SESSION 3

CHAIRMEN: MARIAPINA CERULO (IT) AND STEFAN GFROERER (DE)

13.15 - 13.17

(85) **Laparoscopic excision of abdominal lymphangioma: a single center experience**. Ilaria Infantino, Alessandra Martin, Elena Rovero, Giorgia Libro, Riccardo Coletta, Roberto Lo Piccolo, Antonino Morabito. Meyer's Children Hospital. Florence. Italy.

Introduction: Abdominal lymphangioma (AL) is a rare lymphatic malformation which can be addressed in a multimodal pathway depending on its location. Complete resection is the main goal of treatment.

Aim: to report the institutional experience of AL treatment in the last 5 years.

Material and Methods: The clinical records of patients who underwent surgical treatment for AL from 2017 to 2022 were reviewed retrospectively. Data on patient demographics, clinical presentation, mass characteristics, surgical procedure and short (surgical times, recovery duration, complications rate) and long-term outcomes (relapses rate) were collected. Data are presented as median and IQR.

Results: Ten patients underwent surgical treatment for AL. The age at surgery was 5.8 years (3-8.5), the weight was 22 kg (19-27). At diagnosis the dimensions were 83x85x35 mm (55x66x20-100x108x61); 80% of children were symptomatic (abdominal pain and constipation), while 20% had an incidental finding. Location was intraperitoneal in 80% of AL, retroperitoneal in 20%; interestingly, 50% had a history of previous conservative treatment (aspiration). Six patients had a laparoscopic excision, while two needed a combined laparoscopic and open approach; two were submitted to emergency laparotomies. Full resection was performed in 50% of Als, 33% were partially resected and 17% needed a marsupialisation. Surgery duration was 106 minutes (87-120), with no significant difference between the surgical approach used (p value 0.9). No intraoperative or postoperative complications were reported. The median follow-up time was 7 months (2-9.7); no recurrence was shown in those treated with laparoscopy, two patients treated with mixed or open technique relapsed; two patients were lost at follow-up.

Conclusions: Complete excision is the gold standard of treatment for AL. Our study has proven laparoscopy to be a valuable and safe approach, with a low recurrence rate. Laparotomy should be limited to emergency settings.

13.17 - 13.19

(90) **Bag-mesh splenopexy for wandering massive splenomegaly.** Xavier Tarrado, Laura Saura, Pedro Palazón, Clara Massaguer, Blanca Capdevila. Hospital Sant joan de Déu. Barcelona. Spain.

Aim: To present the treatment of a wandering spleen in a patient with hereditary xerocytosis with massive splenomegaly.

Patient: A 13 year-old girl with hypersplenism secondary to xerocytosis with massive splenomegaly was diagnosed of wandering spleen located in the pelvic cavity and gastric organoaxial volvulus.
As splenectomy in this hemolytic anemia was not indicated, a splenopexy was planned. After detorsion of the spleen, a bag mesh splenopexy to a deperitonized area in its orthotopic location was performed. Operative time was 150 minutes. Postoperative course was uneventful.

Six months later she was diagnosed of symptomatic cholelithiasis so laparoscopic cholecystectomy was performed. This procedure allowed to check up the splenopexy after reabsorption of the bag mesh.
After 5 years of follow up, CT scan and US show spleen remaining in place and the patient is asymptomatic.

Conclusion: Bag-mesh splenopexy with window deperitonization allowes a steady spleen attachement even on massive splenomegaly.

13.19 - 13.21 (116) **Triple A syndrome and esophageal achalasia minimally invasive treatment: 5 years single-Centre experience.** Carmen Campilongo, Riccardo Guanà, Alessia Cerrina, Alessandro Pane, Federico Scottoni, Elisa Zambaiti, Fabrizio Gennari. Regina Margherita Children's Hospital. Turin. Italy.

Triple A syndrome or Allgrove's syndrome is a rare hereditary autosomal recessive disorder, characterized by adrenal insufficiency with isolated glucocorticoid deficiency, achalasia and alacrima.

Clinical diagnosis is made with the Shirmer's test that confirms alacrimia and cortisol and ACHT dosage demonstrates adrenal insufficiency, with subsequent introduction of a lifelong glucocorticoid replacement therapy.

Esophageal achalasia is a rare idiopathic motility disorder that affects 0.11/100000 children annually and that manifests with vomiting, dysphagia, regurgitation, and weight loss. Definitive diagnosis is made with barium swallow study and esophageal manometry.
In the last 5 years, we treated 3 patients with worsening dysphagia as primary symptom, a 12-years old boy, and two monozygotic twins of 8 years of age.
They were all admitted to our ED for exacerbation of vomiting and epigastric pain in the previous weeks. Esophagram revealed a dilated esophagus with bird-beak narrowing at the gastroesophageal junction suggesting the diagnosis of achalasia, confirmed by endoscopy and esophageal manometry.
Collecting anamnesis, alacrimia and nasal speech was reported since childhood.
The presence of all 3 cardinal clinical entities of AAA syndrome strongly suggested this disorder, conformed by genetic studies.
A laparoscopic Heller myotomy plus Dor fundoplication was performed in all patients, without intra-or post-operative complications.
Oral diet was started at 48 hours once mucosal integrity was confirmed by esophagram.
The patients were discharged in PO day 3 with a PPI therapy for 1 month.
The prognosis of AAA syndrome is highly dependent on early diagnosis in order to prevent life-threatening adrenal crisis.
In our series the diagnosis of achalasia has been crucial for a prompt complete diagnosis of AAA syndrome and the immediate starting of hydrocortisone therapy.

The laparoscopic Heller myotomy and Dor fundoplication confirmed to be safe and effective also in the pediatric population.

13.21 - 13.23 (174) **Esophageal perforation during Heller myotomy: Laparoscopic management**. Jayakumar TK, Kirtikumar Rathod, Avinash Jadhav, Biangchwadaka Suchiang. All India Insititute of Medical Sciences. Jodhpur. India.

Introduction: Achalasia cardia is a motility disorder of the oesophagus affecting adults between 30 and 40 years of age. It is rarely seen in children. Laparoscopic Heller myotomy is routinely practised. Esophageal injury during the procedure can complicate the laparoscopic operation and affect the surgical outcome. We managed one such complicated case laparoscopically.

Case: A 12-year-old boy presented with complaints of difficulty in swallowing food, both solids and liquids. He was evaluated and diagnosed with achalasia cardia. We performed laparoscopic operation for Heller myotomy procedure. During the operation, an oesophageal perforation occurred, which was about 1 cm wide full-thickness defect. We closed the defect with full-thickness interrupted sutures followed by securing a patch of omentum over it. We completed the operation laparoscopically. The patient was electively kept intubated for 48 hours in the ICU. We started total parenteral nutrition and he was kept nil by mouth. An upper GI study was done on the seventh postoperative day which demonstrated no leaks. We allowed liquid diet on the same day. Oral feeds were transitioned to a semi-solid diet. He was discharged from the hospital two days later.

Discussion: Laparoscopic Heller myotomy is a technically challenging operation. Complications like esophageal perforation can be still managed laparoscopically.

13.23 - 13.25 (172) **Non-hypertrophic pyloric stenosis in a neonate causing gastric volvulus: A unique presentation.** Jayakumar TK, Kirtikumar Rathod, Arvind Sinha. All India Insititute of Medical Sciences. Jodhpur. India.

Introduction: Gastric outlet obstruction in a neonate due to non-hypertrophic pyloric stenosis (NHPS) is a rare cause. Gastric volvulus due to the NHPS is again a rare presentation. NHPS has been reported previously in infants & children.

Case: Our patient is a 37-day-old baby boy, who presented with complaints of vomiting for the last two weeks, and an inconsolable cry over the last two days. He has been vomiting seven to eight times a day, a few hours after breastfeeding. After the resuscitation with fluids, he was evaluated for the cause of obstruction. On ultrasonography, the stomach was distended, with pylorus having normal wall thickness. With infantile hypertrophic pyloric stenosis being ruled out, an upper gastrointestinal contrast series was obtained. It demonstrated gastric volvulus. We performed gastropexy laparoscopically. Post-operatively he had persistent symptoms. A repeat ultrasound study demonstrated the same findings. An endoscopy procedure was performed using a flexible endoscope. It demonstrated a narrow pylorus, consistent with the non- hypertrophic pyloric stenosis (NHPS). We performed a laparoscopic Heineke-Mikulicz pyloroplasty. The patient's symptoms had improved postoperatively. He was discharged after 5 days.

Discussion: NHPS as a cause of gastrointestinal obstruction, especially manifesting with gastric volvulus is a rare presentation. NHPS was never reported in neonates. Hence our suspicion of this diagnosis was low. NHPS can present in the neonatal period as well. Patients with NHPS have features of gastric outlet obstruction. Ultrasound study demonstrates normal pylorus, while upper gastrointestinal contrast study and endoscopy can confirm the pyloric narrowing. Laparoscopic pyloroplasty can serve as an alternative for an open procedure.

13.25 - 13.27 (154) **Risk factors for symptomatic presentation of Meckel's diverticulum in pediatric patients**. Clara Massaguer, Oriol Martín-Solé, Sonia Pérez-Bertólez, Maria Coronas Soucheiron, Mario Cuesta Argos, Blanca Capdevila Vilaró, Xavier Tarrado. Hospital Sant joan de Déu. Barcelona. Spain.

Aim of the study: To identify risk factors of symptomatic presentation of a Meckel's diverticulum (MD), regarding its characteristics (length, depth and presence of ectopic mucosa).

Methods: Retrospective transversal study of the patients operated on our center of MD's resection from January 2009 until August 2021. Demographic, clinical, surgical and histological data were recorded. Fisher's exact tests and logistic regressions were used for the statistical analysis.

Main results: 93 patients were operated on, 45% laparoscopically or laparoscopically assisted. Median age was 4.2 years old (IQR: 0.8 to 9.2) and 69% were symptomatic (31% were a casual finding). The presence of ectopic mucosa is related to the risk of bleeding (51% vs 7%, p<0.001) and perforation (30% vs 9%, p=0.018). There is a higher risk of occlusion with greater age (OR 1.15; 95%CI: 1.01 to 1.3; p=0.03). The length is a risk factor for torsion (OR 1.61; 95%CI 1.05 to 2.47; p=0.03) and intususception (OR 1.56; 95%CI: 1.1 to 2.23; p=0.01). The width is a risk factor of perforation (OR 2.3; 95%CI: 1.18 to 4.53; p=0.015) and intususception (OR 2.35; 95%CI: 1.09 to 5.07; p=0.03). The width (OR 1.99; 95%CI: 1.11 to 3.55) and older children (OR 1.09; 95%CI: 1 to 1.18) are risk factors of the presence of ectopic mucosa.

Conclusions: The presence of ectopic mucosa and the MD's characteristics (length and width) increase the risk of symptomatic presentation. When dealing with a large or wide incidental MD, prophylactic resection should be considered to prevent future complications.

13.27 - 13.29 (157) **Diagnostic challenges in Extremely Low Birth Weight (ELBW) premature infants with suspected esophageal atresia: a case report.** Francesca Palmisani, Leonore Mueller, Katrin Klebermaß-Schrehof, Michaela Mayr, Michael Wagner, Renate Fartacek, Angelika Berger, Martin Metzelder, Wilfried Krois. Department of Pediatric Surgery, Comprehensive Center for Pediatrics, Medical University of Vienna. Vienna. Austria.

Recent advances in neonatal care have led pediatric surgeons to face the demanding task of managing congenital malformations in preterm babies with extremely low birth weight (ELBW; <1000g), in absence of adequately sized instruments and equipment.
We report the case of a severely growth-retarded premature female born at 27 weeks of gestation with a birth weight of 410 grams, where a thoracic x-ray revealed a false route of the inserted 4 French NG-tube with a lateral deviation and malposition at the diaphragmatic level.

Due to the presence of intestinal gas, we found the images suggestive for a type C esophageal atresia (EA). A contrast study with mediastinal leakage further revealed a perforation of the esophagus or of the upper pouch of an EA, without signs of pneumo-thorax or -mediastinum. To confirm the diagnosis of EA we performed a tracheo-bronchoscopy through a 3mm endotracheal tube with a 2.3 mm flexible bronchoscope after clinical stabilization. Since a tracheo-esophageal fistula could not clearly be identified, we decided to proceed with the endoscopic evaluation of the esophagus. In absence of adequately sized gastroscopes, we used the same flexible bronchoscope. Due to the lacking gas-insufflation system of bronchoscopes, we carefully insufflated air through a simultaneously advanced NG tube and succeeded to reach the stomach under visual guidance, thus excluding the diagnosis of EA. The esophageal perforation could be conservatively treated without further complications.

Especially in frail preterm babies where even the placement of an NG tube can be challenging, securing correct diagnosis before major invasive interventions is crucial. Treatment of ELBW infants requires multidisciplinary management, delicate instruments and sometimes creative workarounds to meet the needs of these demanding cases.

13:29 - 13.31 (155) **Laparoscopic Transhiatal Gastric Transposition for Long Gap Esophageal Atresia - - Report of first two cases done in India.** Arun Kumar Loganathan, Susan Jehangir, John Thomas, John Mathai. Christian Medical College and Hospital. Vellore. India.

Introduction: LGEA (long gap oesophageal atresia) is a rare congenital anomaly that necessitates extensive surgical reconstruction. Recent trends favour preserving the native oesophagus for reconstruction via thoracoscopic internal traction techniques, which are limited to a few centres even in developed countries. Oesophagostomy and feeding gastrostomy at birth are standard practise in resource-limited areas. Later, oesophageal substitution by stomach, small intestine, or colon is attempted. Gastric pull up is the most common and is traditionally performed via laparotomy and neck dissection with blind tunnelling through the thorax. We present cases of LGEA treated with laparoscopic gastric transposition.

Case details: Two boys (age 10 months and 2 years) underwent laparoscopic gastric transposition for LGEA type A and B respectively. Both children presented after cervical oesophagostomy and feeding gastrostomy performed at peripheral centers. Umbilical 5mm camera port and two additional 5mm working ports and a liver retractor were used to mobilise the stomach while preserving the right gastric and gastroepiploic arteries. The stomach was exteriorized through the umbilical port and a pyloroplasty performed, esophageal stump closed and marking stay sutures placed on the fundus of the stomach at its highest point. The cervical esophagostomy was taken down. The thoracic dissection was achieved under vision by the laparoscope from below and concurrent dissection at the thoracic inlet. The stomach was pulled up with the help of the fundal stays and anastomosis achieved. Complete oral feeds were established by post operative day 12 and day 10 respectively. One child had a transient paresis of the laryngeal nerve causing postoperative stridor. Both children are on full oral feeds and gaining weight at 3 month follow up

Conclusion : Laparoscopic gastric transposition is feasible and provides the benefit of direct visualisation and magnification for the trans hiatal thoracic dissection.

13.31 - 13.33

(203) **Uses and applications of capsule endoscopy in the paediatric age: Analysis of 10 years' experience in a single centre.** Simone D'Antonio, Giovanni Parente, Eduje Thomas, Chiara Cordola, Marco Di Mitri, Mario Lima. Department of Pediatric Surgery, IRCCS, University Hospital of Sant'Orsola. Bologna. Italy.

Introduction: Capsule endoscopy (CE) is a non-invasive diagnostic exam with important applications in the paediatric age.

Materials and methods: In our study, we analysed data regarding capsule endoscopies performed at our Department of Paediatric Surgery of the University Hospital of Bologna from February 2012 to March 2022.

Results: In the study period 71 CEs were performed. The main indication for the exam was abdominal pain, followed by rectorrhagia, follow-up in hereditary polyposis, positive faecal occult blood test and inflammatory bowel diseases. This data differs from what reported in adult patients, in which the main indication is occult gastrointestinal bleeding. Concerning the results of the exam, the main lesions encountered were ulcerative lesions, followed by Meckel's diverticula, polyps, inflammation and aphthous ulcers. The principal localization was the ileum, confirming the utility of CE for the study of the small bowel. The comparison with other diagnostic exams highlighted several cases in which CE allowed to make diagnosis of a lesion, where other methods were negative. Failure to evacuate the capsule happened only in one case.

Conclusion: In our cohort, we analysed the features of the CEs performed at our Operative Unit in the last 10 years, confirming it's safety, tolerability, feasibility and diagnostic value in clinical practice.

13.33 - 13.35

(59) **A different method for gastrostomy: laparoscopic percutaneous gastrostomy.** Berat Demirel, Merve Celenk, Basak Dagdemir Ezber, Sertac Hancıoglu, Beytullah Yagiz. Ondokuz Mayıs University, Medical School, Department of Pediatric Surgery. Samsun. Turkey.

Aim: Many different techniques have been described for gastrostomy. In this study, we aimed to share a new technique that we have recently started to implement and its results.

Methods: Patients who underwent laparoscopic percutaneous gastrostomy were followed up during the early postoperative period and during follow-up, and complications were determined. In patients who underwent laparoscopy with this method, the orogastric tube was grasped with the help of a grasper. The needle, which was advanced percutaneously from the place where gastrostomy was planned, was advanced into this tube. The guide wire advanced through the needle was taken out of the mouth. The catheter attached to the guide wire was pulled out of the abdomen. With laparoscopic vision, the abdominal wall of the stomach was seen and the bumper of the catheter was placed in the stomach.

Results: There were 22 patients who underwent laparoscopic percutaneous gastrostomy. 14 of them were boys and 8 of them were girls. Their age ranged from 2.25 to 17.25 years, with an average of 8.6 years. All patients had neurological disease. Concurrent fundoplication was performed in 19 patients. No complications were observed in any of the patients in the first 21 postoperative days. The mean follow-up period was 6.61 months (1 to 17.5 months). During this period, peristomal discharge was observed in two patients, and buried bumper syndrome was observed in two patients (at the 4th and 12th weeks postoperatively). He recovered with conservative treatment by tube replacement. No patient required surgical intervention.

Conclusion: Laparoscopic percutaneous gastrostomy is a safe and easily applicable method. Many major complications can be prevented by applying it under laparoscopic vision. It does not require simultaneous endoscopy.

13.35 - 13.37

(188) **How gastrointestinal surgery can improve QoL in Spinal Muscular Atrophy patients: preliminary considerations in a series of 12 cases.** Francesca Destro, Giulia Lanfranchi, Margherita Roveri, Ugo Maria Pierucci, Sara Costanzo, Marco Brunero, Milena Meroni, Andrea Pansini, Valentina Caputo, Anna Camporesi, Gloria Pelizzo. Pediatric Surgery Department, "Vittore Buzzi" Children's Hospital. Milano. Italy.

Introduction: Spinal Muscular Atrophy (SMA) is a degenerative disease that causes progressive muscle weakness. Dysphagia, gastroesophageal reflux (GER) and growth retardation are common gastroenterological problems. Anti-reflux surgery and gastrostomy placement are currently indicated as one-time surgery to reduce the anesthesiological risks and prevent GER consequences. The aim of this study is to report surgical results in a series of SMA patients focusing on functional aspects and quality of life (QoL).

Materials and methods: We enrolled all SMA patients that required surgery in the period 2020-2022 with a minimum follow-up of 3 months. We collected data regarding demographics, gastro-esophageal anatomy and the presence of GER (upper gastrointestinal series and pH-impedance), surgery and follow-up. In the last year, high-resolution-manometry (HRM) has been used for functional evaluation. A multidisciplinary approach was applied to all the steps of patients' management.

Results: Twelve SMA patients (F=M, mean age 4 years) underwent PEG (percutaneous endoscopic gastrostomy) with or without laparoscopic fundoplication in 10 and 2 patients respectively. At follow-up, one patient with gastrostomy alone required additional fundoplication. A complication occurred in one patient (acute peritonitis by gastrostomy detachment). Recurrent GER was attested in one case. Parents reported an improvement in the every-day management of their children and in their QoL (12/12, 100%). However, 2/12(17%) also complain for bothersome symptoms during and soon after enteral feeding (retching and bloating). Mean weigh gain was 1,3kg in 3 months.

Conclusions: Laparoscopic fundoplication and PEG are commonly performed in SMA children. However, the complexity of these patients determines additional risks, requiring specific evaluations before, during and after surgery and a multidisciplinary approach. Our preliminary results showed the efficacy of the procedure and the positive effects on the everyday QoL. Further refinements of the diagnostic evaluation are required to better understand functional aspects and perform a tailored surgery.

13.37 - 13.39

(66) **Redo surgery in children with anorectal malformation.** I. Khvorostov, E. Okulov, A. Gusev, A. Dotzenko, S. Yatzik, E. Dyakonova. National Medical Research Center for Children's Health. Moscow. Russian Federation.

Aim and Objectives: Despite significant progress in the surgical treatment (ARM) of children's anorectal malformations, the number of REDO operations remains considerable. We performed a retrospective study of patients with a previously repaired ARM to determine the indications of reoperations.

Materials and methods: A nonrandomized, uncontrolled study was conducted, including 47 patients with ARM who had previously undergone radical surgery. The methods of visual examination, MRI, ultrasound, X-ray studies were used in the examination protocol.

Results: 10 patients (21,2%) (6 boys, 4 girls) underwent redo posterior-sagittal approach (PSARP) for anoplasty mislocation. 9 (20,4%) patients (all girls) underwent perineal reconstruction under colostomy protection. 3 (6,3%) patients with complete rectal prolapse underwent transanal rectal mucosectomy and muscular plication according to Luis De La Torre modification. Anal stenosis was discovered in 15 (31,9%) patients. 4 patients of this group were operated on for resection of the distal colon in the absence of the effect of bougienage with the development of pathological megarectum. We are performed the operation using PSARP for 6 boys (12,7%) with the original remnant fistula (ROOF) having excision of the ROOF for all patients without the need for a laparotomy. 4 patients (8,5%) with the retraction of the rectum underwent PSARP after primary pull through procedure by laparoscopic assisting operation.

Conclusions: Reoperations in patients with APM are associated with technical defects in primary operations: the absence of electromyo-identification during the primary operation, high processing of the distal colon with the stump left in case of rectourethral fistula, absence of circular release of the reduced intestine from the Denon-Villiers capsule.

13.39 - 13.41

(121) **Laparoscopic Ledd procedures in children of the first 6 months of life with malrotation syndrome without midgut volvulus.** I. Khvorostov, A. Gusev, E. Okulov, A. Bekin, E. Dyakonova, S. Yatzik, A. Dotzenko, M. Volkova. FSAI "NMRC of children health" MHRF. Moscow. Russian Federation.

The indications and timing of surgical treatment for intestinal malrotation syndrome (IMS) in children during the first months of life without midgut volvulus have not been determined. Some surgeries prefer open Ledd's operation in all patients with rotation impairment without clinical manifestations of obstruction, while others offer surgery only if clinical signs of recurrent duodenal obstruction develop.
We performed Ledd's laparoscopic procedure on 5 patients aged 3 weeks to 6 months with clinical manifestations of recurrent duodenal obstruction without midgut volvulus.

Laparoscopic Ledd's laparoscopic procedure was successfully completed in all patients without conversion to laparotomy. The average duration of surgery was 90 minutes. The average length of hospital stay is 8 days. Enteral feeding was restored by 8 days after surgery. The symptoms of duodenal obstruction completely resolved in all patients.

Ledd's laparoscopic procedure is a safe and effective procedure that can be performed in patients with clinical manifestations of malrotation without midgut volvulus in order to prevent possible complications in the future.

13.41 - 13.43

(86) **Outcomes of Pediatric Endoscopic Pilonidal SInus Treatment (PEPSIT): systematic review.** Anastasia Mentessidou, Veniza Maravilla, Georgina Malakounides. Department of Paediatric Surgery, Cambridge University Hospitals NHS. Cambridge. United Kingdom.

Introduction: The general trend towards minimally invasive techniques is mirrored in the treatment of pilonidal sinus disease (PSD). Pediatric endoscopic pilonidal sinus treatment (PEPSiT) is gaining increasing popularity. The aim of this study was to evaluate the technique and pooled outcomes of PEPSiT.

Methods: A search for all studies on PEPSiT for primary or recurrent PSD in patients <18 years old pertaining to demographics, technique and outcomes was performed. Studies with preliminary results were excluded to avoid duplicate results. Literature review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines. Chi-square test was used to assess associations of different perioperative wound care protocols with outcomes.

Results: Nine studies with a total of 320 patients, with combined mean age of 15.7 (15-16.2) years, were included. Twenty-seven per cent (27%) of the patients had recurrent PSD. Mean operative time was 38 (29-57) minutes and mean hospital stay was 16 (6-24) hours. The procedure was successful in 291 patients, resulting in 90.9% (85-100%) overall success rate; mean time to full healing was 4.1 (2.9-12.4) weeks. Recurrence was reported in 29 patients, resulting in 9.1% overall recurrence rate (0-27.6%); mean time to recurrence was 4.6 (2.9-5.8) months. Mean follow-up duration was 13.5 (6.8-25.4) months. Outcomes were not significantly altered with intensive perioperative laser treatment (p=0.10) or with postoperative regular hair removal with shaving, depilatory creams or laser till full healing (p=0.33).

Conclusion: Pooling of available evidence confirms that PEPSiT is a safe and effective method for PSD treatment in patients under 18 years of age. Added to its advantages of non-invasiveness and minimal life disruption postoperatively, PEPSiT's pooled outcomes appear superior to those of numerous conventional methods for PSD treatment. Superiority of PEPSiT needs to be confirmed in future comparative studies, including cost:benefit analysis.

13.43 - 13.45

(129) **Pediatric endoscopic sinus treatment: our first 100 cases.** Sonia Pérez-Bertólez, Oriol Martín-Solé, Isabel Casal-Beloy, Clara Massaguer, Mario Cuesta, María Coronas, Xavier Tarrado. Hospital Sant joan de Déu. Barcelona. Spain.

Aim: Pediatric Endoscopic Pilonidal SInus Treatment (PEPSiT) has favorable short-term-outcomes, but there is a lack of reliable data on medium and long-term follow-up. The objective of our study was to evaluate the effectiveness and advantages of PEPSiT vs conventional surgery of pilonidal sinus in the pediatric population.

Methods: A quasi-experimental study was carried out in pediatric patients undergoing pilonidal sinus surgery at a single institution between january 2019-2022. Excision and healing by secondary intention (EHSI), excision and primary closure (EPC), and PEPSiT were compared. The surgical technique chosen was surgeon-dependent.

Results: 149 patients were studied – 100 undergoing PEPSiT, 28 undergoing EHSI, and 21 undergoing EPC. Median full healing process was 4 weeks (IQR: 3-8) in PEPSiT, 16 weeks in EHSI (IQR: 12-26.5) and 7 weeks (IQR: 4 a 10) in ECP (p=0,0001). Pain on the Visual Analogue Scale (VAS) and need for analgesics were lower in the PEPSiT group (p < 0.001). Mean time to return to normal life was shorter with PEPSiT – 177 days earlier than EHSI (CI95%: 124.7-230.2; p<0,001) and 7.2 days earlier tan EPC (CI95%: 20.2-138.6; p<0,009). Complications with PEPSiT were 9.3 times lower tan EHSI (OR: 9.3; CI95% 3.5-24.7) and 8.5 times lower than ECP (OR=8.5; CI95% 2.9-24.4). EHSI had 5.3 times more probability of recurrence than PEPSiT (OR=5.3; CI95% 1.3-22.7), and ECP 15.2 times more (OR=15.2; CI95% 3.2-71.7).

Conclusions: Endoscopic pilonidal sinus treatment is effective in medium-term follow-up, with less complications than classic techniques. It allows for an early return to normal life without restrictions.

13.45 - 13.47

(44) **Treating pilonidal disease via fistuloscopy: what can be the reason of recurrence?** Balazs Fadgyas, Zoltan Ringwald, Peter Vajda. Heim Pál National Institute of Pediatrics, Departement of Surgery and Traumatology. Budapest. Hungary.

Aim: To evaluate the complications and recurrence following Pediatric Endoscopic Pilonidal Sinus Treatment (PEPSiT) in children.

Methods: A prospective observational study was performed between 2019-2021. Patients under 18 years were included, who underwent PEPSiT procedure. Patients lost during follow-up were excluded. Length of hospital stay (LOS), complications, recurrence, wound healing time (fistula closing) and postoperative hair removal were observed.

Results: During the study period 43 PEPSiTs (4 redo-PEPSiT) were performed. The average age of the studied patients was 15.95 years, 39 male and 4 female patients were operated. LOS was 1 day in all cases. Wound infection observed in 2/43 patients. Recurrence was found in 12/43 (27.9%) cases. The postoperative hair removal was inadequate in 19/43 cases and all recurrent cases (12/12) were found in this group.

Conclusions: According to the study the main reason of recurrence following PEPSiT procedure could be the insufficient hair removal.

14.45 - 15.30

SESSION XI. ROBOTICS AND INNOVATION 2
CHAIRMEN: MARIO MENDOZA (CH) AND GLORIA PELIZZO (IT)

14.45 - 14.50

(193) **Preliminary experience of advanced pediatric thoracic robotic surgery in 17 patients**. Ulgen Celtik, Zafer Dokumcu, Coskun Ozcan, Ata Erdener. Ege University Faculty of Medicine Department of Pediatric Surgery. 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 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). Summary of indications are depicted in below.

Thoracic mass excision: 8 patients
- Benign pathologies

Bronchogenic cyst:1
Duplication cyst:1
Ganglioneuroma:1
- Malign pathologies

Osteosarcoma- Lung metastasis: 2
Hepatocellular carcinoma- Hilar metastasis:1
Posterior mediastinal neuroblastoma: 2

Esophageal surgery: 6 patients
Esophagectomy and Gastric pull up: 4
Myotomy and Dorr fundoplication:2

Miscellaneous: 3 patients
Left partial anomalous pulmonary venous return ligation
Morgagni hernia repair
Lobectomy for bronchiectasis

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.

14.50 - 14.55 (115) **Robotic surgery and gastroesophageal junction in children: lessons learned.** Silvia Bisoffi, Federica De Corti, Costanza Tognon, Stefania Michelon, Piergiorgio Gamba, Francesco Fascetti Leon. University of Padova. Padova. Italy.

Since we started our paediatric robotic program with the DaVinci Xi platform, the procedures on the gastroesophageal junction-GEJ (Nissen fundoplication and Heller-Dor myotomy) were among the most adopted. Standard setting was gradually developed, and technical efficacy progressively achieved.

The optimal setting is currently obtained with a supine position with straight legs, and anti-sliding pad for 10° reverse Trendelenburg; 4 robotic trocars in a transverse supraumbilical line together with an accessory trocar in a left paraumbilical line to minimize cosmetic impact. Details are shown.

The patient cart is placed on the right-hand side, and the endoscopic stack is positioned at the left-hand side towards the patient's head in case of indication for gastrostomy insertion.

In this frequent case, during antireflux procedure, the endoscope is introduced into the stomach straight after the wrap is passed behind the GEJ, and PEG insertion completed at the very end of the operation.
15 procedures were completed, docking time (mean: 12 minutes; range 5-25) and robotic operative time (mean: 144 minutes; range 85-205) reduced significantly since the program started.

Furthermore, clear advantages of the robotically assisted surgery have been observed in cases demanding particular dexterity and movement precision, such as redo Nissen fundoplication and Heller myotomy. Specifically, 3D vision and fine movement were very helpful in dissecting failed fundos, controlling bleeding and dividing myofibers. The 8-mm trocars and the in-line geometry were suitable for small patients and for neurologically impaired patients with prominent thoracoabdominal deformity as well.

Despite GEJ being commonly performed with success with standard laparoscopic approach, we believe that robotic technology can add safety and technical advantages when approaching more complex cases such as redo surgery, and Heller myotomy.

14.55 - 15.02 (120) **Efficacy of laparoscopic training in improving technical skills among paediatric surgery residents.** Francesca Gigola, Virginia Carletti, Matteo Colli, Federico Bianchi, Riccardo Coletta, Roberto Lo Piccolo, Antonino Morabito. Department of Neurosciences, Psychology, Drug Research and Child Health (NEUROFARBA), University of Florence. Florence. Italy.

Introduction: Real-life laparoscopic training opportunities for paediatric surgery residents in Italy, even in high-volumes centres, are impossibile. The increased complexity in laparoscopic procedures associated with demographical reduction demands other training methods to ensure the aquisition of advanced skills in residents and appropriate training. Our study aimed to understand whether a structured laparoscopic training program could improve laparoscopic knotting.

Material and Methods: Eight laparoscopic-naïve residents in paediatric surgery took part in a structured laparoscopy training using the LAPARO® Advance Trainer laparoscopic simulator. All residents were instructed to train for at least 15 minutes for 20 days. The outcome was to perform a laparoscopic intracorporeal knot in under 180 seconds. Pre- and post-training timing for knot execution was calculated. Results are presented as median and IQR. Wilcoxon signed-rank was used for paired analyses; a p-value < 0.05 was considered significant for all the studies. Statistical analysis was performed using Jamovi 1.8 (The jamovi project (2021). jamovi (Version 1.6) [Computer Software]).

Results: All the residents performed 11 laparoscopic knotting attempts in 20 days. The first laparoscopic knot took a median of 392 seconds (IQR: 288-537); the time dropped to 175 seconds (IQR:150-257) on the eleventh attempt. The difference between pre-and post-training timing was statistically significant ($p<0.05$). Improvement in timing of execution appeared to be statistically significant from the 8th attempt onwards. Seven residents (88%) performed the laparoscopic knot in less than 180 seconds after a median of 8 tries (IQR: 2.5-8.5).

Conclusion: This study showed the efficacy of laparoscopic training in improving laparoscopic naive residents' skills. Implementing a laparoscopic simulation curriculum should be mandatory for pediatric surgery residents to shorten the learning curve and reduce surgical adverse events.

15.02 - 15.07

(142) **Initial application of laparoscopic 5-mm stapler in thoracoscopic and digestive pediatric surgery.** Sophie Vermersch, Aurélien Scalabre, Don Andre Vincentelli, François Varlet. University hospital. Pediatric surgery department. Saint-Etienne. France.

Purpose: Minimally invasive pediatric surgery is challenging because of small operating space and physical constraints. The aim of this study is to present our initial experience using the 5-mm stapler in pediatric general surgery.

Methods: A retrospective chart review was conducted to identify surgical procedures using 5-mm stapler at our institution. Demographic data included age and weight. Operative data included indication for use, complications and operative time.

Results: Since the acquisition of this equipment in June 2019, we performed 14 procedures (6 duodenal atresia, 5 lobectomy, 2 pulmonary metastasectomy and 1 segmentectomy).
The median age was 1 day (range 1-840) for duodenal stenosis or atresia and 6 months (range 6-168) for thoracoscopic surgery. The median weight was 3 kilograms (range 1.89-9) for duodenal atresia and 7 kilograms (6.56-41) for thoracoscopic surgery. The median length of surgery was 90 minutes for duodenal atresia (range 80-105) and 178 minutes for thoracic surgery, depending on the type of surgery (range 50-320). No conversions or intra-operative complications were recorded. One patient with duodenal atresia presented stenosis of the anastomosis secondary to manual closure of the stapler entry point.

Conclusion: In your experience, thoracoscopic and duodenal atresia surgery with the 5-mm stapler were effective. On account of having adequate dimensions for small cavities, these instruments can facilitate the procedure and could help to reduce the operative time.

15.07 - 15.14

(33) **How to improve the image recognition by a better annotation of a medical image in an artificial intelligence studies**. Baran Tokar, Ozer Celik, Nuran Cetin, Tehran Abbasov, Ilknur Ak Sivrikoz. Eskisehir Osmangazi University, School of Medicine, Department of Pediatric Surgery, Division of Pediatric Urology and Center of Research and Application for Computer-Aided Diagnosis and Treatment in Health. Eskisehir. Turkey.

Objective: As an artificial intelligence subtype, deep learning (DL) study may support clinical decision-making process by medical image recognition. This study aimed to obtain a better annotation and determine the accuracy of DL in kidney detection, side differentiation and detecting the empty and filled renal pelvis and calyxes (RPC). Methods: Labeling was performed on 1260 renal images in 29 frames of the diuretic renography in 36 children. All children had unilateral or bilateral hydronephrosis. The Tensor Flow Object Detection API was used to deploy object detection models. Sensitivity, precision, and F1 score were determined for the detection of the right or left kidney as an object. Supervised- training was applied for differentiation of filled and empty RPC. Results: In 1260 labeled renal images, the left or right kidney were detected with 94% sensitivity, 96% precision, and 95% F1 score. The number of the renal image labeled was 638 for filled RPC (group I) and 358 for empty RPC (group II). For training 300 images were selected from each group. The architecture was inceptionV3 in DL. For testing, 58 images were selected from each group and the accuracy was 88% for group I and 66% for group II. Conclusions: DL could differentiate the organ, its location, and a contrast-filled lumen with a relatively large number of labeled scans used for training. Low tissue contrast and unclear boundaries may affect the quality of annotation and the output. Clinicians should work together with other disciplines to develop efficient DL models for the real-world clinical environment.

15.14 - 15.21

(34) **Virtual Reality Soft Tissue Simulation Framework for Pediatric Endoscopic Procedures.** Baran Tokar, İlker Ozcan, Emin Bakan. Eskisehir Osmangazi University, School of Medicine, Department of Pediatric Surgery, Division of Pediatric Urology. Eskisehir. Turkey.

While simulating rigid objects in computers is relatively easy, traditionally it was almost impossible to do real time soft tissues simulation. With the advent of Position Based Dynamics (PBD) techniques and GPU technology, real time soft tissues simulation is possible. The main purpose of the project, is to develop the methodology of designing and producing virtual reality (VR) soft tissue simulators for intraluminal and laparoscopic procedure in pediatric endoscopic surgery. In this reported part of the project, a basic VR simulation framework of a model for endourological interventions (EUI) is presented. Method: A VR simulation framework for endoscopic procedures was planned. That study would be a base for developing VR simulation for a wide variety of pediatric endoscopic surgical procedures. In this part of our project, we aimed to develop VR simulation of urinary tract intraluminal structure (UTILS) for EUI. A model was designed with the help of real images and videos of the procedures. The foundation of the framework is PBD soft tissue simulation. PBD will allow us to simulate big volumes of soft tissues in real time in high discretization resolutions. Results: Anatomical details of UTILS and instrument-organ compatibility were obtained in simulation. We have developed our own PBD system from scratch that runs on GPU, which provides excellent real time performance and allow modifications such as heat related phenomena, anisotropic behavior, or even dynamic behavior such as muscle contractions. Conclusion: With the current trend of increasing GPU performance it will be possible to simulate bigger and bigger portions of human body with each new generation of GPUs that will also serve to produce simulators for pediatric surgery practice.

15.21 - 15.28

(77) **Multi-center evaluation and validation of a pediatric low-cost and 3D printed laparoscopic trainer**. Alexis Lubet, Jean-Baptiste Marret, Frédéric Elbaz, Lucie Grynberg, Gauthier Jeanjoucla, Quoc Peyrot, Julien Rod, Louis Sibert, Agnès Liard-Zmuda, Mariette Renaux-Petel. Rouen University Hospital. Rouen. France.

Introduction: The aim of this study was to design a low-cost 3D printed pediatric laparoscopic trainer and to demonstrate its training effectiveness.

Materials and methods: The Space Child Laparoscopic Trainer (SCLT) is 3D-printed using fused deposition modeling technology, with an average cost of 5 euros per unit and an assembly time of 10 minutes. A smartphone is used as the camera.
Residents were trained on both standard already validated laparoscopic trainer (LT) and SCLT. Two fundamental laparoscopic tasks were randomly performed on each trainer: precision cutting and peg transfer. Global performance was calculated as a score using GOAL score and exercise duration. The learning curve of each trainer was assessed in a linear mixed effects model with random effects. The effectiveness of learning was estimated by computing the slopes of the learning curves by comparing them using Wald's method.

Results: A total of 240 exercises was performed by 50 residents and 10 senior surgeons. Mean performance score for precision cutting was 3.44 (±0.76) on LT and 3.51 (±0.85) on SCLT. Mean performance score for peg transfer was 3.26 (±0.63) on LT and 3.53 (±0.82) on SCLT. The training slope was estimated at +0.139 (95% CI: +0.053 to +0.252, p=0.01) for LT and +0.153 (95% CI: 0.035 to 0.243, p=0.004) for SCLT. Learning curve was slightly higher on SCLT with an estimated ratio between learning slopes of 1.10 (95% CI: 0.35 to 3.46, p=0.09).

Conclusion: The SCLT is a low-cost portable laparotrainer that is easy to assemble and use. This study concludes that its utilization is as valuable for laparoscopic training as a standard laparotrainer. Its wide dissemination to residents and surgeons, especially in developing countries may allow an easier access to laparoscopic training.
This study was presented this year to the GECI.

15.30 - 16.15

SESSION XII. UROLOGY 3
CHAIRMEN: SIMONA GEROCARNI-NAPPO (IT) AND PAUL PHILIPPE (LU)

15.30 - 15.37 (73) **Three-dimensional versus two-dimensional laparoscopic pyeloplasty in children**. Cristina Tordable, Daniel Cabezalí, Alicia Gómez, Lara Merino, Andrés Gómez. Hospital 12 de Octubre. Madrid. Spain.

Introduction: The aim of this study is to evaluate the effect of 3 dimensional (3D) system in the operative time and complications during a laparoscopic pyeloplasty procedure (LP) compared to 2 dimensional (2D) laparoscopy.

Material and methods: We retrospectively evaluated 27 children that underwent laparoscopic pyeloplasty with 2D (14 patients) and 3 D system (13 patients) . The surgical procedure was divided in steps (dissection, posterior wall ureteropelvic suture, catheter placement, anterior wall ureteropelvic suture and pelvic-pelvic suture) The time spent in the surgery steps, complications and hospital stay were analyzed and compared between 2D and 3D groups.

Results: The mean total operative time was 58.50 minutes in 2 D LP group and 47,5 in 3 D LP (p< 0.05). The mean time of the surgery steps was: dissection 23.50 minutes in the 2 D LP and 15.00 minutes in the 3 D LP (p<0,05); posterior wall ureteropelvic suture 16.00 minutes in the 2 D LP group and 14.00 minutes in 3D LP(p= 0.26); catheter placement 5.50 minutes in the 2 D LP group and 3.00 minutes in the 3 D LP (p< 0,05); anterior wall ureteropelvic suture 10.00 minutes in the 2 D LP group and 8.00 minutes in the 3 D LP (p < 0.04); pelvic pelvic suture 6.50 minutes in the 2D LP and 5.00 minutes in the 3D LP group (p= 0.40)
The average hospital stay was 1,3 days in the 2 D LP and 1,2 in the 3DLP (p >0,05) and there were no complications in any group.

Conclusions: Based on our findings, 3D LP improves the operative time, mainly the dissection, the catheter placement and the anterior wall ureteropelvic suture but there are no significant differences in the posterior wall ureteropelvic suture, complications and hospital stay.

15.37 - 15.44 (63) **Robot-assisted Extravesical Ureteral Reimplantation (REVUR) in children with simple and complex ureteral anatomy: a multicenter study.** Ciro Esposito, Laurent Fourcade, Quentin Ballouhey, Francois Varlet, Aurelien Scalabre, Marco Castagnetti, Alaa El Ghoneimi, Fulvia Del Conte, Mariapina Cerulo, Maria Escolino. Federico II University Hospital. Naples. Italy.

Background: Recently, robot-assisted extravesical ureteral reimplantation (REVUR) has gained wide acceptance in the pediatric population. However, further evidence is needed to confirm its efficacy even in case of complex anatomy. This study aimed to report the outcomes of REVUR in both simple and complex ureter anatomy.

Methods: The charts of all patients with VUR, who received REVUR in 6 different institutions over a 5-year period, were retrospectively reviewed. Patients with both simple and complex ureter anatomy were included. Parameters assessed were patient demographics, surgical variables, and post-operative results.

Results: Fifty-seven patients with median age of 6.9 years (range 4.5-12), receiving REVUR in the study period, were included. Eighteen (31.6%) had complex anatomy and included prior failed endoscopic injection (n=13), complete ureteral duplication (n=2), periureteral diverticulum (n=2), ectopic megaureter requiring dismembering (n=1). The median operative time was 155 min for unilateral and 211.5 min for bilateral repairs. The overall VUR resolution rate was 96.5%. Post-operative complications (Clavien 2) included urinary retention following bilateral repair (n=5, 8.7%), febrile UTIs (n=6, 10.5%) and gross hematuria (n=3, 5.2%). Comparative analysis between simple and complex cases showed that REVUR was faster in simple cases in both unilateral [p=0.002] and bilateral repair [p=0.001] and post-operative urinary retention was more frequent in simple cases [p=0.004].

Conclusions: Our experience confirmed that REVUR was safe and feasible, reporting a high success rate and no need for secondary procedures for management of VUR in both simple and complex ureter anatomy. Management of complex cases only required an acceptable increase in the operative times, with no significant difference in the post-operative mordidity and success rates.

15.44 - 15.49

(64) **Laparoscopic and robot-assisted ureterocalicostomy for treatment of primary and recurrent pelvi-ureteric junction obstruction in children: a multicenter report**. Ciro Esposito, Thomas Blanc, Dariusz Patkowski, Pedro Lopez, Anne-Françoise Spinoit, Mariapina Cerulo, Fulvia Del Conte, Vincenzo Coppola, Maria Escolino. Federico II University Hospital. Naples. Italy.

Background: Small case series of ureterocalicostomy (UC), using both laparoscopic and robot-assisted approach, have been reported in the pediatric population This study aimed to assess the outcomes of laparoscopic ureterocalicostomy (LUC) and robot-assisted laparoscopic ureterocalicostomy (RALUC) in children with pelvi-ureteric junction obstruction (PUJO).

Methods: The data of 15 patients, who received LUC (n=9) and RALUC (n=6) in 6 international pediatric surgery units over a 5-year period, were retrospectively analyzed. Patient characteristics and surgical outcomes were assessed.

Results: The median patient age was 10.7 years (range 3-17). In 7/15 (46.7%) children, UC was performed as a primary procedure. In the remaining 8/15 (53.3%) cases, UC was performed as a "salvage" procedure for recurrent PUJO. The median operative time was 157.6 minutes (range 90-240) and the median anastomotic time was 59.5 minutes (range 25-95). The median length of stay (LOS) was 2.8 days (range 2-10). No intra-operative complications and no conversions occurred. The median length of follow-up was 37.6 months (range 1-60). Surgical success rate was 100%. Post-operative Clavien grade 2 complications were recorded in 3/15 (20%) patients undergoing LUC. Comparing the two different approaches, no significant differences were found with respect to overall operative time [p=0.43], LOS [p=0.07] and post-operative complications [p=0.18]. Conversely, the median anastomotic time was significantly shorter in RALUC (49.3 min) than in LUC (69.7 min) [p=0.01].

Conclusions: LUC and RALUC appeared safe and effective approaches for PUJO repair in children and reported excellent outcomes as salvage and primary procedure as well. Robotics provided shorter anastomotic time, but it was indicated in older children. The choice of one approach over another remained mainly dependent on the surgeon's preference and experience and/or robot availability.

15.49 - 15.56

(136) **Endoscopic urinary diversion as initial treatment in obstructive ectopic ureter.** Rubén Ortiz, Laura Burgos, Beatriz Fernández, Javier Ordoñez, Alberto Parente, Jose María Angulo. University Hospital Gregorio Marañón. Madrid. Spain

Aim: We propose an endoscopic urinary diversion (EUD) in the initial management of symptomatic obstructive ectopic ureter in infants.

Patients and methods: Twenty obstructive ectopic ureters were initially treated by EUD between 2006 and 2017. This approach was not feasible in other three patients in the same period. Ectopic ureter was always confirmed by cystoscopy. It was indicated in those patients with high suspicion of ureteral ectopia at preoperative imaging scans, with urinary tract dilatation worsening and febrile UTIs despite antibiotic prophylaxis. When ectopic meatus was not found, EUD consisted in the creation of a transurethral neo-orifice (TUNO) performed by needle puncturing of the ureterovesical wall, under fluoroscopic and ultrasound control. If ectopic meatus was identified in the posterior urethra, "intravesicalization procedure" was done opening the urethral-ureteral wall, creating a new ureteral outlet into the bladder. Follow-up protocol included periodical clinical reviews, US, MAG-3 and VCUG scans.

Results: Median age of EUD was 3.2 months (0.5-7), with median operating time of 27.5 minutes (12-60) and hospital stay of 1 day (0.5-9). TUNO was performed in 7 cases and "intravesicalization" in 13, with a median follow-up time of 6.5 years (4.2-14.6). Initial renal function was preserved in all cases, with improvement on renal drainage after EUD. Significant postoperative differences were observed in hydronephrosis grade and ureteral diameter ($p < 0.005$). Postoperative complications were UTI in 7 patients and TUNO stenosis in one. Secondary VUR was found in 15/20 cases. Definitive treatment was further individualized in each patient after 1 year of life, attending to symptoms and renal function.

Conclusion: EUD is a safe and less-invasive technique in the initial management of symptomatic obstructive ectopic ureter. It allows an adequate ureteral drainage until the definitive surgery is proposed. It does not invalidate future definitive treatments and other surgical options in case of failure.

15.56 - 16.01

(131) **Surgically modified animal-tissue model of UPJO in children: high-fidelity model for surgical simulation and training.** Tobias Jhala, Philipp Szavay, Sabine Zundel. Pediatric Surgery. Lucerne. Switzerland.

Purpose: To provide a high-fidelity, animal tissue-based model for advanced surgical simulation of laparoscopic dismembered pyeloplasty in infants and children.

Materials and methods: A previously described animal tissue model using chicken crop was surgically modified and fusioned with piglet kidney specimens in order to provide an organ model realistically resembling infant and children hydronephrosis for simulation of dismembered laparoscopic pyeloplasty.

Results: The surgical modification of the animal tissues with the fusion of chicken crop and piglet kidney respectively was able to provide a high grade of resembling a realistic organ situs for infant and pediatric pyeloplasty.
Anatomical, biological as well as haptic conditions of the tissue were able to resemble human tissue in a high grade.

Discussion: In literature so far animal-tissue models described range from folded chicken skin to live animal models. While these types of models have their own advantages and disadvantages none of them provide adequate anatomical relations.

Conclusion: The fusion of previously described tissue models of chicken crop for simulation of pyeloplasty along with piglet kidneys for surgical simulation can provide a highly realistic model for surgical simulation of pediatric dismembered laparoscopic pyeloplasty. In addition, this model rules out the disadvantage of native animal kidney specimens which the lack of pathology of a dilated extrarenal pelvis. For simulation purposes in pediatric laparoscopic urology, i.e., reconstructive procedures such as dismembered pyeloplasty this model appears to be promising in terms of providing realistic pathology in pediatric dimensions.

16.01 - 16.06

(156) **Pop-off mechanisms as protective factors for renal kidney disease in pediatric patients with posterior urethral valves.** Clara Massaguer, Oriol Martín-Solé, Sonia Pérez-Bertólez, Xavier Tarrado, Luis García Aparicio. Hospital Sant Joan de Déu. Barcelona. Spain.

Aim of the study: To identify if pop-off mechanisms act as protective factors for chronic or end-stage renal disease in patients with posterior urethral valves (PUV).

Methods: Retrospective cohort study of patients with PUV treated in a pediatric third level hospital. Demographic, clinical, analytical and radiological data were collected. Unilateral high-grade vesicoureteral reflux with ipsilateral renal dysplasia and without contralateral kidney involvement, urinoma, prenatal urinary ascites, big vesical diverticulum and persistent urachus were considered as pop-off mechanisms. Multiple logistic regressions and multivariant Cox regression were used for statistical analysis. The study was approved by the local ethics comittee.

Main results: 70 patients treated in our centre from 2010 until August 2020 were included. 14 (20%) presented pop-off mechanisms and 56 (80%) did not. Pop-off mechanisms were protective against development of chronic renal disease (CRD) (0% vs 27%; p=0.03) and may protect from the need of renal replacement therapy (RRT) (0% vs 9%; p=0.58). Nadir creatinine values (mg/dL) were predictors of CRD (0.37 vs 0.53; p<0.0001) and need of RRT (0.38 vs 1.21; p<0.001).

Conclusions: Pop-off mechanisms act as protective factors from CRD in patients with PUV. Nadir creatinine is a predictive factor of CRD and need of RRT in these patients. A bigger sample is needed to determine whether pop-off mechanisms protect from the need of RRT in patients with PUV.

16.06 - 16.11

(185) **Mininvasive treatment for Nutcracker Syndrome: initial experience with extravascular stent placement.** Elisa Zolpi, Paolo Magagna, Cosimo Bleve, Jacopo Dall'Acqua, Stefania Marconi, Fabio Salvatore Chiarenza. Pediatric Surgery Unit, Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies AULSS8 S. Bortolo Hospital. Vicenza. Italy.

Introduction: Nutcracker syndrome (NCS), is characterized by impeded outflow from the LRV into the inferior vena cava due to an abnormally narrow angle between the abdominal aorta (AA) and the superior mesenteric artery (SMA). At present, the treatment guidelines for NCS are unclear, and different therapeutic principles need to be applied in specific individuals depending on the severity of symptoms.

Material and Methods: We describe 4 patients diagnosed with NS with a mean of 4 years of follow-up at our department. All patients were diagnosed at pediatric age and the mean age at diagnosis was 16 years.

The diagnosis of NCS relies on clinical manifestations, Doppler ultrasonography (DUS) and computed tomography (CT) results. DUS and CT angiography were performed for all patients for comprehensive assessments of the angle between the AA and SMA, the LRV diameter ratio (hilar to aortomesenteric), the peak velocity (PV) ratio (aortomesenteric to hilar), and hemodynamic characteristics.
Three cases were treated surgically. The pre-operative kidney model of the patient was printed out to enable surgical planning. After that, the extravascular stent (EVS) was designed based on the LRV's primitive physiologic structure. The three patients underwent laparoscopic three-dimensional printed (3DP) EVS placement. The surgical procedure were designed for the placement of EVS, taking great care in positioning and fixing the stent.

Results: The mean duration of surgery was 240min. No intraoperative complications. Computed tomography examinations revealed that the pre- and post-operative angle between the SMA and the aorta ranged from 18.7°±4.3° to 55.0°±4.4; No side effects were observed in the 12 to 24 months following surgery.

Conclusion: The 3DP EVTS is a safe and effective minimally invasive alternative for the treatment of NCS. The results are good but a longer follow-up is needed.

16.45 - 17.30

POSTER SESSION 4
CHAIRMEN: LOUISE MONTALVA (FR) AND RADOICA JOKIC (RS)

16.45 - 16.47

(187) **Endoscopic technology for Blue Rubber Bleb Nevus Syndrome: a delayed diagnosis**. Giulia Lanfranchi, Ugo Maria Pierucci, Margherita Roveri, Sara Costanzo, Milena Meroni, Francesca Destro, Gloria Pelizzo. Pediatric Surgery Department, "Vittore Buzzi" Children's Hospital. Milano. Italy.

Introduction: Vascular malformations affecting abdominal viscera, especially the gastrointestinal tract (GI), are an unusual cause of chronic anemia. Blue Rubber Bleb Nevus Syndrome (BRBNS) is an extremely rare and severe condition.
We present the case of a 14-year-old female, with a history of iron deficiency refractory anemia who was diagnosed with BRBNS a few years after the onset of symptoms (pallor, fatigue and poor exercise tolerance).

Case report: The girl came to our attention for refractory anemia diagnosed three years before at another Hospital. She had neither experienced other symptoms nor any GI bleeding. At birth, she underwent partial removal of a venous malformation of the left paravertebral region despite a diagnosis of congenital vascular syndrome had never been made.

At our first evaluation, she had already undergone an abdominal CT and technetium-99m-pertechnetate scan with normal findings.
Physical examination showed a rubbery cutaneous venous malformations under the left sole and a blue vascular papule over the right palm.

We performed an upper GI endoscopy, that revealed 2 strawberry-like mucosal lesions in the stomach and VCE (videocapsule endoscopy) that disclosed 10 intestinal hemangiomas.
BRBNS diagnosis was established on the base of the peculiar clinical features and the pathognomonic endoscopic appearance.

Conclusions: Literature on the use of VCE in children is limited. Main indications include obscure gastrointestinal bleeding (OGIB) and suspected Crohn's disease, although in the adult it is becoming the front-line method for evaluating patients with unknown anemia.
According to our experience, VCE should be considered as a promising screening modality for the diagnosis of suspected GI vascular malformations in children. It has the advantage of limiting the diagnostic invasiveness although careful patient selection is mandatory to avoid complications (e.g. consider patients' age and possible stenosis). It is also a useful tool in monitoring the effects of the therapy.

16.47 - 16.49 (26) **Diagnostic performance of serum calprotectin and appy-1 test in pediatric acute appendicitis: a systematic review and a meta-analysis.** Javier Arredondo Montero, Giuseppa Antona, Carlos Bardají Pascual, Mónica Bronte Anaut, Natalia López-Andrés, Raquel Ros Briones, Nerea Martín-Calvo. Complejo Hospitalario de Navarra. Pamplona. Spain.

Background: This study aimed to examine the diagnostic performance of serum, fecal and urinary calprotectin as well as the role of the APPY 1 biomarker panel in pediatric acute appendicitis (PAA).

Methods: We conducted a systematic review of the literature that involved an extensive search in the main databases of medical bibliography. Two independent reviewers selected the relevant articles based on the previously defined inclusion and exclusion criteria. Methodological quality of the selected article was rated using the QUADAS2 index. A synthesis of the results and two random-effect meta-analyses were performed.

Results: The research resulted in 173 articles. We excluded 163 following the inclusion and exclusion criteria, resulting in the 10 studies included in this review. Four of the included studies compared serum values and reported significant differences between groups, but inconsistent results regarding cut-off points, sensitivity and specificity. Two publications compared urinary values and presented inconsistent results regarding sensitivity and specificity. One publication evaluated fecal calprotectin, but it did not provide measured data. Four studies evaluated the diagnostic performance of APPY-1 test in pediatric acute appendicitis, with a pooled sensitivity, specificity and NLR of 97.37 (95% CI 95.60-98.44), 36.74 (95% CI 32.28-41.44) and 0.0714 (95% CI 0.041-0.115) respectively.

Conclusions: Serum calprotectin has limited diagnostic yield in PAA. There is not enough evidence on the usefulness of urinary or fecal calprotectin in the diagnosis of PAA. APPY-1 is a reliable test to exclude the diagnosis of PAA in patients at low or moderate risk according to PAS and Alvarado Score

16.49 - 16.51 (21) **Discriminatory capacity of interleukin-6 between complicated and uncomplicated acute appendicitis in children: a prospective validation study.** Javier Arredondo Montero, Giuseppa Antona, Adriana Rivero Marcotegui, Raquel Ros Briones, Mónica Bronte Anaut, Amaya Fernandez-Celis, Natalia López-Andrés, Nerea Martín-Calvo, Carlos Bardají Pascual. Complejo Hospitalario de Navarra. Pamplona. Spain.

Background: Interleukin-6 (IL-6) is a biomarker with moderate diagnostic performance in pediatric acute appendicitis (PAA). Previous studies indicate that it may be useful in discerning between complicated and uncomplicated PAA.

Material and methods: We designed a prospective observational study to validate serum IL-6 as a marker for diagnostic classification between complicated and uncomplicated PAA. This study includes 87 patients with a confirmed diagnosis of acute appendicitis, divided into two groups: 1) patients with complicated PAA (n=26) 2) patients with uncomplicated PAA (n=61). In all of them a serum sample was obtained at the time of diagnosis and IL-6 concentration was determined by ELISA. the Kolmogorov-Smirnov test was used to assess the normality of the variables. Comparative statistical analysis was performed using the Mann-Whitney U test. To calculate its discriminative capacity, receiver operating characteristic curves were analyzed. A p-value of <0.05 established statistical significance. The results were expressed as medians and interquartile ranges. Statistical analysis was performed with STATA 15.0 (StataCorp LCC).

Results: Serum IL-6 values were 60.25 (27.10-169) ng/mL (group 1) and 17.2 (8.5-36.8) pg/mL (group 2). The area under the curve was 0.78 (IC 95% 0.68-0.88) (p<0.01) and the cut off was established at 25.90 pg/mL, with a sensitivity of 84.6% and a specificity of 65.6%.

Conclusions: Serum IL-6 has a moderate performance in discerning between complicated and uncomplicated PAA. The development of a score that includes clinical and radiological variables may increase the classification performance of this molecule.

16.51 - 16.53 (22) **Diagnostic performance of serum pentraxin-3 in pediatric acute appendicitis: a prospective diagnostic validation study.** Javier Arredondo Montero, Giuseppa Antona, Carlos Bardají Pascual, Raquel Ros Briones, Mónica Bronte Anaut, Adriana Rivero Marcotegui, Amaya Fernandez-Celis, Natalia López-Andrés, Nerea Martín-Calvo. Complejo Hospitalario de Navarra. Pamplona. Spain.

Background: Pediatric acute appendicitis (PAA) is a pathology with a high rate of diagnostic error. In recent years, the diagnostic performance of multiple biomarkers has been evaluated.

Material and methods: We designed a prospective observational study to validate serum pentraxin-3 (PTX3) as a diagnostic tool in PAA. This study included 214 patients, divided into three groups: 1) patients who underwent major outpatient surgery (n=63), 2) patients with non-surgical abdominal pain in whom the diagnosis of PAA was excluded (n=53) and 3) patients with a confirmed diagnosis of PAA (n=99). In 202 patients a serum sample was obtained at the time of diagnosis, and PTX3concentration was determined by ELISA. the Kolmogorov-Smirnov test was used to assess the normality. Comparative statistical analysis was performed using the Mann-Whitney U test. To calculate its discriminative capacity, receiver operating characteristic curves were analyzed. A p-value of <0.05 established statistical significance. The results were expressed as medians and interquartile ranges.

Results: Serum PTX3 values were 2.54 (1.70-2.95) ng/mL (group 1), 3.29 (2.19-7.64) ng/mL (group 2) and 8.94 (6.16-14.05) ng/mL (group 3). The AUC (group 2 vs 3) was 0.77 (IC 95% 0.68-0.85) (p<0.001) and the cut off was established at 7.28 ng/mL, with a sensitivity of 61.3% and a specificity of 73.1%.

Conclusions: Serum PTX3 has a moderate diagnostic performance in PAA, but it cannot be considered a unique and definitive diagnostic test. The design of a clinical, analytical and radiological score that includes PTX3 could contribute to improve its diagnostic performance.

16.53 - 16.55

(71) **Prospective analysis of the prevalence of coagulopathy in patients with complicated and uncomplicated pediatric acute appendicitis**. Javier Arredondo Montero, Raquel Ros Briones, Giuseppa Antona, Mónica Bronte Anaut, Nerea Martín-Calvo, Carlos Bardají Pascual. Complejo Hospitalario de Navarra. Pamplona. Spain.

Introduction: In clinical practice, it is common to find moderate coagulopathy in patients with pediatric acute appendicitis (PAA), especially in evolved cases. However, the literature regarding this finding is scarce.

Material and methods: In this study, 119 patients were prospectively included, divided into two groups: 1) patients with non-surgical abdominal pain in whom the diagnosis of PAA was excluded (n=35) and 2) patients with a confirmed diagnosis of PAA (n=84). In all patients a coagulation study was obtained at the time of diagnosis and INR and aPTT were analyzed. The Kolmogorov-Smirnov test was used to assess normality. Comparative statistical analysis was performed using the Mann-Whitney U test. A p value of <0.05 established statistical significance. Results were expressed as medians and interquartile ranges.

Results: aPTT values were 1.05 (1-1.17)(group 1) and 1(0.93-1.07)(group 2)(p=0.01). INR values were 1.08 (1.02-1.18)(group 1) and 1.19 (1.13-1.28) (group 2)(p=0.0005). In relation to the type of PAA, INR values were 1.17(1.13-1.27) in patients with uncomplicated PAA and 1.23(1.13-1.36) in patients with complicated PAA(p=0.09). None of the patients received specific treatment for the correction of coagulopathy. No statistically significant differences were observed in relation to surgical time, hospitalization time or the presence of complications between patients with coagulopathy and patients without coagulopathy.

Conclusions: This study demonstrates the presence of moderate coagulopathy of the extrinsic pathway in patients with PAA, which is more pronounced in patients with complicated PAA. However, this finding does not seem to have an impact on routine clinical practice.

16.55 - 16.57

(74) **Analysis of an inflammatory biomarker panel in the immediate postoperative period of pediatric acute appendicitis: a pilot study**. Javier Arredondo Montero, Giuseppa Antona, Raquel Ros Briones, Mónica Bronte Anaut, Amaya Fernández-Celis, Natalia López-Andrés, Nerea Martín-Calvo, Carlos Bardají Pascual. Complejo Hospitalario de Navarra. Pamplona. Spain.

Introduction: Studies on the immediate postoperative systemic inflammatory profile of pediatric acute appendicitis (PAA) are scarce.

Material and methods: We designed a prospective observational study to evaluate three proinflammatory serum markers: neutrophil gelatinase-associated lipocalin (NGAL), Interleukin-6 (IL-6) and Pentraxin-3 (PTX-3) in the immediate postoperative period of PAA. This study includes 71 patients with a confirmed diagnosis of acute appendicitis (PAA), divided into three groups: 1) patients with non-complicated PAA (n=50) 2) patients with gangrenous PAA (n=6) and 3) patients with perforated PAA (n=15). In all of them a serum sample was obtained 12 hours postoperatively after surgery. Kolmogorov-Smirnov test was used to assess the normality of the variables. Comparative statistical analysis was performed using the Mann-Whitney U test, Fisher exact test and Pearson correlation test. The results were expressed as medians and interquartile ranges. Statistical analysis was performed with STATA 15.0 (StataCorp LCC).

Results: 70 patients were operated by single port (TULA) and 1 patient by standard laparoscopy. The groups were sociodemographically and clinically comparable. IL-6 levels were 6.05 [4-11.9] (group 1), 16.1 [4.8-63.4] (group 2) and 39.6 [16.8-98.5] (group 3)(p=0.001). PTX-3 levels were 15 [9.85-22] (group 1), 11.55 [8.69-14.42] (group 2) and 24.96 [22-28.41] (group 3)(p=0.28). NGAL levels were 58.08 [43.80-82.47] (group 1), 72.90 [53.67-74.43] (group 2) and 82.36 [62.83-87.16] (group 3)(p=0.16). Weakly positive correlations were found between postoperative IL-6 and: Preoperative INR (r=0.253,p=0.04), days of admission (r=0.23,p=0.06), hours to onset of postoperative oral tolerance (r=0.239, p=0.04). No other correlations of interest were found either with clinical variables or among the markers themselves.

Conclusion: The systemic inflammatory profile of complicated PAA is higher than that of uncomplicated PAA. Future multicenter studies that characterize more accurately these findings may provide the basis for patient stratification, determining which patients would benefit from initial nonsurgical management.

16.57 - 16.59

(84) **Robot-assisted Retroperitoneal Lymph Node Dissection (RA-RPLND) in a Child**. Louise Murchison, Ben Challacombe, Anu Paul, Massimo Garriboli, Arash Taghizadeh, Pankaj Mishra. Evelina Children's Hospital, St. Thomas' Hospital. London. United Kingdom.

Background: Whilst RA-RPLND has been reported in adults with testicular cancer since 2006, its use in adolescents and children is limited to isolated case reports (all of whom beyond the age of 15 years). We report the use of RA-RPLND in a 14 year old male with stage 3 mixed germ cell tumour (non-seminoma) of the left testis.

Methods: Prior to RA-RPLND, the patient had undergone three cycles BEP (Bleomycin Etoposide and Cisplatin) chemotherapy. At the end of treatment, with normal tumour markers a CT abdomen was performed which showed persistent left para-aortic lymph nodes (3cm) which were likely cystic teratoma differentiated. Following discussion at a super-regional specialist Multidisciplinary team meeting, decision was made to proceed to RA-RPLND. The patient was positioned in steep Trendelenberg. A trans-peritoneal approach was utilized with insertion of 5 ports. The bowels were reflected, flaps developed and lifted with stay sutures. The inferior vena cava and aorta exposed. The inferior vena cava and aorta were exposed. Inter aorto-caval packet, left para- aortic packet with mass very stuck to left renal vein, left spermatic cord. Clips to all lymphatics and vessels, IMA spared.

Results: The surgery was performed safely and without complications. Estimated blood loss was 100cc, operative time was 210 minutes. The histology showed differentiated teratoma in the two target nodes, measuring 2.5 and 3.5 cm out of 22 lymph nodes resected with negative margins. The patient was discharged 2 days post-operatively.

Conclusion: This case demonstrates that RA-RPLND is safe and feasible within the adolescent and paediatric population. However, as a result of the limited number of reports, further research is required to assess the techniques' outcomes.

16.59 - 17.01

(149) **Mininvasive Surgery and 3D reconstruction in treatment of challenging Giant Cystic Lymphangioma. Advantages of the techniques.** Cosimo Bleve, Lorella Fasoli, Maria Conighi, Enrico Lapergola, Stefano Mazzoleni, Paolo Cocco, Francesca Vinci, Salvatore Chiarenza. Pediatric Surgery Unit, Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies AULSS 8 S. Bortolo Hospital. Vicenza. Italy.

Introduction: Cystic Lymphangioma (CL) is a rare congenital benign tumor, generally considered as the local proliferation of differentiated lymphoid tissue in the development of the lymphatic system. This disease occurs in various areas of the body, with the most common location at the neck, occasionally the axilla or groin. Rarely in the abdomen and mediastinum (0,7-4% of mediastinal tumors). Laparoscopy and Thoracoscopy offer proven benefits for resection of such lesions despite the difficulties associated with the anatomical location and nature of the lesion.

Methods: Since January 2015, we have treated 4 patients with complex forms of CL, 3 with mediastinal mass (1 with prenatal diagnosis) and 1 with abdominal mass.

Results: all patients with mediastinal mass underwent preoperative MRI and CT. Two presented a right-posterior localization (one with contralateral extension); one a right-anterior. They underwent right thoracoscopic resection. The patient with abdominal mass studied with MRI and underwent laparoscopic resection. In the last two patients, we made use of 3D anatomic reconstruction model to plan surgical approach. In all cases, we performed a complete excision. No perioperative complications were recorded. The hospital stay ranged from 3 to 7 days. In all cases, histological diagnosis confirmed cystic lymphangioma.

Conclusion: minimally invasive surgery (thoracoscopic and laparoscopic) is effective and safe in resection and removal of both mediastinal and abdominal masses. The advantages especially in the mediastinum are due to the possibility of extending the resection counter-laterally with complete and continuous control of the noble structures. 3D-reconstruction provides comprehensive and precise anatomical information improving the chances of success and reducing the risk of major complications.

17.01 - 17.03

(190) **Laparoscopic management of tubal torsion in pediatric age: experience from a single Center.** Margherita Roveri, Giulia Lanfranchi, Sara Costanzo, Francesca Destro, Ugo Maria Pierucci, Andrea Pansini, Camilla Viglio, Giorgio Selvaggio, Gloria Pelizzo. Pediatric Surgery Department, "Vittore Buzzi" Children's Hospital. Milan. Italy.

Introduction: Fallopian tube torsion is a rare but potentially damaging condition in children, representing a surgical emergency thus requiring a prompt management for both the diagnosis and surgery. The aim of our study is to present our experience in the management of tubal torsion, underlying the advantages of the laparoscopic approach.

Materials and Methods: We performed a retrospective review of patients with tubal torsion managed between November 2020- May 2022. Demographics, clinical presentations, radiological findings and surgical details were analyzed.

Results: We managed 4 patients with adnexal torsion (age range 6 -15 years, mean 11 years). One was prepubertal.
Presenting symptoms were pain 4/4(100%), vomiting 3/4(75%), diarrhea and obstruction 2/4(50%) and fever 1/4(25%).
Ultrasound scan showed an abdominal mass, but was not conclusive regarding its origin in all patients. One patient underwent surgery with no further radiological evaluation. MRI demonstrated tubal torsion with adnexal cysts in the remaining 3 cases.
Preoperative tumor markers were normal, except for 1 patient (elevated CA125).
Laparoscopy was performed in all patients. In 3/4(75%) cases the adnexal were preserved after derotation and cystectomy. Conversion and oophorectomy were required in 1 case due to the presence of a huge adnexal mass involving the ovary, with uncertain macroscopic features; ipsilateral tube was preserved.
Hystology showed paraovarian cysts in 3(75%) cases and an ovarian cyst in 1.
We didn't observe any complications at a median 1-year follow-up and tubo-ovarian symmetric ultrasound appearance has been achieved in all the 3 patients with preserved adnexa.

Conclusion: Laparoscopy is the gold standard for both the diagnosis and management of adnexal pathologies.
Our results confirmed the safety of the procedure and complete functional recovery after untwisting the ischemic adnexal, regardless of the gross appearance. A conservative approach is mandatory, to preserve normal growth and future fertility.

17.03 - 17.05

(96) **Ovarian Cyst Torsion and Asymptomatic Morgagni Hernia in an 12-Years Old with Ehlers-Danlos: A Case Report.** Barmadisatrio -, Fransiska Kusumowidagdo, Yoshua Irawan, Jimmy Annas, Yunus -, Astri Ramadhani, Fahad Taihuttu. Stellenbosch University. Cape Town. South Africa.

Ehlers-Danlos syndrome (EDS) includes a group of connective-tissue disorders characterized by abnormal collagen metabolism. The diverse spectrum of this disease and its complications present a distinct challenge to the surgeon. Patients may have hyperelastic or fragile skin, poor wound healing, hypermobile joints, and clotting abnormalities. In view of the multisystemic involvement, different medical specialists need to be involved in the management of EDS patients, depending on the extent and severity of the disease manifestations.

A 12-year-old girl presented to our ER with acute abdominal pain. This patient complained about intermittent pain on her lower abdomen in last 3 months. The patient is not on her menstrual cycle. She also got repeated patella joint dislocation on both of her legs when she had strenuous activity. Nonetheless, she could reposition the dislocation by herself. She also had frequent bruising on her body. Our patient had history of congenital right diaphragmatic hernia and treated conservatively in neonatal period.Chest physical examination was normal , on palpation we found abdominal cystic mass 10x10x5 cm in right lower quadrant, mobile and painless. Skin hyperextensibility was present, multiple macula hyperpigmentation, and score 5 based on Beighton Scale (Hyperextension of the elbows and knees, forward flexion of the trunk). Whilst the abdominal CT revealed ovarian cyst, thoracal scoliosis, and diaphragmatic hernia. There were no abnormalities on complete blood count and coagulation test. Diagnostic laparascopy was performed and found septated right ovarial cyst torsion, normal appendix and diapfragmatic hernia with small part of gaster slide into thoracic cavum. We performed right salphingoovariectomy, due to ischemic ovarium. The Morgagni diaphragmatic hernia is treated conservatively and routine physiotherapy for her joint disorders. Currently, this patient had no complaints and recovered uneventfully.

17.05 - 17.07

(100) **Is necrotic always nonviable? Analysis of ovarian torsion in a single institution retrospective study.** **Aneta Piotrowska-Gall, Łukasz Władyszewski, Piotr Cierniak, Przemysław Wolak. Collegium Medicum, Jan Kochanowski University of Kielce. Kielce. Poland**

Aim: The study aims to assess the viability of ovaries after torsion.

Materials and Methods: We conducted a retrospective study of girls treated for ovarian and adnexal torsion between 01.04.2012 and 30.03.2022. Data were collected on demographics, symptoms, intraoperative findings, and follow-up ultrasound. A total of 60 girls had torsion of their ovary, uterine tube, or whole adnexa. Exclusion criteria consisted of isolated uterine tube torsion (n=10) and resection of the ovaries (prenatal n=6, other n=7).

Results: Thirty-seven girls met the inclusion criteria in the study, with a median age of ten years old. The median duration of the symptoms was 24 hours (av. 89 hours). The preoperative diagnosis was based on ultrasound and clinical findings. Intraoperatively the surgeon defined the degree of the torsion (median= two rotations) and the viability of the ovary. The viability was classified into three categories: A, meaning full recovery (n=12), B: partial recovery (n=20), and C: necrotic gonad (n=5).
Cystectomy or tumorectomy was performed in 17 cases, with no malignancy in this group.

Ninety-two percent (n=34) of patients had at least one follow-up ultrasound. The median time of the follow-up was 5,8 months.
The viability of the ovary was defined as a follicular structure. There were only three girls with homogenous ovaries in our group.
There were two girls with recurrent torsion. No complications were observed during the follow-up.

Conclusions: Conservative treatment should be applied even in cases of a necrotic-appearing ovary after torsion. It is possible to perform the removal of ovarian pathology at the time of the initial surgery and preserve ovarian tissue. A repeated follow-up ultrasound is vital for assessing the viability of the ovary and evaluating potential residual pathology within the gonad.
A multicenter prospective study is required to understand the recovery after torsion better.

17.07 - 17.09

(189) **Minimally Invasive Management of Ovarian Masses in Adolescents - Report of 3 Cases.** Elena Tarca, Bogdan Savu, Livia Lupu, Dina Al Namat. "Gr. T. Popa" University of Medicine & Pharmacy. Iasi. Romania.

Adolescence may be a difficult time in a patient's life, and diagnosis of an ovarian tumour in this age group raises a serious challenge, as in 1% of the cases the mass can be malignant. The management of such situations should be a personalized one, taking into account fertility preservation and using ovarian-sparing operative techniques as much as possible.

We report three cases of adolescents, hospitalized for ovarian masses and treated in our service, with a very good evolution at 2, 5 and 8 years follow-up, respectively. After physical examination, laboratory and imaging investigations, laparoscopic surgical procedures were performed in every case. The peritoneal cavity was explored and the well-delimited ovarian tumours were removed. Considering the normally looking pelvis and absence of adenopathy, both ovaries were preserved in each case. Postoperative pathological diagnoses were: mature cystic ovarian teratoma, ovarian haemorrhagic cyst and borderline serous papilliferous cystadenoma, respectively. The subsequent evolution of all 3 patients was positive and one of them gave birth to a healthy baby through natural delivery.

Even though laparoscopy has become a preferred approach in the management of such conditions, the differential diagnosis between a benign and a malignant tumour cannot be established exactly until after the histological examination. Nevertheless, as relapses are possible after many years, the patients long-term monitoring is necessary.

17.09 - 17.11

(94) **Spillages preclusion; new insight into Pediatric Single incision laparoscopic Surgery (SILS) ovarian cystectomy.** Hanan Said, Bshaer Albaihani, Obada Alhalaq, Enas Ramel, Elshaimaa Mohamed. International Medical Center. Jeddah. Saudi Arabia.

Aim: To evaluate the safety and feasibility of laparoscopic ovarian cystectomy inside endoscopic bag to avoid intraperitoneal spillage

Patients and Methods: A retrospective study was conducted to review all patients with ovarian cyst from age of 5 years done by Single incision laparoscopic Surgery (SILS) with lateral 15 mm port for endobag insertion, from July 2015 to June 2020. Total of 16 patients, 15 had SILS ovarian cystectomy inside the endobag and had laparoscopic assisted ovarian cystectomy. All had a unilateral lesion and one has single ovary.

Results: The diameter of the cyst range from 5.6 cm to 12.5 cm. No reported cases with rupture endobag. Only 2 had rupture cyst inside the endobag. There were no intraoperative spillage or postoperative complications/recurrence. All has an excellent umbilical scar, with invisible lumbar scar for the endobag insertion.

Conclusion: Single incision laparoscopic Surgery (SILS) cystectomy in-a-bag is feasible, and oncologically safe for pediatric ovarian cystic tumors. Manipulation of larger tumors less than 14 cm with the adnexa into the sac was amenable. The procedure has an excellent cosmetic result.

17.11 - 17.13

(103) **Brief description of a simple, safe technique to maintain and guide abdomino-scrotal track in laparoscopy orchidopexy**. Hanan Said, Enas Ramel, Bshaer Albaihani, Obada Alhalaq. International Medical Center. Jeddah. Saudi Arabia.

Aim: To evaluate a simple safe technique to maintain and guide the abdominal-scrotal tract in the 2nd stage or single stage laparoscopic orchidopexy.

Brief Description & Methods: After full mobilization of the testis in second stage or single stage laparoscopic orchidopexy, a scrotal incision is made and a Dartos pouch created. A Maryland forceps is passed from the abdomen to the scrotum, via the internal ring and inguinal region under laparoscopic vision internally and by palpation of the Maryland in superficial inguinal pouch. A mosquito forceps is guided back into the abdomen by grasping on 6-8 fr. feeding tube segment, held by the Maryland and then pull back abdominally under laparoscopic guidance. The feeding tube segment will be removed laparoscopically. Once inside, the mosquito dilate the tract and then pulls testis outside.

Results: Throughout a series of 120 (Single stage and two stages laparoscopic orchidopexy) cases, over a period of 5 years, all cases were completed successfully. No damage to the testes or inguinal structure occurred.
It also avoids testicular torsion during pull out.

Conclusion: The main advantage of this maneuver is being consistently controlled and under vision, avoiding uncertainty of the tract. This can be reproduced for other procedure, where a tract is needed between 2 cavities

17.13 - 17.15

(138) **Single-stage laparoscopic orchidopexy for intra-abdominal testis in children under 2 years old.** Giuseppe Autorino, Flurim Hamitaga, Natalia Voumard, Ernesto Montaruli, Mario Mendoza Sagaon. Department of Pediatric Surgery, Ospedale Regionale di Bellinzona e Valli. Bellinzona. Switzerland.

Purpose: Laparoscopic orchidopexy has been reported to offer excellent results. However, controversy still exist regarding the ideal timing for surgery and if the single-stage orchidopexy is better than the two-stage orchidopexy. Therefore, we decided to review the results of all of our patients who underwent a laparoscopic orchidopexy for intra-abdominal testis within the first two years of life.

Materials And Methods: We analyzed the records of all children under 2 years of age who underwent laparoscopic orchidopexy for intra-abdominal testis. Patients older than two years and those with intracanalicular testis were excluded from the study. The laparoscopic technique consists of mobilization of the testicle with the spermatic vessels and the vas deferens from the peritoneum, performing the “stretching test” and if the result is good, the gubernaculum is sectioned and the testicle is positioned orthotopically into the scrotum and fixed with nonabsorbable suture. In case of a negative” stretching test” a single-stage Fowler-Stephens technique was performed.

Results: From January 2005 to January 2022, we performed single-stage laparoscopic orchidopexy on 45 children under two years of life with intra-abdominal testis. The intra-abdominal testis were right-sided in 20 patients, and left-sided in 25 patients. In 6 patients a contralateral classic open orchidopexy for ectopic inguinal testis was performed. Seven testicular atrophies were found during surgery, and an orchidectomy was performed. One of our patients had a pre-operative hypotrophic testicle and developed a testicular atrophy 3 years post-op and an orchidectomy was performed. Follow-up from 1 to 17 years.

Conclusions: single-stage laparoscopic orchidopexy for intra-abdominal testis within the first 2 years of life is a safe and efficacious method for the treatment of intra-abdominal testis. The stretching test before fixation of testis allows determination of whether the single-stage laparoscopic orchidopexy is possible without initial tension of spermatic vessels. Follow-up is advised until puberty.

17.15 - 17.17

(198) **Endoscopic treatment of vesico-ureteral reflux : a Tunisian center experience**. Meriem Beji, Nahla Kechiche, Salma Mani, Rachida Laamiri, Sami Sfar, Sabrine Ben Youssef, Meriem Ben Fredj, Sana Mosbahi, Amine Ksiaa, Lassaad Sahnoun, Mongi Mekki, Mohsen Belghith. CHU Fattouma Bourguiba. Monastir. Tunisia.

Introduction: The endoscopic treatment of vesico-ureteral reflux (RVU) is recognized as an alternative of surgical treatment. It has a good outcome in case of low grade RVU (efficacy > 90 %).
The aim of our study is to evaluate our experience with the endoscopic treatment of RVU.

Material and methods: We performed a retrospective study of patients’ records that was treated for RVU over a 15 year period. Forty-five patients had an endoscopic treatment in the pediatric surgery department of Fattouma Bourguiba Hospital – Monastir.

Results: The middle age of patients is 4.7 years (7 months – 14 years). The sex-ratio is 0.45 (14 boy/31 girl). RVU is bilateral in 25 cases and unilateral in 20. A high-grade RVU is noted in 19 cases. Twenty-three patients have kidney cicatrices. The amount of product injected varies from 0.3 ml to 0.7 ml with an average of 0.5 ml per ureter. A total disappearance of RVU is noted in 30 patients (66 %). A surgical treatment was secondary indicated for 15 patients who had a high-grade of RVU initially. The surgery is done at 10 months post-endoscopic treatment on average (from 5 to 24 months). The disappearance of product is noted in 5 patients. The patients were regularly followed in our consultation.

Conclusion: The endoscopic treatment of RVU is a good alternative of surgical treatment with advantages of shorter hospital stay and the absence of the surgical scar. The success of the 2 techniques is comparable, especially if the indication is correct. Sometimes the lake of product is a limit to the endoscopic treatment.

17.17 - 17.19

(7) **De novo vesicoureteral reflux after ureterocele decompression in children: A systematic review and meta-analysis comparing laser puncture versus electrosurgical incision techniques.** Tanvi Luthra, Tanvi Goel, Sachit Anand, Apoorv Singh, Nellai Krishnan, Prabudh Goel, Devendra Yadav, Minu Bajpai. All India Institute of Medical Sciences, New Delhi. India.

Background: The available endoscopic techniques for ureterocele decompression including laser puncture (LP), electrosurgical incision (ES) and coldknife incision have comparable success rates. The incidence of de novo VUR varies among these techniques and there is a lack of consensus. This systematic review and meta-analysis was performed to define current evidence on comparative efficacy with special emphasis on de novo VUR.

Methods: The authors searched EMBASE, PubMed, Scopus and Web of Science on November 7, 2021 with keywords (Diathermy OR Laser OR Electrosurgery) AND (Ureterocele). A total of 195 records were identified and duplications were removed. Subsequently, eligibility criteria were applied to 90 studies. Meta-analysis was performed using RevMan 5.4 (Cochrane Collaboration, London) software. As all outcomes were dichotomous, risk ratios (RR) were calculated and the Mantel-Haenszel method was utilized for pooled RR. The methodological quality was assessed by Downs and Black scale.

Results: Five studies were considered for systematic review, while four were included in the meta-analysis. A total of 202 children were included with 67 who had developed de novo reflux. Significantly lower rates were noted in LP group vis-a-vis ES group (RR=0.17, 95% CI 0.09 to 0.32, P<0.00001). Repeat endoscopic decompression(n=20) was compared for the two groups with RR of 0.66 (95% CI 0.26 -1.68), and no significant difference (P=0.38). A total of 46 secondary procedures was performed in 170 children, mostly ureteral reimplantations, with a significantly higher need following LP versus ES (RR=0.26, 95% CI 0.13-0.49, P<0.0001).

Conclusions: When compared to ES technique, the LP technique for endoscopic ureterocele decopression is associated with significantly low incidence of de novo VUR and requirement of secondary surgeries (and antireflux surgeries). However, due to moderate risk of bias, further trials need to be conducted for an optimal comparison.

17.19 - 17.21

(105) **DJ catheter removal without anesthesia- our in vivo results.** Edit Kecskés, Levente Szabó, Gábor Varga, László Sasi Szabó. University of Debrecen Clinical Center, Pediatrics Clinic, Pediatric Surgical Unit. Debrecen. Hungary.

Aim: Disadvantage of DJ stents (DJ) is the need for anesthesia and cystoscopy (CS) for its removal. We analyzed the in vivo efficacy of a nonanesthetic-noncystoscopic (NCS) DJ removal technique described by Houwei.

Methods: Retrospective data collection was conducted of all pediatric patients underwent one-sided DJ removal between 01/2021-03/2022. We compared the results of the noncystoscopic DJ removal after laparoscopic pyeloplasty with the cystoscopic interventions in the previous year. Furthermore, we compared the success rate of noncystoscopic removal after retrograde (RDJI) and anterograde (ADJI) DJ insertion. We examined the success and complication rate of the in vivo intervention and its cost-effectivity. An ex vivo model was made to practice and represent this method.

Results: In the study period we attempted noncystoscopic DJ removal in 25 patients (anterograde DJ insertion: 17, retrograde DJ insertion: 8 patients). Mean age was 33.91 months (ADJI), 35 months (RDJI) and 67.6 months (CS). The NCS technique was successful in all ADJI cases (17/17), but the effectivity was only 37.5% following retrograde DJ insertion (3/8), p< 0,005. NCS removal was successful after an average of 1.94 trials after anterograde insertion and 2.33 trials after retrograde insertion (1-5 experiments) without perioperative complications. Intervention time was significantly shorter in NCS (5.3 mins vs. CS: 14 mins, p< 0.005). Noncystoscopic DJ removal is more cost-effective (NCS: ~ 8.4 EUR vs. CS: ~ 98 EUR).

Conclusions: Application of the innovative noncystoscopic-nonanesthetic technique is effective and safe. NCS removal of DJ stents significantly shortens the time of the intervention, it is less burdensome for the patient and it reduces hospital costs.

17.21 - 17.23

(186) **A Tertiary Center Experience in Varicocele Management in Children**. Elena Tarca, Viorel Tarca, Livia Lupu, Dina Al Namat, Dan Ababei, Bogdan Savu. "Gr. T. Popa" University of Medicine & Pharmacy. Iasi. Romania.

Varicocele is the most frequent prepubertal andrological pathology leading to infertility. The therapeutic management of varicocele in children is still a subject of extensive debate.
The purpose of the study was to compare the results of the different treatment methods used in our center.

The observation charts of 150 varicocele patients, managed in our tertiary hospital over a period of 9 years, have been retrospectively analyzed. Three groups of patients were created, depending on the method of treatment – 60 cases operated by laparoscopic approach, 46 cases by classic approach and 44 cases where surgery was denied or delayed. The demographic data, the duration of surgery, length of hospitalization, the complications and the relapse rates were compared statistically.

Results: Patients mainly came from rural areas (72.6%), with a mean age of 14.6 years. The difference in weight of 53.1/55.3 kg between the group treated classically and the group treated laparoscopically was insignificant. The total duration of hospitalization and the postoperative period were slightly higher in the group treated laparoscopically (4.26 / 2.05 days and 3.67 / 1.71, respectively), but the differences were not statistically significant; yet, the duration of the surgery was significantly higher in the group treated laparoscopically (68.62 / 55.11 minutes). In terms of relapse, the postoperative progress was with one patient in the classically treated group (2%) and 5 in the laparoscopy group (8.3%). Regarding the rate of the postoperative occurrence of a hydrocele, none occurred in any patient treated classically, but it occurred in six patients treated laparoscopically (10%).

Conclusions: The treatment of varicocele by laparoscopic approach began to be practiced in our clinic about eight years ago, and although it is still being perfected, the results are encouraging. There is also an obvious need for refining lymphatic sparing maneuvers that may boost a lower rate of postoperative hydrocele occurrence.

17.23 - 17.25

(9) **Barbed versus non-barbed suture for pyeloplasty via the minimally-invasive approach: A systematic review and meta-analysis.** Gaurav Prasad, Sachit Anand, Prabudh Goel, Miro Jukić, Nellai Kirishnan, Zenon Pogorelić, Minu Bajpai. All India Institute of Medical Sciences, New Delhi. India.

Background: There is no agreed protocol on usage of proper and best suturing material in minimally invasive pyeloplasty. The aim of this meta-analysis was to summarize and analyze current evidence on suturing materials for laparoscopic pyeloplasty.

Methods: Study was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Scientific databases (PubMed, Scopus, Web of Science, and EMBASE) were systematically searched for relevant comparative studies on barbed suture (BS) and non-barbed suture (NBS) in minimally invasive pyeloplasty.

Results: Five comparative studies met the inclusion criteria and were included in the meta-analysis. Pooling the data demonstrated a significantly shorter operative duration in patients belonging to BS group versus NBS group (95%CI -81.63 to -10.41, P=0.01), with statistically significant estimated heterogeneity among the included studies (P<0.0001). ><0.0001). Although the incidence of redo-pyeloplasty was higher in BS group the pooled risk ratio for the need for redo-pyeloplasty in subjects belonging to the BS group versus NBS group was 6.00 (95%CI 0.78 to 46.14), demonstrating no statistically significant difference(P=0.09). The pooled risk ratio for the occurrence of these complication showed no significant difference among the patients belonging to both the groups (95%CI 0.22 to 6.05, P=0.88).

Conclusions: Minimally invasive pyeloplasty using BS are associated with significantly shorter operative time. The incidence of postoperative complications and requirement of redo-pyeloplasty showed no significant difference among both the treatment groups. Further randomized controlled trials need to be conducted before any definite conclusions are drawn.

17.25 -17.27

(104) **Laparoscopic vaginal reconstruction in a case of 14-year-old girl with cervicovaginal agenesis.** Avinash Jadhav, Jayakumar TK, Shubhalaxmi Nayak, Manish Pathak, Arvind Sinha. All India Institute of Medical Sciences. Jodhpur. India.

Introduction: Vaginal reconstruction using a sigmoid colon flap as replacement is done for cases of vaginal and cervicovaginal agenesis. To accomplish this procedure entirely by laparoscopy is technically quite challenging.

Case: Our patient is a 14-year-old girl who presented with complaints of amenorrhea and lump in abdomen. Her past history revealed surgical intervention at the age of 6 months for a benign cystic lesion and a minor surgical intervention for drainage of hematometra (attempted by a surgeon in private hospital). We evaluated her and the MRI scan showed hematometra & hydrosalpinx. The cervix and upper vagina couldn't be visualised. Distal vagina was about 1.5 cm in length. Preoperative genitoscopy showed blind ending vagina. For cervicovaginal agenesis, we planned laparoscopic vaginal reconstruction. Three ports were placed (epigastrium, right & left lumbar areas). Pelvic dissection was done and the proximal end of vagina was identified. Using a endostapler, sigmoid colon flap of appropriate length was resected. The distal end of the sigmoid colon was pulled through and sutured to the blind ending vagina. The distal portion of uterus was widely incised and intracorporeal suturing was done for utero-colic anastomosis. The sigmoid colo-colic end-to-end anastomosis was done with intracorporeal sutures. Post-operative period was uneventful. Patient was discharged after 5 days.

Conclusion: Vaginal reconstruction using sigmoid colon is an effective option providing excellent anatomical and functional result. To accomplish the entire procedure laparoscopically is technically challenging but a possible one. Patients have small scars, recover early and have a short hospital stay.

17.27 - 17.29

(124) **Young Pediatric Surgeons and Covid -Era. Outcomes for gaining minimal invasive surgical experience during Pandemia. A Single-Center Experience.** Theodoros Dionysis, Helen Aita, George Kottakis, Dimitra Leka, Michalakis Sklavos. 1st Pediatric Syrgical Department ,'Pan &Aglaia Kyriakou" Children's Hospital. Athens. Greece.

Aim: To determine the outcomes in pediatric surgical education, during Covid-ERA, in Tertiary Children's hospital in Low-income Country.

Methods: Retrospective analysis from 20/2/2020 until 1/5/2022 including all minimally invasive surgical procedures (cystoscopy, laparoscopy, thoracoscopy, gastroscopy) in elective and emergency set-up.

Results: in total 60 cases were retrospectively reviewed. Decreasing of emergency minimal invasive techniques during Covid -Era, cause of delayed PCR -TEST for Covid-19, has been noticed(only 15 cases from a totally 60 MIS performed procedures).On the other hand, an increased advanced MIS technique in elective cases has been noticed, cause of volition from the surgical staff to keep the MIS skills.

Conclusion: The young Pediatric Surgeons have been trained in elective MIS procedures and there is a lack of emergency MIS training. This paradox is happening cause of Covid-19 pandemia in low-income countries, and cause of the inability to supply the MIS surgical staff with appropriate tools.

17.30 - 18.15

POSTER SESSION 5
CHAIRMEN: KIRTIKUMAR J RATHOD (IN) AND HELENA REUSENS (BE)

17.32 - 17.34

(101) **Comparison of three laparoscopic techniques for indirect hernia surgical repair in children: a single center experience.** Benedetta Peluzzi, Chiara Oreglio, Matteo Colli, Francesca Gigola, Kejd Bici, Antonino Morabito. Università di Firenze. Firenze. Italy.

Background: Indirect inguinal hernia is a common condition in the pediatric population. Traditionally, open surgical repair is performed, even though the use of minimally invasive techniques is progressively increasing. Several laparoscopic methods are available to address this pathology, involving fully intra-corporeal or extra-corporeal closing procedures. This study describes the outcomes of three different laparoscopic techniques performed at our institution.

Materials and methods: We performed a retrospective review of sixty-two children who underwent hernia repair from May 2019 to April 2022 with either one of these laparoscopic techniques: percutaneous internal ring suturing (PIRS), laparoscopic inguinal hernia inversion and ligation (LIHIL) and laparoscopic intracorporeal Z-suture (LIZS). Follow-up was performed through telephone calls and a completed questionnaire assessing long terms outcomes in terms of pain, symptoms, relapses, and aesthetic results.

Results: Sixty-two patients (nineteen females, forty-five males) were included in the study (median age at surgery: 64 months). Thirty-two patients were scheduled to perform LIZS, twenty-two PIRS, and eight LIHIL. Pre-operatively, only six patients were diagnosed with bilateral hernias. Post-operatively, a total of fourteen patients had bilateral patent peritoneal-vaginal duct. Surgical times were comparable among different mono- and bilateral hernias techniques. Three patients underwent conversion from LIZS to open plan; one patient performed LIZS instead of PIRS. No statistically significant difference was found regarding relapses: one patient of the LIZS group (3,1%) and three patients of the PIRS group (13,6%). Long term outcomes were satisfactory for all three techniques.

Conclusions: No statistically significant differences were found among the three different groups regarding outcomes. Therefore, these techniques can be considered comparable, and the choice should be made according to the surgeon's preference and experience. Moreover, our study highlights the laparoscopic approach's advantage in exploring the contralateral canal and evaluating its patency. This allows avoiding unnecessary future surgery and general anaesthesia for contralateral hernia repair.

17.34 - 17.36

(93) **First results of pediatric robotic inguinal hernia repair with the Senhance® robotic system.** Roxanne Eurlings, Ruben Visschers, Hamit Cakir, Marc Dirix, Wim van Gemert. Department of Pediatric Surgery, University Hospital Maastricht. Maastricht. Netherlands.

Introduction: Inguinal hernia repair is one of the most common procedures in pediatric surgery. With open repair increasingly giving way to laparoscopic techniques, the natural progression is the transference of the laparoscopic procedure to robot-assisted inguinal hernia repair. In children, application of robotic surgery is limited, meaning safety and efficacy is still to be assessed. This report is the first one worldwide that describes inguinal hernia repair in children using the Senhance® robotic platform.

Patients and methods: In 13 consecutive children an inguinal hernia repair was performed in the Maastricht UMC+ using the Senhance® system. Three ports were used of which one was the camera port. The hernia defect was closed at the level of the inner annulus with an intracorporal purse string suture.

Results: The mean age was 3.9 years. Five patients had bilateral inguinal hernias and eight patients were operated on one side. Total anesthesia time was 111 minutes, mean net operative time was 52 minutes. During the procedure, no complications occurred. In one patient, recurrence of the inguinal hernia was seen.

Discussion: Surgery with the Senhance ® robotic platform offers multiple advantages, such as tremor filtration, indexing and eye tracking. Over the course of the first patients operated on with the robot in the Maastricht UMC+, we found certain adjustments to the logistics proved to be beneficial, e.g. placing the trocars more lateral and lower on both sides of the umbilicus, placing a roll under the lumbar spine to provide better access to the inguinal region and also placing a convex arc over the head to provide more movement space for the robotic arms while still protecting the patient's head. In our patient sample, the use of the robotic system was safe and effective. Further evaluation in a bigger sample size and long-term follow-up is necessary.

17.38 - 17.40

(122) **Laparoscopic common bile duct exploration in a 14 months old premature female patient**. Eleftheria Mavrigiannaki, Ioannis Georgopoulos, Emmanouil Kourakis, Nickolaos Christopoulos, Antonios Vezakis. Department of Pediatric Surgery, General Children's Hospital "Agia Sofia". Athens. Greece.

Background: Cholelithiasis complicated with choledocholithiasis in infancy is a rare clinical entity affecting mainly patients with complex comorbidities. A standardized protocol is impeded by the small number of cases, inadequacy of ERCP's technical equipment with the size of patients and thus little experience with endoscopic exploration in this age group and the lack of size-appropriate laparoscopic tools.

Aim: To discuss intraoperative technical challenges of laparoscopic common bile duct exploration for the pediatric surgeon in infants and neonates.

Case presentation: A 14th month old female patient with a body weight of 9.6kg was referred for surgical management of choledocholithiasis after a long time of observation. The laparoscopic transcystic approach was decided with the assistance of a specialized adult surgeon. The length of cystic duct was shorter than 1,5cm. After partial excision of the gallbladder and high ligation of the cystic duct an orifice was created distally with scissors. An endoscopic jagwire was easily advanced in the duodenum and radioscopically confirmed. Due to equipment disproportion to the lumen's width, multiple attempts with different catheters were needed in order to pass a 4Fr cholangiogram catheter with balloon tip. First injection of the contrast was unsuccessful and cholangiography was achieved by occluding the orifice with a Maryland dissector. No filling defects were recognized. Vater's ampulla and bile duct were dilated with a 6fr balloon catheter, followed by cystic duct ligation and cyst excision. Operative time was 140min. Recovery was uneventful and she was discharged on the 3rd postoperative day.

Conclusion: Minimally invasive procedures in pediatric surgery are guided by knowledge and equipment adopted by adult surgeons, yet further adjustment of the instrumentation to patients' size and unique anatomy are needed, particularly for specialized procedures as a common bile duct exploration. Such an advancement will benefit both the patients and pediatric surgeons.

17.40 -17.42 (102) **Indocyanine green fluorescence guided Laparoscopic surgery for Kasai Procedure in a case of Biliary atresia.** Jayakumar TK, KirtiKumar Rathod, Arvind Sinha. All India Institute of Medical Sciences. Jodhpur. India.

Introduction: In the recent times, Indocyanine green (ICG) fluorescence guided Kasai operation has gained popularity. Surgeons have used it to assess liver function, appropriate depth of dissection in Porta hepatis, and the amount of drainage of bile. Laparoscopy has the advantage of providing magnified view and precise operation when combined with fluorescence guidance.

Discussion: A four-month-old boy presented with icterus, and hepatomegaly. On evaluation, the total bilirubin (8.5 mg/dL) and direct bilirubin (4.5 mg/dL) were significantly elevated, indicating cholestatic jaundice. The sonography and HIDA scan reports were indicating biliary atresia as differential diagnosis. ICG was given intravenously 24 hrs before the surgery. Diagnostic laparoscopy was done. Intraoperatively, the liver was found to be cirrhotic, with poor fluorescence. The gall bladder was small and non-fluorescent. Aspiration of the gall bladder revealed only mucoid material. These findings confirmed the diagnosis of Biliary atresia. Laparoscopic operation involved excision of gall bladder, fibrotic biliary remnants, dissection of the porta hepatis. Creation of the roux limb and end-to-side jejunojejunostomy was done extracorporeally. The Roux limb was brought into retro-colic area and the porta-to-side porto-jejunostomy was started by applying a suture on the medial end. The procedure was converted to laparotomy and porto-enterostomy was completed. Post-operatively patient recovered and passed bilious stools.

Conclusion: In our case laparoscopy was used to assist majority of the surgery. With ICG guidance, the dissection was precise. The depth of dissection could be assessed. We are hopeful that in future, the port-enterostomy as well can be attempted laparoscopically.

17.42 - 17.44 (16) **Single-port cholecystectomy using conventional laparoscopic instruments. Is it feasible?** Julio Moreno Alfonso, Javier Arredondo Montero, Raquel Ros Briones, Ada Molina Caballero, Alberto Pérez Martínez. Hospital Universitario de Navarra. Pamplona. Spain.

Introduction: Single-port laparoscopic surgery generally requires specific instruments: articulated, curved, or flexible. The clustering and lack of triangulation of the instruments in the reduced umbilical port, the costly materials, and its limited versatility hinder the development of this surgical alternative. For that, we have devised technical strategies and modifications to enable the use of conventional laparoscopic material in single-port surgery, simplifying the required instruments and facilitating laparoscopic cholecystectomy in children.

Methods: We used only three instruments through the umbilical incision, entering via 5-mm trocars placed on the fingers of a surgical glove wrapped around the rim of a wound retractor. A 5 mm, 30° angled rigid laparoscope was used along with standard grasper and monopolar hook, manually curved approximately 30° to increase their triangulation capability. The fundus of the gallbladder was raised with one or two hooks made from Kirschner wires, introduced percutaneously under direct vision and whose sharp ends were bent intracavitary with a laparoscopic needle holder. The extra-abdominal end of the wire was fixed with a hemostat to maintained retraction. The procedure was completed using standard laparoscopic technique.

Results: Five single-port laparoscopic cholecystectomies were performed (3 males, 2 females) with a mean age of 10.4 years ± 4.6. Median operative time was 145 minutes (interquartile range 95-145). The median hospital stay was 40 hours and only 1 patient required opioids in the postoperative period. The cost per procedure was €1,367, similar to four-port laparoscopy (€1,322). One case required conversion to conventional laparoscopy and there were no perioperative complications. All patients were pleased with the cosmetic result.

Conclusion: Single-port laparoscopic surgery is particularly complex when articulated instruments or specialized umbilical ports are not available. This approach to laparoscopic surgery is more feasible with the proposed technical contributions.

17.44 - 17.46 (183) **Quick and easy endoscopic treatment for "buried bumper" syndrome.** Yaiza Galvañ Félix, Jairo Echeverría Carrillo, Verónica Alonso Arroyo, Marta Ortega Escudero, Jacobo Montero García, Carlos Hernández Díaz, Jose Gutiérrez Dueñas. Hospital Universitario de Burgos. Burgos. Spain.

Introduction: Percutaneous endoscopic gastrostomy (PEG) is a safe and minimally invasive method of ensuring enteral nutrition in pediatric patients with complex pathology. However, the compression of tissue between the internal and external fixation device of the gastrostomy tube can lead to a migration of the internal part of the device out of de gastric lumen named "buried bumper" syndrome, considered a major complication that has traditionally been treated by surgery.

Methods: We present the case of a 15 years old patient with spastic tetraparesis due to congenital cytomegalovirus, carrier of PEG since she was 4 years old for nutritional support and medication. Due to the progression of severe scoliosis, the location of the PEG caused discomfort because it collided with the costal margin, being necessary to change its position. The previous gastrostomy was removed for spontaneous closure, and a new PEG was placed endoscopically under general anesthesia. At the fourth postoperative week, the patient began to present pain during nutrition infusion and perigastrostomy output of infused material. Given the suspicion of "buried bumper" syndrome, an exploratory upper gastrointestinal endoscopy was performed under sedation, confirming the diagnosis.

Results: Once the diagnosis was confirmed, a guidewire was inserted through the gastrostomy tube to the gastric lumen, been used to replace the migrated device for a new balloon device under direct vision. The procedure runs without complications, allowing the use of the new device immediately. The patient was discharged that afternoon and has not subsequently presented other signs of malposition or malfunction.

Conclusion: The outpatient management of "buried bumper" syndrome without surgery seems possible and safe; allowing not to interrupt the use of PEG device.

17.50 - 17.52 (161) **Gastric trichobezoar: the laparoscopic technique for intragastric hunting.** María Dolores Blanco Verdú, Beatriz Fernández Bautista, Javier Ordoñez Pereira, Isabel Bada Bosh, Juan Carlos De Agustín Asensio. Hospital Gregorio Marañón. Madrid. Spain.

Introduction: Trichobezoar is an uncommon pathology consisting of the formation of an indigestible mass composed primarily of hairs that accumulate in the digestive tract. Small trichobezoars can be removed endoscopically, while large trichobezoars require laparoscopic or, even, laparotomy removal. Gastric trichobezoar surgery remains a problem due to peritoneal contamination and subsequent possibility of chemical and bacterial peritonitis. We present a video showing a laparoscopic trichobezoar extraction technique using a rigid hooped "butterfly catcher" type bag introduced into the stomach through a gastrotomy.

Material and methods: The patient was 10 years old and presented vomiting and a flat weight curve of 2 years of evolution. After an unsuccessful attempt at endoscopic removal, laparoscopic surgery was indicated. A 10mm 3D camera was used. Four trocars were inserted: a 10 mm umbilical trocar, two 5 mm paraumbilical trocars and a 10 mm trocar in the left hypochondrium to introduce the extraction bag. A longitudinal incision was made on the anterior gastric face. The extraction bag was introduced, the most proximal part of the bezoar at the level of the fundus and with back and forth movements directed towards the pylorus, the bezoar was extracted. The closure of the gastrotomy was performed with continuous resorbable barbed suture. The opening of the pouch was directed to the umbilicus and the bezoar was fractionated to facilitate its extraction.

Results: Postoperative evolution was uneventful. Enteral feeding was restarted 24 hours after surgery and the patient was discharged 3 days after surgery.

Conclusion: Laparoscopic trichobezoar extraction is a minimally invasive technique that allows its removal without contaminating the peritoneal cavity.

17.52 - 17.54 (144) **Laparoscopic removal of a large trichobezoar in a ten year old female.** Kirtikumar Rathod, Revathy Menon, Arvind Sinha. AIIMS Jodhpur. India.

Background: Trichobezoars are foreign bodies in the gastrointestinal tract which are usually composed of ingested hair. It is a rare disorder which is mostly seen in adolescent females. These patients may habitually ingest the pulled out hair. The accumulated hair may develop into massive hard structures which gradually obstruct the lumen of the gastrointestinal tract. They are diagnosed when the patient presents usually with the features of obstruction or abdominal lump and diagnosed on imaging or by endoscopy. Removal is attempted by endoscopy, laparoscopy or laparotomy.

Brief report: We present a case of a ten year old female with pain abdomen and a palpable lump in the left hypochondrium. Upon evaluation she was found to have a massive gastric trichobezoar. A trial of endoscopic removal was given but due to inability to retrieve the specimen, she was taken up for laparoscopic removal of the trichobezoar. A 12mm infraumbilical served as the camera port with two 5mm working ports inserted at right lumbar region and left iliac fossa. The bezoar measured 10 x 6cm and was retrieved laparoscopically through a glove bag with slight extension of the infraumbilical port incision to aid in complete specimen extraction. The patient tolerated oral feeds well by post operative day two and was discharged on the third post operative day. She remains asymptomatic on follow up and is currently referred to the psychiatric clinic for counselling.

Conclusion: We conclude that laparoscopic removal of trichobezoar is safe and effective in ensuring a complete retrieval of the specimen without spillage. The advantages offered by laparoscopy include excellent cosmesis and early gain of function. We also recommend that every patient of trichobezoar be referred for psychiatric counselling post operatively as part of a holistic management. This may ensure that the patient is treated appropriately for any psychiatric illness.

17.54 - 17.56 (10) **Laparoscopic assisted colonic pull through in type 4 pouch colon.** Kirtikumar Rathod, Revathy Menon, Arvind Sinha. AIIMS Jodhpur. India.

Introduction: Our patient is a 2 year female who is a case of Anorectal malformation with type 4 pouch colon who underwent for laparoscopic assisted colonic pull through. Pouch colon is a rare anorectal malformation but it's incidence in India is quite significant. She underwent colostomy and pouchectomy at an outside hospital and presented to us for definitive management of the anorectal malformation. Laparoscopic management is preferred nowadays for it's advantage in offering better visualisation especially in locations where access by laparotomy is limited.The retrorectal dissection and colonic pull through which is a quite difficult and time consuming procedure can be achieved completely using a minimally invasive technique.

Method: She was taken up for laparoscopy assisted colonic pull through. The procedure began by taking down of the stoma using GI endostapler. Once the stoma was taken down, descending colon was mobilised by dissecting it gradually off the lateral attachments.Since this was a reoperation adhesions were encountered which were tackled using thunderbeat (energy device). Length of mobilised colon for pull through was assessed.At the proposed neoanal site incision was given and 10mm port was inserted into the pelvic cavity. Grasper was introduced and colonic loop pulled through. Colopexy was done to maintain orientation. Anoplasty was subsequently done.

Result: Post operatively the patient had ileus which resolved by postoperative day two after which she had a bowel movement and feeds were initiated. The feeds were tolerated well by the child.

Conclusion: Laparoscopy is an appropriate modality for colonic pull through and useful in dealing with difficult pelvic dissection.

17.50 - 17.52 (35) **Retrospective analysis of laparoscopically managed pediatric patients with Hirschsprung disease.** Manish Pathak, Revathy Menon, Kirtikumar Rathod, Shubha Nayak, Arvind Sinha. AIIMS Jodhpur. India.

Introduction: Hirschsprung disease is characterised by aganglionic bowel segment and our goal is to resect it and pull down the normoganglionic bowel. Described techniques such as Swenson, Duhamel, Soave have seen modification recently through the advent of laparoscopy. Our aim is to assess outcome of laparoscopy for management of patients with Hirschsprung disease.

Method: 28 patients who underwent laparoscopic assisted pull through for Hirschsprung disease were included. Parameters studied included age at surgery, gender, type of pull through, location of transition zone, duration of surgery, post-operative complications, length of hospital stay (LoHS), complications faced on follow up.

Results: 28 patients who underwent laparoscopy assisted pull through were included in this study. Median age at presentation was 24 months of age and age of patients ranged from 3 months to 19 years. Male to female ratio was 24:4.
26 patients underwent Swenson, 1 underwent Soave's and 1underwent Duhamel's pull through. None required conversion to open. 3 patients successfully underwent primary pull through (Swenson's). Median duration of surgery was 4 hours. Median LoHS was 6 days.
3 patients faced complications during period of hospital stay. Every patient was followed up 3 weeks post operatively and started on regular hegar dilator programme. Median follow up duration was 24 months. 2 patients developed enterocolitis, 2 developed constipation and 1 developed soiling on follow up. All the patients were treated successfully.

Discussion: Laparoscopy in pull through offers ease of obtaining multiple biopsies, easy mobilisation of bowel upto long distance under vision, enables identification of torsion of bowel if any, enables use of ICG to confirm vascularity. We may potentially avoid perineal injury from excessive traction.

Conclusion: Laparoscopic assisted pull through is a safe and feasible option in pediatric patients with a considerably low risk of complications.

17.58 - 18.00 (20) **Laparoscopic restorative proctocolectomy with ileal pouch-anal anastomosis for Gardner's syndrome in children.** Vojtech Dotlacil, Michal Rygl. Department of Paediatric Surgery, Second Faculty of Medicine, Charles University and Motol University Hospital. Prague. Czech Republic.

Aim: Gardner's syndrome is an autosomal dominant disease caused by a mutation in the adenomatous polyposis coli (APC) tumour-suppressor gene. It consists of familial adenomatous polyposis (FAP), osteomas and a multitude of soft-tissue tumours.
The aim of this report is to present laparoscopic prophylactic restorative proctocolectomy and ileal pouch-anal anastomosis (RPC with IPAA) in a fifteen-year-old girl with FAP.

Case description: The girl was initially examined by a dentist for the late eruption of definitive dentition and multiple jaw osteomas. Based on these findings, she underwent genetic testing which confirmed Gardner syndrome (de novo mutation in APC).
Subsequently, she underwent a complete examination (oncology, ophthalmology, paediatric gastroenterology with endoscopy, endocrinology) and was indicated for prophylactic laparoscopic RPC with IPAA due to the finding of hundreds of polyps in the colon. The procedure and postoperative course were uneventful and the patient was discharged on the 7th postoperative day. Pathological examination of the sample confirmed the diagnosis of FAP and polyps had the structure of an adenoma with low-grade dysplasia.

Conclusions: We have reported a case of Gardner's syndrome with hundreds of colonic polyps. These polyps have a 100% probability of malignant transformation and therefore a laparoscopic restorative proctocolectomy with ileal pouch-anal anastomosis was performed.

18.02 - 18.04 (92) **Pelvic Health Assessment in Adult Females Following Pediatric Appendicitis: A Monocentric Retrospective Case-Control Study.** Chiara Cordola, Giovanni Parente, Marco Di Mitri, Eduje Thomas, Simone D'Antonio, Mario Lima. Department of Pediatric Surgery, IRCCS, University Hospital of Sant'Orsola. Bologna. Italy.

Background: The anatomical location of the appendix in females may determine the involvement of the internal genitalia in case of acute appendicitis (AA). The aim of this study was to evaluate the incidence of pelvic health impairment in adult women who underwent appendicectomy during childhood.

Materials and methods: A retrospective observational study was conducted including all female patients operated for acute appendicitis at our Centre between 1985 and 1995. The patients, divided into complicated AA (Group A) and not complicated AA (Group B), were subjected to a questionnaire investigating their gynaecological health. The same questionnaire was administered to female volunteers with past medical history (PMH) negative for AA. The data were compared using chi-square test and Fisher exact test (a p value below 0.05 was considered statistically significant).

Results: In total, 75 patients operated for AA during childhood (22 in Group A and 53 in group B) and 44 female volunteers with PMH negative for AA (group C) were enrolled in the study. Seventeen patients (77.3%) in group A, 40 (75.4%) in group B, and 29 (65.9%) in group C ($p < 0.05$) had pregnancies. The number of miscarriages among women who became pregnant in their life was 5 in group A, 13 in group B, and 12 in group C ($p < 0.05$). Chronic pelvic pain was reported by 7 out of 22 (31.8%) patients in group A, 7 out of 53 (13.2%) in group B, and 5 out of 44 (11.4%) in group C (A vs. C: $p = 0.04$, OR = 3.64; A vs. B: $p = 0.06$ and B vs. C: $p = 0.52$).

Conclusions: In our series, AA determined no repercussions on gynaecological health. However, women who experienced complicated AA showed a higher prevalence of chronic pelvic pain onset in adulthood compared to healthy women.

18.04 - 18.06

(43) **Appendectomy in children. Is it still questionable whether laparoscopic or open?** Balazs Fadgyas, Lidia Gacsi, Georgina Monostori, Dorottya Ori, Peter Vajda. Heim Pál National Institute of Pediatrics, Departement of Surgery and Traumatology. Budapest. Hungary.

Aim: To evaluate the laparoscopic versus open appendectomy in childhood in a single centre experience.

Methods: A retrospective observational cohorts were analysed, in children (0-18 years) who were operated between 2011 and 2020 in a single institute. Patients were divided into two groups: laparoscopic (LA) and open appendectomy (OA, including converted LA). Co-morbidities were excluded. Patients were subdivided according to the histological results as uncomplicated (UCAA – negative, simplex, catharral, phlegmonous, gangrenous) and complicated acute appendicitis (CAA - perforated) cases. Postoperative complications (wound healing problems, intra-abdominal abscess, ileus) and length of hospital stay (LOS) were analysed. For statistical analysis, Fisher's exact, Chi2 for trend and Mann-Whitney U tests were used.

18.08 - 18.10

(123) **Does COVID-19 pandemic make a difference in pediatric appendicitis outcomes?** Monika Bukowska, Paweł Żuk, Krystian Toczewski, Marcin Polok, Dariusz Patkowski. Wroclaw Medical University. Wroclaw. Poland.

Many reports indicate that the ongoing COVID-19 pandemic may have significantly affected the delayed arrival of patients to hospitals, and thus often delayed diagnostics resulting in complicated courses of various diseases. The study aimed to test the abovementioned hypothesis in relation to the course of acute appendicitis (AA) in children. The data of patients operated on AA in two university pediatric surgery centers within a year of the first COVID-19 infection in Poland were analyzed. The obtained data were compared with the same period before the pandemic. In total, 363 operated on children were analyzed, including 193 patients operated on in the pre-pandemic period and 170 during the pandemic. No statistically significant differences were observed compared to the pre-pandemic period in the examined values on an annual basis or in individual quarters - no significant difference in the course of the disease, complications, or the number of reoperations was noted. In one of the centers, a higher number of laparoscopies was reported, which was due to a change in surgical technique unrelated to the pandemic. The subjective impression of delayed diagnoses, the severity of the disease, and complications is not reflected in the presented data. The COVID-19 pandemic does not seem to have a significant impact on the course of AA in children.

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