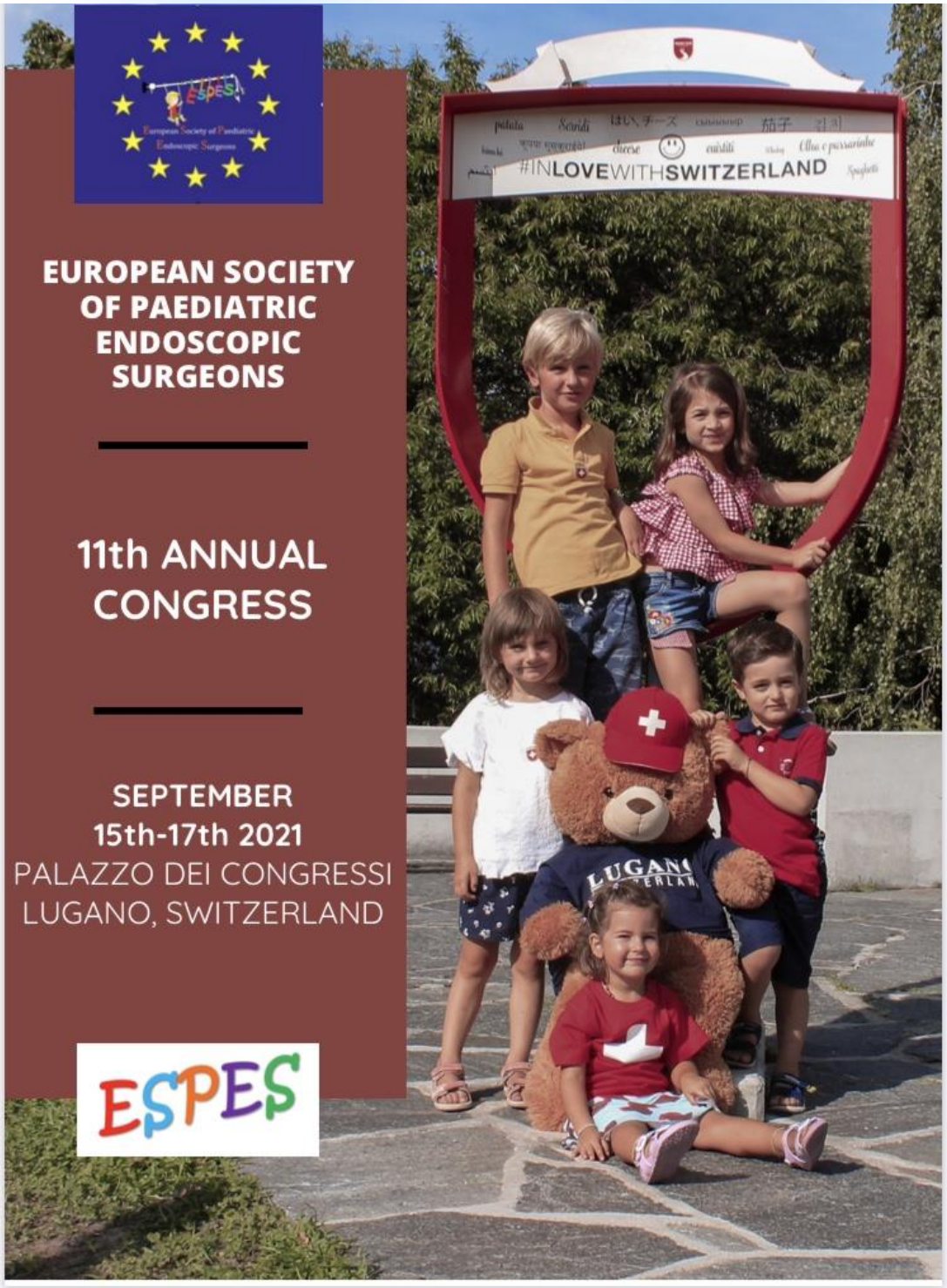
ABSTRACT BOOK



XI ESPES Annual Congress

Thursday 16th September, 2021

Session I: Gastrointestinal 1a (08:00 - 08:30)

08:00 - 08:05 (37) **Learning curve for laparoscopic repair of pediatric inguinal hernia using percutaneous internal ring suturing.** Zenon Pogorelić[1,2], Miro Jukić[1,2], Dario Huskić[2], Tin Čohadžić[1,2], Tomislav Šušnjar[1]. [1]University Hospital of Split, Split, Croatia. [2]University of Split, School of Medicine. Split, Croatia

Background: Percutaneous internal ring suturing (PIRS) is a simple and popular technique for the treatment of inguinal hernia in children. The aim of this study was to analyze the learning curves during implementation of PIRS in our department.
Methods: A total of 318 pediatric patients underwent hernia repair using the PIRS technique, by three pediatric surgeons with different levels of experience in laparoscopic surgery. These patients were enrolled in a prospective cohort study during the period of October 2015 until January 2020. Surgical times, intraoperative and postoperative complications in addition to outcomes of treatment were compared among the surgeons.
Results: Regarding operative time a significant difference among the surgeons was found. Operative time significantly decreased after 25-30 procedures per surgeon. The surgeon with advanced experience in laparoscopic surgery had significantly less operative times for both unilateral (P=0.002) and bilateral (P=0.0001) hernia repair, compared to the other two surgeons. Perioperative complications, conversion, and ipsilateral recurrence rates were higher in the beginning, reaching the benchmarks when each surgeon performed at least 30 PIRS procedures. The most experienced surgeon had the lowest number of complications (1.4%) and needed a fewer number of cases to reach the plateau. The other two surgeons with less experience in laparoscopic surgery had higher rates of complications (4.4% and 5.4%) and needed a higher number of cases to reach the plateau (P=0.190).
Conclusion: A PIRS learning curve for perioperative and postoperative complications, recurrences, and conversion rates reached the plateau after each surgeon performed at least 30 cases. After that number of cases PIRS is a safe and effective approach for pediatric hernia repair. A Surgeon with an advanced level of experience in pediatric laparoscopic surgery adopted the technique more easily and had a significantly faster learning curve.

08:05 - 08:12 (85) **Percutaneous internal ring suturing (PIRS): factor(s) of recurrence?**
Klara Nagy-Erdei, Gabor Varga, Adam Radvanyi, Laszlo Sasi Szabo. University Of Debrecen, Medical And Health Science Centre, Department Of Pediatrics, Division Of Pediatric Surgery. Debrecen, Hungary

PIRS technique has been used for 15 years for pediatric inguinal hernia/hydrocele repair. Despite its advantages, the recurrence rate is still higher compared to open repair. Our aim was to analyze the factors affecting recurrence rate of the technique.
A retrospective cohort study was performed on all the patients treated with PIRS in a single institute, between 2016 and 2020. Inclusion criteria was completed PIRS procedure, there was no exclusion criteria. Factors analyzed were patient gender, age, body weight, prematurity status, laterality of the hernia, duration of surgery, additional laparoscopic instrument usage, surgeon's personal experience and recurrence rate. The average follow-up was 2.5 years. Statistical analysis was performed with Fisher's exact and Mann-Whitney tests.
555 PIRS procedures on 419 children were performed. Mean age and body weight was 43.8 months and 14.72 kg at surgery. There was male dominance (296/419). The affected side was the right in 257, left in 114 cases and 48 cases were bilateral. 49 patients had hydrocele as preoperative diagnosis. 98 contralateral patent vaginal processes were closed as incidental findings. Average operative time was 27.6 minutes (one-sided: 24.8, bilateral: 34.3 minutes). 144 patients were younger than 1 year, 153 patients were under 10 kg, 64 patients were premature. In 105 operations an additional forceps was inserted to help suturing. 9 surgeons with 7-96 procedures personal experience performed the operations. 12 patients had recurrence (2.8%).
Gender, side, preoperative diagnosis, operational time, use of additional instrument, surgeon's experience and younger than 1 year of patient's age did not influence significantly recurrence rate. We found 2 significant predisposing factors for recurrence: prematurity (p:0.0006) and left-sided inguinal ring opening (p:0.0062).
PIRS technique is a safe, effective and feasible method for inguinal repair, but prematurity and left sided defect are associated with higher recurrence rate.

08:12 - 08:17 (120) **Evolution of outcomes and complications of Flip Flap laparoscopic repair for inguinal hernia in children: our 5 years' experience.** Francesca Nascimben, Francesco Molinaro, Rossella Angotti, Giulia Fusi, Alessandra Taddei, Gaia Brenco, Gabriele Vasta, Elisabetta Pentimalli, Mario Messina. Department of Medical Sciences, Surgery and Neuroscience, Section of Pediatric Surgery, University of Siena. Siena, Italy

Inguinal hernia repair is one of the most common pediatric surgeries that can be approached with open or laparoscopic approach. Aim of this study was to describe outcomes and complications of Flip Flap inguinal hernia repair, analyzing our experience in the last 5 years. Secondary aim was to investigate how confidence of surgeons regarding VLS approach increase during time and how this particular technique represents a primary procedure useful to increase surgeons' skills in performing laparoscopic sutures.
280 children admitted at our Department with inguinal hernia requiring surgery between 2015 and 2020 were included. 160 children (57%) underwent open approach, whereas 120 (43%) laparoscopic ligation of hernia. For each groups clinical and surgical data were recorded. We focused on comparing post-operative complications: the most frequent

complication was hydrocele (n=4, 1.4%). Reported post-operative complication were not statistically different between two groups (open n=3, 1.8% vs laparoscopy n=1, 0.8%). No other post-operative complications were documented in our cohort for both groups. In laparoscopy group we registered 3 cases of ipsilateral recurrence (1.6%) and no cases of metachronous hernia.

The choice of laparoscopic approach significantly increased from 22% in 2015 to 74% in 2020 ($p<0.05$) as well as the percentage of male underwent to laparoscopic procedure (38% in 2015 to 74% in 2020, $p<0.05$).

It is known that the rate of complication or recurrence is similar for open or minimally invasive inguinal hernia repair. Laparoscopy offers several advantages such as the possibility of visualize contralateral internal inguinal ring, reducing the incidence of metachronous inguinal hernia. Moreover, taking confidence with a minimally invasive technique such Flip Flap hernioplasty by performing it repeatedly over time, leads to an improvement of surgeons skills also in performing laparoscopic sutures, that can be helpful for other complex or tricky procedures.

08:17 – 08:22 (122) **Leiomyoma of the cardia: laparo-endoscopic transgastric enucleation**

László Sasi Szabó[1], Éva Nemes[1], Károly Palatka[2]. [1]University of Debrecen, Institute of Pediatrics, Department of Pediatric Surgery, Debrecen, Hungary. [2]Universitiy of Debrecen, Institute of Internal Medicine, Department of Gastroenterology. Debrecen, Hungary

Gastric submucosal tumors are rare in children. In benign cases, wedge resection is accepted to avoid extended surgery, but even limited resection of the esophagogastric (EG) junction carries an increased chance of complications and poor functional outcome. Limited series exist about laparo-endoscopic transgastric resections of gastric submucosal tumors in adult patients, but there is no published case regarding the pediatric population so far.

A 17-year-old boy was admitted to our hospital due to massive hematemesis requiring transfusion. Oesophagogastroscopy revealed a 3 cm large mass in the cardia. Biopsy was performed which revealed the tumor to be a benign leiomyoma. Endoscopic ultrasonography showed a capsule around the lesion and no transmural infiltration; on abdominal MRI the disease was localized to the gastric wall.

A combined endoscopic-laparoscopic operation was performed: under endoscopic visualization, following trans-illumination and percutaneous transgastric stay-sutures, 3 cuffed trocars (one for the camera and two working ports) were inserted directly into the gastric cavity. With 10 mmHg pressure, CO2 insufflation started; an endoscopic loop was encircled around the neck of the lesion, and with gentle traction, the tumor was lifted. The mucosa was incised around the lesion and with a monopolar hook and Ligasure dissector, it was totally enucleated from the submucosa. The specimen was removed through the esophagus with the endoscope. The trocar wounds of the stomach were closed with laparoscopic sutures using the same port locations. The patient started oral feeding on the 2nd postoperative day. Histology revealed negative resection margins. 6 weeks later a control esophago-gastroscopy showed intact EG junction with no signs of recurrence.

Laparo-endoscopic transgastric enucleation is a safe alternative to resect gastric benign tumors, especially in the EG junction. It has the advantage to avoid mutilating surgery, permits fast recovery, without any compromise in effectivity.

08:22 - 08:29 (86) **Esophageal atresia management and ERNICA consensus statements: is there a difference?** Vivien Stercel, Gabor Varga, Laszlo Sasi Szabo. University of Debrecen, Medical and Health Science Centre, Department of Pediatrics, Division of Pediatric Surgery. Debrecen, Hungary

Purpose: The ERNICA group published a consensus statement guideline for management of esophageal atresia and tracheoesophageal fistula (EA/TEF) in 2019. Our aim was to investigate our Gross „C" type EA/TEF cases according to selected ERNICA statements and to analyze the effect of this protocol on clinical outcomes.
Patients and methods: We selected all distal TEF cases operated in our institute with thoracoscopy (TR) or thoracotomy (OR) between 01.01.2005 and 29.02.2020 with at least 1 year of follow-up. Data analysis focused on surgical time of reconstruction, anastomotic leakage, esophageal stricture, re-fistula formation, need of reoperation, timing of extubation, length of parental feeding, length of stay (LOS). Effect of ERNICA statements Nr: 19,25,26,34,39,41 was analyzed on the investigated factors. Data were analyzed by linear, binomial and multi-nominal regression analyses, depending on target variable. Correlation-analysis was also conducted in some cases.
Results: The study population included 59 newborns: 18 were in TR and 41 in OR group. Preoperative bronchoscopy resulted in significantly lower rate of severe complications ($p<0.001$) and anastomotic leakages ($p<0.05$). Preserving the azygos vein reduced severe complications significantly ($p<0.01$). Transfixing the TEF did not affect any aspects of our study. LOS was shortened in TR patients, but the difference was not significant (TR: 41.8 days, OR: 47.6 days, $p>0.05$). We found significantly less severe complications in TR group ($p<0.01$), but operating time was significantly longer in those cases ($p<0.05$). We have not found any significant effect of other ERNICA statements on the investigated aspects.
Conclusion: Despite of low evidence level, ERNICA offers a good strategy for EA/TEF management. In case of appropriate using of ERNICA guideline, an optimized clinical outcome of EA/TEF is achievable and sustainable. Complication rate in our center is lower in case of thoracoscopic treatment.

Session I: Gastrointestinal 1b (08:45 - 09:30)

08:45 – 8:52 (11) **Comparison of long-term results of preferred surgical technique in primary esophageal atresia repair: thoracotomy vs thoracoscopy.** Ozge Kilic, Ulkum Zafer Dokumcu, Coskun Ozcan, Hakki Ata Erdener. Ege University Faculty of Medicine Department of Pediatric Surgery. Izmir, Turkey

Aim of the Study: Esophageal atresia (EA) is a congenital malformation characterized by the discontinuity of esophagus. For primary repair of EA, thoracoscopic approach is performed in many centers whereas thoracotomy is still widely preferred. The aim of the study is to compare the long-term outcomes of two techniques.
Methods: Medical records of patients that have undergone thoracoscopic or open surgery between March 1990 and December 2018 were evaluated retrospectively. Patients with shorter follow up than one year or incomplete records of routine controls were excluded. Demographics, surgical procedures, and long-term results of gastrointestinal and respiratory complications, chest wall deformities, scar cosmesis and life quality were evaluated. Chi-square and t-test were used for statistical analysis.
Main Results: Out of forty-seven patients (19 female, 28 male) who met inclusion criterion, there were 20 patients in Thoracotomy and 27 in Thoracoscopy groups, respectively. Demographics were similar and mean follow-up period was more than 10 years in both groups ($p>0.05$). There was no significant difference in rates of anastomotic stricture (50%vs48.1%), dysmotility (60%vs74%), gastroesophageal reflux (55%vs55.5%), recurrent fistula (15%vs7.4%) and tracheobronchomalacia (25% vs 44.4%) in Thoracotomy and Thoracoscopy groups. Incidence of chronic lung disease, mean quality of life and scar cosmesis scores were similar in both groups. Frequency of chest and musculoskeletal deformity was significantly higher in thoracotomy group ($p=0.046$).
Conclusions: Gastrointestinal and respiratory problems are common in long-term follow up of EA patients. Thoracoscopic approach is as safe and efficient as open approach but there is a significant higher risk of chest and musculoskeletal deformity development following thoracotomy.

08:52 - 08:59 (80) **Laparo-endoscopic rendezvous in the treatment of cholecystocholedocolithiasis in the pediatric population.** Fabio Cisarò, Alessandro Pane, Federico Scottoni, Claudio Barletti, Salvatore Garofalo, Riccardo Guanà, Francesco Tandoi, Silvia Catalano, Renato Romagnoli, Pierluigi Calvo, Fabrizio Gennari. "Regina Margherita" Children's Hospital. Turin, Italy

Background and Aim: The incidence of choledocholithiasis is reported to be increasing in children. As for the adult population, several different therapeutic strategies have been described, however it is unclear which of those should be considered the gold standard. Adult literature is progressively providing evidence in support of the "rendezvous" ERCP-laparoscopic cholecystectomy ("rendez-vous technique"). This technique allows a safe management of the stones during the same anesthetic episode of the cholecystectomy. Even if the "rendez-vous technique" has been largely reported in adults, just two cases have been independently reported in children. Aim of the study is to report our experience with the "rendez-vous technique" in a consecutive series of children with cholecysto-choledocolithiasis.
Methods: All patients who underwent the "rendez vous technique" at our institution between 2009 and 2020 were reviewed and evaluated for outcomes and complications.

Results: Eleven children with cholecysto-choledocholithiasis were evaluated: the procedure was successful in 10 while in 1 patient it was aborted due to technical difficulties. All patients resolved their clinical condition without major complications.
Conclusion: To our knowledge, this is the first consistent series of "rendez-vous technique in the pediatric population, proving its feasibility and safety.

08:59 - 09:06 (31) **Indocyanine green (ICG) fluorescent cholangiography during laparoscopic cholecystectomy using Rubina TM Technology: preliminary experience in two pediatric surgical centers.** Ciro Esposito[1], Daniele Alberti[2], Mariapina Cerulo[1], Alessandro Settimi[1], Beatrice Montanaro[2], Silvia Pecorelli[2], Giovanni Boroni[2], Maria Escolino[1]. [1]Federico II University of Naples, Naples, Italy. [2]ASST Spedali Civili. Brescia, Italy

Background: This study aimed to describe the use of a new technology, RUBINA TM, to perform intra-operative Indocyanine green (ICG) fluorescent cholangiography (FC) in pediatric laparoscopic cholecystectomy (LC).
Methods: During the last year, ICG-FC was performed during LC using the new technology RUBINA TM in two pediatric surgery units. The ICG dosage was 0.35 mg/Kg and the median timing of administration was 15.6 hours prior to surgery. Patient baseline, intra-operative details, rate of biliary anatomy identification, and surgical outcomes were assessed.
Results: Thirteen patients (11 girls), with median age of 12.9 years, underwent LC using the new RUBINA TM technology. Pre-operative work up excluded biliary and/or vascular anatomical anomalies. One patient needed conversion to open surgery and was excluded. The median operative time was 96.9 minutes (range 55-180). Technical failure of intra-operative ICG near-infrared fluorescence (NIRF) visualization occurred in 2/12 patients (16.7%). ICG-NIRF allowed to identify biliary/vascular anatomic anomalies in 4/12 (33.3%), including Moynihan's hump of the right hepatic artery (n=1), supravescicular bile duct (n=1), short cystic duct (n=2). No allergic or adverse reactions to ICG, post-operative complications or re-operations were reported.
Conclusions: Our preliminary experience suggested that the new RUBINA TM technology was very effective to perform ICG-FC during LC in pediatric patients. The advantages of this technology include the possibility to overlay the ICG-NIRF data onto the standard white light image and provide surgeons a constant fluorescence imaging of the target anatomy to assess position of critical biliary structures or presence of anatomical anomalies.

09:06 - 09:11 (70) **Choledochal stump stones in a pediatric patient: can endoscopic retrograde cholangiopancreatography (ERCP) be an effective treatment?** Marta Bisol[1], Miriam Duci[2], Piergiorgio Gamba[1], Luca Maria Antoniello[1]. [1]Paediatric Surgery Unit, Women's and Children's Health Department, University of Padua. Padua, Italy. [2]Paediatric Surgery Unit, Women's and Children's Health Department, University of Padua. Padua, Italy

Over the last few years, Endoscopic Retrograde Cholangiopancreatography (ERCP) has been increasingly performed in childhood, not only for diagnostic purposes but also as a therapeutic option for some pancreatobiliary system diseases. We report a case in which ERCP was used to successfully treat a complication after choledochal cyst resection.

An 11-year-old girl was referred to our center for acute pancreatitis, secondary to bile reflux into the pancreatic duct and choledochal stones presence. Under sedation, ERCP was performed and three clear stones of 6-8mm were removed. Following the procedure, both clinical and laboratory improvement was observed. However, a persistent choledochal dilatation was found in subsequent radiological examinations and a type IV choledochal cysts was confirmed through magnetic resonance cholangio-pancreatography (MRCP). Cyst resection and Roux-en-Y hepaticojejunostomy were performed. The post-operative course was uneventful. Two years later, the patient complained some episodes of abdominal pain and MRCP showed a residual intrapancreatic choledochal cyst filled with few stones. A new ERCP was performed: using a 11 mm instrument and a Dormia basket, the choledochal stump was reclaimed and 5 8mm-sized stones were extracted. During the post-procedure recovery the patient developed a mild pancreatitis, spontaneously solved after 48 hours. At follow-up the patient referred complete symptoms remission.

Although acute pancreatitis is an uncommon presentation for choledochal cyst in children, it should always be suspected. In our center experience ERCP seems to be a safe and effective procedure for minimally invasive removal of lithiasis formations from the choledochal stump.

09:11 - 09:18 (76) **Challenges in minimally invasive choledochal cyst surgery.** Rahul Ravi Saxena, Arvind A Sinha, Manish M Pathak, Kirti Kumar Rathod, Avinash Sukhdev Jadhav. All India Institute of Medical Sciences. Jodhpur, India

Objective: Minimally invasive surgery has been gaining popularity for its surgical management of CDC. We describe the challenges faced by during minimally invasive CDC excision. In the last two years 15 cases of both open and laparoscopic CDC excision and hepatico-enterostomies were done in our hospital.

Results:

Case one**:** Patient had portal vein anterior to the CDC and hence, was converted to open.

Case two**:** There was bleed from artery to bile duct on postoperative day one and patient needed re-exploration.

Case three: Cyst was opening into the middle part of main pancreatic duct rather than opening into the duodenal end. An extracorporeally wrongly sited incision on the Roux-en-Y loop of the jejunum also makes the intra-corporeal anastomosis, difficult.

Case four: Cystic duct was opening into porta hepatis and the extra hepatic, hepatic ducts were very tiny. It was converted to open and needed porto-enteric anastomosis.

Case five: Diagnostic dilemma of choledocholithiasis versus forme fruste CDC. Large 14mm calculi in the CDC

Case six: Large size CDC causing folding of cyst on itself making the anatomy difficult during robotic surgery.

Case seven**:** Large size CDC with blind ending long intra-pancreatic portion.

Case eight: Bilobed Choledochal cyst which was reported as CDC with associated duodenal duplication cyst on MRI.

Conclusions: CDC can present with anatomical variations which may not have been described in literature. This can make operation challenging although it may be still possible to do it minimally invasive. Every case should be individualized and thorough discussion with radiologist can help in identifying the variations in the anatomy.

09:18 - 09:25 (99) **Mininvasive surgical approach in treatment of splenic cyst. Analysis and considerations. Proposal of a safe treatment protocol.** Cosimo Bleve, Elisa Zolpi, Maria Luisa Conighi, Lorenzo Costa, Elena Carretto, Enrico La Pergola, Marta Peretti, 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: Nowadays splenectomy, partial splenectomy(PS), cyst decapsulation are still debated in treatment of non-parasitic splenic cystic (SC). We report our minimally invasive experience in treatment of this pathology retrospectively analyzing the results of these three laparoscopic surgical options.

Methods: We reviewed data of all children who underwent mininvasive treatment for SC from 2008 to 2016. 9patients (6males, 3females); mean age 13,5years(range 6-17). All patients presented a SC varying in size from 5 to 25cm involving totally or partially this organ. We analyzed retrospectively surgical procedure including age, sex, history of trauma, physical examination, radiological findings, therapeutic approaches, outcomes.

Results: All patients were treated laparoscopically with total splenectomy(n=4), partial splenectomy(n=2), with vessels embolization of splenic region involved by cyst in 1patients; cyst excision(n=3). Pathological diagnoses were: epidermoid cysts(n=2), epithelial cysts(n=6), hematoma(n=1) after spontaneous splenic fracture in mononucleosis splenomegaly. Postoperative course was uneventful. Mean operative time 168' (range:75'-240'). Splenectomy was performed for cyst localization in hilum region. Two epidermoid cysts underwent PS being focal lesions. In one was performed an embolization of corresponding polar vessels. Follow-up (3-13years) shows no recurrences. Indocyanine-green(ICG) fluorescence was adopted in the last 2cases. The ICG injection was performed intra-operative allowing a better identification of vascular anatomy, an easier surgical dissection and a better defined demarcation line between vascularized and not-vascularized spleen after supplying vessels section.

Discussion: Laparoscopic spleen-preserving approach for non-parasitic cysts/focal lesion is feasible, but challenging. Main problem for success is cyst localization. The aim is to preserve the spleen. A complete cyst resection should be attempted. In case of suspected

peripheral lesions we introduce embolization before surgery and intraoperative ICG to prevent potential bleeding in case of PS. We believe that the combination of these two techniques can be a good option for a sparing safe surgery

09:25 – 09:30 (55) **Evaluation of same day discharge appendectomy in children from 6 to 17 years with acute appendicitis.** Geraldine Glatz, Florence Bastiani, Jean François Lecompte, Ronny Bensaid, Jean Yves Kurzenne, Jean Bréaud. CHU Lenval. Nice, France

Introduction: Acute appendicitis is the most common surgical emergency in children. We aim to evaluate if appendectomy is doable in a same-day discharge surgery in children from 6 to 17 years presenting acute appendicitis.
Material & Methods: A prospective monocentric non randomized cohort was formed from June 2017 to April 2019 in the teaching pediatric hospital of Nice CHU Lenval (France). Feasibility was define as the discharge of the child up to twelve hours after surgery and no consultation before the postoperative one at day 8. Secondary goals were to evaluate the hospitalization rate on the day of surgery, pain management at home by the parents thanks to the 10-item form PPMP scale, and family satisfaction.
Results: 45 patients were included with a median age of 11.0 years. Feasibility rate was 80,0 % (n=36) with an IC of 95% [66,2 ; 89,1]. Nine patients didn't make the « ready to go home » discharge criteria and had to be hospitalized due to a late surgery, poor pain management or didn't fulfill the feeding protocol; the hospitalization rate on the day of surgery was 20%. No patients had a consultation before the eighth day. At the end of follow up at day 30, 97,1 % parents were pleased or very pleased by going home on the same day of surgery. (IC 95% [85,1 ; 99,9]).
Conclusion: This study seems to demonstrate the feasibility of appendectomy in a same day discharge surgery for acute appendicitis with well pain management at home and parents' satisfaction. The hospitalization rate on the day of surgery is mainly due to late surgery because of major difficulties accessing to our operating room, not allowing children to recuperate as fast as they could. Management of same day discharge surgery of acute appendicitis requires a very strict pathway despite of the emergency pathology.

Session II: Urology 1 (09:30 - 10:15)

09:30 - 09:35. (32) **Indocyanine green (ICG) fluorescent lymphography via intra-testicular injection during laparoscopic Palomo varicocelectomy: a prospective study on clinical safety and efficacy.** Ciro Esposito, Alessandro Settimi, Mariapina Cerulo, Vincenzo Coppola, Giuseppe Autorino, Roberto Cardone, Rachele Borgogni, Maria Escolino. Federico II University of Naples, Naples, Italy

Background: Laparoscopic Palomo varicocelectomy using Indocyanine green (ICG) fluorescent lymphography (FL) has been recently standardized with low post-operative

recurrence and hydrocele. Concerns remain regarding the safety of intra-testicular injection of ICG dye. This study aimed to evaluate the long-term outcomes of this innovative technique in terms of safety and efficacy.
Methods: Thirty consecutive patients (mean age 14.8 years) undergoing laparoscopic Palomo varicocelectomy using ICG-FL over a 12-month period, were enrolled. Operative indication was high-grade varicocele in all patients and testicular hypotrophy in 12/30 (40%). Follow-up included clinical examination and testicular doppler ultrasound (US) at 1, 6, 12 months postoperatively, aiming to assess the varicocele persistence, onset of hydrocele and complications related to the intra-testicular injection.
Results: ICG-FL allowed lymphatic sparing in all cases. No intra-operative complications neither systemic adverse reactions induced by ICG occurred. The median follow-up was 17.6 months (range 13-24). A self-limited scrotal hematoma following the intra-testicular injection occurred in one patient (3%) whereas intra-testicular calcification at the injection site was observed on US in another one (3%). Persistent low-grade varicocele was noted in 2 patients (6%), who did not require any re-intervention. No post-operative hydrocele was reported and 8/12 (66.6%) patients with pre-operative testicular hypotrophy reported a significant testicular regrowth.
Conclusions: Laparoscopic Palomo varicocelectomy using ICG-FL was a safe and effective procedure, with low varicocele persistence/recurrence and absence of post-operative hydrocele. The ICG intra-testicular injection proved to be equally safe with no damage for the testis and no adverse reactions for the patient.

09:35 - 09:40 (19) **Systemic review and meta-analysis of Chapman's vascular hitch procedure in patient with pelviureteric junction obstruction due to lower pole crossing vessel.**
Kirtikumar J Rathod, Rupesh K Sikchi, Arvind S Sinha. AIIMS. Jodhpur, India

Objective: To systematically analyze published literature to give an overall success rate for Chapman's vascular hitch (CVH) procedure in patient with pelviureteric junction obstruction (PUJO) due to lower pole crossing vessel (LPCV)
Material and methods: A systemic review and meta-analysis of vascular hitch was carried out up to present date. In conjunction with this, systematic search of PUBMED, SCOPUS and GOOGLE SCHOLAR database was performed by using the search terms "vascular hitch" ("Pelviureteric Junction Obstruction" OR PUJO) AND ("crossing vessel" OR "Crossing" OR "Extrinsic Pelviureteric Junction Obstruction")
Results: Out of 327 articles, 24 studies were eligible to be included in the review. Detailed in these studies were 800 patients with PUJO caused by lower pole crossing vessels (CV) with total of 605 patients who underwent CVH. Diuretic test was performed in 11 studies. Patient minimum mean age was 6 years. Minimum mean operative duration was 45 minutes and maximum was164 minutes. Minimum mean length of stay was 1 day and maximum was 15. Minimum Mean follow up was of 9.1 months and maximum was 58.8 months. According to Forest plot results, pooled success rate of the CVH was found to be 94.8% [95%CI: 92.2-97.1].

Conclusion: Chapman's VH has significantly reduced operative duration, length of stay and has a good success rate. In hydronephrosis with PUJO due to LPCV, the CVH could be considered a good surgical option along with appropriate patient selection.

09:40 - 09:45 (28) **Laparoscopic Ureterocalicostomy: a feasible option for pediatric patients.** Rahul Ravi Saxena, Arvind A Sinha, Manish M Pathak. All India Institute of Medical Sciences. Jodhpur, India

Purpose: Ureterocalicostomy is reserved for reconstruction of recurrent, recalcitrant ureteropelvic junction obstruction associated with postoperative fibrosis, completely intrarenal pelvis or a relatively inaccessible renal pelvis. We demonstrate a case of fibrosed pelviureteric junction managed by laparoscopic ureterocalicostomy.
Case presentation: A 9-year-old female patient was referred to our hospital with complaints of recurrent episodes of urinary tract infections for last 2 years. Patient had evidence of right renal calculi on previous ultrasound. On repeat ultrasound and MRI right kidney was found to be smaller in size measuring ~ 8x4.5cm with maintained corticomedullary differentiation. There was gross dilation of calyceal system and thinning of renal parenchyma with narrowing of the pelvis. (maximum cortical thickness upper pole ~ 9mm , mid pole ~ 5.8mm , lower pole ~ 6mm). Surrounding perirenal fat stranding was seen. The APD of right pelvis was 16mm. The pelvis appeared inconspicuous and cicatrized. Left kidney appeared normal. On diuretic renogram, SRF of right kidney was 28 % with delayed clearance.
Laparoscopic ureterocalicostomy was planned because of the completely cicatrized pelvis with thinning of the cortex. A transperitoneal approach was implemented in a lateral flank position with four trocars. The, the ureter was transected, and the renal pelvis was closed. A 2.5-cm incision was made at the lower calyx. The ureter was spatulated laterally and uretero-caliceal anastomosis was completed in a running fashion using 4-0 barbed absorbable sutures. The operation time was 180 min. The postoperative course was uneventful. Postoperative imaging studies showed marked improvement of the right hydronephrosis.
Conclusions: Laparoscopic ureterocalicostomy is technically feasible in pediatric population and effectively duplicates the established principles of open surgery.

09:45 - 09:52 (93) **Laparoscopic pyeloplasty in infants**. Ádám Radványi, Gábor Varga, László Sasi Szabó. University of Debrecen. Debrecen, Hungary

Background: Confirmed UPJ obstruction requires pyeloplasty. MIS techniques have the same success rate as standard open procedures; however, laparoscopic correction under 1 year of age (1 y/o) is not generally accepted.

Objective: Our aim was to investigate the safety, efficacy and feasibility of laparoscopic transperitoneal pyeloplasty under 1 y/o.
Materials and methods: In a retrospective cohort study, we analyzed the data of the patients who underwent laparoscopic (MIS) and open pyeloplasty in our department between 01.01.2011 and 29.02.2021. Without excluding any of the patients we have evaluated and compared the demographic, perioperative and follow-up data.
Results: We performed 101 pyeloplasty in 99 patients: 37 were younger than 1 y/o (21 MIS, 16 open) and 64 were older (47 MIS, 17 open). The mean age of the infants were 121 ± 71.0 days (MIS) and 163 ± 87.7 days (open). There was no conversion. The only intraoperative complication was difficulty with the JJ catheter insertion (4 out of 5 cases were under 1 y/o); mean operative time was significantly longer (130 vs. 185 minutes, $p<0,01$) in those cases. There was no significant difference in skin-to-skin time between the MIS groups (145 min. under 1 y/o vs. 135 min., $p=0,2589$) and open (105 min. under 1 y/o vs. 120 min., $p=0,346$) groups. Patient age and weight at the time of the operation did not show correlation with operative time. Postoperative LOS and analgesic use were significantly lower in both MIS groups. Age at the operation showed negative correlation with postoperative complications regardless of operative approach. After an average of 54 months follow-up, there was no recurrence in any of the groups.
Conclusion: Laparoscopic pyeloplasty is feasible and safe in infants; they can also benefit from advantages of laparoscopy without negative effect on duration of the surgery and the outcome.

09:52 - 09:57 (41) **Ureteral Polyps in children: two different managements.** Claire Rion, Sophie Vermersch, Morgan Pradier, Don André Vincentelli, François Varlet, Aurélien Scalabre. CHU Saint Etienne. Saint-Etienne, France

Introduction: Fibroepithelial polyps (FEP) are rare benign lesions of mesodermal origin that can arise all along the urinary system. They may cause intrinsic uretero-pelvic junction obstruction (UPJO) in children and recent literature accounts up to 5% of cases. Symptoms are mainly hematuria and flank pain. The pre-operative diagnosis is challenging, they are difficult to detect by ultrasonography (US). They can be assessed by a radiolucent filling defect in intravenous pyelography (IVP) or CT scan with contrast.
The management has not been clearly defined yet, though recent literature suggested an algorithm for diagnosis and treatment of FEP in children.
Material, Patients and Methods: We retrospectively reviewed two patients with UPJO by FEP treated in our institution.
Results: The first case was a nine-year-old boy who presented left flank pain. Repeated US revealed hydronephrosis. MRI and CT scan were considered normal at the time. Two years later, as the boy experienced chronic left flank pain, we reviewed the imaging studies and noticed a filling defect on the MRI. The diagnosis was confirmed by IVP. Ureteroscopy with YAG laser treatment was done twice. Unfortunately recurrent left flank pain occurred and an ureteral stricture was diagnosed. It was treated successfully by laparoscopic

pyeloplasty.
The second case was an eleven-year-old-boy who experienced two left renal colic. The US was normal and CT scan identified a filling defect. Ureteroscopy confirmed the presence of multiple FEP. We performed a laparoscopic pyeloplasty during the same procedure.
Conclusion: These cases highlight the difficulty to diagnose UPJ obstructions due to FEP. We performed ureteroscopy for polyp mapping when filling defect was encountered. The treatment algorithm is dictated by the endoscopic appearance of the ureteral polyp: endoscopic treatment is preferred for 1 or 2 pedunculated polyps whereas pyeloplasty is suggested for multiple polyps to avoid ureteral injury and postoperative stricture.

09:57 - 10:02 (21) **Laparoscopic ligation with extracorporeal tapering ureteroplasty and laparoscopic ureteroneocystostomy in a child with congenital ectopic megaureter with urinary incontinence.** Kirtikumar J Rathod. AIIMS. Jodhpur, India

5 year old girl with complaints of dribbling of urine since birth. On evaluation the child was diagnosed to have right side ectopic ureter which was grossly dilated and tortuous ureter. Cystoscopy showed trabeculations. On vaginoscopy continuous spillage of urine through vagina was visualized. On laparoscopy large dilated and tortuous right ureter was visualized. Right ureter mobilized till its opening into the vagina and was transfixed and divided. Ureter was then exteriorized through the port side. Extracorporeal tapering of ureter was done for approx. 8cm using 6-0 PDS. Ureter was pulled inside the abdomen and ureteroneocystostomy was performed laparoscopically. Extravesical ureteric reimplantation was done .Post operatively patient is well, continent and is under regular follow up with no complaints. Laparoscopic mobilization and extracorporeal tapering ureteroplasty should be the procedure of choice in girls with ectopically opening megaureter

10:02 - 10:07 (23) **Laparoscopic excision of giant bladder diverticulum with uretero-neocystostomy and extravesical reimplantation.** Kirtikumar J Rathod. AIIMS. Jodhpur, India

Objective: We present a case of three year male child with a giant bladder diverticulum. The patient was managed by laparoscopic excision of bladder diverticulum and ureteroneocystostomy.
Background: Bladder diverticulum is a large herniation of the bladder mucosa through a defect in the muscularis propria of the bladder wall. Surgical treatment is indicated when there is persistent high-grade vesicoureteral reflux, recurrent urinary tract infections, or documented obstruction of either the distal ureter or the bladder neck. Options in the treatment of bladder diverticula include observation, endoscopic management, and

surgical excision. Conventionally open method is used. However, there are few reports of the procedure being done using minimally invasive method.
Case Report: A three year male child presented with pain during micturition, dribbling and history of recurrent UTI. Micturating-cystourethrogram (MCU) showed a large diverticulum bigger than the size of bladder itself on the left side along with ipsilateral grade 1 reflux. The child was planned for laparoscopic diverticulum excision. Cystoscopy showed a giant bladder diverticulum with left ureter opening in it. After ports insertion, diverticulum was identified after filling the bladder with saline. Ipsilateral vas deferens was gently moved away from the diverticulum. Diverticulum was dissected till detrusor defect edges were visible. Detrusor defect was repaired using PDS 4-0 sutures. Ureteroneocystostomy was done over 4 Fr double J (DJ) stent with 5-0 PDS. Extravesical reimplantation was done in Lich Gregoir fashion. The child is doing well and is on follow up.
Conclusions: Laparoscopic method for bladder diverticulum although being challenging owing to the intra-corporeal suturing, is associated with easy identification of surrounding vital structures like vas deferens as compared to vesicoscopic approach, minimal postoperative pain and good cosmetic outcome.

10:07 - 10:12 (67) **Successful laparoscopic bilateral nephrectomy and gonadectomy for rare WT1 gene mutation in an 8 months old infant with 46XY karyotype.** Thomas M Benkoe[1], Alexander Springer[1], Klaus Arbeiter[2], Anke Scharrer[3], Stefan Riedl[4], Martin L Metzelder[1]. [1]Department of Pediatric Surgery, Medical University of Vienna, Vienna, Austria. [2]Department of Pediatric Nephrology, Medical University of Vienna, Vienna, Austria. [3]Department of Pathology, Medical University of Vienna, Vienna, Austria. [4]Department of Pediatric endocrinology, Medical University of Vienna. Vienna, Austria

WT1 gene mutation is an extremely rare condition characterized by congenital nephropathy resulting in chronic renal failure and a high risk of Wilms tumor formation. In infants with 46XY karyotype, the mutation may cause an intersex condition resulting in phenotypical sex-reversal and streak gonads with a high risk of malignant transformation. Thus, treatment is complex and requires consultation with a pediatric nephrologist, pediatric oncologist, pediatric surgeon, pediatric endocrinologist, pathologist and geneticist. To this regard all patients need renal replacement therapy and or renal transplantation. Both the kidneys and gonads have a high risk of germ cell malignancy (40-60% Hughes et al. 2006). Therefore, surgical removal of both kidneys and gonads is recommended. However, there is no consensus on the timing and method of choice for nephrectomy and gonadectomy. In the second week of life the baby developed anuria and needed renal replacement therapy. Peritoneal dialysis was established. Further diagnostics revealed a WT1 gene mutation and a 46XY karyotype (with sonographic evidence of small bilateral intraabdominal gonads and a uterus). Both kidneys were hyperechogenic and 5.5cm in length. In this case report we showed the feasibility and safety of synchronous laparoscopic bilateral nephrectomy and gonadectomy in infancy. Histopathology revealed an in situ dysgerminoma with focal invasion and formations of a gonadoblastoma of the

right dysgenetic gonad, underlining an early operative intervention under these circumstances.

Poster Session 1 (10:30 - 11:00)

10:30 - 10:33 (15) **Role of preoperative laboratory investigations to predict perforated appendicitis in children.** Kirtikumar J Rathod, Ayushi V Vig, Arvind S Sinha. AIIMS. Jodhpur, India

Introduction: Acute appendicitis is one of the most common paediatric surgical emergencies. Herewith we present our study to determine the correlation of pre-operative laboratory investigations with intraoperative findings and histopathological report in children with appendicitis.
Materials and Methods: A retrospective analysis of 60 appendectomies was conducted at the Department of Pediatric Surgery. Parameters studied were age, gender, duration of symptoms, Total leucocyte counts and hsCRP at presentation, ultrasonography, intraoperative findings (perforated or not perforated appendix), placement of drain in perforated cases, post-operative duration of antibiotics and hospital stay. We compared the values of TLC and CRP in perforated and non-perforated cases. Histopathological report of the specimens was retrieved.
Results: The mean age of the patients was 11.23 years (range- 2-18years) with a male preponderance; M:F 2:1. The mean TLC value was 16,772 cells/cc in the perforated group which was significantly higher than the non-perforated group 10,872cells/cc (p value<0.001). Mean Hs CRP for the perforated group was 104.3 which was significantly higher (p value - 0.015) as compared to 40.69 of the non-perforated group. We calculated a cutoff TLC value of 17,930 cells/cc and HsCRP value of 32.9microgram/ml was found to be suitable preoperative parameters suggestive of perforated appendicitis. USG correctly identified perforated appendicitis in 56% (n=23) patients. The negative Appendectomy rate at our hospital was <5% which is comparable to the previous studies. No significant difference was noted in the post-operative course and duration of hospital stay if drain was placed intraoperatively in perforated appendicitis.
Conclusion: High TLC count and HsCRP can accurately predict perforation in appendicitis cases pre-operatively and we propose administration of higher antibiotics according to perforated appendicitis protocol in patients who initially present with high TLC count and CRP.

10:33 - 10:36 (3) **Laparoscopic versus open appendectomy in children less than 5 years old**
Radoica R Jokic[1,2], Jelena B Antic[1,2], Svetlana S Bukarica[1,2], Nenad J Zakula[1], Ivana I Lukic[1]. [1]Clinic of pediatric surgery, Novi Sad, Serbia. [2]University of Novi Sad, Medical faculty. Novi Sad, Serbia

The peak incidence of acute appendicitis is between 10 and 12 years of age, while it is very uncommon under the age of five. Only 2% are reported in infants and 0,04-0,2% in neonates. The majority of appendicitis in children under 5 years are complicated. Perforation rate goes up to 84%. In recent years, laparoscopic approach is preferred. We performed this study to represent our experience in treating acute appendicitis in early childhood. Between 2014 -2019, 50 children between 5 months and 5 years were operated (31 males and 19 females). In majority of cases (74%) it was complicated appendicitis (18% gangrenous, 50% perforated and periappendicular infiltration in 6%). Open approach was performed in 42%, laparoscopic in 44%, and in 14% (7 cases) conversion was made. 40.5% of all children with complicated appendicitis were operated laparoscopically. There was no significant difference (open and laparoscopic group) considering hospital stay (mean 8.25 vs. 9.82 days; p=0.054) and initiation of per oral intake (mean 3.14 vs. 3.73 days; p=0.307), but difference was significant for children in whom conversion was made (significantly longer hospital stay: mean 13.5 days; p=0.002). Wound complications occurred in 8% (3 wound infections and one dehiscence), all in open or conversion group. There were two cases of postoperative ileus, both after perforated appendicitis. One of them was 6 days after the initial operation (conversion), and was managed by open approach: intestinal deliberation and Child-Philips plication. Second case of postoperative ileus occurred one month after laparoscopic operation, and was managed using minimally invasive approach again. Laparoscopic approach is comparable to open approach (length of hospital stay and initiation of per oral intake), and associated with lower rate of early postoperative complications. Decision to make a conversion resulted in longer hospital stay, which emphasizes importance of appropriate preoperative assessment.

10:36 - 10:39 (4) **Experience in the use of retrograde balloon dilation of esophageal strictures in children with dystrophic epidermolysis bullosa**. A V Tupylenko, V I Oldakovsky, M M Lokhmatov, T N Budkina, E Yu Dyakonova, A A Gusev. FSAI "NMRC for Children's Health" MH RF. Moscow, Russian Federation

Introduction: one of the most common complications in patients with dystrophic form of congenital epidermolysis bullosa is the occurrence of esophageal strictures. In turn, esophageal obstruction prevents oral feeding and is one of the factors leading to severe nutritional insufficiency. In the world practice, the method of choice for recanalization of the esophagus in this category of patients is antegrade balloon dilatation. Gastrostomy is used to compensate for energy losses and hyperalimentation. However, antegrade balloon dilation has a risk of damage to the oral mucosa, larynx, and dentition.
Objective: to improve the technique of intraluminal recanalization of the esophagus in children with epidermolysis bullosa.
Materials and methods: In 2020, 3 patients with a dystrophic form of congenital epidermolysis bullosa underwent retrograde balloon dilation of esophageal strictures under endoscopic and X-ray control. The age of the patient was 7, 9 and 12 years. Clinically, esophageal strictures were manifested by grade 3 dysphagia on the Bown scale, hypersalivation, and refusal to eat. Localization of strictures – 2-upper third, 1-middle

third. The size of the narrowed area did not exceed 4 mm in width and 0.5 cm in length. Retrograde balloon dilation was performed under inhaled mask anesthesia.
Results: restoration of the esophageal lumen in 1 session of balloon dilation. On the 2nd postoperative day, oral feeding was resumed in the physiological volume. No complications were detected during the follow-up period of 6-12 months. There were no relapses.
Conclusion: according to our experience, retrograde balloon dilation is the least traumatic method, in contrast to the classical antegrade option. However, not all parents and patients agree to gastrostomy, which limits the possibility of using the retrograde version of balloon dilation in clinical practice. Further study of the technique is required on a larger sample of patients.

10:39 - 10:42 (65) **Stepped minimally invasive approach to a complicated esophagus atresia patient with recurrent esophageal leakage, anastomotic stricture and gastroesophageal reflux.** Mehmet Surhan Arda, Selin Kandemir, Hüseyin İlhan. Eskisehir Osmangazi University, Faculty of Medicine, Department of Pediatric Surgery. Eskişehir, Turkey

Recurrent tracheoesophageal fistula (RTEF), gastroesophageal reflux (GER), anastomotic stricture (AS) and esophageal leakage (EL) are the late complications of esophagus atresia (EA) repair. It is a great complexity if all are together. In this study, our stepped, repeating minimal invasive approach (MIA) in a patient with all three complications, has been presented.
Case: A two-year-old girl with complains of vomiting, coughing and recurrent lung infection even feeding solely through gastrostomy (G). She has undergone surgical repair due to type-3 EA in a foreign country. She has multiple incision scars on abdomen and right hemithorax. In her history, failed EA repair was ascertained. Moreover, due to leakage from jejunostomy, it has switched to gastrostomy.
GER, EL and dilated proximal esophagus with AS has been detected on upper gastrointestinal series (GIS). A stiff stricture was figured out, that did not respond to dilatation. Laparoscopic fundoplication with preserving G was the first step. Owing to complications during past surgeries the jejunum has stuck to anterior abdominal wall. It has been opened while dissecting the adhesions however, it was fixed intracorporeally.
After six-months of gap, her lungs were healed and repairing the esophagus was the second step. For thoracoscopic reparation three ports were introduced. Esophagus, anastomotic segment, epithelized leakage tract was hold up and was released from adhesions. Meanwhile patient was desaturated. Surgery has been stopped and patient switched to head up position. The obstructed endotracheal tube was noticed when extubated. One and half month later patient was undergone second thoracoscopic procedure in which resection and anastomosis performed. During postoperative period, leakage from anastomosis was cured non-operatively. After a follow up of 1 year she did well without any complain.
In conclusion, MIA is safe and reliable method during secondary procedures in children, independent to previous complications.

10:42 - 10:45 (145) **Pediatric Achalasia: laparoscopic Heller myotomy and DOR fundoplication.** Inês Braga[1,2], Catarina B[1,2], Jorge Correia-Pinto[1,2,3]. [1]Department of Pediatric Surgery, Hospital de Braga, Braga, Portugal. [2]Life and Health Sciences Research Institute (ICVS), School of Medicine, University of Minho, Braga, Portugal. [3]ICVS/3B's – PT; Government Associate Laboratory. Braga, Portugal

Introduction: Achalasia is a rare esophageal disorder in the pediatric population, in which the lower esophageal sphincter fails to relax and seems to have an increased resting pressure as long as missing peristalsis. Although the precise etiology is unclear, there is a degeneration of the inhibitory myenteric plexus that innervates the lower esophageal sphincter and esophageal body. Conservative management does not succeed very often, resulting in recurrent symptoms and the need for definitive surgical treatment.
Methods/ Results: We present a video of a previously healthy 11 years-old boy, presenting with persistent cough and respiratory infections for several months and lately dysphagia and regurgitation. A contrast radiography and manometry were conducted and a type 2 Achalasia was diagnosed. A laparoscopic Heller myotomy and Dor fundoplication was proposed and performed. A gastrografin contrast x-ray in the day after revealed mucosal integrity and enteric diet was started uneventfully. The patient was discharged 48 hours later with a nutritional plan and medicated with a proton pump inhibitor (PPI). Currently followed in the outpatient consultation, otherwise asymptomatic.
Conclusion: Laparoscopic Heller myotomy and Dor fundoplication is a safe and effective procedure in the pediatric population with this rare esophageal disease.

10:45 - 10:48 (63) **Cost comparison study of the percutaneous endoscopic gastrostomy versus the one-step gastrostomy procedure.** Hanne C.R. Verberght, Ruben G.J. Visschers, Dianne J.H. Dinjens, Wim G. van Gemert. Maastricht University Medical Center. Maastricht, Netherlands

Purpose: The aim of our study is to investigate the difference in costs from a hospital perspective of the Percutaneous Endoscopic Gastrostomy (PEG) versus the One-Step Gastrostomy (OSG) taking into consideration treatment, surgery, hospitalization, follow-up, and possible complications.
Methods: Retrospective cost comparison study of pediatric patients at the pediatric surgery department of the Maastricht University Medical Center (MUMC+) who received a percutaneous endoscopic gastrostomy or a one-step gastrostomy between January 2015 and December 2019. Parameters analyzed included demographics, cost overview, indication for placement, length of stay, Pediatric Intensive Care Unit (PICU) stay, anesthesia, surgery duration, and complications.
Results: 89 patients were included, 45 received a PEG and 44 a OSG. Demographic data and hospitalization were not statistically significant different between the two groups. The mean hospitalization for the PEG was 3.2 days for placement and 1.4 days for device switch versus 3.0 days for the OSG placement. Surgery duration of PEG placement had a mean

time of 19.2 minutes and device switch 12.5 minutes versus 22.9 minutes for OSG placement. The difference in total hospital cost was €1321.19 in favor of the OSG. No statistically significant differences were found in the complications.
Conclusion: Both techniques have negligible differences in costs, complications, and primary hospital stay. The one-step gastrostomy is feasible, safe, and consists of one single anesthesia and hospital stay. Thus, it results in less stress and disease burden for the patient and their family.

10:48 - 10:51 (20) **Laparoscopic duodeno-jejunostomy and transanastomotic feeding jejunostomy tube insertion for a large annular pancreas causing duodenal obstruction in a neonate.** Kirtikumar J Rathod, Ayushi V Vig, Arvind S Sinha. AIIMS. Jodhpur, India

Introduction: We present a case of annular pancreas causing duodenal obstruction which underwent laparoscopic duodeno-proximo-jejunostomy and placement of a transanastomotic tube.
Technique description: A 2.8 kg 2 day old neonate was diagnosed to duodenal atresia with Down syndrome. A 5mm infra-umbilical port was inserted for camera and two 3mm ports were inserted on its either sides for instrumentation. Intraoperatively duodenum was hugely dilated till the second part/third part of the duodenum as well as the rest of small intestine was seen collapsed. The distal part of the duodenum was not localized due to this abnormally located pancreatic tissue. Anastomosis was performed using PDS 5-0 in single layer. After completion of the posterior layer of the anastomosis, an 6Fr infant feeding tube was placed trans anastomotic reaching mid jejunum. Feeds were started on POD 2 via the naso-jejunal trans-anastomotic tube. Currently baby is gaining weight on 2 months of follow up.
Conclusion: Laparoscopic Duodeno-jejunostomy, though technically challenging, is feasible in neonatal age group. Insertion of a laparoscopically guided trans- anastomotic tube ensures early feeding and enhances early recovery. It also avoids complications related to total parenteral nutrition.

10:51 - 10:54 (17) **Laparoscopic excision of complex mesenteric cyst and total laparoscopic handsewn end to end intracorporeal small bowel anastomosis.** Kirtikumar J Rathod, Rupesh K Sikchi, Arvind S Sinha. AIIMS. Jodhpur, India

Aims of technique: To describe the method of laparoscopic excision of complex mesenteric cyst in a child
Patient**:** The index case is a 6 year old male, presented with complaints of dull aching pain abdomen and non-bilious vomiting on and off since past 6 months. On examination no palpable lump was felt over abdomen. USG was suggestive of thin walled cystic mass with few internal septa seen anteromedial to right kidney suggestive of mesenteric cyst. CT scan revealed 5.3 x 6.2 cm cystic multiloculated infiltrating lesion along right sub hepatic region suggestive of mesenteric lymphangioma. Patient underwent laparoscopic excision of

mesenteric lymphangioma with end to end jejunal anastomosis. Patient tolerated the procedure well. Patient was allowed orally on post-operative day 3 after removal of nasogastric tube and was discharged on post-operative day 4. Patient currently has no complaints and is alright on regular follow up.
Materials and methods: Three 5 mm ports were inserted. Infraumbilical port for camera and Right iliac fossa and left epigastric port for instrumentation was created. Multiloculated complex mesenteric cyst was identified lying in the pelvis which was located about 25 cm distance from DJ flexure. Cyst was excised along with 10 cm of jejunum and laparoscopic intracorporeal end to end single layer anastomosis was done. Specimen was placed in endobag and was retrieved through Infraumbilical port site incision
Conclusion: Laparoscopic excision of mesenteric cyst should be the preferred way for management of large mesenteric cyst in children, as it has advantage of less post-operative pain, early recovery, short hospital stay and cosmetically better wound.

10:54 - 10:57 (54) **Laparoscopic-assisted removal of mesenteric Meckel diverticulum: about two cases and literature review.** Maria Ruffoli[1], Mirko Bertozzi[2], Silvia Cavaiuolo[1], Fabrizio Vatta[2], Gian Battista Parigi[1,3], Claudio Vella[4], Giovanna Riccipetitoni[2,3]. [1]S.C di Chirurgia Pediatrica -Fondazione IRCCS Policlinico San Matteo. Pavia, Italy. [2]S.C. di Chirurgia Pediatrica -Fondazione IRCCS Policlinico San Matteo. Pavia, Italy. [3]Università degli Studi di Pavia. Pavia, Italy. [4]Chirurgia Pediatrica dell'Azienda Ospedaliero – Universitaria di Ferrara. Ferrara, Italy

Aim: Mesenteric Meckel's diverticulum (MMD) is described in the literature only as case report. We recently observed 2 cases treated for intestinal bleeding by a laparo-assisted approach.
CASE 1: A 6-year-old male presenting abdominal pain and massive intestinal bleeding was transferred to our institute. The child has been previously submitted to US revealing the presence of a cystic lesion. An upper and lower endoscopic study was performed in order to exclude other causes of GI bleeding with negative results. With the suspicion of a bleeding Meckel's diverticulum (MD) the patient underwent a laparoscopy: a mesenteric lesion looking like a cystic intestinal duplication was discovered at 60 cm from the ileocecal valve. The lesion was exteriorized through the umbilicus, after dissection it appeared to be a MMD; a segmental intestinal resection was performed
CASE 2: A 1-year-old male presented at our emergency department for rectorrhagia. A US was performed showing a cystic lesion of the ileum without intussusception images. After colonoscopy and gastroscopy negative for other causes of bleeding, a laparoscopic exploration was performed. A cystic lesion was found at 45 cm from the ileocecal valve and excised by video-assisted technique through the umbilical incision. Histopathology revealed a MMD
Discussion: A review of the literature showed only 10 pediatric cases of MMDs. The mean age at presentation was 6,3 years. Abdominal pain or intestinal bleeding were the clinical signs. 1/10 cases was laparoscopically treated.

Pre- and intraoperative diagnosis of MMD may be difficult due to similar appearance to a cystic intestinal duplication. Nevertheless bleeding from cystic duplication is anecdotic. Final diagnosis is possible only after an accurate dissection or at histopathological evaluation. Laparoscopic assisted removal appears feasible and effective. Laparoscopy represents the gold standard for MD removal and permits to explore all the intestinal tract excluding other pathologies.

Session III: Gastrointestinal 2 (11:30 - 12:15)

11:30 - 11:35 (43) **Predisposing factors for successful laparoscopic splenectomy of pediatric patients with immune thrombocytopenic purpura.** Roman V Zhezhera, Katerina O Riabenko, Oleksandr O Hryshyn. Nationals specialized children's hospital "OKhMATDIT". Kiev, Ukraine

Background: Laparoscopic splenectomy is being performed more often to achieve successful remission of children with immune thrombocytopenic purpura.
Methods: A retrospective review of 20 laparoscopic splenectomies (LS) with using a three port technique witch had been performed for similar indications. The indications for splenectomy were, patients who no longer responded to glucocorticoid or intravenous immunoglobulins therapy and platelet level was less than 30 x103/µL. Patients were divided into two groups according to the level of platelets after preoperative therapy glucocorticoid or intravenous immunoglobulins. Group #1(n=10) showed the level of platelets were 150+\-30 x103/µL, and Group #2 (n=10) shoved the level of platelets were 70 +\- 30 x103/µL. We performed 20 laparoscopic splenectomies of children with immune thrombocytopenic purpura. Accessory spleens were found on 40% of the patients. We didn`t experience any conversions.
Results: The platelet level after LS of Group #1 was above 150 x103/µL without using glucocorticoid or IV immunoglobulins. The platelet level after LS of Group #2 was minimum 10 x103/µL, maximum 100 x103/µL and patients had to use glucocorticoid and IV immunoglobulin. An average follow-up period was 6 -12 months and showed all 10 (100%) patients of Group #1 had successful remission, they didn`t use any glucocorticoids or immunoglobulins. 5 (50%) patients of Group #2 didn’t achieve remission and they underwent courses of glucocorticoid and IV immunoglobulin during the year; 3 (30%) patients achieved partial remission and needed to receive only two courses of glucocorticoid without IV immunoglobulins during one year; 2 patients (20%) had successful remission. Only one patient had postoperative complications witch was bleeding from umbilical wound.
Conclusions: Patients with preoperative platelet level greater than 70 x103/µL are expected to successfully respond to LS for immune thrombocytopenic purpura

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11:35 - 11:40 (22) **A novel minimally invasive method to treat Mesenteric cyst in acute emergency: Idea from Hydrocele operation.** Kirtikumar J Rathod. AIIMS. Jodhpur, India

Objective: We present case of large mesenteric cyst in a 3 year old child with associated superior mesenteric vein thrombosis managed successfully with laparoscopy.
Background: Mesenteric cysts are a very rare cause of abdominal pain as it usually present as an incidental finding. Mesenteric cysts can occur anywhere in the mesentery, from the duodenum to the rectum, and may extend into the retroperitoneum. Once the diagnosis is made surgical treatment is the treatment of choice as there is a possibility of volvulus and gut strangulation. Surgical options like excision and marsupialization are described in literature with variable success rate. The present case describes a novel method to treat this condition when it was associated with superior mesenteric vein thrombosis.
Report: A 3 year old male child presented to us in emergency with history of severe abdominal pain since 3 days. On examination he had tenderness in right lower quadrant. Blood tests were normal. Ultrasound abdomen showed a cystic lesion of 15X9cm in right lumbar region. CT abdomen showed the same lesion and was reported as mesenteric lymphangioma with superior mesenteric vein thrombosis and multiple collateral channels in mesenteric vasculature. As the child had severe abdominal pain decision was to do a diagnostic laparoscopy and proceed. We found a large mesenteric cyst at jejuno-ileal junction with congested small bowel. As the reason of superior vein blockage was uncertain we did a quick novel operation of puncturing the cyst and eversion of cyst was as done with hydrocele operation. The child did well after the surgery and is on investigation for mesenteric vein obstruction. There is no recurrence on postoperative scan.
Conclusion: Laparoscopic method of puncture the mesenteric cyst and doing eversion of cyst wall is a novel and easy option in emergency and gives good results.

11:40 - 11:45 (134) **Validation of simulation-based MIS essential skill-training module.** Candela Rahn, Manuel Lopez, HUVH. Barcelona, Spain

After developing a simulation-based MIS essential skill-training module for pediatric surgery residents in 2018, the validation process was carried out. The purpose of this study is to validate this training module, strategically ordered in complexity, by assessing the pre and post training scores and timings of the residents, and analyzed them with the attending surgeons´ only performance.
Pediatric surgery residents and attending surgeons were recruited from a single center to train in 14 simulation-based exercises for essential laparoscopic skills. After demonstration of the task by the same tutor, the first and the fifth performance of the residents and the first of the attendings were video-recorded and blinded to minimize the bias when scored. The analysis included the timing and quantitative assessment, carried out by the same tutor, with the validated GOALS and SALAS evaluation form for each task.
From October 2019 to February 2020, training sessions of 2 hours twice a week were scheduled. 5 pediatric surgery residents and 4 attending surgeons completed the training

module in 5-7 and 2 sessions respectively. The residents had a general improvement of 25% and 21.6% in score and time between the first and the fifth practice. The fifth performance was 9% and 7% below the attending's´ score and time respectively. The score was significantly observed between the first and the fifth practice of the residents (p <0.0000000007); and the fifth practice scored similar to attendings´performance (p=0.28). The mean time in the first and fifth practice was 70 and 55 minutes, and for the attendings it was 51 minutes. The laparoscopic camera skills improved 29,34% for the residents and 7,31% for the attendings.
The simulation-based training module, under the described conditions, has demonstrated benefits to develop and improve laparoscopic skill training. Therefore, it could be recommended for continuous and tutored education in surgical residency programs.

11:45 - 11:52 (87) **Abdominal involvement in children infected or exposed to SARS-CoV-2: the role of laparoscopy in a Pediatric Surgical COVID hub.** Sara Costanzo[1], Andrea Pansini[1], Giorgio GO Selvaggio[1], Lorena Canazza[1], Federica Marinoni[1], Milena Meroni[1], Giulia Del Re[2], Gloria Pelizzo[1,3]. [1]Pediatric Surgery Unit, Ospedale dei Bambini "Vittore Buzzi", Milan, Italy. [2]Pediatric Surgery School, University of Brescia, Brescia, Italy. [3]Department of Biomedical and Clinical Science "L. Sacco", University of Milano. Milan, Italy

Background: Since the beginning of SARS-CoV-2 pandemic, our hospital has been a COVID hub for pediatric surgical patients. We aim to present the role of laparoscopy in the management of COVID-exposed children with abdominal surgical emergencies.
Methods: We collected and analyzed all patients aged <18 years, affected by a surgical condition and an evidence of infection/contact with SARS-CoV-2, admitted to our Pediatric Surgery department between March and December 2020. A grading score was created to classify the severity of abdominal involvement: 1=mild: no major surgical issues, 2=moderate: ileitis/colitis/appendicitis/mild impairment of parenchymal organs, 3=severe: peritonitis, bowel obstruction, adnexal torsion, severe impairment of parenchymal organs.
Results: 24 COVID-exposed pediatric surgical patients were identified in the period of study, 16 (67%) females, with a median age of 9.75 years (range 0.6 – 17.3). An abdominal involvement was recorded in 20/24 (83%) patients; 16 underwent a surgical procedure, 14 through a laparoscopic approach. According to our grading system, 5/14 were classified as grade 3: 3 explorative laparoscopies in 2 Multisystem Inflammatory Syndrome in Children associated peritonitis (both converted for ileal resection) and 1 COVID-associated peritonitis, 2 tubaric torsions; 9/14 were grade 2, all appendectomies for acute appendicitis (1 needed laparoscopic adhesiolysis after 7 weeks). No laparoscopy-related complications occurred. The presence of SARS-CoV-2 RNA was found in the 2 histology specimens of ileal resections, while all the appendixes were free of viral RNA.
Conclusions: SARS-CoV-2 infection or contact is not a contraindication to laparoscopy, even in the most severe degrees of abdominal involvement. A minimally invasive approach allows to perform a simple exploratory laparoscopic when a COVID-associated peritonitis is documented, in which surgery does not have a therapeutic role. Grade 3 is more prone to

conversion due to the risk of small bowel impairment and grade 2 is a good indication for laparoscopic approach.

11:52 - 11:57 (29) **Management and surgical timing of pediatric cholelithiasis: our experience and review of literature**. Veronica Carlini, Alberto Ratta, Lorenzo De Biagi, Francesco Italiano, Vincenzo Domenichelli. Infermi Hospital. Rimini, Italy

The aim of our study is to evaluate the efficacy of ursodeoxycholic acid (UDCA) and the surgical timing in patients with cholelithiasis. We retrospectively analyzed 41 patients with cholelithiasis from 2010 to 2020 and we evaluated clinical, ultrasound, intraoperative and histological features.38/41 patients presented recurrent abdominal pain, 12 of which with colicky pain, 2/41 occasional diagnoses, 6/41 had concomitant diseases. 41 patients were treated with UDCA, 38 of them underwent laparoscopic cholecystectomy for persistence of gallstones after 6 months of medical therapy (UDCA). The gallstones completely disappeared in only 3 children after therapy: in 2 of these cholelithiasis recurred again after one year of suspension from therapy. Preoperative ultrasound showed a non-specific image of acute o chronic gallbladder disease in 24/41 patients. The mean time of surgery was 114 minutes and it was significantly longer in patients with intraoperative macroscopic inflammation of gallbladder. Histological examination revealed severe damage with ulcers, erosions and fibrosis in 22/41 patients. The clinical risk score (duration and features of clinical signs) was higher in patients with biliary colic and persistent abdominal painful; the preoperative ultrasound score was not sensitive and specific in 2/3 of the patients analyzed. Poor information is available about the management of this disorder in childhood. UDCA is still considered first choice treatment in patients with radiolucent stones and subsequently, in case of non-dissolution of lithiasis, laparoscopic cholecystectomy is mandatory. Our retrospective study confirmed that UDCA therapy is ineffective in dissolution of gallstones in the majority of cases without improvement of abdominal discomfort. In addition we noted recurrence of cholelithiasis after primary dissolution in 75% of cases. In our opinion, the real effectiveness of UDCA remains doubtful; a dedicated clinical and ultrasound score is required to assess the damage of gallbladder and subsequently to define surgical timing.

11:57 - 12:04 (96) **Laparoscopy versus open surgery in the management of congenital duodenal obstruction: a multicenter study.** Amane Lachkar[1], Isabelle Talon[1], Anne Lehn[1], Liza Ali[2], Quentin Ballouhey[3], Laurent Fourcade[3], Ibtissame Kassite[4], Hubert Lardy[4], Sophie Vermersch[5], Anna Poupalou[6], Henri Steyaert[6], Arnaud Bonnard[2], François Becmeur[1]. [1]Hôpital de Hautepierre, Strasbourg, France. [2]Hôpital Robert-Debré, Paris, France. [3]CHU Limoges, Limoges, France. [4]CHU Tours, Tours, France. [5]CHU Saint-Etienne, Saint-Etienne, France. [6]Hôpital Universitaire Des Enfants Reine Fabiola. Bruxelles, Belgium

Aim: to compare outcome between laparoscopy and open surgery in congenital duodenal obstruction (CDO).
Method: We conducted a retrospective multicenter study including patients treated for CDO from January 2009 to December 2019.Collected data were demographics, associated malformations, technique, operative time, outcome and complication. We compared Laparoscopy (LS) to open surgery (OS). We also evaluated the impact of associated malformations and syndromes.
Results: We included 139 patients from 6 centers: 60% were girls and 40% boys. The average birth weight was 2430g and the average term 36 gestational weeks. Patients were diagnosed in the antenatal period in 74% of cases. Follow up was 33 months. Associated malformations were present in 76 % of cases and 21 % were syndromic. Mean operative time was 119 min in the LS group and128 min in the OS group. Fifty-five patients (60%) were operated by laparoscopy and eighty-four (60%) by laparotomy. Conversion was needed in 6 (11 %) patients. We reported 31 complications (22%) :18% in laparoscopy group versus 25 % in open surgery group without significant differences. Fistula was reported in three patients only in OS group. Stenosis was reported in six patients (4 in LS group). Permeable non-functional anastomosis was reported in two patients from each group. There were no statistical difference comparing parenteral feeding duration (24 days in LS group vs 28 days in OS group) and length of stay (40 days in LS group vs 43 days in OS group). Patients with associated malformations or syndromes had undergone three times more redo surgery.
Conclusion: Laparoscopic management of CDO is feasible and safe regardless the type, associated malformations or syndromes, in absence of contra indication in expert centers.

12:04 - 12:09 (56) **Laparoscopic transmesocolic duodenojejunostomi with suspending transvers colon in superior mesenteric artery syndrome.** Mehmet Surhan Arda[1], Araz Huseynov[1], Yusuf Aydemir2[2], Elif Gündoğdu[3], Hüseyin İlhan[1]. [1]Eskisehir Osmangazi University, Faculty of Medicine, Department of Pediatric Surgery, Eskişehir, Turkey. [2]Eskisehir Osmangazi University, Faculty of Medicine, Department of Pediatrics, Division of Gastroenterology and Hepatology, Eskişehir, Turkey. [3]Eskisehir Osmangazi University, Faculty of Medicine, Department of Radiology. Eskişehir, Turkey

Superior Mesenteric Artery Syndrome (SMAS) is a rare gastric outlet obstruction in children. Both diagnosis and treatment are difficult. While weight gain is a treatment option, resection of Treitz ligament, gastrojejunostomy or duodenojejunostomy are other serious treatment options. Surgical treatment should be reserved unless respond to medical treatment. In this study, a 14-year-old girl with the diagnosis of SMAS and whose symptoms were relapsed after medical treatment has been presented.
Following umbilical camera port placement, a 15mm one from right lower quadrant and two lateral 5 mm working ports has been placed. Transvers colon was suspended to abdominal wall. Mesocolon was opened and the third part of duodenum was coherised. After sufficient releasing, jejunal segment, 15-20 cm distal to Treitz ligament, was

prepared. Isoperistaltic jejunoduodenal anastomosis was performed by a 60 mm vascular stapler and gap at mesocolon was closed.
Postoperative 2nd day nasogastric tube was removed and begun to feed; the penrose was pulled out postoperative 3rd day. As she was full fed without evidence, she was discharged. She did well during follow up of two year.
In conclusion, suspended transverse colon with stay sutures, transmesocolic laparoscopic duodenojejunostomy could be a reliable and preferred approach if medical treatment has been failed in children.

12:09 - 12:14 (75) **Combined laparoscopy and intra-operative enteroscopy for the treatment of small bowel lesions.** Francesca Destro[1], Andrea Pansini[1], Milena Meroni[1], Giulia Lanfranchi[1], Margherita Roveri[1], Luciano Maestri[1], Gloria Pelizzo[1,2]. [1]Department of Pediatric Surgery, Buzzi Children's Hospital, Milan, Italy. [2]Department of Biomedical and Clinical Science "L. Sacco", University of Milan. Milan, Italy

Introduction: Intraoperative enteroscopy (IE) is a procedure with diagnostic and therapeutic value. It is reserved for intestinal lesions that are difficult to reach with other modalities and requires both endoscopic and surgical expertise. We are reporting technical details after managing 3 patients with intestinal bleeding.
Material and methods: IE was used for the detection and treatment of small bowel lesions (1 case of heterotopic gastric mucosa and 2 cases of intestinal polyposis). Laparoscopy was performed (12 mm trocar in the umbilicus for the optic and an ancillary 3 mm operative trocar or a single umbilical trocar with an operative channel) followed by the extraction of the affected bowel through the umbilical wound. Later, an enterotomy was used to access the bowel loop, and a 12 mm trocar with pneumatic anchorage was inserted to facilitate the progression of the endoscope (8 mm gastroscope). For smaller children, it was also possible to use a 5 mm trocar with a 5 mm endoscope.
Results: Combined IE and laparoscopy permitted to reach the diagnosis in all 3 patients with neither intra nor postoperative complications. The movements inside the bowel were straightforward and the visualization of structures was excellent. Surgery was tailored to every single patient: the intestinal resection was limited to the affected area in the case with gastric heterotopia and polyp resection was performed endoscopically in the patients with polyposis.
Discussion and conclusions: IE is an excellent and useful tool during complex surgery. It offers the possibility to inspect all the small bowel decreasing surgical trauma and avoiding the contamination of the surgical field. It also allows the adaptation of the surgical act and to repeat the procedure in case of relapses or recurrences of polyps.

Poster Session 2 (14:00 - 14:30)

14:00 – 14:03 (13) **Severe tracheomalacia in 5-month-old child after esophageal reconstruction.**
A B Alkhasov, E I Komina, S A Ratnikov, M S Savelyeva, A A Gusev, E Yu Dyakonova, S P Yatzik. Federal State Autonomous Institution of the Ministry of Health of the Russian Federation National Medical Research Center for Children's Health. Moscow, Russian Federation

Tracheomalacia is a common problem in patients born with esophageal atresia and distal tracheo-esophageal fistula. However, in 2%–25% of these patients tracheomalacia can be severe, manifesting as life-threatening events, and may require a surgical solution. Among the treatment options that have been described in the literature for severe tracheomalacia, aortopexy seems to be the most successful. In our case report we want to demonstrate that minimally invasive aortopexy may be good a treatment option for tracheomalacia. A 5-month-old boy was admitted to our hospital with complains of dyspnea and stridor. History revealed that the patient born with esophageal atresia and underwent esophageal reconstruction. On fibrobronchoscopy and computerized tomography we discover severe tracheomalacia, associated with vascular compression. The patient underwent thoracoscopic aortopexy. There was no complains and no evidence of stenosis on check bronchoscopy. The patient made an uneventful recovery and was discharged from the hospital on the 14th postoperative day.

14:03 - 14:06 (89) **A rare cause of acute abdomen**. Vivien Stercel, Laszlo Sasi Szabo
University of Debrecen, Medical and Health Science Centre, Department of Pediatrics, Division of Pediatric Surgery. Debrecen, Hungary

Introduction: Right lower quadrant abdominal pain is the most frequent cause of urgent surgical consultation in childhood. The most common cause of acute abdomen is appendicitis, but many different illnesses may cause right iliac fossa pain, we would like to report a rare case.
Case presentation: A six-year old, overweight boy (BMI: 27) was admitted to our department with a history of one-day periumbilical and right-sided, crampy abdominal pain. Initial finding of physical examination was moderate tenderness in right iliac fossa and periumbilical region without muscle guarding. Abdominal ultrasound revealed an echogenic 9x7 cm fatty induration in the periumbilical region and a normal sized appendix vermiformis. His white blood cell count was 13.4 G/l and C-reactive protein was 27 U/l. During observation, symptoms worsened and control ultrasound revealed abdominal fluid as new finding. Despite the normal appearing appendix on ultrasound, we indicated surgery due to his worsening symptoms. During diagnostic laparoscopy, we found a consecutive appendicitis caused by a thrombosed partial omental infarction adhered to the right-sided paraumbilical abdominal wall, which was the reason of his complaints. Early

postoperative course of the patient was uneventful and he was discharged on the fourth postoperative day.

Discussion: Omental infarction can imitate classic symptoms of appendicitis and can be treated conservatively with NSAIDs and antibiotics. It can be exactly visualized by computed tomography. However ultrasound findings have important role in diagnosis, but surgeon makes decision about need of surgical intervention with all factors considered. If the diagnosis is certain, conservative therapy is recommended, but surgery cannot be avoided if physical symptoms get strong enough. In case of obesity with symptoms of acute abdomen and similar signs of ultrasound we should think about the possibility of omental infarction.

14:06 - 14:09 (16) **Single stage management of dual pathologies causing pain in the abdomen**. Kirtikumar J Rathod, Ayushi V Vig, Arvind S Sinha. AIIMS. Jodhpur, India

Introduction: Pain abdomen and vomiting are common presentations of pelvi-ureteric junction obstruction. However, detection of pelvi-ureteric junction obstruction should not rule out the possibility of another co-existing pathology as well, leading to the same constellation of symptoms. Here we present the video of a concurrent pyeloplasty and appendectomy performed at the same setting.

Our Case

A 5-year-old female presented with pain abdomen, fever and vomiting for three days. Ultrasonography was suggestive of acute appendicitis and left gross hydronephrosis likely pelvi-ureteric junction obstruction. DTPA was suggestive of left sided obstructed drainage and reduced function (GFR- 20.75ml/h). Patient was taken for elective pyeloplasty and appendectomy at the same setting. 5mm Infraumbilical camera port was inserted and two 5mm instrumentation ports were inserted in the epigastrium and hypogastrium slightly towards the right, so as to ensure adequate space for dissection around the pelvis. Dismembered pyeloplasty was performed using vicryl 5-0 over a 4.5 Fr 16cm DJ stent. Using the same ports the inflamed appendix was identified at para-caecal location and appendectomy was performed. Operative duration was 180 minutes. Patient had an uneventful course and renal function improved on subsequent scan performed after three months.

Conclusion: Dual pathologies may be responsible for the symptom of pain abdomen in rare circumstances. Concurrent pyeloplasty and appendectomy can be performed in the same setting using the same set of ports with no requirement of any extra port. This not only reduces the morbidity of repeated hospital admissions but also decreases the risk of repeated exposure to general anesthesia.

14:09 - 14:12 (40) **Bile duct exploration and choledocholithiasis removal by laparoendoscopy.** Andrea A Soria-Gondek, María M Oviedo-Gutiérrez, Alba A Martín-Lluís, Montserrat M Aguilera-Pujabet, Alejandro A Manzanares-Quintela, Fernando F Pardo-Aranda, Marta M de Diego-Suárez. Hospital Universitari Germans Trias i Pujol. Badalona, Spain

Introduction: The treatment of pediatric choledocholithiasis remains challenging due to its low prevalence and the lack of recommendations. Preoperative, intraoperative or postoperative endoscopic retrograde cholangiopancreatography is the usual management. We present herein the bile duct exploration and retrieval of multiple choledocholithiasis by laparoendoscopy.
Material and methods: A 14-year-old boy without previous history presents with coluria and itching of seven days of evolution. Blood tests results showed cholestasis. Cholangio-MRI findings were non- complicated cholelithiasis, dilation of intra and extrahepatic ducts, 11mm common bile duct and 3 choledocholithiasis, the bigger one of 10mm diameter.
Results: Once the cystic duct and artery were ligated, we introduced a 5mm choledoscope through an accessory 5mm port. The transcystic approach was unsuccessful. The bile duct exploration was achieved through a choledochotomy. We confirmed 3 choledocholithiasis near the Ampulla of Vater. Two of them were retrieved with a Dormia basket. The 10mm one impacted at the Ampulla was fragmented by electrohydraulic lithotripsy and pushed to the duodenum. The operation was completed with a proximal choledoscopy to rule out the presence of any retained fragment. The choledochotomy was closed with interrupted sutures. Methylene blue suture leak test was performed. No intraoperative or postoperative complications occurred. The patient was discharged 48 hours after the procedure.
Conclusion: Bile duct exploration and choledocholithiasis retrieval by laparoendoscopy is safe and feasible in pediatric patients. Through this approach choledocholithiasis and cholelithiasis can be managed in a single procedure without ampullary cannulation or fluoroscopy.

14:12 - 14:15 (45) **Intrapancreatic ectopic spleen: an unusual clinical observation.** Christian Piolat[1], Gladys Lebughe Djimo[2,3,4]. [1]Université Grenoble Alpes, Grenoble, France. [2]Université Grenoble Alpes, Grenoble, France. [3]Cliniques Universitaires de Kinshasade Kinshasa, Kinshasa, the Democratic Republic of the Congo. [4]Health public, Lomo University of Research. Kinshasa, the Democratic Republic of the Congo

Introduction: Intrapancreatic ectopic spleen (IPES) is a rare birth defect, especially in children. It is most often located at the distal end of the tail of the pancreas. Its diagnosis is difficult in the preoperative period, despite the performance of endoscopy or scintigraphy with marked red blood cells. The differential diagnosis of IPES is made with neuroendocrine or metastatic pancreatic tumors. The authors present this unusual birth defect which was successfully operated in a child.
Clinical observation: This is a 5-year-old boy diagnosed with hyperechoic small kidneys antenatal. At birth, he have presented with a polymalformative syndrome (badly hemmed ears, narrow neck, anomaly of the shoulder blades, bilateral renal hypoplasia, bilateral cryptorchidism, bilateral hip dislocation). The heterozygous deletion of the PBX1 gene was the genetic abnormality that was identified. The annual ultrasound follow-up revealed a

left suprarenal mass at the age of 5 years. The latter was removed by retroperitoneoscopy and histopathological analysis of the surgical specimen, which confirmed the splenic tissue.
Conclusion: IPES is well described in adults (> 180 cases), but rarely to our knowledge, have ever been described in children. His diagnosis is suggested on the basis of imaging examinations and confirmed by histopathological analysis.

14:15 - 14:18 (12) **20 years of experience in treating children with Hirschsprung's disease.** Evgeniy A Okulov[1], Alexey A Gusev[1], Alexander S Bekin[2], Alexey V Dotzenko[2], E. Yu. Dyakonova[2], S. P. Yatzik[2]. [1]Federal State Autonomous Institution of the Ministry of Health of the Russian Federation National Medical Research Center for Children's Health, Moscow, Russian Federation, Moscow, Russian Federation. [2]FSAI "NMRC for Children's Health" MH RF. Moscow, Russian Federation

Introduction: We wanted to compare the functional outcomes of different types of surgical treatment in children with Hirschsprung's disease. (HSCR)
Materials and methods: The results of treatment of 210 children with HSCR in children were evaluated using various methods: 132 children open to the Soave method. Open Swenson - 10, Jurdson - 53, De la Torre - Ortega - 16. Subsequent results were assessed on the A. Holschneider scale.
Results: The disease manifested itself as chronic constipation (66.9%), intestinal obstruction (14%), enterocolitis in 4.6% of patients. In most cases, the aganglionic zone is localized in the rectosigmoid - 151, the left half is found in 21, the rectal form in 24, total colon involvement in 14 cases. As the first stage in total forms, ileostomy was performed at the place of residence. In the early 2000s, open Soave were mainly used due to the presence of a giant suprasthenotic expansion, which determined the use of this technique in case of possible discongruence of the primary anastomosis. In the last 10 years, the number of children with decompensated forms has sharply decreased, as well as in connection with the development of laparoscopy - they began to perform primary anastomoses using the Georgeson and De la Torre-Ortega. An excellent postoperative result was recorded in 12.9%, good - 62.9%, satisfactory in 24.1% of respondents.
Conclusions: According to our observations - For any forms of transanal resections, complaints persist for a long time in those children, whose operative treatment was carried out with damage to the dentate rectal line and further violation of its sensitivity. Most of the unsatisfactory results directly depend on the integrity of the dentate rectal line. The satisfactory result of the treatment of total forms depends on the length of the preserved aganglionic zone - 3-4 cm above the dentate rectal line.

14:18 - 14:21 (42) **Timing for reconstructive surgery in Hirschsprung disease. A systematic literature review.** Alessio Pini Prato, Claudio Carlini, Maria Grazia Faticato, Maria Pia Dusio, Enrico Felici, Paolo Nozza. Umberto Bosio Center for Digestive Diseases, The Children Hospital, AO SS Antonio e Biagio e Cesare Arrigo. Alessandria, Italy

Introduction: Debate exists regarding the ideal timing for surgery in Hirschsprung disease (HSCR) in various ages. The aim of this paper is to suggest a possible strategy to determine exact timing for reconstructive surgery in HSCR.
Material and Methods: A systematic literature search of papers published on PubMed and Embase during the last decade, addressing "Hirschsprung", "preoperative enterocolitis", "preoperative mortality", "complications", and "timing" in all possible combinations, has been performed.
Results: A total of 10 out of 170 identified papers addressed this issue in detail and were subsequently assessed for in-depth analysis. Our review confirmed that the most important issue to drive surgical timing is represented by HAEC. Most authors suggest performing pull-through at around 3 months of age after effective bowel decompression, which should not be continued indefinitely to avoid complications.
Conclusion: Based on this systematic review we suggest as follows: 1) healthy neonates should undergo surgical reconstruction at 3 months of age; 2) urgent surgery (levelling enterostomy) might be required in those unwell, with ultralong HSCR, or with ineffective nursing; 3) surgery can be safely postponed only in older patients with a lower likelihood of HAEC (i.e. without previous HAEC occurrences) avoiding long-lasting rectal irrigations.

14:21 - 14:24 (74) **Pediatric rectal tonsils mimicking lymphoma effectively managed with operative endoscopy.** Rebecca Pulvirenti[1], Miriam Duci[1], Luisa Santoro[2], Piergiorgio Gamba[1], Luca Maria Antoniello[1]. [1]Pediatric Surgery Unit, Women's and Children's Health Department, University of Padua, Padua, Italy. [2]Surgical Pathology and Cytopathology Unit, Department of Medicine-DIMED, University of Padua. Padua, Italy

A 7-years-old girl was referred to our center with an eleven-month history of constipation, rectal bleeding and intermittent rectal prolapse. No other abnormal clinical or laboratory findings were detected and she was initially treated for constipation, ineffectually.
Due to persistent symptoms a colonoscopy was performed and revealed two polypoid lesions, surrounded by a mucosal hyperplasia area, right above the dental line.
Histological examination showed localized lymphoid hyperplasia and mature lymphocytes with numerous mitotic figures and minimal prevalence of lambda light chains. These findings advocated for closer clinical follow-up.
No symptoms remission was reported and a second endoscopic examination was performed one month later. Upper intestinal tract endoscopy was normal. Colonoscopy confirmed the presence of the previously identified rectal polypoid lesions and diathermic excision of the two major ones was performed, without complications. The post-operative course was uneventful and the patient was discharged the day after in good health.
No immune deficiencies or infective causes leading to lymphoid proliferation were found at further tests. Histology and immunohistochemical studies excluded the presence of a lymphoid malignancy due to absence of monoclonal expansion of B cells. Localized lymphoid proliferation was confirmed and led to a rectal tonsils diagnosis.

One month later the patient referred complete symptoms remission. Clinical follow-up and long-term endoscopic examination were planned.
In the literature few pediatric rectal tonsils cases are reported. In our experience operative endoscopic treatment seems to be a safe and effective method to secure a definitive diagnosis and promptly solve the patient's symptoms.

14:24 - 14:27 (98) **Massive anterior mediastinal teratoma: a minimally invasive solution.** Carolina Soares-Aquino, Norberto Estevinho, Mariana Borges-Dias. Centro Hospitalar Universitário São João. Porto, Portugal

Anterior mediastinal masses are usually an incidental finding in pediatric age, with vague symptoms like dyspnea, thoracic pain or weight loss.
We present a video of a 7-year-old boy who was referred to our center due to a right anterior mediastinal mass. He presented with a pleuritic chest pain with 3 weeks evolution, with one week low grade fever without dyspnea, weight loss or other symptoms. A chest radiograph and a computed tomography demonstrated a right anterior mediastinal mass with 10 x 8 x 4.5 cm, containing calcifications and adipose tissue, compatible with a mature teratoma. He was submitted to thoracoscopic excision of the mass. The procedure was performed with the patient in left semi-lateral decubitus, with three 5mm trocars and selective lung intubation. After uneventful dissection the tumor was morcellated and removed through one of the ports after elongation of the incision and protection of the chest wall.
The patient was admitted in the intensive care unit for 24 hours and the chest drain was removed on the 3rd postoperative day. A right hemicupula elevation was detected in the first chest radiograph, which improved during the following months. The patient is now asymptomatic, without evidence of recurrence. The pathological analysis confirmed a mature teratoma.

14:27 - 14:30 (18) **Thoracoscopic lobectomy for congenital lobar emphysema in a child**
Kirtikumar J Rathod, Tanmay M Motiwala, Arvind S Sinha. AIIMS. Jodhpur, India

Aims: To describe the thoracoscopic approach in management of congenital lobar emphysema in a 1.5 year old child
Case report: Congenital lobar emphysema is a rare developmental lung malformation, occurring in 1:20000 to 1:30000. It is characterized by partial obstruction of bronchus resulting in hyperinflation of lung lobe. The index case is a 1.5 year old female, presented with complaints of cough, cold and difficulty in breathing on and off since 3 months of age. Previous history of three hospital admissions was present for similar complaints. Patient was initially misdiagnosed as a case of pneumothorax and chest tube was inserted for the same at outside hospital. On clinical examination, there was hyper-resonant chest sound

on left side. Chest x ray was suggestive of over-expanded hyperluscent left upper lobe with mediastinal shift. HRCT finding was suggestive of congenital left lobar emphysema with contra lateral trachea-mediastinal shift. Patient underwent thoracoscopic left upper lobectomy under single lung ventilation. Patient tolerated the procedure well and postoperative period was uneventful.
Material and methods: Three 5 mm ports were inserted. 4th intercostal space left anterior axillary line port for camera and 3rd intercostal space and 6th intercostal space left midaxillary line port for instrumentation was created. Diseased lung lobe was identified. Artery, vein and bronchus supplying the left upper lobe was ligated separately and divided. Specimen was retrieved through lowermost port site and chest tube was inserted.
Conclusion: Thoracoscopic lobectomy is a good alternative to traditional thoracotomy for children with congenital lobar emphysema as it results in reduced length of postoperative period, lesser amount of complications and good cosmetic and functional results.

Session IV: Thorax 1 (15:30 - 16:30)

15:30 - 15:35 (64) **One lung ventilation (OLV) control during video-assisted thoracoscopic surgery (VATS) in children: is lung ultrasound an alternative verification method?** Rebecca Pulvirenti[1], Costanza Tognon[2], Simone Pizzi[3], Giuseppe Cortese[4], Ciro Esposito[5], Piergiorgio Gamba[1]. [1]Pediatric Surgery Unit, Women's and Children's Health Department, University of Padua, Padua, Italy. [2]Anesthesiology Pediatric Unit, Women's and Children's Health Department, University of Padua, Padua, Italy. [3]Anesthesiology Pediatric Unit, Mother and Child Department, G. Salesi Hospital, Ancona, Italy. [4]Unit of Anesthesia, Intensive Care and Pain Therapy, Department of General and Specialistic Surgery, Kidney Transplantation, Nephrology, Intensive Care and Pain Therapy, Federico II University of Naples, Naples, Italy. [5]Pediatric Surgery Unit, Department of Translational Medical Sciences, Federico II University of Naples. Naples, Italy

OLV is the preferred ventilation technique for VATS as it provides a better exposure of the operative field. In the literature there are several endobronchial tube position's verification methods described but none of them can be considered completely risk-free. Lung Ultrasound (US), as firstly described by Lichtenstein (2003), is increasingly being used to study lung ventilation as it provides clear evidence of lung normal or absent inflation. Our aim was to confirm the effectiveness of lung US as verification method for pediatric OLV and suggest that its use could be extended to pre-operatively prove lung exclusion.
We retrospectively reviewed patients who underwent OLV for VATS from January 2019 to March 2021 and in which correct OLV was confirmed through lung US. A total of 21 patients were included. Effective lung exclusion was considered when absence of lung sliding and presence of lung pulse were encountered at US. When lung US of the operative-sided lung didn't match with the above mentioned criteria a re-positioning of the

appropriate device and a subsequent US verification were performed. After surgery and re-inclusion of the operated lung another lung US was taken in all patients. US finding were posteriorly reviewed by Pediatric Anesthesiologists from different centers to minimize point-of-care bias.
Complete lung exclusion and, indirectly, correct OLV were observed in all patients through thoracoscopy. The post-operative lung US performed proved the re-appearance of the lung sliding in the previously excluded lung.
In our experience lung US resulted to be a safe, effective, less time-consuming and non-invasive verification method for OLV. In theatre it could allow not performing invasive exams (chest x-ray, bronchoscopy) or using clinical-based only verification methods (lung auscultation, chest movement's observation); more clinical studies in the pediatric field would be necessary to define its sensitivity and specificity.

15:35 - 15:40 (110) **Primary palmar hyperhydrosis: how to achieve the best result.** Maria Luisa Conighi, Cosimo Bleve, Valeria Bucci, Lorella Fasoli, Paolo Cocco, 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

Background: primary palmar hyperhidrosis (HH) is a chronic sympathetic disorder associated with important subjective distress with impact on quality of life. It onset during childhood or adolescence, affects about 1–3% of the population (even if reported incidence may be underestimated because many patients are reluctant to seek treatment). Nowadays non-surgical strategies can give only a transient relief, while thoracoscopic selective sympathectomy seems to be the treatment of choice. However, compensatory sweating can be still a problem and consequently the appropriate level of sympathectomy is still debated.
Methods: patients who had undergone treatment for primary palmar HH during last 3 years were retrospectively reviewed.
Results: 21 patients (6 males, 15 females) underwent bilateral thoracoscopic selective sympathectomy. Age range was 10-50 y (mean age at surgery: 22.7y). Surgical procedure consisted of thoracoscopic cautery, division and excision of T3-T4 ganglia in 2 pts, T3 in 2 pts, T4 in 11 pts. We had no intraoperative complications; a right pneumothorax in a patient needed needle evacuation few hours after surgery. Length of hospital stay was 24-48 h (depending on postoperative pain control). At a mean follow up of 11.5 months no patient had palmar HH recurrence. Compensatory sweating appeared, within 6 months from surgery, in a patient undergone T3-T4 ablation, a patient undergone to T3 ablation and in no patients undergone to T4 selective ablation.
Conclusion: PHH is an often misunderstood disease and even medical professionals are not able to give to his patients the correct information and support, this is the reason why not only adolescent but also adults came to our attention after we've start treating this condition. In light of our initial experience, we believe that thoracoscopic selective T4 sympathectomy achieves optimal results in the treatment of primary palmar HH, improves primary axillary HH and reduce the risk of compensatory sweating.

15:40 - 15:47 (66) **Long-term outcomes of bilateral thoracoscopic T3 sympathectomy for primary focal palmar hyperhidrosis in children.** Felix R De Bie, Christopher G Halline, Tameyah Mathis-Perry, Melanie Zimmermann, Kali Rhodes, Pablo Laje. Division of General, Thoracic and Fetal Surgery, Children's Hospital of Philadelphia. Philadelphia, USA

Background: Thoracoscopic bilateral T3 sympathectomy for primary focal palmar hyperhidrosis in children has excellent short-term outcomes. There is a scarcity of data in the literature, however, on the long-term outcomes of the operation.
Methods: We conducted a retrospective chart review of all children and adolescents who underwent a T3 bilateral thoracoscopic sympathectomy for primary focal palmar hyperhidrosis between June 2013 and August 2020 at our hospital. We composed a quality of life (QoL) questionnaire evaluating the patient's perception of how much the hyperhidrosis affected their daily life in multiple domains. The questionnaire was completed before the operation and at every postoperative follow-up visit.
Results: We operated on 58 patients, 42 of which were females (72.4%). Median age was 15 (6-25) years. There were no intraoperative or postoperative complications, and all patients had immediate complete postoperative resolution of their palmar hyperhidrosis. Fifty-three patients (91.4%) had long-term follow-up data available with a median of 2.5 (0.1-7.5) years. Two patients (3.4%) experienced recurrence of their palmar hyperhidrosis. One of them underwent a re-do bilateral T3 (plus T4) bilateral thoracoscopic sympathectomy with complete resolution of his recurrent hyperhidrosis. Ten patients (17.2%) experienced compensatory hyperhidrosis and required occasional medical management with oral anticholinergics. Two patients reported regretting having undergone the operation, one due to compensatory sweating and one due to excessive palmar dryness. Overall, the mean QoL score improved remarkably, from 42/100 before the operation to 92/100 at 1 month, 89/100 at six months to a year, 97/100 between two and four years, and 80/100 ≥ 5 years after the operation.
Conclusion: Thoracoscopic bilateral T3 sympathectomy has a high success rate for primary palmar hyperhidrosis in children. Compensatory sweating and recurrence of the excessive palmar sweating can occur years after the operation, so patients must be followed long term.

15:47 - 15:52 (82) **Thoracoscopic Left Cardiac Sympathetic Denervation for long QT syndrome in a 4-year-old boy.** Riccardo Guanà[1], Elisa Zambaiti[1], Alessia Cerrina[1], Francesco Guerrera[2], Fulvio Gabbarini[1], Alessandro Pane[1], Fabrizio Gennari[1]. [1]Regina Margherita Children's Hospital, Turin, Italy. [2]San Giovanni Battista Hospital. Turin, Italy

Background: Long QT syndrome (LQTS) is a rare cardiac disorder that may induce arrhythmias with sudden death. Patients with this affection are traditionally treated with medical therapy and, if resistant, with an implantable automatic defibrillator.

High thoracic left sympathectomy may reduce the frequency of symptoms in LQTS and is increasing indications in adult patients, with few reports existing in pediatric patients.
We report the case of a 4-year-old boy with LQTS treated by left thoracoscopic sympathectomy and stellate ganglionectomy.
Case presentation: A 4-year-old boy with LQTS associated to syncope and tachyarrhythmia, was managed with T1-T4 thoracoscopic left sympathectomy.
Results: T1-T4 left sympathectomy was performed with partial (two-thirds) stellate removal. Thoracoscopy was performed with 5mm three-trocars technique using a monopolar hook and scissors. No chest tube was left in place. Operative time was 45 minutes. The child QT interval decreased (mean preoperative QT: 590msec; mean postoperative QT: 490msec) and he was discharged on postoperative day four. Actual follow-up is 3 months.
Conclusions: Thoracoscopic sympathectomy was safe and effective in our case. Reported complications in literature are incomplete resection or risk of Horner's syndrome. Short-term follow-up in our case study revealed reduced requirement for beta-blocker therapy and reduced QT interval. Adult series recommend that the extent of sympathectomy be from T1 to T4 and either the entire stellate ganglion or at least the inferior one-third should be removed. These patients should be referred in highly specialized Centers.

15:52 - 15:57 (111) **Congenital lobar emphysema: challenging thoracoscopic lobectomies.** Maria Luisa Conighi[1], Diego Biondini[2], Cosimo Bleve[1], Elisa Zolpi[1], Lorella Fasoli[1], Marta Peretti[1], Pierluca Ceccarelli[2], Salvatore Fabio Chiarenza[1]. [1]Pediatric Surgery Unit, Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies, AULSS 8 S. Bortolo Hospital, Vicenza, Italy. [2]Pediatric Surgery Unit, University Hospital. Modena, Italy

Background: Congenital lobar emphysema (CLE) is a rare anomaly of lung development: a check-valve type obstruction causes air trapping resulting in alveolar distension and therefore hyperinflated lobe. About 30% of cases present at birth and almost all become symptomatic by 6 months. We present two challenging cases.
Case Reports: A newborn patient presenting a perinatal respiratory distress requiring cPAP during first 48h, Niv thereafter. Chest X-ray and CT scan were performed and posed the suspicious of a CLE involving the middle right lobe, causing mediastinal shift and left lung compression. On 14th day of life, patient underwent a right thoracoscopy: emphysematous middle lobe occupied the great majority of intrapleural space, with compressed and dislocated upper and lower lobes. CO2-insufflation was unable to reduce CLE volume, so the pathological lobe was open to obtain a larger workspace. Intraoperative complications not occurred. Postoperative period was complicated by a systemic infection, so patient was discharged on 14th postoperative day. Second patient was a 12-year-old girl referred to the emergency room because of a sudden right thoracic pain and dyspnea: chest X-ray suspected a wide right pneumothorax. A chest-tube was inserted and radiological control 48h later showed a persisting unchanged image, so CT-scan was performed. A CLE involving the right upper lobe was diagnosed. Patient underwent right thoracoscopy with

selective intubation: the huge volume of CLE caused a "torsion" of hilar structures and, what seemed preoperatively to be a superior pathological lobe, was instead the dislocated emphysematous middle lobe. Surgery was uneventful. The patient was discharged on 7th postoperative day.
Conclusions: Thoracoscopic lobectomy for CLE is a worldwide accepted procedure in symptomatic patients, but it often needs advanced surgical skill because of limited working space and an often subverted anatomy, conditions that increase difficulties with surgical dissection. This is even more relevant when we consider newborn patients.

15:57 - 16:02 (79) **Primary spontaneous pneumothorax - Surgery timing optimization.** Dominika Stevkova[1], Pavol Omanik[1], Marieta Hricova[2], Michal Kabat[1], Igor Beder[1], Jozef Babala[1]. [1]Department of Paediatric Surgery, National Institute of Children´s Diseases. Bratislava, Slovakia. [2]Department of Paediatrics, National Institute of Children´s Diseases. Bratislava, Slovakia

Aim: Although primary spontaneous pneumothorax (PSPNO) is a common clinical problem even in paediatric surgery, the optimal surgical treatment of children and adolescents is still topic with many controversies. Based on retrospective study performed in years 2008 – 2014 and high recurrence rate (64%) after conservatively treated first attack of PSPNO, the current algorithm was modified favoring VATS intervention already after the first attack.
Methods: Authors performed a prospective analysis of patients with PSPNO treated between July 2014 and December 2020. The analyzed parameters included demographic data, predisposing factors, correlation between CT scan and operative finding, immediate postoperative course, complications as well as long-term results.
Results: The analyzed group consists of 24 patients (18 boys and 6 girls) aged 13 - 18 years. BMI index under 19 was noticed in 15 patients (63%). A significant decrease of atmospheric pressure (15 – 25 hPa) was recorded during the onset of symptoms in 12 patients (50%). 21 VATS resections with mechanical pleurodesis were performed – after the first attack in 16 patients (2 of interventions in metachronous PSPNO) and after the second attack of PSPNO in 4 patients. There was only 1 patient (6%) with recurrence of PSPNO who needed a VATS reoperation after the first VATS resection with pleurodesis. 1 case of PSPNO recurrence with no need of previous chest drainage was recorded.
Conclusion: Anatomical changes on lungs leading to higher risk of PSPNO are observed mainly in asthenic male patients. Autumn and winter are seasons with higher incidence of the first attacks of PSPNO. Decreases in atmospheric pressure, may also play an important role in onset of symptoms. Based on results of the study authors do recommend early VATS intervention after the first attack of PSPNO, lowering the recurrence rate to minimum.

16:02 - 16:07 (118) **Removal of a long-standing endobronchial foreign body using cryotherapy and cryoextraction.** Alba Martín-Lluís, Andrea Soria-Gondek, María Oviedo-Gutiérrez,

Montserrat Aguilera-Pujabet, Alejandro Manzanares-Quintela, Rachid Tazi Mezalek, Marta De Diego Suárez. Hospital Universitari Germans Trias i Pujol. Badalona, Spain

Introduction: Foreign body aspiration is common in the pediatric population. Rigid bronchoscopy is usually successful in removing airway foreign bodies in these patients. However, its use can be complex if there is fragmentation of the foreign body, in distal locations or in long-standing foreign bodies with granulomas. Flexible bronchoscopy associated with other techniques such as cryotherapy and cryoextraction represents a good alternative in these specific cases.
We present a case of a long-standing endobronchial foreign body (cuttlefish) in a pediatric patient, successfully treated with flexible bronchoscopy, cryotherapy and cryoextraction.
Methods: A 10-year-old boy was admitted for bronchitis and respiratory infection with torpid evolution despite optimal treatment. In patient's history, aspiration with cuttlefish was referred a few days before. Six flexible bronchoscopies were performed in the emitting hospital. In all of them, a friable foreign body of changing location with granulomas was identified in a subsegmental bronchi of the lateral-basal segment of the left lower lobe. Due to its friability, the removal of the foreign body was not possible in any of the examinations.
Results: When the patient was referred to our hospital, one year after the onset of symptoms, the diagnosis was confirmed with a flexible bronchoscopy. Cryotherapy was applied on the granulomas, so that they could be easily removed. Next, the foreign body was removed with cryoextraction. The patient was discharged 24 hours after the procedure. A flexible bronchoscopy was performed two months later and no foreign bodies or granulomas were identified.
Conclusion: The use of cryotherapy and cryoextraction in pediatric patients is feasible and simple. Its use allows not only the ablation of endobronchial lesions but also the removal of foreign bodies in the airway.

16:07 - 16:12 (121) **Congenital esophageal stenosis due to ectopic tracheobronchial remnants: a new innovative minimally invasive solution.** Maria Luisa Conighi, Lorenzo Costa, Cosimo Bleve, Lorella Fasoli, Elisa Zolipi, Marta Peretti, 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

Background: Congenital esophageal stenosis (CES) is a very rare condition due to histological abnormality of esophageal wall (ectopic tracheobronchial remnants (TBR), segmental fibromuscular hypertrophy, membranous diaphragm). Symptoms depend on stenosis site and degree, therefore diagnosis is often delayed. First-line treatment can be conservative (endoscopic dilatation) or surgical (myotomy or resection-anastomosis) according to CES type.
Material and Methods: during last two years, we've treated three patients affected by TBR-CES. Patient-1, after thoracoscopic treatment of type III EA, underwent, at 11th day of life, an esophagogram that showed a subanastomotic stenosis. Patient-2 came at our attention

at 22 months of life for dysphagia, episodes of food impaction, vomiting, malnourishment. Patient-3 referred to our service at the age of 7y because of a severe dysphagia persisting after surgery for achalasia performed in another hospital.
Results: patients underwent esophagogram, endoscopy and MRI/CT-scan. They all presented a distal CES (respectively 1.5, 2.5 and 2 cm above the cardias) that in patients 1 and 2 was not even passable with 5mm endoscope. Neither CT-scan nor MRI detected TBR. Conservative management was first adopted in patient 1, without success. All patients underwent an intraoperative esophagoscopy and a minimally-invasive trans-hiatal abdominal approach (longitudinal myotomy; excision of TBR anterior part; transversal muscular closure to enlarge esophageal lumen; hyatoplasty and Dor fundoplication to prevent post-operative reflux). Mean follow-up was 13 months (clinical, radiological and endoscopic evaluations). Patient 2 and 3 presented a mild episode of food impaction, 4 and 5 months after surgery respectively, spontaneously resolved. Currently they all are asymptomatic.
Conclusion: A correct preoperative definition of CES anatomical features and position is critical to choose the best therapeutic approach. The proposed surgical technique led to anatomical and clinical resolution, minimally-invasive surgery is effective; finally, as highlighted in literature, a longer follow-up is needed to confirm technique efficacy.

Session V: Miscellaneous 1 (16:45 - 17:30)

16:45 - 16:50 (26) **Laparoscopic mesh sacrocolpopexy in a case of prolapsed neovagina in a teenager (Video Presentation).** Rahul Ravi Saxena, Biang chwadaka Suchiang, Kirti Kumar Rathod, Arvind K Sinha. All India Institute of Medical Sciences. Jodhpur, India

Aim: To demonstrate the technique of Laparoscopic mesh sacrocolpopexy in a case of prolapsed neovagina in a teenager.
Material and methods: An 18-year-old married female patient who is a known case of MRKH syndrome presented with complains of mass protruding from her vaginal opening for the last one year after undergoing a sigmoid colon cervico-vaginoplasty 5 years back. Prolapse was only on straining and can be manually reposited. There was no interference with sexual activities. MRI was suggestive of a neo-vaginal segment measuring approx. 9 cm with no uterus. An Ectopic pelvic kidney on right side was incidentally reported. The patient was evaluated and planned for laparoscopic sacrocolpopexy. With the patient in the lithotomy position, 4 ports were created. An anterior dissection was done to expose the anterior surface of the neovagina. A Y shaped mesh was tailored and sutured to the anterior and posterior surface of the neovagina separately, while the vertical limb was tacked to the sacral promontory using a laparoscopic tacking device.
Results: The patient was discharged on the 2nd post-operative day with no complications. The patient is doing well after one year of follow up with no recurrence and difficulty in intercourse.

Conclusion: Laparoscopic mesh sacrocolpopexy for a prolapse pelvic organ is a well-established procedure. Its use in a prolapsed neovagina however, has not been discussed very frequently in literature. Until present to the best of our knowledge, only 4 cases have been reported and none were in a patient as young as in ours. The advantage of choosing this procedure over the open has offered us many advantages; the most obvious was the altogether avoidance of a vaginal incision. A longer follow up is required to prove the long term success of the procedure.

16:50 - 16:55 (59) **Ovarian torsion in adolescents: evolution of the surgical treatment in thirty years.** Eduje Thomas, Giovanni Parente, Tommaso Gargano, Neil Di Salvo, Tosca Cerasoli, Mario Lima. Pediatric Surgery Department, IRCCS Sant'Orsola-Malpighi University Hospital. Bologna, Italy

Introduction: Ovarian torsion is a common gynecological emergency characterized by a sudden onset of abdominal pain. When suspected, prompt surgical treatment is warranted to preserve ovarian function and future fertility. The aim of this study is to present evidence gathered on this condition in thirty years of activity and how such knowledge has influenced our surgical approach, with a glimpse into future improvements.
Materials and methods: We retrospectively analyzed the medical records of patients admitted for suspected ovarian torsion from 1990 to 2020. All data concerning pre-operative exams, surgical treatment, histologic reports, and follow-up were gathered.
Results: A total of 100 patients were admitted to our Surgical Unit from January 1990 to December 2020 for suspected ovarian torsion. Among these, only 30 (30%) were patients in adolescent age whereas 70 (70%) were neonates with a prenatal diagnosis of ovarian torsion in utero. Mean age was 121 $\pm$ 44 months. A minimally invasive laparoscopic approach was adopted in 19 patients (63%). Most of the 11 patients (37%) who were subjected to an open procedure were operated in the first years of our experience with MIS procedures. The procedure performed was a salpingo-ovariectomy in 19 cases (63%), an ovarian sparing surgery in 4 cases (14%) and a simple detorsion in 7 cases (23%). The torsion was determined by a cystic lesion in 14 patients (47%) and a neoplasm in 7 patients (23%), whereas no underlying lesion was found in 9 patients (30%). A malignant tumor was found only in 1 patient (3%), being an immature ovarian teratoma.
Conclusion: Management of ovarian torsion is gradually evolving from an invasive demolitive approach to a minimally invasive ovarian sparing surgery, thanks to evidence on the low malignancy risk and the recovery potential of the ovarian perfusion.

16:55 - 17:00 (100) **Role of laparoscopy in management of Fallopian Tube Torsion (FTT) in female adolescents.** Cosimo Bleve, Elena Carretto, Elisa Zolpi, Maria Luisa Conighi, Lorenzo Costa, Enrico La Pergola, Marta Peretti, 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: Isolated fallopian tube torsion(IFTT) is a rare cause of acute abdomen mostly seen in women of reproductive age with an annual prevalence of 1 in 1.5million. Because it has fewer findings on imaging compared to adnexal torsion, frequently the correct diagnosis is achieved during surgery. We retrospectively analyzed cases of FTT at our institution to further characterize diagnosis and management.
Methods: in the last 13years we've treated 11patients aged 10-14years (mean age 12years) affected from FTT diagnosed with laparoscopic approach. We analyzed common presenting signs, symptoms, radiographic findings, surgical interventions.
Results: All patients presented abdominal pain localized to the torsion side. Ultrasonography described in 8patients an associated ovarian/paraovarian cyst without signs of ovarian torsions/direct visualization of the tube. FTT was considered in two patients with acute abdomen, normal blood examination and multiple ovarian follicles with increase size of the ovary at ultrasonography. Laparoscopy was performed for diagnosis in all cases. Intraoperatively, 8 patients (73%) presented an associated cyst, 3(27%) were isolated torsion. Four patients (36%) underwent salpingectomy, one open and three laparoscopic (one partial); 5(45%) underwent detorsion with drainage of associated cyst or cystectomy. Two underwent detorsion. No recurrences were recorded. All resected specimens revealed salpinx hemorrhage and gangrene with an associated cyst in one. Open-salpingectomy was necessary for pelvic adhesions. At follow-up all patients were asymptomatic with normal ovaries.
Conclusions: FTT is a rare condition especially in younger adolescents. Vague clinical presentation contributes to low preoperative suspicion. FTT should be considered with an unilateral acute pelvic pain. Early diagnosis/suspicion is important for preservation of fertility. Laparoscopy allows for definitive diagnosis and treatment. Conservative management is controversial but could be preferred in order to provide the best option for future fertility of these girls. Long-term fertility outcomes in pediatric patients must be further assessed to define the most effective treatment.

17:00 - 17:05 (146) **Laparoscopic fertility-sparing surgery in benign and malignant pediatric gynecological conditions.** Giulia del Re[1], Claudia Filisetti[1], Camilla Viglio[1], Valeria Calcaterra[2,3], Gloria Pelizzo[1,4]. [1]Pediatric Surgery Department, Children's Hospital "Vittore Buzzi", Milan, Italy. [2]Pediatric Department, Children's Hospital "Vittore Buzzi", Milan, Italy. [3]Pediatrics and Adolescentology Unit, Department of Internal Medicine, University of Pavia, Pavia, Italy. [4]Department of Biomedical and Clinical Science "L. Sacco", University of Milano. Milan, Italy

Introduction: Ovarian masses in pediatrics represent a range of pathology from functional cyst to highly aggressive malignant tumors that account approximately for 1%–2% of all childhood cancers. Ovarian preservation is a challenge for surgeons, who must balance the best options to support hormonal health and future fertility. We compared surgical outcomes of patients with ovarian pathological conditions treated with laparoscopic oophorectomy or ovary-sparing surgery (OSS).
Patients and Methods: We recorded medical data of patients with ovarian masses,

who received laparoscopic oophorectomy or OSS between January 2020 and 2021, focusing on characteristics and function of the residual ovary. OSS was performed when deemed technically feasible. Demographic, clinical and operative data, tumor markers and hormonal levels, recurrence rates have been recorded. Follow-up from surgery has consisted in ultrasound, tumor markers and ovarian hormones level (1 to 6 months).
Results: A total of 12 girls with ovarian masses (10 teratomas, 1 dysgerminoma, 3 ovarian torsion with cystic lesion) were included. Average age was 13,3 years old (range 9-17), no patient presented positive markers before surgery. Synchronous bilateral teratoma was detected in one case. Eight underwent OSS (6 laparoscopic and 2 conversions), 6 oophorectomy (2 laparoscopic and 4 open surgery). No intraoperative or post-operative complications were recorded. In 7 patients postoperative US showed normal morphology of the operated ovary, with follicular parenchyma and no evidence of any residual or recurrent lesions. A girl submitted to OSS presented metachronous ovarian teratoma 3 months after surgery, then submitted to laparoscopic OSS. Within 3 postoperative months, in all the pubertal girls (9) the reappearance of regular menstrual cycle with normal hormonal panel was recorded.
Conclusions: Laparoscopic OSS seems to be a successful treatment for children and adolescents with ovarian pathological conditions. Laparoscopic fertility-sparing therapy should be considered as standard treatment for pediatric fertility preservation.

17:05 - 17:10 (27) **Laparoscopic cortical preserving adrenalectomy for right sided pheochromocytoma.** Rahul Ravi Saxena, Biang Chwadaka Suchiang, Kirti Kumar Rathod, Arvind A Sinha. All India Institute of Medical Sciences. Jodhpur, India

Introduction: Pheochromocytoma is a rare disorder in the pediatric age group seen between 11 and 13 years of age. It has a slight predilection to the male population and one of the rare causes of correctable hypertension in children. Diagnosis is made by a combination of radiological imaging and clinical features. Management consists of a surgical excision. Here we present a case of pheochromocytoma in an adolescent in whom laparoscopic tumor excision was done.
Case report: A 15-year-old boy was referred to our institution with complains of headaches, palpitations and occasional abdominal pain. He was found to have severe hypertension, and radiological imaging and MIBG suggested an avid right adrenal mass i.e. pheochromocytoma; thereby explaining his symptoms. After adequate control of blood pressure and heart rate, he was taken for laparoscopic excision of the tumor. Via four ports, a very careful dissection using various energy sources was done as the tumor was in close proximity to the IVC. Tumor was removed with an intact capsule leaving behind normal right adrenal tissues.
A brief period of hypotension was present intra-operatively after tumor excision from which the child recovered shortly and was eventually discharged on the 5th post-operative day. One month later an MIBG scan was done which did not suggest any area of active malignancy, along with a drop-in level of normetanephrines. The blood pressure however is still on the higher side which is otherwise under control with prazosin and metoprolol.

Conclusion: Laparoscopic excision of pheochromocytoma is feasible and safe in the pediatric age group and should be considered over the open procedure. Along with having the advantages of minimal invasive surgery (MIS) as a whole, it is also able to adhere to tumor excision protocol where a complete tumor excision was achieved along with sparing the normal adrenal tissue

17:10 - 17:15 (44) **Safety of Veress needle for laparoscopic entry in children: myth or reality?**

Alessio Pini Prato[1], Federico Palo[2], Claudio Carlini[1], Ilaria Falconi[1], Girolamo Mattioli[2]. [1]Umberto Bosio Center for Digestive Diseases, The Children Hospital, AO SS Antonio e Biagio e Cesare Arrigo, Alessandria, Italy. [2]Giannina Gaslini Institute. Genova, Italy

Introduction: Recent reports suggested that blind laparoscopic entry techniques, including Veress needle (VN) might increase the risks of potentially fatal complications.
Material and Methods: All consecutive patients who underwent laparoscopy in two Pediatric Hospitals with the use of a Veress needle during a 14-year period have been included. The first trocar was a radially expanding one (STEP). Complications related to the insertion technique are reported as those related to the whole laparoscopic technique.
Results: A total of 3463 pediatric patients underwent laparoscopy between January 2006 and December 2019. Of these, 205 (5.9%) were younger than 6 months of age at surgery. Two-hundred-eighty-four patients (8.2%) previously underwent abdominal surgery. During first trocar insertion no major nor minor vascular injuries occurred. Two patients (0.06%) experienced bowel lesions. Nine (0.26%) experienced failed entry. No other issues related to laparoscopic entry technique have been recorded during the study period. Fourteen patients (0.4%) experienced postoperative issues related to trocars positioning, namely 9 omental eviscerations through port site insertion and 5 hemoperitoneum due to epigastric vessels lesion during operative trocar positioning. No specific risk factors predisposing to complications have been identified but the presence of a positive history of previous abdominal procedures that proved to be significantly related to an higher occurrence of bowel injury during Veress needle insertion ($p = 0.0067$).
Discussion and Conclusion: Although with a number of bias and limitations, our study suggests that creation of pneumoperitoneum with VN combined to first trocar entry with STEP technology in children can represent a safe alternative. An exception is represented by patients who underwent previous abdominal surgeries who should be approached with caution, possibly with an open approach. Anyway, given the relatively poor quality of high-quality studies on this regard, we strongly support the implementation of well-designed RCT in children in order to answer to this delicate topic.

17:15 - 17:20 (69) **Low-cost surgical smoke filtration in pediatric laparoscopy in the COVID 19 era.**

Panagiotis Petropoulos, Irini Chronopoulou, Eleftheria Mavrigiannaki, Chrysoula Giannopoulou, Grigorios Iordanoglou, Nick Christopoulos. Agia Sophia Children's Hospital. Athens, Greece

The effect of surgical smoke and its role in the transmission of viruses and other pathogens is a subject of investigation for a long time. Due to the recent COVID-19 pandemic the concern of contamination to other patients but also to the operation theater stuff has resurfaced because of the location of virus load in the intestine of affected individuals, the way of transmission through respiratory tract and the virus small mass. The recent guidelines for laparoscopic procedures dictate to use a filter for the evacuation of the CO_2. The problem that arises is the cost of such filtering systems especially in poor countries.
For that we created a low-cost system that is easy to use. We use the DAR^{tm} pediatric electrostatic filter with catheter mount that is used in the respirator for filtering the air of the patient. We connect the trocar with the filter through the opening that is for the capnograph. We close the mouth piece opening on this side of the filter and we use the other side for air to pass through. No active suctioning is attached to this system.
This is a HEPA filter that filters down to 2nm considering that SARS-CoV-2 has a larger diameter of 70 to 90 nm, the same filtering efficiency can be expected to apply for the new virus. Standard electrostatic filters used for ventilation machines have the capability of filtering known bacterial and viral loads and are certified for 99.99% effective protection.
The only disadvantage we found is the small gas flow because of the small diameter of the connection through the trocar to the filter but this needs for the surgeon to be patient and wait for the time needed, especially for pediatric patients that the volume of the air insufflated is small.

17:20 - 17:25 (34) **Video based coaching: an efficient learning and teaching modality for pediatric surgery and pediatric urology training program.** Vincenzo Coppola, Giuseppe Autorino, Mariapina Cerulo, Fulvia Del Conte, Ester Ricci, Rachele Borgogni, Roberto Cardone, Maria Escolino, Ciro Esposito. Federico II University of Naples. Naples, Italy

Background: This study aimed to compare two learning methods of surgical procedures, operative textbooks and video-based coaching in a group of 10 trainees in Pediatric Surgery.
Methods: Five surgical procedures were selected to be studied, including 3 laparoscopic procedures (Nissen fundoplication, partial nephrectomy, cholecystectomy) and 2 robotic procedures (Lich-Gregoir reimplantation and Anderson-Hynes dismembered pyeloplasty). The trainees were divided into two groups of five each, according to the learning method: Group 1 (G1) adopted video-based coaching to study the surgical procedures and Group 2 (G2) studied the same procedures by reading textbooks in the conventional way. Tutors prepared a questionnaire of 100 multi-answered questions, including 20 questions focused on the different steps of each surgical technique, that was submitted to all trainees of both groups.
Results: Analyzing the 10 questionnaires, G1 (video group) obtained a median result of 82 exact answers (range 74-97), while G2 (textbook group) obtained a median result of 64.2

correct answers (range 53-79). The average scores of G1 were significantly better than G2 (p=0,0265).
Conclusions: Video-based coaching to learn surgical techniques is a novel, feasible and excellent modality for supplementing surgical techniques learning for Pediatric surgery trainees. Objective evaluation using a multi-answered questionnaire demonstrated that video-based coaching in pediatric surgery is statistically better compared with textbook classic education. We would suggest adopting this teaching modality in every surgical training program to teach Minimally Invasive Surgery (MIS) and Robotics.

17:25 - 17:30 (60) **Surgical basic skills training and simulators: is expensive always better?**
Giovanni Parente, Luca De Marziani, Eduje Thomas, Neil Di Salvo, Tommaso Gargano, Mario Lima. Pediatric Surgery Department, IRCCS Sant'Orsola-Malpighi University Hospital. Bologna, Italy

Introduction: Nowadays simulation in surgery is getting more and more attention especially in the young trainees' education. By the way, a center dedicated to simulation could be too expensive and not always affordable considering the equipment needed.
Therefore, we tried to assemble an easy "home-made" simulator (HM) aimed to improve basic skills as eye-hand coordination and minimally invasive suturing.
Material and Methods: we assembled a simulator resembling the standard box-trainers (BT) with easily available and low-cost materials. 20 medical students were enrolled in the study. Students performed 4 tasks from the FLS (fundamental of laparoscopic surgery) program on the home-made simulator and on the classic-one and the time the exercises took was recorded. Then the median time of the exercises on the HM was compared to the ones on the BT using t-student test; a p-value < .05 was considered statistically significant.
Results: the median time of the students on the 4 exercises on the BT was 257 ± 91 s, 178 ± 46 s, 51 ± 19 s and 431 ± 138 s, while one the HM was: 239 ± 51 s, 186 ± 63 s, 49 ± 28 s, 434 ± 115 s. There were no statistically significant differences from the durations of the tasks on the two simulators (p .295, .481, .798, .929).
Conclusions: Our home-made simulator did not affect the time of execution of basic laparoscopic exercises. This is important because we think that centers that cannot afford a classic simulator could assembly one easily and cheaply letting young trainee exercise before approaching the real surgical life in the operating room.

Friday 17th September, 2021

Session VI: Urology 2 (08:00 – 09:00)

08:00 - 08:05. (106) **Simultaneous laparoscopic heminephrectomy in children with bilateral duplicated systems. The case for transperitoneal approach.** Andrzej Golebiewski, Leszek Komasara, Marcin Losin, Maciej Murawski, Piotr Czauderna. Medical University of Gdansk. Gdansk, Poland

Introduction: A duplex kidney with a poorly functioning upper-pole segment is usually related to incontinence, voiding dysfunction, and urinary tract infections. A standard treatment option for this condition is upper-pole laparoscopic heminephrectomy.
Aim: To report the feasibility of performing simultaneous laparoscopic heminephrectomy in children with bilateral duplicated systems.
Material and method: Four children (3 girls and 1 boy) with bilateral congenital duplication with nonfunctioning upper pole underwent concurrent simultaneous bilateral heminephrectomy with ureterectomy using a five-port approach. Mean age at repair was 10 months (range 5-26 months) and mean weight was 13,6 kg (range 6,3-18,7 kg).
Results: Laparoscopic heminephroureterectomy were performed via a five-port transperitoneal approach. The patient was positioned in supine position and adjusted by changing the orientation of the table when moving to the other side. The dilated ureter was identified at the distal third and cranially dissected up to the upper renal pole and resected with selective clamping of arterial branch. Mean operative time was 145 min (range 140-160 min). Mean estimated blood loss was 26,5 cc (range 10-50 cc). Postoperative length of stay for two patients was 2 days and 3 days for other two patient (mean = 2.7 days). Mean length of follow-up was 14,7 months (range 6-25 months). No significant intraoperative or postoperative complications occurred for any of the four patients. One child had a small stable, residual pararenal fluid collection on the left side of heminephrectomy.
Conclusion: In children with bilateral duplicated urinary tract with ureterocele, ectopic ureter, and/or vesicoureteral reflux, laparoscopic transperitoneal repair can be accomplished safely in a single operative procedure during the same anesthetic administration with a short hospital stay. We believe that in case of bilateral renal surgery transperitoneal laparoscopic approach is the option of choice for bilateral heminephrectomy in children.

08:05 - 08:12 (36) **Laser-puncture of the ureterocele in neonatal patients significantly decreases an incidence of de novo vesico-ureteral reflux than electrosurgical incision.** Zenon Pogorelić[1,2], Jakov Todorić[1], Dražen Budimir[1], Miro Jukić[1,2], Marijan Saraga[1,2]. [1]University Hospital of Split, Split, Croatia. [2]University of Split, School of Medicine. Split, Croatia

Background: The aim of this study was to compare outcomes of treatment of two endoscopic techniques used in management of neonatal patients with intravesical ureterocele.
Methods: A case records of 64 neonates who underwent endoscopic ureterocele procedures, performed at our institution from January 2005 to January 2021, were retrospectively reviewed. The patients were divided in two groups depending on used endoscopic procedure. The first group (n=41) consisted of patients who underwent electrosurgical incision of the ureterocele, while the second group (n=23) consisted of patients in whom up to ten laser-punctures of the ureterocele were performed. The groups were compared in regards to outcomes of treatment, with special emphasis on de novo vesicoureteral reflux and the need for further treatment and surgery.
Results: Median follow-up was 7.5 (IQR 3, 11.5) and 3.5 (IQR 1.5, 5) years in the electroincision and laser-puncture groups, respectively (P=0.017). No significant differences between the groups in regards to medians of duration of surgery (12 min vs. 11 min, P=0.670), length of hospital stay (2 days in both groups, P=0.988) or postoperative obstruction (n=1 vs. n=0, P>0.999) were recorded. Ureterocele decompression was achieved after endoscopic treatment in 87.9% and 100% of the patients in electrosurgery and laser-puncture groups, respectively (P=0.150). Five patients (12.1%) from electrosurgery group required endoscopic retreatment. The laser-puncture group had a significantly decreased rate of de novo vesicoureteral reflux (8.7% vs. 58.5%; P=0.0001) and lower incidence of subsequent surgery due to de novo vesicoureteral reflux (50% vs. 62.5%; P=0.727).
Conclusion: Both electrosurgical incision and laser-puncture endoscopic techniques are safe and effective in relieving the obstruction. Laser-puncture technique is associated with significantly lower incidence of de novo vesicoureteral reflux and accordingly fewer invasive procedures for neonatal patients.

08:12 - 08:17 (114) **Laparoscopic and Laparoscopic-assisted Mitrofanoff appendico-vescicostomy: challenges in paediatric minimally invasive surgery.** Elisa Cerchia[1], Massimo Catti[1], Barbara Tadini[1], Elisabetta Teruzzi[1], Paolo Caione[2], Simona Gerocarni Nappo[1]. [1]Division of Paediatric Urology, Regina Margherita Children's Hospital, AOU Città della Salute e della Scienza. Turin, Italy. [2]Consultant Paediatric Urologist. Rome, Italy

Introduction: Mitrofanoff appendicovescicostomy is a well-established open surgical technique, with the aim to provide a conduit for clean intermittent catheterization (CIC) in children with uncatheterizable urethra. Laparoscopic Mitrofanoff has been rarely reported due to its technical challenges. We present our experience on laparoscopic Mitrofanoff and a more recent modified laparoscopic-assisted procedure.
Material and Methods: From 2016 to 2020 seven patients underwent mini-invasive Mitrofanoff. Patient clinical data, imaging and urodynamics were retrospectively reviewed. In all cases the Mitrofanoff conduit was placed on the anterior bladder wall, with the stoma at the umbilicus, and CIC started after 3 weeks. Data were statistically analyzed.

Results: Mean age was 10.42±0.95 years (range 9-12), with 3 undergoing laparoscopic Mitrofanoff (43%) and 4 the laparoscopic assisted (57%). Primary diseases were 1 epispadias, 1 ureterocele with single kidney, 1 urethral syringocele with single kidney, 1 occult spinal dysraphism with anorectal malformation, 3 posterior urethral valves. Operative time was 273±25 minutes in Lap-group (range 200-350) and 203±28 minutes in the Lap-assisted group (range 180-235), $p<0.05$. No intraoperative complications occurred. In laparoscopic cases a 3-port transperitoneal approach was used except in one case that required a fourth port due to ectopic appendix. The mean postoperative follow-up is 31±13 months in Lap group (range 20-46) and 14±6 months in Lap-assisted group (range 8-21). In the first group 2 patients required revision (1 stomal stenosis, 1 Mitrofanoff leak). Cosmetic outcome was judged as excellent in all patients.
Discussion and Conclusion: Minimally invasive procedure for Mitrofanoff appendico-vescicostomy is feasible and successful in children. Compared with open procedures it is advantageous especially in adolescents and in children with ectopic appendix. Laparoscopic-assisted procedure compared with the formal laparoscopic is easier and quicker, is easy to teach and can be performed by less expert laparoscopists.

08:17 - 08:24 (10) **Possibilities of treatment of neurogenic bladder in children with the use of laparoscopic access (experimental study).** Dmytro Volodymyrovych Shevchuk[1,2,3], Oleksandr Andriyovych Danylov[2]. [1]Zhytomyr regional Children's Clinical Hospital, Zhytomyr, Ukraine. [2]Shupyk National University of Healthcare of Ukraine, Kyiv, Ukraine. [3]Franko State University. Zhytomyr, Ukraine

Introduction: It was found that in 95% of myelodysplasia is accompanied by neurogenic bladder dysfunction. It is important to find an effective method of treatment (including surgery) of this pathology. Of particular interest are methods of bladder reinnervation.
Aim: Demonstrate the possibility of reinnervation (myoneurotization) of the bladder in its neurogenic dysfunction in children.
Materials and methods: Since 2010, 9 operations of myoneurotization of the bladder (7 girls and 2 boys) have been performed at the clinical bases of Shupyk National University of Healthcare of Ukraine. The average age was 9 years. The essence of the operation is the implantation of branch of n. obturatorius into the detrusor. In 2018, such an operation was performed video-assisted, in 2019 - for the first time nerve implantation took place laparoscopically. All studies were approved by the legal representatives (parents) of patients.
Results: Approximate treatment results showed good laboratory and instrumental data. This study requires further study of long-term results.
Conclusion: Reinnervation (myoneurotization) of the bladder in its neurogenic dysfunction in children using laparoscopic access is a promising method for further research.

08:24 - 08:29 (139) **Zinner syndrome – laparoscopic approach - feasible and safe.** Adam Halinski, Pawel Halinski, Andrzej Halinski. Department of Paediatric Urology, Private Medical Center "Klinika Wisniowa". Zielona Gora, Poland

Introduction: The authors would like to present a laparoscopic procedure for Zinner disease which was performed on 9 year old male child. Zinner syndrome is a triad of Wolffian duct anomalies comprising of unilateral renal agenesis, ipsilateral seminal vesicle cyst, and ejaculatory duct obstruction. In asymptomatic patients, treatment is usually conservatively, however, symptomatic patients are often treated surgically
Material and methods: The child was admitted to the hospital because of the recurrent pain of the bladder, blood in urine sample and symptoms of UTI. US, blood tests and urine culture were performed. Blood tests were normal, and urine culture was negative. US revealed a 75 mm in diameter cyst behind the bladder, left kidney was not found. Child underwent CT scan which confirmed changes founded in USG. Laparoscopic approach was planned for this case.
Results: The operation time was 3h. Blood loss was 100 ml. There was no intra or postoperative complications. Hospital stay was 5 days. Without any symptoms child was discharged for home. The histopathologic result was seminal vesicle cyst. He is still under outpatient clinic follow up. Right now - 2 years after surgery he has no pain or UTI.
Conclusions: Laparoscopic technic is feasible and safe even in such rare and hard cases, but well skilled surgeon and well qualified operating team are definitely needed. More data are still needed. On the other hand, small number of the patients with such disease is a very important restriction. The decision about the surgery technic should be according to the surgeon preferences.

08:29 - 08:36 (127) **Incidence of prostatic utricle in the pediatric population: a systematic review of the literature.** Maria Enrica Miscia[1,2], Giuseppe Lauriti[2,1], Dacia Di Renzo[1,2], Valentina Cascini[1,2], Pierluigi Lelli Chiesa[2,1], Gabriele Lisi[2,1]. [1]Pediatric Surgery Department, "Santo Spirito" Hospital, Pescara, Italy. [2]Dept. of Aging Sciences. "G. d'Annunzio" University. Chieti, Italy

Background: Prostatic Utricle (PU) is an uncommon finding, more frequent in patients with severe hypospadias. However, it may be present in children with normal genitalia. PU should be surgically treated when symptomatic. The surgical approach could be open, endoscopic, laparoscopic, or robot-assisted. We aimed to assess the incidence, symptoms, diagnosis, and treatment of PU in the pediatric population.
Materials and Methods: Using a defined search strategy, we performed a systematic review of the English literature (PubMed, Cochrane, Scopus, Web of Science). Case reports and case-series reporting on less than 3 patients have been excluded.
Results: Of 234 studies screened, 17 papers (1,455pts) have been included. PU was found in 493/1,455pts (34%). Among these, 433 (88%) were patients with hypospadias. The incidence of PU was significantly increased in those cases with posterior hypospadias (286/433pts, 53%) compared to middle (109/433pts, 26%) and anterior hypospadias

(12/433pts, 11%; p<0.0001). The most common reported symptom at diagnosis was recurrent urinary tract infections (104/356pts), followed by epididymitis (19/47pts). In 1,017/1,387 cases a cystourethrography was performed to exclude a PU. Eighty-three/244 patients underwent an ultrasound study, reporting a detection rate of 71% (59/83pts). A surgical treatment has been performed in 138/258 PU (53%), with an open approach in 96/138 (70%), endoscopic in 20/138 (14%), laparoscopic in 18/138 (13%) and robot-assisted in 4/138 (3%). Recurrences have been reported in 2 cases (2%) following open approach, 4 (20%) in endoscopic treatment, 1 (6%) after laparoscopy and none after the robotic-assisted excision.
Conclusions: PU is a not rare anomaly among patients with hypospadias. To the best of our knowledge, all children with posterior hypospadias should be screened with an ultrasound study in order to exclude a PU. Even if open excision is most frequently used, laparoscopic and robot-assisted approaches seem to be valid and safe alternatives.

08:36 - 08:43 (129) **Laparoscopy assisted diagnosis and reconstruction of cloacal malformation and left distal ureteral atresia associated with right renal cross ectopy.** Mehmet Surhan Arda[1], Çigdem Oztunalı[2], Baran Tokar[1]. [1]Eskisehir Osmangazi University, Faculty of Medicine, Department of Pediatric Surgery, Eskisehir, Turkey. [2]Eskisehir Osmangazi University, Faculty of Medicine, Department of Radiology. Eskisehir, Turkey

Cloacal malformation might be associated with renal congenital anomalies. Physical, radiological and cystoscopic examination may show urinary tract pathologies (UTP). In suspected cases, meticulously planned preoperative evaluation including diagnostic laparoscopic exploration may delineate the anatomy of the upper UTP which may need an earlier reconstruction.
Video Presentation: A female patient with cloacal malformation was admitted. Ultrasound and MRI showed a cross ectopic right kidney (CERK) and a hydronephrotic left kidney with a thin parenchyma and a dilated proximal ureter. Cystoscopy showed a single perineal opening, with a 14 mm common channel continuing with a vaginal orifice, left inferolateral rectal orifice and right superolateral urethral orifice. Urethra was 12 mm in length, there was no left ureteral orifice and right ureter was opening close to the bladder neck at the midline. Laparoscopic exploration showed a mal rotated CERK and significantly dilated left renal pelvis and proximal ureter elevating the left colon. Laparoscopic “U suture” ureterostomy was performed on the left. A dilatation on the left side was resolved on follow up. The second exploration showed a left distal ureteric atresia which was resected followed by telescopic extravesical ureteroneocystostomy of the short and dilated left ureter on JJ stent. On the third stage, JJ stent was removed, laparoscopic colorectal dissection was performed and then with a posterior sagittal incision, rectum, vagina and urethra were dissected and reconstructed. The patient did well postoperatively.
Conclusion: Reconstruction of cloacal malformation with a short common channel might be considered as a relatively easy procedure. Concentration on the perineal pathology may cause underestimation of other associated anomalies. A meticulous preoperative

evaluation of other organ system, especially searching for UTP might show a pathology that needs a priority in surgical plan.

08:43 – 08:50 (119) **Wilms' tumor and laparoscopic radical nephrectomy: long-term results from a multicentric study**. Aurélien Scalabre[1], Morgan Pradier[1], Katherine Burnand[2], François Becmeur[3], Hubert Lardy[4], Marc David Leclair[5], Julien Rod[6], Frédéric Lavrand[7], Pascale Philippe-Chomette[8], Sabine Irtan[9], Florent Guérin[10], Stephan Geiss[11], François Varlet[1], Yves Heloury[12], Aurore Bouty[13]. [1]CHU, Saint-Etienne, France. [2]Royal Children Hospital, Melbourne, Australia. [3]CHU, Strasbourg, France. [4]CHU, Tours, France. [5]CHU, Nantes, France. [6]CHU, Caen, France. [7]CHU, Bordeaux, France. [8]CHU-RDB, Paris, France. [9]CHU-Trousseau, Paris, France. [10]CHU-KB, Paris, France. [11]CH, Colmar, France. [12]CHU-NEM, Paris, France. [13]CHU, Lyon, France

Introduction: Open radical nephrectomy remains the gold standard surgical treatment for Wilms' tumor (WT) with a high cure rate. Since 2004 several authors reported surgical treatment by laparoscopy and demonstrated the feasibility. The aim of this study was reporting the long-term results of laparoscopic radical nephrectomy (LRN) from a multicentric study.
Patients and Methods: from 11 centers, we collected the patients who underwent a LRN between 2006 and 2018, around 20% of total WT treated in the same period, to have a minimal follow-up higher than 2 years. We especially studied the pathology and the number of tumor rupture, local recurrence, port-site metastasis and small bowel obstruction.
Results: LRN was done in 52 children with a mean age of 40.19 months and a mean follow-up of 76.51 months. Twenty-six have a follow-up higher than 5 years. The pathological staging of WT was stage I in 32, stage II in 16 and stage III in 4. Among stage 1 patients, 2 recurrences occurred, 1 due to liver adhesions with positive margin and 1 without tumor rupture during procedure or any positive margin. The children had no port-site metastases but 1 had a tumor graft on biopsy site (stage 3). No small bowel obstructions occurred and no death was reported.
Conclusion: LRN is safe in selected patients and the results are similar than open surgery.

08:50 -08: 55 (126) **Upper pole ureteronephrectomy: comparison between retro and trans-peritoneal approach.** Valeria Bucci, Marta Peretti, Elisa Zolpi, Lorella Fasoli, Elena Carretto, 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***:** Duplex renal system is a common condition in pediatric population, frequently associated with obstructive megaureter of the upper moiety and/or vesicoureteral reflux of the lower district. In case of a hypofunctioning upper moiety associated to ectopic ureter (extrasphinteric) or recurrent urinary tract infections, upper ureteronephrectomy can be indicated, especially with minimally invasive techniques. We report our 10 years' experience.

Methods: A retrospective analysis was conducted on patients submitted to transperitoneal and retroperitoneal upper pole ureteronephrectomy at our institution in the last ten years. Data regarding demographics, diagnosis, surgical procedure and follow up were collected.
Results: 11 patients were retrospectively enrolled. Ultrasound revealed upper pole hydroureteronephrosis and ureterocele. Voiding cystourethrogram showed an ipsilateral lower pole VUR in 4 cases and bilateral VUR in one case. MAG3-scintigraphy demonstrated a hypofunctioning upper moiety in all cases. In 9 patients a preoperative cystoscopy was performed. At a median age of 22 months, retroperitoneoscopic upper pole ureteronephrectomy was performed in 7 patients, while a laparoscopic approach was used in the other cases. Mean operative time was 155 min for the retroperitoneoscopic procedure and 165 min for the transperitoneal one. The transperitoneal one was preferred in cases requiring a nearly complete excision of the ureter. In the other cases, the retroperitoneal approach allowed a direct and safe access to the hilum without a massive colonic mobilization. Ureteral stump was left open in 9 cases and ligated in the remaining 2 (obstructive/refluxing ureter). No post-operative complications were recorded. During follow-up, all patients demonstrated spontaneous reabsorption of the ureterocele.
Conclusion: Minimally invasive upper pole ureteronephrectomy represents a definitive treatment of hypofunctioning upper pole with ureterocele, avoiding the need of several procedures. The retroperitoneal and transperitoneal approaches have different advantages and pitfalls. Although technically demanding, in experienced hands the retroperitoneal technique proves to be a safe approach, also in young children.

08:55 – 09:00 (137) **What if it is not urolithiasis? Rare renal tumor mimicking kidney stone disease.** Adam Halinski, Andrzej Halinski. Department of Paediatric Urology, Private Medical Center "Klinika Wisniowa". Zielona Gora, Poland

Introduction: Papillary adenoma is a prevalence tumour which is very rare in children. The symptoms can imitate nephrolithiasis.
Material and methods: The authors present the case of a 4 year old male patient treated for a staghorn calculus of the right kidney. A decision about surgical treatment was made as the result of ESWL therapy failure. During the surgery, a compact tumor was found under the kidney capsule, without any contact with the calyceal system. Due to diagnostic difficulties the material was examined in three laboratories: Anatomical Pathology Laboratories in Zielona Góra, Medical University in Poznań and the Children's Memorial Health Institute in Warsaw.
Results: At present the patient is in a good condition and he is under the supervision of the Urology Clinic. The reoccurrence of the tumor has not been observed.
Conclusions: The diagnosis of such a rare tumor brings about many diagnostic difficulties and wrong choice of treatment at the beginning. Radiological diagnosis did not show the state which was observed during the surgery. In the case of such rare renal tumors in children, multicenter consultations are indispensable. In assessing the child's condition and in the prognosis it is necessary to take other factors into consideration, e.g. chromosome aberration tending to transformation and malignancy.

Discussion: Papillary adenoma is a rare, benign renal tumor, occurring mainly after 40 years of age. It should be differentiated from papillary renal carcinoma. Macroscopically, it is a demarcated single structure situated just under the renal capsule, in the renal cortex. The prevalence of trisomy 7 and 17, and loss of the Y chromosome is very often observed in patients. Additional chromosomes 12, 16 and 20 are equally often observed. Similar genetic alternations occur in papillary renal carcinoma. Histopathological diagnosis is difficult and requires immunohistochemical studies.

Session VII: Gastrointestinal 3 (09:00 - 09:45)

09:00 - 09:05 (102) **Superior Mesenteric Artery Syndrome, uncommon diagnosis and difficult treatment in childhood: success of the laparoscopic treatment.** Elisa Zolpi, Lorenzo Costa, Maria Luisa Conighi, Enrico La Pergola, Lorella Fasoli, Marta Peretti, Fabio 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: Superior Mesenteric Artery (SMA) syndrome is a rare condition in which the third part of the duodenum becomes compressed between the SMA and the aorta. The syndrome may be precipitated by sudden weight loss secondary to other pathologies, such as eating disorders.
Presenting symptoms included abdominal pain, vomiting, nausea, early satiety and anorexia. Contrast Enhanced MR reveal decreased aortomesenteric angle and aortomesenteric distance causing compression of third part of duodenum with resultant marked distension of proximal duodenum, stomach shown by contrast studies. Conservative management aims to increase intra-abdominal fat by dietary manipulation and thereby increase the angle between the SMA and aorta. Where surgery is indicated; division of the ligament of Treitz, anterior transposition of the third part of the duodenum and duodenojejunostomy have been described.
Methods: We report two cases of adolescent patients who presented with typical symptoms but the diagnosis of SMA was understood in the first 8-12 months; they had been subjected to several instrumental surveys and therapies. Diagnosis is confirmed by angio-RM, which reveals a reduced aorto-SMA angle and distance, contrast studies and gastro-duodeno-jejunoscopy showing duodenal obstruction. The treatment was laparoscopic duodenojejunostomy. The procedure was completed successfully in both patients who recovered quickly with no short-term complications.
Conclusions: Owing to the rarity of SMA syndrome, patients often present after a long illness and may have been misdiagnosed with psychosomatic or malabsorptive conditions. The diagnosis of SMA syndrome should be considered in all patients presenting with upper abdominal pain, vomiting, weight loss and food intolerance, particularly when they are young and otherwise healthy. Duodenojejunostomy is the commonly accepted

surgical management of the SMA syndrome. When performed laparoscopically, it is an effective operation with rapid recovery.
A multi-specialist team approach including gastrointestinal, vascular and radiological specialists should be involved in the management of these patients.

09:05 - 09:12 (50) **SILS Technique: a viable option in pediatric Inflammatory Bowel Disease.** Fabrizio Vatta[1], Alessandro Raffaele[1], Mirko Bertozzi[1], Marta Gazzaneo[1], Claudio Vella[2], Giovanna Riccipetitoni[1]. [1]Department of Pediatric Surgery, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy. [2]Department of Pediatric Surgery, Azienda Ospedaliero Universitaria di Ferrara. Ferrara, Italy

Introduction: Patients affected by IBD are extremely fragile and may require several surgical procedures during their life. Single incision laparoscopic surgery (SILS) allows an excellent vision and a 360-degree liberty of motion inside the abdominal cavity, reducing at the same time the surgical trauma and avoiding ancillary laparotomies. We report our experience with SILS in a series of children affected by IBD
Methods: Retrospective review of all pediatric patients affected with IBD treated from 2009 and 2021 with SILS.
Results: A total of 23 SILS procedures were carried out in 17 pediatric patients affected with IBD (11 Crohn's disease -CD- and 6 ulcerative colitis -UC-). Age ranged from 7 to 17 years old.
All 11 CD underwent ileocecal resection and video-assisted hand anastomosis without any intra-operative complication or need for redo-surgery. Median time to refeed and recovery was 72 hours. All 6 UC patients required 2 SILS procedures (total colectomy with end-ileostomy and mucosectomy with ileo-anal J pouch anastomosis and closure of the ileostomy). In 1 out of 6, ileostomy was closed with a 3rd procedure. In the UC group, SILS device was placed at the ileostomy site during the second stage, in order to facilitate the realization of the J-pouch and the pull-through. In all patients, no visceral or parietal adhesions were noticed. Post-operative course was uneventful for all patients at short/midterm follow up.
Conclusions: SILS approach can be considered a useful technique and an excellent choice in IBD surgery in pediatrics. Need for a single incision significantly reduced surgical trauma, which is crucial in children affected with IBD, who will probably require further surgeries in the future.

09:12 - 09:17 (24) **Laparoscopic excision of Type-4 congenital pouch colon and management of its complication by laparoscopic redo procedure.** Kirtikumar J Rathod. AIIMS. Jodhpur, India

Objective: We present a case of three month male child with status ileostomy, operated outside on day two of life for type 4 CPC. The patient was managed by laparoscopic pouch excision and anorectoplasty.

Background: Congenital pouch colon (CPC) is a rare variant of ARM (Anorectal Malformation) in which a variable length of colon terminates in a colonic pouch that shares a fistulous communication with either the bladder or vagina. To the best of our knowledge till date there is no report of CPC being managed by laparoscopic pouch colon excision and lap-assisted anorectal pull-through (LAARP).
Report: A three month male child with status ileostomy, operated outside on day two of life for type 4 CPC was referred to us. The patient was managed by laparoscopic pouch excision, ligation of fistula between pouch and urinary bladder and anorectoplasty. The baby recovered and was discharged after the operation. On postoperative follow up Hegar dilatation was tried but could not be passed beyond 2cm, distal cologram showed colonic stenosis. The patient was again managed laparoscopically. The stenotic segment was excised and redo pull through followed by anorectoplasty with healthy bowel was done. The child is doing well and is on follow up.
Conclusions: LAARP offered excellent visualization of the pouch, fistula and surrounding structures, accurate visualization of the anatomy, helps to minimize abdominal and perineal incisions, avoids dividing and weakening the pelvic musculature, thereby diminishing the degree of perineal and pelvic soft tissue scarring. Although technically demanding CPC type 4 can be managed laparoscopically and even its complication can be managed by minimal invasive method.

09:17 - 09:24 (123) **Laparoscopy decreases post-operative inflammation in infants with necrotizing enterocolitis**. Louise Montalva[1], Livia Qoshe[1], Aurore Haffreingue[1], Liza Ali[1], Lucile Marsac[2], Alice Frérot[3], Matthieu Peycelon[4], Arnaud Bonnard[4]. [1]Department of General and Thoracic Pediatric Surgery, Hôpital Robert-Debré,, Paris, France. [2]Department of Pediatric Anesthesia, Hôpital Robert-Debré,, Paris, France. [3]Department of Neonatology, Hôpital Robert-Debré, Paris, France. [4]Department of General and Thoracic Pediatric Surgery, Hôpital Robert-Debré. Paris, France

Aim: In our center, a new protocol using laparoscopy for necrotizing enterocolitis (NEC) has been implemented. Carbon dioxide insufflation during laparoscopy may have anti-inflammatory potential. We aimed to compare post-operative C-Reactive Protein (CRP) levels and outcomes after laparoscopy and laparotomy for NEC.
Methods: Medical charts of premature infants undergoing laparoscopy for NEC suspicion (2015-2019) were reviewed. Cases of surgically-proven NEC operated by laparoscopy (laparoscopy-NEC) were then compared to premature infants that had undergone surgery for NEC between 2012 - 2015 (laparotomy-NEC). CRP was measured on the day of surgery (POD-0) and 2 days later (POD-2). Data were compared using contingency tables and Student t-test when appropriate.
Results: Laparoscopy was performed in 23 infants (median age: 23 days, weight: 1345g), with conversion to laparotomy in 78%.
Infants with NEC undergoing laparoscopy (n=23) and laparotomy (n=25) were similar in terms of demographics, perforation (57% vs 56%, p=0.99), age at surgery (23 vs 27 days, p=0.39), and POD-0 CRP (142 vs 124mg/L, p=0.58). Between POD-0 and POD-2, CRP

decreased after laparoscopy (142 vs 116mg/L, p=0.007), whereas CRP increased after laparotomy (124 vs 170mg/L, p=0.007). POD-2 CRP was lower after laparoscopy compared to laparotomy (p=0.02). Stoma rate was lower in laparoscopy-NEC (39%) compared to laparotomy-NEC (76%, p=0.002), resulting in a decreased rate of reintervention (59% vs 89%, p=0.03).
Conclusions: In addition to being safe and feasible in premature infants, laparoscopy decreases NEC-related post-operative inflammation, as reflected by CRP levels, and was associated with a decreased need for reintervention, by reducing stoma rate.

09:24 - 09:29 (103) **Initial experience with single incision laparoscopic ileocaecal resection for Crohn's Disease in children.** Vojtech Dotlacil[1], Barbora Kucerova[1], Blanka Rouskova[1], Lucie Pos[1], Tereza Lerchova[2], Richard Skaba[1], Michal Rygl[1]. [1]Department of Pediatric Surgery, 2nd Faculty of Medicine, Charles University in Prague, University Hospital Motol, Prague, Czech Republic. [2]Department of Pediatrics, 2nd Faculty of Medicine, Charles University in Prague, University Hospital Motol. Prague, Czech Republic

Background: Although, single incision laparoscopic assisted (SILS) ileocecal resection (ICR) is a well-established technique in adult IBD surgery, data on SILS ICR in pediatric population are still scarce. The aim of the study is to evaluate the first experience with SILS in pediatric patients with Crohn's disease (CD), who underwent ileocecal resection at our department.
Materials and Methods: A data from consecutive group of pediatric CD patients who underwent SILS ICR between May 2019 and February 2021 was retrospectively reviewed.
Procedures were performed using a "self-made" glove port positioned at the extraction site with standard laparoscopic instruments.
Measured outcomes included patients' demographics, clinical characteristics, surgery, duration of hospitalization, postoperative complications and follow-up.
Results: Thirteen patients (8 females, 62%) were included in the analysis. Median age at the time of surgery was 17 years (IQR 14.2–17.4) and 13 years (IQR 8.9–15.9) at diagnosis. Penetrating disease behavior was recorded in 54% of patients. Biological treatment was administered in 85% of patients. Median time from the last application of biologics to surgery was 14 days (IQR 9.5–19). The SILS ICR was performed by the same surgical team in all patients. Conversion to open surgery was reported once, in a patient who underwent ICR and resection of enterocolic fistula. In 70% of cases the indication for surgery was elective. All patients had restorative procedures. Median duration of the surgery was 154 minutes (IQR 138–170). One (7%) complication (an intra-abdominal abscess) according to Dindo-Clavien classification was observed and did not require reoperation. Median length of hospitalization was 7 days (IQR 5.7–7.5). Median time of follow-up was 6 months (IQR 1.7–6.2).
Conclusions: SILS ICR is a safe and feasible procedure. In our group, we observed a low incidence of complications. "Self-made" single port access decreases the cost of the procedure.

09:29 - 09:34 (97) **Clinical outcome in Hirschsprung's disease treated with LA-TERPT technique.** Mario Lima, Vincenzo Davide Catania, Eduje Thomas, Giovanni Parente, Neil Di Salvo, Tommaso Gargano, Giovanni Ruggeri. Pediatric Surgery Unit, IRCCS Sant'Orsola-Malpighi Hospital, University of Bologn. Bologna, Italy

Aim: The aim of the present study is to evaluate the mid and long-term outcomes in patients affected by Hirschsprung's disease (HD) treated by a minimal access approach: laparoscopic-transanal endorectal pull-through (LA-TERPT).
Methods: Data of all patients admitted between January 2007 and December 2017 in our center were retrospectively collected and analyzed. Patients with total colonic aganglionosis, those lost at follow-up or missing data were excluded. Patients were evaluated for demographic, clinical, and operative data. Functional outcomes were evaluated at our outpatient service focusing on intestinal habits and bowel management only in those with a follow-up period longer than 24 months after surgery.
Results: Among 57 patients affected by HD 28 were treated by the LA-TERPT technique. 79% were males, with a mean gestational age of 39 weeks, and mean weight at birth of 3150 grams. The rate of associated anomalies was 36% with a preponderance of congenital heart malformations. Only one patient had enterocolitis. Surgery was performed at a median age of 8 months. HD was located in more than 90% in the sigma rectum, no one required a colostomy, and median bowel length resection was 19 cm. No conversion was required. No post-operative anal stenosis was observed. Long-term functional outcome was considered good by 80% of patients. In 4 cases chronic constipation required laxatives and bowel management. No soiling was recorded.
Conclusions: Minimally invasive and laparoscopic approach for HD could be considered safe and effective. Operative data are comparable with the perineal approach. Both surgical and functional long-term outcomes are good with a low rate of chronic constipation and no major postoperative complications

09:34 - 09:39 (132) **Retrospective review of laparoscopic pull through procedures – a tertiary paediatric surgery unit early experience**. Arjun Visa, Anastasia Livani, Paul Charlesworth, Ashwini Joshi. The Royal London Hospital. London, United Kingdom

Objective: To evaluate the initial experience and outcomes of the use of laparoscopy for pull through procedures in a paediatric tertiary center. Prior to 2009, the open technique was the predominant form of management of both Hirschsprung's disease (HD) and anorectal malformations (ARM) at this center.
Methods: We retrospectively reviewed patients who had undergone a laparoscopic pull-through procedure between 2009 and 2017. We reviewed the cases of 2 surgeons, in the time period above, to track progress along a learning curve and medium term outcome. The demographic, operative, postoperative and follow up data of these patients were analyzed. Rintala scores were generated retrospectively at 4 years post op. We did not calculate this score for those who were not toilet trained and/or could not communicate due to global developmental delay, autism or other clear non-surgical cause.

Results: Our study included n=17 children. The mean age at surgery was 2.35 months, with a median of 2 months. Of these, 7 had staged procedures (41.2%) and 10 had primary pull-through (58.8%). Mean operative time including levelling biopsies was 184 minutes with length of stay 6.5 days. One year post-op, 6 had complications (35%), 3 of which were grade IIIb (18.75%), and 2 grade II (12.5%). One patient Grade I (5.8%), initially had biopsies positive for HD, though post primary pull through, and on further review by senior pathologist, found to have normal biopsies at all levels. Mean Rintala score at 4 years was 15.2 [range 11-18].
Conclusion: Including the learning curve, our outcomes demonstrated a 'Good' medium term outcome with a mean Rintala score between 9 and 16. As time progresses, it is likely our results will continue to improve. Laparoscopic pull through procedure is therefore an acceptable modality in this center.

09:39 - 10:44 **Laparo-assisted pull-through for Hirschsprung Disease: single center experience with functional outcome assessment.** F. Galbiati, M. Ichino, F. Macchini, A. Morandi, G. Fava, F. Maestri, A. Preziosi, A. Di Cesare, E. Leva. Paediatric Surgery Department, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico. Milan, Italy

Aim: To assess post-operative complications and long-term outcomes of patients operated with laparo-assisted techniques for Hirschsprung Disease (HD).
Methods: Retrospective study on patients operated with laparo-assisted techniques for HD (January 2013-December 2020) at our Center. Demographic, surgical, pre- and post-operative data on complications (Clavien-Dindo classification – CD), Hirschsprung Associated Enterocolitis (HAEC=Pastor≥ 4), functional outcomes (Rintala questionnaire – R; Pediatric Incontinence/Constipation Score - PICS) and dietary habits (KIDMED Score) were collected.
Results: Twenty-four patients were included in the study. Three had long-segment HD. Primary pull-through was performed in 18 patients. Soave's colo-rectal anastomosis was performed in 21 patients, Swenson's in 3. Mean age at surgery was 7±4 months. Mean operative time was 4.7±1.6 hours, with progressive operative time reduction. Median hospitalization was 7 (5-50) days. Five (20,8%) surgical complications were recorded: 4 CD Grade IIIB (2 anastomotic dehiscence requiring diverting colostomy, 1 prolonged urinary retention requiring cystostomy, 1 anastomotic stricture requiring pneumatic dilatation) and 1 CD Grade I (anastomotic stricture treated at home with Hegar dilators). Median post-operative follow-up is 4 years (2 months – 7 years). Twelve patients (50%) had at least 1 HAEC. In total 22 HAEC were recorded (64% requiring admission), but only 2 (9%) with a Pastor score ≥10. Fourteen episodes (64%) occurred in the first post-operative year. Among patients already above toilet training age, 29% have optimal functional outcome (R≥18, PICS-I≥20), 57% only occasional soiling (R≥10, PICS-I≥10) and 14% poor functional outcome (R≤9, PICS-I≤10). We found no correlation between functional outcome and dietary habits.
Conclusions: Minimally invasive surgical techniques are safe and effective choices for HD. The first post-operative years are burdened by high morbidity due to HAEC. HD remains a

complex disease requiring a close post-operative follow-up; protocols should be implemented and assessed to reduce the incidence of HAEC. Nonetheless, long-term outcome remains satisfactory.

Session VIII Robotics and Innovation 1 (10:15 – 11:15)

10:15 - 10:22 (30) **Robot-Assisted extravesical ureteral reimplantation (REVUR) in children with complex obstructive megaureter needing tapering and dismembering: a single-center experience.** Ciro Esposito[1], Lorenzo Masieri[2], Mariapina Cerulo[1], Vincenzo Coppola[1], Giuseppe Autorino[1], Rachele Borgogni[1], Roberto Cardone[1], Maria Escolino[1]. [1]Federico II University of Naples, Naples, Italy. [2]Meyer Children Hospital. Florence, Italy

Background: This study aimed to report the outcome of robot-assisted extravesical ureteral reimplantation (REVUR) in children with complex obstructive megaureter (COM) needing tapering and dismembering.
Methods: The records of pediatric patients with COM, who received REVUR with ureteral tapering and dismembering in our surgical unit over the last two years (2018-2020), were retrospectively reviewed. Patients with COM included patients who had previous surgery on the affected side, associated paraureteral diverticula or complex anatomy.
Results: Six patients (5 boys), with a median age of 6.8 years (range 2-16), were treated during this time period. COM was associated with paraureteral diverticula (n=3), previous failed endoscopic balloon dilation (n=3), ectopic megaureter ending into the vagina (n=1) and previous endoscopic bulking agent injection causing iatrogenic ureteral obstruction (n=1). COM was left-sided in 4 and right-sided in 2. Presentation symptoms included breakthrough febrile UTIs (n=2), flank pain (n=2), hematuria (n=1), pseudo-incontinence (n=1). All surgical procedures were accomplished robotically, without conversions or intra-operative complications. The median operative time (including robot docking) was 183 min (range 155-270). The median length of stay was 3.8 days (range 3-7). The indwelling double J stent was removed 4-6 weeks postoperatively. Post-operative complications (Clavien 2) occurred in two patients and included gross hematuria and febrile UTI. At the longest follow-up of 34 months, all patients reported resolution of pre-operative symptoms, improved hydronephrosis at US and improved drainage and differential function at renal scan.
Conclusions: REVUR was safe and effective for the management of children with complex obstructive megaureter needing tapering and dismembering. This technique was versatile and achieved excellent success rate with minimal post-operative morbidity.

10:22 - 10:29 (105) **Suprapubic approach in pediatric robotic surgery: interesting and esthetic approach in common surgery.** Fulvia Del Conte[1,2], Liza Ali[1], Louise Montalva[1], Anne Emmanuelle Colas[1], Arnaud Bonnard[1]. [1]University Hospital Robert Debré, Paris, France. [2]University Hospital Federico II. Naples, Italy

Aim: Advantages of robotic surgery are not to be demonstrate. In our center, we have a great experience of laparoscopic surgery using 3 and 5 mm trocars. In what an approach with 8 mm robotic trocars would be better in common surgery? We tried the supra pubic approach used in adults patients, consisting in placement of all the trocars in Pfannenstiel line. The aim of the study was to present our experience of this approach.
Methods: Patients operated for abdominal surgery (excluding total colonic resection and neonatal surgery) with this approach from July 2019 to march 2021 were included. Age, duration of surgery, number of robotic arms and complications were reported.
Results: 24 patients were included in the study. Results are presented in the table. For cholecystectomy, splenectomy and choledochal cyst, an accessory trocar (5 or 2mm) was used. 1 conversion into laparoscopic surgery was reported for per-operative difficulties for the choledochal cyst in the beginning of our experience. All patients were satisfied by scars aspect and localization.
Conclusions: Supra-pubic approach is feasible and interesting in supra and sub mesocolon surgery without per-operative major difficulties. Scars localization are not only satisfying for patients but also for surgeons.

Surgery	No Cases	Median age	# robotic arm	Duration of surgery	Complications
Cholecystectomy	11	14 (7-18)	3	87.5 (51-110)	none
Splenectomy	5	6 (5-15)	3	108 (77-165)	none
Cholecystectomy +Splenectomy	2	13 (9-17)	3	115 (110-120)	none
Colo-rectal Surgery	5	17 (13-17)	4	115 (105-147)	3 abscesses
Choledocal cyst	1	3	3	125	none

10:29 - 10:36 (88) **Posterior tracheopexy with thoracoscopic or robotic approach: technical details.** Michele Torre, Vittorio Guerriero, Luca Pio, Federica Lena, Girolamo Mattioli. Ist. G. Gaslini. Genova, Italy

Posterior tracheopexy has been proposed as a novel approach to treat tracheobronchomalacia, in addition or alternative to aortopexy. However, reports on this technique are still very sporadic. Our aim is to discuss technical surgical details based on our preliminary experience of thoracoscopic and robotic posterior tracheopexy.
Technical details on 9 patients (from 8 months to 23 years of age) who underwent posterior tracheopexy are presented and discussed; 5 of these are treated with robotic approach. The number of stitches needed to fix the pars membranacea to spine varied, depending on the surgical approach: in thoracoscopic procedures from 2 to 6 stitches, while in robotic assistance from 6 to 14. All sutures used were made with non-absorbable threads (Prolene 4/0).

Airway obstruction evaluated at pre-operative bronchoscopy was between 70% and 100%, with posterior intrusion of pars membranacea. Operative time ranged from 110 to 320 minutes. In five cases aortopexy was associated, one during the same surgical procedure.
Post-operative complications were observed especially in the short term: in two patients a lesion of the thoracic duct occurred and one of them also developed an esophageal perforation, which required two further endoscopic procedures. Another patient developed dysphagia two months after surgery, probably caused by significant esophageal dislocation observed after procedure.
Thoracoscopic approach is feasible, although robotic assistance greatly improves visualization, allows gentle esophageal dissection, and makes easier and more precise the pexy of the trachea and bronchi on all its length. Furthermore, bronchopexy can be performed if necessary, a specific advantage of posterior tracheopexy compared to aortopexy. Intraoperative bronchoscopy and close cooperation between surgeons and anesthesiologists are essential.

10:36 - 10:43 (62) **Surgical management of the distal ureter and ureterovesical junction: moving from open intravesical to minimally-invasive extravesical approach. Single center experience shifting from laparoscopy to robotic surgery.** Girolamo Mattioli[1,2], Marcello Carlucci[1]. [1]Pediatric Surgery Unit, IRCCS Gaslini Children Hospital, Genoa, Italy. [2]Dinogmi University of Genova. Genoa, Italy

Background: open trans-vesical surgery is considered the best treatment for several conditions affecting the distal ureter(DU) and uretero-vesical junction(UVJ). Minimally-invasive surgery, especially robotic, is becoming an alternative approach but its use is still limited.
Aim: report of our experience in robotic and laparoscopic surgery of the DU and UVJ, focusing in technical considerations to improve outcomes.
Patients and methods: data of patients treated, since 2018, by conventional and robot-assisted laparoscopy for VUR, megaureter, complicated duplex-system and vesical diverticula were prospectively recorded. Operations included extravesical dismembered (EDUR) and non-dismembered (ENDUR) ureteral reimplantation and uretero-ureterostomy (UU). Results from laparoscopic-group (L-Group) and robotic-group (R-Group) were compared.
Results: Fifty-two patients (38 males, 14 females) were treated, 25 laparoscopically and 27 robotically. Median age was 3.2 years. L-Group included 5 EDUR, 17 ENDUR and 3 UU; R-Group included 13 EDUR, 10-ENDUR and 4 UU. No differences were observed comparing two groups regarding diagnosis, pre-operative data, post-operative management, pain management and length of hospital stay. L-Group showed shorter operative times (86min vs 138min) and higher recurrence rates (L-Group 40%, R-Group 22%). Recurrences and complications occurred mostly in the first cases treated in both groups.
Conclusions: Minimally-invasive treatment of DU and UVJ represent a valid and feasible alternative to open trans-vesical procedures. Conventional laparoscopy is more technical demanding and related high recurrence/complication rates could not justify completely its

use. Robot allows for better results and resolution rates. Obviously learning curve is crucial to reduce complications and recurrences. The introduction of several technical tips as adequate tunnel length and width, anchoring ureter at the top of the tunnel, fix the ureteral serosa at the detrusor, detruso-plasty at the neo-meatus are all helpful to improve results. Moreover 3D magnification and supporting tools (Indocyanine green) are helpful to avoid vascular, seminal and nervous injuries.

10:43 - 10:48 (5) **Robotic surgery in a pediatric setting: does it worth?** G. Mattioli[1,2], S. Avanzini[1], M. Torre[1], M. Carlucci[1], F. Palo[1,2]. [1]IRCCS Giannina Gaslini, Genova, Italy. [2]Università degli studi di Genova, Dinogmi. Genova, Italy

Robotic surgery is the most innovative technology in minimally invasive approaches, unfortunately, its use on pediatric population is relatively recent and less literature about its use is reported. Our aim is proving the feasibility and the positive effect of using the robotic system in pediatric hospital by reporting 53 procedures performed between March and December 2020. The robotic system was successfully adapted to the pediatric patient, no complication due to technical problems of the robot were reported. Its use showed versatility and ability to facilitate the performance of the procedures in terms of visibility and accessibility to surgical site. All these considerations conclude that pediatric robotic surgery is safe, effective, improves performances and outcomes; this should bring to a reconsideration of economic sustainability, limit of this technology; this leads to important ethical considerations, in fact, especially in the case of limited resources, it is not possible to offer the same treatment to all patients. The overcoming of technical and economic limits is very hoped in the future, like adapting the size of the instruments to pediatric patient and the reduction of the cost of the robotic system thanks to the development of other robotic system. It is also desirable to emphasize more and more the importance of entrusting the pediatric patient to hospitals that place at the center of their activity the specificity of this kind of patient care and of his needs.

10:48 - 10:53 (52) **Long-term follow-up of pediatric robotic assisted laparoscopic pyeloplasty**. Luigi Avolio[1], Piero Giovanni Romano[1], Marta Gazzaneo[1], Alessandro Raffaele[1], Fabrizio Vatta[1], Mirko Bertozzi[1], Gloria Pelizzo[2]. [1]S.C. di Chirurgia Pediatrica - Fondazione IRCCS Policlinico San Matteo, Pavia, Italy. [2]Dept. of Pediatric Surgery - Ospedale dei bambini "V. Buzzi" Milano - Università degli Studi di Milano. Milano, Italy

Aim: Robotic pyeloplasty for the treatment of ureteropelvic junction anomalies has been a standard of care in the last decade. However long-term outcomes are yet to be evaluated.
Aim of our study is to describe long term outcomes of robot-assisted laparoscopic pyeloplasty.
Material and Methods: Retrospective review of patients undergone robot-assisted laparoscopic pyeloplasty at our Institution from 2011 to 2013. A typical Anderson-Hynes dismembered pyeloplasty was carried out using a 8 mm access port for the camera, two 5

mm for instrument access, and one 3 mm accessory port. We evaluated preoperative pelvic dilatation, presence of symptoms and other renal malformations, need for redo surgery or other necessary procedures.
We recruited 11/11 of them to evaluate clinical features and repeat an Ultrasound for measuring pelvic anteroposterior diameter.
Results: 11 patients underwent robot assisted pyeloplasty median age 4.3 years, range: 4 months - 9 years. Median pre-operative pelvic dilatation was 4.5 cm. Mean follow-up was 8.8 ± 1.2 years. Latest AP pelvic diameter was 0.8 cm and 10/11 had less than 1 cm pelvic diameter. All patients are symptom-free, except one, who still has sporadic flank abdominal pain, although at renal scan no obstruction was detected and the AP pelvic diameter was about 1 cm. No one required redo surgery.
Conclusion: RALP is feasible and safe even in infants in the first years of life even in huge pelvic dilatation. It gives better instrument manipulation and operating field visualization when compared with traditional laparoscopy allowing also difficult and delicate sutures in small spaces. Long term follow up shows that most patients reach a less than 1 cm pelvic diameter and do not present symptoms related to anomalies of the pyelo-ureteral junction. Long term success rate is similar to the open and laparoscopic approach.

10:53 - 10:58 (113) **Robotic-Assisted Laparoscopic (RAL) Nephron-Sparing Surgery for renal tumor in children: a case report.** Simona Gerocarni Nappo[1], Elisa Cerchia[1], Marco Allasia[2], Barbara Tadini[1], Massimo Catti[1], Elisabetta Teruzzi[1], Paolo Gontero[2]. [1]Division of Paediatric Urology, Regina Margherita Children's Hospital, AOU Città della Salute e della Scienza, Turin, Italy. [2]Division of Urology, Department of Surgical Science, AOU Città della Salute e della Scienza-Presidio Molinette. Turin, Italy

Introduction: RAL partial nephrectomy for oncologic disease is a well-established procedure in adults while in children has been described anecdotally. We present a case of RAL partial nephrectomy for a renal tumor in a girl.
Case Report: A 4 year old patient, 14 kg, was admitted to A&E for abdominal pain and fever. Ultrasonography and CT scan showed a 27x30x28 mm well circumscribed upper pole tumor of the right kidney with a thin rim and a dense fluid homogeneous density. After ev antibiotics the mass was unchanged. MRI was performed with 3D-virtual reconstruction of lesion and vessels. Following multidisciplinary discussion, due to the uncertain nature of the lesion and in the absence of guidelines, nephron-sparing surgery was decided and RAL partial right nephrectomy was planned.
Results: After proper padding, the patient was placed at 40° on the left flank, in hyperextension. Da Vinci Xi ports (3) were placed in pararectal line, first port placed with mini-open access, assistant port at the umbilicus. CO2 pressure was 7 mm Hg. After adequate exposure of the right kidney, IVC and the tumor, the branch of the renal artery directed to the tumor was selectively clamped (ICG confirmed good perfusion of the kidney), and upper pole partial nephrectomy was performed without significant bleeding. Operative time was 180 mins including docking. Postoperative period was uneventful.

Doppler US was normal and the child was discharged on day 4. Histology revealed a central necrotic tumoral mass, still under examination.
Discussion and Conclusion: Partial nephrectomy is a demanding surgery. RAL advantages are minimal invasivity, good magnification, 3D-vision and precise movements. In this case, the low body weight did not prevent the procedure which was uneventful. However vast experience in robotic urologic surgery and careful patient selection are mandatory. 3D-imaging reconstruction may be helpful in preoperative planning.

10:58 - 11:03 (90) **Robotic assisted surgery for ovarian sparing in bilateral mature teratoma: a case report.** Roberta Comunian, Ernesto Montaruli, Natalia Maria Voumard, Flurim Hamitaga, Alessia Allasia, Mario Mendoza-Sagaon. Pediatric Institute of the Southern Switzerland. Bellinzona, Switzerland

Introduction: Mature teratomas are one of the most common histologic subtypes of childhood ovarian germ cell tumors, despite this, their treatment in this young age, is still under debate. In 10 to 15% could be bilateral. This report describes the management of a 15-years old girl being diagnosed with a bilateral mature teratoma, successfully operated with robotic-assisted surgery.
Case Report: A 15-years old girl in previous good health, presented in ER with acute abdominal pain and vomiting. She had no family history of malignancy neither family syndromes. Regular menstrual cycle with dysmenorrhea. Abdominal US detected a cyst of the right ovary of 38x33 mm and another cyst-like structure of 57x43 mm in left ovary. Serum tumor markers were normal. Abdominal CT scan showed a right ovarian torsion. Both ovaries presented a mass associated with calcification and adipose tissue compatible with a mature teratoma. Initially a laparoscopic ovarian detorsion was performed. The Postoperative MRI one month later, showed recovery of the right ovary and reinforced the suspicion of two mature teratomas. Two months after a Robotic Assisted Ovarian Sparing Excision of both benign masses was scheduled. The patient was discharged on postoperative day four. Pathology confirmed the diagnosis of mature cystic teratoma in both ovaries. Follow-up goes up to 6 months and to date the girl is doing very well.
Conclusion: The advantages of robotic surgery, such as visual magnification, dexterity, and ergonomics, are important factors to consider for bilateral ovarian excision of mature teratomas, especially in young patients. RAS (robotic-assisted surgery) allows for more precise tissue dissection, even if there is very little tissue to save. This aspect takes on great importance, considering the consequences of oophorectomy in a young patient, such as potential future infertility and premature ovarian failure

11:03 - 11:08 (51) **Robotic assisted surgery in pediatric gynecology: a single center experience.** Fabrizio Vatta[1], Alessandro Raffaele[1], Luigi Avolio[1], Piero Romano[1], Mirko Bertozzi[1], Gloria Pelizzo[2], Giovanna Riccipetitoni[1]. [1]Department of Pediatric Surgery, Fondazione IRCCS.

Policlinico San Matteo, Pavia, Italy. [2]Department of Pediatric Surgery, Ospedale dei Bambini "Vittore Buzzi" ASST FBF Sacco. Milano, Italy

Aim: The use of robotic-assisted surgery has increased exponentially in the last decades and it is applied in all surgical fields, including gynecology. Nevertheless, the applications in pediatrics are still sporadic and not standardized. Our aim to review our experience in robotic-assisted surgery in pediatric gynecology is to evaluate its safety and feasibility.
Methods: Systematic review of all patients affected by an oncological disease who underwent a robotic-assisted procedure at our Institute from 2011 to 2021.
Results: A total of 20 patients underwent robotic-assisted gynecological procedures. Sixteen procedures (median age 13.1 years-old) were carried out in children with adnexal lesions. (11 oncological: mature teratoma (seven), serous papillary cystadenofibromas of the fallopian tube (two), ovarian serous cystoadenoma (one), and ovarian mucinous cystoadenoma (one); 5 follicular cysts). Median length of stay was 2 days. No recurrences or complications at a median follow-up of 2.6 years were observed. Two gonadectomies were performed on two DSD patients (age 23 and 15 years old respectively), no complications occurred. Two girls underwent resection of Mullerian anomalies causing recurrent abdominal pain (a bilateral uterine remnants in a 16-years-old girl with MRKH syndrome and a left-rudimentary horn in a 12-years-old child). For both of them, length of hospitalization was 2 days, and follow-up was uneventful with complete resolution of symptoms.
Conclusion: Robotic surgery in pediatric gynecology has proven to be safe and feasible, providing acknowledged technical advantages. Nevertheless, known inconveniencies are high costs, lack of availability in emergency and difficult use in small children. Preparation and patient positioning, alongside with a correct trocar placement, are crucial to carry out these procedures.

11:08 - 11:13 (144) **What we can do with an abbocath.** Inês Braga[1,2], Catarina Barroso[3,2], Rúben Lamas-Pinheiro[1], Jorge Correia-Pinto[3,2,4]. [1]Hospital de Braga, Braga, Portugal. [2]Life and Health Sciences Research Institute (ICVS), School of Medicine, University of Minho, Braga, Portugal. [3]Department of Pediatric Surgery, Hospital de Braga, Braga, Portugal. [4]ICVS/3B's – PT; Government Associate Laboratory. Braga, Portugal

Introduction: With a minimally invasive mindset, surgeons dream and create new approaches and tips to solve daily problems and difficulties during standard procedures. For several years, we have been able to overpower some techniques and transpose it to other procedures. One of these techniques is based on a16G abbocath and two types of suture (prolene 2-0 and ethibond 2-0). We present a video with some procedures we are able to perform following the same principle, a pooled loop.
Results: Laparoscopic inguinal hernia repair with PIRS technique (Percutaneous Inguinal Ring Suture) is increasingly being performed all over the world. With a single abbocath, a cerclage around the inguinal ring, extra-peritoneal, is performed using a flag consisting movement, traction and counter-traction. In males the vas deferens is detached and

excluded from the cerclage. In females, the round ligament is enclosed as well, to avoid peritoneal gaps. A similar trick is presented in the *Pectus Excavatum* repair, the Nuss procedure, to fix the prosthesis. Under thoracoscopic visualization, the abbocath puncture both sides of a chosen vertebra and a pooled loop approaches the bar. Lastly, with laparoscopic assistance, a Morgagni hernia is closed with several pooled loops, each with a single puncture site and no visible stitches.

Conclusion: In minimally invasive surgery, this technique can be extremely useful and versatile. Under direct visualization, we are able to minimize working ports and guarantee the procedure safety.

Poster Session 3 (12:15 – 12:55)

12:15 - 12:18 (7) **Optimization in girls examination methods with congenital severe faults of internal genital organs development and urinary system.** Sergey P. Yatzik[1], Igor V. Poddubniy[2], Magda Z. Karkashadze[1], Alexey A. Gusev[1], Andrey P. Fisenko[1]. [1]FSAI "NMRC for Children's Health" MH RF, Moscow, Russian Federation, Moscow, Russian Federation. [2]MSUMD named A.I. Evdokimov. Moscow, Russian Federation

The problem of diagnosis and treatment of severe combined malformations of the genitals and urinary system is always complex and relevant. Despite the improvement of diagnostic methods, significant difficulties still remain in the recognition of malformations of the internal genital organs

The standard method for examining the internal genital organs in girls is ultrasonography. Magnetic resonance imaging allows you to accurately assess the condition and topographic relationships of the internal genital organs.

Objective: to determine the correlation of the data obtained by ultrasound of the pelvic organs and MRI of the pelvic organs with the data obtained by visual assessment of defects during surgery.

Material and methods: 15 girls with various isolated and combined malformations of the genitals and urinary system at the age of 1 year to 17 years were examined. Ultrasound of the pelvic organs and MRI of the pelvic organs were sequentially performed for all patients.

Results: In 13 children, malformations established during MRI were confirmed by intraoperative visual control. In 2 children, a combined urological pathology was not visualized by MRI. According to ultrasound of the pelvic organs in 7 girls, ultrasonographic data coincided with intraoperative visual control of the defect, and in most cases, the defects were isolated. In other cases, there were discrepancies with a positive correlation of the degree of discrepancy with the complexity of malformations and a combination with malformations of the urinary system.

Conclusion: The frequency of diagnostic errors in ultrasound monodiagnostics of malformations of the internal genital organs in girls remains high. These studies showed that MRI is a priority research method for combined malformations of the internal genital organs and urinary system in girls. The correct diagnosis of vaginal malformations allows

you to avoid repeated surgical interventions, complications and increases the effectiveness of treatment.

12:18 - 12:21 (104) **Endoscopic treatment with hyaluronic acid in dextranomer and vesicoureteral reflux complicated by high-grade double urinary district.** Luciano Sangiorgio, Franco Rotundi, Ilaria Falconi, Claudio Carlini. Chirurgia e Urologia Pediatrica A.O. Alessandria. Ospedale Pediatrico Cesare Arrigo. Alessandria, Italy

Introduction: Since June 2010, we have included in our vesicoureteral reflux treatment protocol, endoscopic treatment in all children during the year of life or even in younger ones in case of poor compliance in the management of antibiotic prophylaxis.
Materials and Methods: Over the past 24 months, we have treated 32 patients with high grade (IV - V) reflux with or without double urinary districts. Twenty-two patients had high-grade reflux and the remaining ten had a dual urinary district for a total of 54 reflux units. Twelve patients had reflux nephropathy. The treatment consisted in the endoscopic injection of biocompatible material, under the ureteral meatus, lifting the bladder mucosa with the needle, to favor the detachment and therefore the elongation of the ureteral-bladder junction and the creation of a special niche for the wheal. of biocompatible material. (Nicola Capozza technique). The endoscopic treatment guarantees biocompatibility, valid duration over time, no tendency to migrate from the injection site, excellent ease of use. Radiological control was performed at least four months after the injection to avoid false successes, through dynamic ultrasound (before and after emptying the bladder).
Results: Healing of reflux occurred in 24 patients (16 with high grade and 8 with double urinary district), in 16 of these children it was necessary to proceed with more endoscopic treatments. (maximum three).
Conclusions: The use of the endoscopic treatment of vesico-ureteral-ureteral reflux, even in extreme cases, has allowed to obtain good results with minimal invasiveness, without creating discomfort for the child and his family, avoiding the intervention that certainly has an impact and puts the child under greater stress. In addition to all this, we have reduced the time of administration of antibiotic prophylaxis. After the injection, we prescribe the antibiotic for five days, followed by the sole administration of cranberry.

12:21 - 12:24 (135) **URS-L in the Treatment of Ureterolithiasis in Preschool Children**
Adam Halinski, Andrzej Halinski. Department of Paediatric Urology, Private Medical Center "Klinika Wisniowa". Zielona Gora, Poland

Urolithiasis can affect all children even preschool ones. Diagnostic difficulties in the youngest children are due to the problems in locating pain and determining its character and severity. In keeping with the ALARA (As Low As Reasonably Achievable) protocol, the number of imaging tests possible to perform is very limited. Ultrasound is the first line exam of choice. After diagnosis of the presence of a stone, ESWL (Extracorporeal

Shock Wave Lithotripsy) should always be considered and offered to parents due to its high effectiveness and minimal invasiveness. If ESWL is contraindicated or not well-accepted by parents, authors suggest another minimal invasive approach: URS-L (Uretherorenoscopy–Lithotripsy). Our study clinically analyzes 87 children, which were treated between 2009 and 2017 using the URS-L procedure. URS-L treatments were performed using Lithoclast until 2009, and after that time, using the holmium laser Ho:YAG. The overall effectiveness of treatments was 93.3%. There was no failure in the access to the stones. A macroscopic hematuria (Clavien-Dindo I grade) was observed through the second post-operative day in 9.2% of treated patients. No urosepsis was observed. Full metabolic evaluation was performed on all patients. Children remained under constant urological and nephrological observation. A recurrence of urolithiasis was observed in 35.6% of the cases.

12:24 - 12:27 (136) **Comparison of treatment methods for urolithiasis in children with the application of ESWL and URSL methods - prospective study.** Adam Halinski, Andrzej Halinski. Department of Paediatric Urology, Private Medical Center "Klinika Wisniowa". Zielona Gora, Poland

Introduction: Development of the equipment for extracorporeal lithotripsy and miniaturization of endoscopes allows for the treatment of children with stones in the ureter in each age group.
Objectives: The aim of the paper is to compare the effectiveness of ESWL and URSL methods in the treatment for urolithiasis (ureteral stones), and establishing the indications for the treatment with the application of one of the methods.
Material and methods: The evaluation assessed 70 children (aged 0,5 – 16; mean 8,7) treated for urolithiasis with the application of ESWL method and 72 children (aged 7 months -16; mean 8,2) treated with the application of URSL method. The procedures were done since 2005. The treatment was applied to children with stones in the ureter not promising spontaneous expulsion with urine. A complete removal of the plague and no complications were considered as a very good result; residual plague to 2mm and no complications were considered a good result and plague in the ureter with concomitant complications were considered a bad result.
Results: In the group of children treated with the ESWL method the results were as follows: 64% very good, 31,5% good and 4,5% bad. In the group of children treated with the URSL method the results were as follows: 77% very good, 15.2% good and 7.8% bad.
Discussion: There is still too little data predicting clearly the success of applying one or another method in children. ESWL and URSL methods are the treatment of choice for ureteral calculi.
Conclusions: URSL method is more effective than ESWL method for a ureteral stone of any size, but it carries a greater risk of complications. ESWL is a very good method for children with smaller plagues (to 7-8 mm). In the case of URSL, the size of a plague does not matter.

12:27 - 12:30 (138) **Stone located in initial ureter - ESWL, URS-L, flexible URS, MicroPerc? Which approach should we choose in children?"**. Adam Halinski, Andrzej Halinski. Department of Paediatric Urology, Private Medical Center "Klinika Wisniowa". Zielona Gora, Poland

Aim: The aim of the study is to settle which procedure should be the first line treatment for remove stone located in proximal part of the ureter in children population.
Material and Methods: We analyzed clinical 64 children treated in our hospital with stone located in initial part of the ureter. All children were referred to our department with renal colic and hydronephrosis. No symptoms of UTI were observed. Mean age was 10,4 (range 4-18 years), mean stone size was 7,5mm in diameter (range 7-9 mm). In all children we performed ultrasound, laboratory tests and urine culture.
Results: After discussion with parents about all possibilities of stone removal and with their agreement we performed: 32 ESWL , 24 URS-L, 7 flexible URS and 1 MicroPerc procedure.
We achieved: 88% efficacy in ESWL, 75% efficacy in URS-L, 86% efficacy in flexible URS and 100% efficacy in MicroPerc procedure; overall 83%.
Conclusions: We still don't have enough data, to predict the outcome of the procedure before it begins. In our material ESWL procedure has the best outcome, but flexible URS is just behind it. On the other hand we use ESWL since 1999 and flex URS just from 3 years. More and more prospective and randomized trials are definitely needed. However, numerous parents are choosing the ESWL as the first treatment of their child, considering it to be safer.

12:30 - 12:33 (140) **Flexible ureterorenoscopy as a possibility of treating nephrolithiasis in children – prospective data.** Adam Halinski, Andrzej Halinski. Depatment of Paediatric Urology, Private Medical Center "Klinika Wisniowa". Zielona Gora, Poland

Aim: Flexible ureterorenoscopy is a surgical technique used for the treatment of the upper urinary tract. It is very often used in adult patients, however, due to the advancing miniaturization of the equipment as well as its precision, this technique has also become possible in the treatment process in children.
Material and Methods: We would like to present 65 cases of flexible ureterorenoscopy carried out in children with nephrolithiasis of the upper urinary tract aged 3,5 to 18 years. The average age was 10.4 years and the children were treated in our department from June 2013 to May 2017. The first surgery in Poland took place in our Department of Paediatric Surgery and Urology, Provicial Hospital in Zielona Góra on the 6th of June 2013. Because of nephrolithiasis all the children had been subjected earlier to unsuccessful ESWL treatment.
Results: 35 children had stone in the lower calyx, 21 children had stone in the middle and lower calyxes and in 9 children a stone was located in the initial part of the ureter. A surgical efficiency of 89,2 % was achieved.
Conclusions: Flexible ureterorenoscopy is an effective and minimally invasive tool both for the diagnosis and treatment of upper urinary tract. For stones located in initial part of the ureter flexible URS can be effective alternative for ESWL or semi-rigid URS with higher

efficacy. It is also alternative for PCNL, but sometimes it carries a risk for repeat procedure. We believe that the advances in miniaturization of the equipment and growing experience enable carrying out of this procedure in smaller children with higher efficiency.

12:33 - 12:36 (2) **Bizarre Foreign Bodies on the Respiratory Tract and their unusual Removal**
Burak - Tander[1], Dilek B Demirel[2], Muazzez - Cevik[1], Selim - Aksoyek[1]. [1]Acibadem. University, Department of Pediatric Surgery, Istanbul, Turkey. [2]Ondokuz Mayis University, Department of Pediatric Surgery. Samsun, Turkey

Aim: We report here, very uncommon foreign bodies in the respiratory tract in small children and some creative methods for removal.
Patients and Methods: Seven patients with uncommon foreign bodies underwent different, "creative" methods of removal. Each one patient had a pebble, a dice, a battery, an olive seed, a sharp edged piece of plexiglass, plastic cover of a pen and piece of walnut. In the 15 year old girl with a pebble in the right main bronchus, the removal was impossible by optical forceps. It was removed by a basket catheter. Classical removal of the plastic cover of a pen and a sharp edged piece of Plexiglas might have damaged the vocal cords. They were removed via a tracheotomy incision. Moreover they couldn't be grasped by classical optical forceps, because they were embedded in bronchus. They could only be grasped by a laparoscopic dissector inserted through the tracheotomy incision. A piece of walnut was embedded in the left main bronchus. It could only be removed by a Fogarty balloon catheter inserted behind the foreign body, inflated and pulled up. A battery in the trachea was removed by Magill forceps in one year old boy. A dice embedded within the right main bronchus in a 15 year old boy cannot be grasped by classical optical forceps. A Fogarty balloon catheter was inserted behind it, inflated and pulled to the carina. Immediately it was grasped by a basket catheter and removed. An aspirated olive seed in a 2 year old boy was removed by an optical forceps.
Conclusion: Foreign bodies with big size or sharp or too smooth edges impossible to grasp need challenging and creative methods for removal. Therefore ideal setting of an operating theater require a broad spectrum of surgical instruments and experienced multidisciplinary personal.

12:36 - 12:39 (125) **Thoracoscopic resection of double mediastinal masses in a 19-months old girl: case report.**
Roberta Patti, Maria G. Scuderi, Vincenzo Di Benedetto. Pediatric Surgery Department Catania University. Catania, Italy

Aim: Mediastinal masses represent an important cause of respiratory and gastroenteric symptoms. The different diagnosis is based on location (anterior, middle or posterior compartment of the mediastinum), nature (cystic or solid) of the lesions and the features of the patient. We report a case of a 19-months old girl with two cystic lesions in the posterior compartment of the mediastinum.

Material and methods: A 19-months old girl with a history of gastroesophageal reflux, dysphagia and episodes of choking was referred to our department. Esophagogram showed caliber reduction and deformation of the distal esophagus; Angio-TAC excluded the presence of vascular malformation and showed two cystic lesions without enhancement, the first one (20x15 mm) was localized in the distal portion of the esophagus and the second one (10x8 mm) was localized close the right pulmonary ileum. EGDS showed an ab extrinsic esophageal compression with lumen reduction. The patient underwent a thoracoscopy to resect the lesions. We used 5 mm 30° thoracoscope and two work ports (3 mm and 5 mm). The cysts were resected without lesion of the esophageal mucosa and vagus nerve.
Results: Post-operative course was uneventful. The patient started drinking in first post-operative day and eating in the second one.
Conclusion: The mediastinal masses need an accurate different diagnosis and anatomical definition to improve the surgical approach. Minimal invasive surgery (MIS) should be preferred. MIS permits faster recovery and better post-operative course.

12:39 - 12:42 (78) **Our experience with treatment of Pectus excavatum.** Barbora Špaková, Marián Molnár, Dalibor Murgaš, Matej Gura, Milan Dragula. Department of Pediatric Surgery, University Hospital Martin, Jessenius Medical faculty in Martin, Comenius University in Bratislava. Martin, Slovakia

Introduction: Pectus excavatum is the most common type of chest wall deformity. It is usually asymptomatic, but patients suffering from severe forms may experience increased fatigue, exercise dyspnea, chest pain, palpitations and/or decreased tolerance to physical activity. However, psychological effect of deformity is often the main problem of these patients. For a long time, the only available type of treatment was a surgical correction. An important part of the therapy is rehabilitation aimed at correcting the body posture by strengthening chest and back muscles as well as breathing exercises. In the last 15 years, there has been an increase in the use of a conservative treatment using the vacuum bell.
Methodology: The authors would like to present a prospective study of n=99 patients undergoing treatment of pectus excavatum using a Vacuum bell at the outpatient clinic of the Department of Pediatric Surgery, University Hospital in Martin over the past 3 years, focusing on potential factors affecting the final effect of treatment.
Discussion: Currently, the vacuum bell can be used in several cases: in patients with mild deformity which does not require surgical correction but causes psychological difficulties, in patients refusing surgery for various reasons, in preparation for surgical procedure to loosen the connective tissue in order to facilitate surgery, per-operatively in order to lift the sternum during a Nuss procedure. Although conclusive results based on long-term supporting evidence are lacking, the available studies demonstrate vacuum bell treatment is a safe option for pectus excavatum with minimal complications. However, its success depends mainly on the motivation and compliance of the patient. In case of insufficient effect, or dissatisfaction with the outcome of treatment, patients can be offered a surgical treatment.

12:42 - 12:45 (14) **Thoracoscopic excision of thoracic ganglioneuroma in a rare case of ROHHAD syndrome.** Kirtikumar J rathod, Darshana K Rathod, Shreyas K Krishnamurthy, Arvind k Sinha. AIIMS. Jodhpur, India

Introduction: Rapid-Onset Obesity with Hypoventilation, Hypothalamic dysfunction, and Autonomic Dysregulation Syndrome (ROHHAD) is rare condition seen in pediatric population. The occurrence of the hypoventilation leading to respiratory arrest and association with neural crest tumors makes the syndrome more fatal. The role of minimally invasive surgery in the management of pediatric thoracic tumors is gaining popularity. Here we report a case of Thoracic ganglioneuroma associated with ROHHAD syndrome successfully managed by thoracoscopic excision.
Case report: A 4-year-old girl was presented to the hospital OPD with complaints of rapid-onset weight gain, hyperphagia, inappropriate behavior and laughter. On evaluation, the patient had persistent high blood pressure (95^{+12} centile) for which antihypertensive was given. The child was evaluated for the cause of obesity in which the biochemical parameters were found to be normal. To rule out the central cause of obesity, MRI brain was done which showed features of paraneoplastic cerebellitis. The involvement of the cerebellum and midbrain prompted screening of spine, which revealed a well- defined left paravertebral lesion which was consistent with left paravertebral ganglioneuroma and thus, the diagnosis of ROHHAD syndrome was established. Patient successfully underwent thoracoscopic excision of the thoracic mass despite of its close proximity to the arch of aorta and the subclavian vessels. The histopathology findings were consistent with ganglioneuroma. The patient is on regular follow-up for past 6 months with drastic improvement in behavioral pattern and routine activities and persistent hypertension.
Conclusion: We conclude that thoracoscopy is a feasible and relatively safe procedure for thoracic tumors like ganglioneuromas even in a complex and challenging conditions like ROHHAD syndrome. It imbibes added advantages over open procedure like a short hospital stay, decreased risks of post-operative infections, pain and also cosmetically acceptable incisions.

12:45 - 12:48 (116) **Robotic cholecystectomy in children - when more is too much.** Vlad Laurentiu David, Bogdan Ciornei, Calin Marius Popoiu, Eugen Sorin Boia. Department of Pediatric Surgery and Orthopedics "Victor Babes" University of Medicine and Pharmacy. Timisoara, Romania

Introduction: Robotic assisted surgery is becoming more and more popular in pediatric centers around the world, mainly for surgical procedures requiring precision and finesse. However, for less demanding procedures like cholecystectomy in children, there is a lack of scientific evidence about the advantages of robotic approach.
Materials and methods: We compared 19 robotic assisted (RC) cholecystectomies (performed with a da Vinci XI Robotic Surgical System) with 28 laparoscopic cholecystectomies (LC) in children. We assessed the following parameters: operative time,

postoperative pain and the need of analgesics, complications, hospital stay and cost of treatment.

Results: Operating time was longer for RC (mean 147.3 min) versus LC (113.27 min). Mean hospital stay was 6.47 days for RC versus 4.86 days for LC. Complication rate was similar between the two groups (two for each group). There were two conversion to open surgery on LC group and 3 reinterventions, 1 in LC and 2 for RC. The mean cost for LC was 1569.89€ and for RC was 2840.83€ (including a mean of 1206.07 € / procedure for the robotic instruments).

Conclusion: While the therapeutic results are similar, RC requires longer operative time, longer hospital stay and higher costs. Thus it is difficult to favor the robotic approach versus the standard laparoscopic approach for cholecystectomy in children.

12:48 - 12:51 (35) **Robot assisted extravesical reimplantation (REVUR) with ureteral tapering and dismembering for obstructed megaureter secondary to endoscopic subureteric injection complicated by ureteral stones.** Ciro Esposito[1], Lorenzo Masieri[2], Giuseppe Autorino[1], Mariapina Cerulo[1], Vincenzo Coppola[1], Maria Escolino[1]. [1]Federico II University of Naples, Naples, Italy. [2]Meyer Children Hospital. Florence, Italy

Background: In the accompanying video, we reported a robot-assisted extravesical reimplantation (REVUR) with ureteral tapering and dismembering for an obstructed megaureter secondary to endoscopic subureteric injection complicated by ureteral stones. In this technique, we adopted some technical adaptations that are novel in the pediatric population.

Clinical case: A 16-year-old boy came to our attention for recurrent flank pain and hematuria associated with a diagnosis of multiple stones (max size 27x21mm) in the left pre-vesical ureter, left hydronephrosis and megaureter (13mm diameter). He had a history of bilateral V grade vesicoureteral reflux (VUR) that was treated with multiple (4-5) endoscopic subureteric injections of Macroplastique ®. The patient received ureteroscopy with visualization of multiple concretions of the bulking agent injected in the previous endoscopic treatments and migrated into the lumen of the pre-vesical ureter. The intraluminal concretions were treated with holmium laser lithotripsy and an indwelling double-J stent was left in place. At follow-up, persistence of the left obstructed megaureter (14mm diameter) with intramural concretions and persistent symptoms including gross hematuria and flank pain were observed. Five months following the ureteroscopy, the patient received REVUR with ureteral tapering and dismembering.

Results: The operative time was 235 minutes and no intra-operative complications occurred. After surgery, the patient developed gross hematuria that resolved spontaneously at post-operative day (POD) 3 and was discharged at POD 4. After removal of double-J stent, post-operative ultrasound showed improved hydronephrosis and renal scintigraphy confirmed improved drainage of the left ureter. To date, the patient is asymptomatic.

Conclusions: Robotic surgery is a feasible and valid option to perform ureteral reimplantation in case of obstructed megaureter requiring tapering and dismembering. Technical variations may assist with facilitating excellent operative outcome

Session IX: Thorax 2 (14:00 - 14:45)

14:00 - 14:05 (58) **Evaluation of patient satisfaction and quality of life after minimally invasive repair of pectus excavatum in adolescents: long-term results of Nuss procedures in a series of 44 patients become adults.** Neil Di Salvo, Eduje Thomas, Giovanni Parente, Tommaso Gargano, Mario Lima. Pediatric Surgery Department, IRCCS Sant'Orsola-Malpighi University Hospital. Bologna, Italy

Introduction: There are only few data on patient satisfaction after Nuss correction of Pectus Excavatum, mainly on adult patients. We already know the technique is effective and results are long-standing. What we really do not know yet is if pediatric patients we operate on are satisfied with final results, if their quality of life is perceived as improved and, finally, whether they would do the procedure again, knowing all the steps they had to go through. It is interesting to evaluate these aspects after a quite long gap of time after the removal of the bar.
Methods: A population of 44 patients treated with Nuss procedure in the age range of 11-15 year old (bar removal after 2 years) was selected at our center. We gave patients two questionnaires after 5 years the removal of the bar, with all patients having become adults (>18 years old).
Results: Satisfaction with chest appearance was reported by 89% of responders. 4 (9%) patients reported full dissatisfaction with the overall results; the most common complaints were severe postoperative chest pain and physical limitations during the bar stay. After long-term observation, over 90% of patients described their quality of life after the operation as being better or much better. The vast majority of population (96%) reported they would opt to have the surgery again but this perception was only achieved a few years after what they called a "traumatic surgical reconstruction".
Conclusions: Adolescents are satisfied with the cosmetic results and their quality of life is perceived as ameliorated after thoracoscopic assisted pectus excavatum correction. This is not seen as immediate but it is achieved only after a quite long gap is passed from the last surgical step (bar removal).

14:05 - 14:10 (68) **Surgical correction of pectus arcuatum (using preoperative 3D reconstruction).** Thomas Apers, Dirk Vervloessem, Paul Leyman, Stijn Heyman
GZA-ZNA Pediatric Surgery Center. Antwerp, Belgium

Pectus arcuatum (also known as Currarino-Silverman syndrome, type II pectus carinatum, chondromanubrial deformity or pouter pigeon chest) is an extremely rare form of congenital carinate chest wall deformity and is often associated with cardiac anomalies. It is characterized by fusion and protrusion of the sternomanubrial junction, together with bilateral deformity of rib cartilages. A case of a 14-year-old female patient with this condition is presented. We used three-dimensional computed tomography reconstruction for operative planning. A modified Ravitch procedure was performed. The procedure consisted of bilateral subperichondrial chondrectomies, wedge osteotomy and H-type plate osteosynthesis. This technique proved to be an effective way of managing this rare chest wall deformity.

14:10 - 14:15 **Short-term respiratory outcomes in thoracoscopic surgery for congenital lung malformations.** M. Ichino[1], F. Macchini[1], A. Morandi[1], M. Ophorst[2], A. Pizzetti[1], F. Maestri[1], P. Bonifazi[1], E. Leva[1]. [1]Paediatric Surgery Departement, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy. [2]NICU, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico. Milan, Italy

Aim of the Study: To assess the early respiratory outcomes of patients that underwent thoracoscopic resection of congenital lung malformations (CLM).
Methods: Retrospective study on patients operated thoracoscopically between 2016 and 2020 for CLM. Patients with at least one post-operative Pulmonary Function Test (PFT) within the second year of life where included. Z-score of PFT (normal value ±1.64) were evaluated, as well as demographic and clinical data. Quantitative results are expressed as mean ± standard deviation.

Results: Twenty-one patients were included in the study (12 males): 20 patients were operated within 7 months of life (1 neonate). In 14 a lobectomy (L) was performed (8 cystic malformations, 5 intra-lobar sequestrations and 1 lobar emphysema), in 7 a sequestrectomy (S) was performed. Twelve patients had pre- and post-operative PFT's. The tPTEF/TE (time to expiratory flow peak/total expiratory time) is on average normal, without pre- to post-operative differences (pre- VS post-: total -0.2±1.1 VS 0.1±1.2, p0.4; L -0.1±1VS 0.5±1.3, p0.3; S -0.3±1.3VS -0.4±0.9, p0.9). The tidal volume (tV) improves in all groups (pre- VS post- : tot -4.5±2.8 VS -1.7±2.6, *p0.02*; L -4.3±1.8 VS -1.5±2.7, p0.06; S -4.9±4.2 VS -1.9±2.8, p0.24). The respiratory rate (RR) improves post-operatively (pre- VS post-: tot 1.7±3.2 VS -0.3±1.6, p0.07; L 1.1±3.2 VS -0.3±1.6, p0.42; S 2.6±3.4 VS -0.3±1.6, *p0.04*). No significant difference was found in post-operative PFT's of patients that had a L vs S (tPTEF/TE -0.4±1.5 VS -0.3±1, p0.85; tV -1.5±2.3 VS -1.2±2.6, p0.83; RR 0.4±1.5 VS -0.7±1.5, p0.67).
Conclusions: This preliminary study on respiratory outcomes in patients that underwent thoracoscopic resection of CLM shows an improvement of pulmonary function in the early

post-operative period, supporting an interventional approach. Long term follow-up is mandatory to assess the delayed outcome.

14:15 - 14:20 (133) **Management of congenital diaphragmatic hernias and diaphragmatic relaxation in a tertiary pediatric facility.** Elena Tarca[1], Viorel Tarca[2], Livia Lupu[3], Dina Al Namat[3], Bogdan Savu[1]. [1]"Gr. T. Popa" University of Medicine and Pharmacy, Iasi, Romania. [2]National Institute of Statistics, Iasi, Romania. [3]"Sfanta Maria" Children Hospital. Lasi, Romania

Introduction: Congenital diaphragmatic hernias (CDH) are still considered among the most common and lethal congenital anomalies, despite notable progress regarding the management of these conditions, pertaining to their morbidity and mortality rates respectively. The aim of our study is to highlight these progresses in our tertiary pediatric hospital.
Methods: We performed a retrospective analytical study, over a period of ten years, on 67 patients with CDH from a total of 109 patients with pulmonary malformations, hospitalized and treated in our pediatric surgery service.
Results: From those 67 patients with CDH, 61% were with left posterolateral CDH, 14% with right CDH, 9% with retrosternal hernia and 16% with diaphragmatic relaxation. More than half of the patients had other associated malformations, most commonly heart abnormalities. 22% of patients died before surgery, due to severe pulmonary hypoplasia and 12% are still requiring further surgery. 66% of patients were surgically treated, 24% by minimally invasive procedures and 42% through open surgery. In terms of survival, the rates were 69% for minimally invasive surgery, versus 57% in open surgery, but the overall survival rate was 52% (when including the patients that died before surgery). The lengths of hospitalization were nearly the same, around 18 days for both surgically treated groups.
Conclusions: Despite important advances in antenatal diagnosis, postnatal medical management, and the introduction of high-frequency and low pressure ventilation and ECMO in CDH, morbidity and mortality rates in this condition remain high. In what concerns the treatment, we did not notice statistically significant differences in our service regarding the surgical approach (classic versus minimally invasive) in terms of mortality rates as well as the period of hospitalization.

14:20 - 14:25 (91) **The nitrofen rat model of congenital diaphragmatic hernia demonstrates increased lung stiffness using shear wave elastography.** Felix R De Bie[1], Ryne A Didier[2], Christopher C Halline[1], Anush Sridharan[2], Abby C Larson[1], Kevin Hayes[1], Travis Kotzur[1], Jonathan Chang[1], Sameer Khan[1], Francesca M Russo[3], Jan Deprest[3], Holly Hedrick[1], Emily A Partridge[1]. [1]Center for Fetal Research, Children's Hospital of Philadelphia, Philadelphia, USA. [2]Department of Radiology, Children's Hospital of Philadelphia, Philadelphia, USA. [3]Department of Development and Regeneration, KU Leuven. Leuven, Belgium

Background: Patients with congenital diaphragmatic hernia (CDH) have intrinsic lower lung compliance. Shear wave elastography (SWE) is an emerging noninvasive ultrasound technology to evaluate fetal lung stiffness with the potential to correlate with histopathologic analyses and postnatal pulmonary function. We aimed to evaluate lung elastography measurements in a nitrofen rat model of CDH.
Methods: To induce CDH in the offspring, four pregnant Sprague-Dawley rats underwent nitrofen gavage on day 9.5 of gestation (E9.5). Three control pregnant dams received olive oil as a sham gavage. At term (E21), dams were anesthetized and fetuses were exposed through hysterotomy while remaining on uteroplacental support, and placed in right lateral decubitus position. A commercially-available Siemens Sequoia ultrasound system with linear 10L4 transducer with SWE capabilities was used to evaluate the (contralateral) right lung stiffness at an imaging depth of ±0.5-1.5 cm. At necropsy, fetal body and lungs were weighed and the presence of CDH confirmed. Only left-sided hernias were considered. Comparisons between groups were made with student-t tests.
Results: A total of 142 SWE measurements of the right lung were analyzed: 74 in fetuses with CDH (n=20) and 68 in controls (n=23). There was a statistically significant increase in mean right lung stiffness in CDH animals compared to controls (5.96±2.26 kPa vs. 4.24 ± 0.73 kPa, $p<0.001$). Total lung weight and lung weight to body weight ratio were decreased in CDH pups compared to controls (91.7µg vs. 181.7µg; $p<0.001$ and 1.8% vs. 3.0%; $p<0.0001$).
Conclusion: Increased ultrasound SWE values were demonstrated in fetal rats with left-sided CDH compared to controls. This technique demonstrates promise as a noninvasive method to evaluate lung stiffness in CDH and potentially to assess CDH severity and correlate with postnatal pulmonary function.

14:25 - 14:30 (130) **Prenatal treprostinil crosses the placenta in rats and is well tolerated by the mother and the fetus.** Felix R De Bie[1,2], Christopher Halline[1], Travis Kotzur[1], Kevin Hayes[1], Jonathan Chang[1], Abby C Larson[1], Copeland C Rouse[1], Sameer Khan[1], Francesca M Russo[2], Holly Hedrick[1], Jan Deprest[2], Emily A Partridge[1]. [1]Center for Fetal Research, Children's Hospital of Philadelphia, Philadelphia, USA. [2]Department of Development and Regeneration, KU Leuven. Leuven, Belgium

Introduction: Prenatal therapy with prostanoids is considered as a potential non-invasive treatment strategy for congenital diaphragmatic hernia (CDH). Before assessing the efficacy of the drug in a rat disease model, transplacental transfer as well as fetal and maternal tolerance to the drug need to be demonstrated.
Methods: At day 16.5 of gestation (E16.5), a subcutaneous osmotic pump was implanted in pregnant Sprague-Dawley rats, delivering different doses of treprostinil i.e. 100, 400, 900 and 1500 ng/kg/min until harvest at term (E21). Maternal weight, comfort level (Rodent Grimace Score) and side-effects of treprostinil (flushing, pump site induration and diarrhea) were monitored daily during drug administration. At term, fetal and maternal plasma was collected, fetal pups weighed (total body & organs) and assessed for viability.

Plasma samples were analyzed for treprostinil drug concentrations with high-performance liquid chromatography in tandem with mass spectrometry. Placentas, fetal brains and kidneys were collected and formalin-fixed for histological evaluation. Group differences were assessed with ANOVA-tests.

Results: Fetal treprostinil concentrations were quantifiable for the 400, 900 and 1500 ng/kg/min doses: 0.29ng/mL, 0.36ng/mL and 0.83ng/ml. The mean transplacental transfer ratio was 11.9±4.1%. For the 1500ng/kg/min dose, fetal concentrations attained the clinical neonatal range (>0.5ng/mL). Maternal concentrations were dose-dependent, reaching 0.68ng/mL, 1.76ng/mL, 5.42 ng/mL and 6.70ng/ml. All dams survived and gained similar weight per pup (P=0.4601). Rodent grimace scores were not different between groups (P=0.1258), and no treprostinil specific side-effects were noted. Fetal body, lung, heart and placenta weights were not different between groups (all P>0.3090). Gross pathological analysis of brain, kidney and placenta showed no abnormalities.

Conclusion: Prenatal treprostinil crosses the placenta and is well tolerated by both the mother and the fetuses at different tested doses. These findings are an essential step towards efficacy assessment in the nitrofen disease model of CDH.

14:30 - 14:35 (131) **Prenatal treprostinil improves the pulmonary hypertensive phenotype in the nitrofen rat model of congenital diaphragmatic hernia.** Felix R De Bie[1,2], Christopher Halline[1], Travis Kotzur[1], Kevin Hayes[1], Jonathan Chang[1], Abby C Larson[1], Copeland C Rouse[1], Sameer Khan[1], Ryne A Didier[1], Anush Sridharan[1], Francesca M Russo[2], Holly Hedrick[1], Jan Deprest[2], Emily A Partridge[1]. [1]Center for Fetal Research, Children's Hospital of Philadelphia, Philadelphia, USA. [2]Department of Development and Regeneration, KU Leuven. Leuven, Belgium

Introduction: Severe pulmonary hypertension accounts for a substantial part of mortality and morbidity in patients with congenital diaphragmatic hernia (CDH). Because in CDH pulmonary vascular development is already abnormal early during fetal development, we hypothesized that prenatal treprostinil through its antiremodeling effect could improve the pulmonary hypertensive phenotype.

Methods: To induce CDH in the offspring, pregnant Sprague-Dawley rats were gavage with nitrofen on day 9.5 of gestation (E9.5). At the start of the pseudoglandular phase of lung development (E16.5) treprostinil was administered via a subcutaneous osmotic pump at two doses 900 and 1500 ng/kg/min until term (E21). At term, pups were harvested and prepared for different analyses: some pups underwent pressure-controlled mechanical ventilation for 20 minutes others underwent tracheal formalin instillation for histological analysis. Airway and vascular morphometry were performed in a blinded manner and in duplicate.

Results: The mean percentage medial wall thickness (%MWT) of pulmonary arterioles (<100µm inner diameter) was higher in CDH than control pups (46.6±8.2% vs 26.9±6.2%, p<0.0001). In pups with CDH, prenatal exposure to treprostinil reduced the %MWT to 38.5± 8.4% and 40.2±9.7% for the 900 and 1500 ng/kg/min doses respectively (p<0.0001

compared to untreated CDH). Reduction of the %MWT was not dose-dependent. In normal pups, prenatal exposure to treprostinil led to an increase in the %MWT to 36.6±11.1% and 36.9±9.3% for the 900 and 1500ng/kg/min doses respectively ($p<0.001$ compared to control). Lung hypoplasia, pulmonary function tests and pulmonary airway development were all unaffected by exposure to the drug.
Conclusion: Prenatal treprostinil reduces the pulmonary arteriolar medial thickness in pups with CDH, however increases it in normal pups. Treprostinil holds promise as a prenatal non-invasive treatment strategy for the pulmonary hypertension component of the CDH pathophysiology, however should be avoided in normal lungs.

14:35 – 14:40 (128) **Combined endoscopic/thoracoscopic excision of a tracheo-bronchial remnant.** Benjamin SR Allin[1], Anthi Thangarajah[2], Marco Novelli[2], Muhammad Choudhry[2]. [1]Chelsea and Westminster Hospital, London, United Kingdom. [2]Chelsea and Westminster. London, United Kingdom

Background: Oesophageal stenosis secondary to a tracheo-bronchial remnant (TBR) is a rare condition characterized by the presence of tracheal/bronchial cartilage in the wall of the oesophagus. We present a case of a combined endoscopic/thoracoscopic excision of TBR on background of previously repaired oesophageal atresia.
Case Report: A two-year old boy who underwent repair of oesophageal atresia in infancy was referred with dysphagia present from 6 months, and a contrast study showing a lower oesophageal narrowing, unresponsive to repeated oesophageal dilatations.
Management: Upper gastrointestinal contrast study was repeated and confirmed the presence of a dilated upper and mid-oesophagus with smooth tapering to the lower oesophagus. Immediately proximal to the gastro-oesophageal junction a narrowed segment was identified with a maximal luminal diameter of 3mm. No improvement was seen after two further dilatations, and it was determined that the narrowing most likely represented a TBR as opposed to a GORD associated stricture. A combined endoscopic/thoracoscopic approach was taken to excision of the TBR. Dissection of adhesions around the distal oesophagus was undertaken thoracoscopically, with use of endoscopic balloon placement to confirm the location of the TBR. The extent of the remnant was marked thoracoscopically using diathermy with the balloon in situ, before removal of the endoscope, excision of the TBR, and completion of an end-end oesophageal anastomosis using PDS. Outcome: Despite development of an empyema and a small, conservatively managed, oesophageal leak, the child progressed to full enteral feeding over a period of a few weeks. TBR was confirmed on histology, and at clinic review post-discharge the child was tolerating a full oral diet and had good weight gain and nutritional status.
Conclusion: We report a combined endoscopic/thoracoscopic technique for excision of a lower oesophageal TBR, with the child progressing post-operatively to tolerate full oral diet for the first time.

Session X: Robotics and Innovations 2 (14:45 - 15:35)

14:45 - 14:52 (81) **Robotic assisted laparoscopy adrenalectomy in children.** Marianna Cornet[1], Claire Dagorno[1], Carmen Capito[1], Laureline Berteloot[2], Véronique Minard Collin[3], Daniel Orbach[4], Sabine Sarnacki[1], Thomas Blanc[1]. [1]Department of Paediatric Surgery, Hôpital Necker-Enfants Malades, Hôpitaux Paris-centre, APHP, Paris, France. [2]Department of pediatric radiology, Hôpital Necker Enfants -Malades, Hôpitaux Paris-centre, APHP, Paris, France. [3]Department of Paediatric and Adolescent Oncology, Gustave-Roussy, Villejuif, France. [4]SIREDO Oncology Center (Care, Innovation and Research for Children, Adolescents and Young Adults with Cancer), Institute Curie. Paris, France

Background: Robotic adrenalectomy is a minimally invasive alternative to laparoscopic adrenalectomy. To date, only case reports of robotic adrenalectomies have been published in children. This study presents a single tertiary pediatric surgical center's series of 27 robotic adrenalectomies to evaluate the procedure's safety and efficacy.
Methods: Prospective study from August 2017 to March 2021. Age, diagnosis, image-defined risk factors (IDRFs), surgical indication, operative time, conversion, bleeding, post-operative complications, hospital stay and outcome were assessed prospectively.
Results: 27 adrenalectomies were performed during 23 procedures: 12 neuroblastoma, 2 ganglioneuroma, 5 pheochromocytoma, and bilateral adrenalectomy for 2 Carney syndrome and 2 McCune Albright syndrome. The median age was 5,7 years (2,3-11); the youngest was 6 months-old. The median weight was 18 kg (12-31) with the smallest weighing 4.6 kg. Six patients with neuroblastoma had 1 IDRF at the preoperative imaging workup, which was contact with or encasement of the renal pedicle. The mean tumor size was 36 mm (30-40). All cases were performed transperitoneally. No intra-operative complications occurred. There were no conversions. Median operative time was 216 minutes (200-248). The median hospital stay was 3 days (2-3). One patient had a retroperitoneal collection after a left adrenalectomy for McCune Albright syndrome, treated by percutaneous drainage. None of the patient presented local recurrence at a mean follow up of 2 years.
Conclusions: Robotic adrenalectomy in children is a safe and effective alternative to traditional laparoscopic adrenalectomy. Careful patient selection is crucial.

14:52 - 14:57 (84) **The ALEXIS® system for laparoscopic splenectomy in pediatric patients.** Emanuele Trovalusci[1], Marco Gasparella[1], Cristina Pizzato[2], Paola Midrio[1]. [1]Pediatric Surgery, Ca' Foncello Hospital, Treviso, Italy. [2]Pediatric Oncology Unit - Pediatrics, Ca' Foncello Hospital. Treviso, Italy

Background: The laparoscopic splenectomy in pediatric patients is performed worldwide but often the disproportion between size of patients and size of organs requires an extra laparotomy access for spleen removal. The aim of the present study was to evaluate the safety and effectiveness of the Alexis ® system to retrieve the spleen without additional laparotomy access.
Methods: The charts of all patients who underwent splenectomy at our center during the last 5 years were retrieved. In all the cases the Alexis ® system was placed in the umbilicus, thru which a 10mm camera was inserted. Three additional 5mm standard trocars were inserted.
Results: Seven patients, affected by spherocytosis (3), epidermoid cyst (2), idiopathic thrombocytopenic purpura (2) and thalassemia (1), underwent laparoscopic splenectomy at a median age of 10 years (range: 8-17). Median patients' weight was 32,5 kg (range: 25-71) and spleen size 15 cm (11-18). In all the cases, upon removal of the camera, the retrieval bag was inserted thru the umbilicus under direct view, the spleen retrieved, morcellated, and removed. No conversion nor enlargement of one of the ports nor an extra laparotomy access were required. The patients were discharged on the fifth post-operative day and the cosmetic results were excellent.
Conclusion: Removal of the spleen can be safely performed without any additional laparotomy thru the Alexis ® system placed in the umbilicus. This system is effective also in case of major patient/organ size disproportion and the final cosmetic aspect is excellent.

14:57 - 15:02 (143) **Robotic Assisted versus Laparoscopic or Open Surgery for Choledochal Malformation: A Systematic Review.** Omar Nasher, Joseph Wiltshire, Naved Alizai. The Leeds Teaching Hospitals NHS Trust, Leeds General Infirmary. Leeds, United Kingdom

Aim: Robotic assisted surgery for complex reconstructive hepatobiliary procedures in children allows precise dissection and suturing, which are key for a successful patient outcome. To date there are only case reports and series in the published literature on minimal access surgery for choledochal malformation. The aim of the study was to compare Robotic Assisted Surgery (RAS) with laparoscopic Assisted Surgery (LAS) and/or Open Surgery (OS) for this rare congenital biliary tract malformation.
Methods: A systematic review of the published literature was conducted using PubMed, Medline and Cochrane library. We included comparative studies investigating different outcomes following RAS versus LAS and/or OS for choledochal malformation in children. The outcomes of interest, which included operative time, length of hospital stay, post-operative complications, blood loss and conversion to open surgery were collected and analyzed.
Results: 61 articles were identified but only 4 met the eligibility criteria. These were single-center retrospective studies with a total of 626 patients: 157 patients had undergone RAS, 201 LAS and 268 OS. Patients undergoing RAS had a shorter length of stay (7.65±2.31 days) compared to LAS (8.14±1.84 days) and OS (10.19±2.47 days). Post-operative complications were similar in the RAS and LAS groups (5% and 8% respectively) when compared to OS (3%). Intra-operative blood loss was of lower volume in LAS

(22.34±9.39ml) compared to RAS (28.54±94.46ml) compared to OS (39±54.94ml). 5% of LAS patients required conversion whereas there was no conversion in the RAS group.
Conclusion: Given the limitations of the available data on robotic assisted surgery for choledochal malformation compared to laparoscopy assisted or open surgery, the current published evidence suggests that the former results in a shorter length of hospital stay and fewer post-operative complications, compared to the laparoscopic group with no (or possibly low) conversion rate.

15:02 - 15:09 (124) **Robotic assisted colectomy: first prospective series in children.** Garance Martin[1], Louise Montalva[1], Liza Ali[1], Anne-Emmanuelle Colas[2], Christine Martinez-Vinson[3], Alaa El Ghoneimi[1], Arnaud Bonnard[1]. [1]Department of General and Thoracic Pediatric Surgery, Hôpital Robert Debré, Paris, France. [2]Department of Pediatric Anesthesia , Hôpital Robert Debré, Paris, France. [3]Department of Pediatric Gastro-enterology. Paris, France

Aim: Although robotic surgery is being used for an increasing variety of pediatric conditions, few studies report robotic-assisted colonic resections. The aim of this study was to describe our series of robotic-assisted colonic resections in children.
Methods: We prospectively collected demographics, surgical data, and outcome of children who underwent robotic colonic resections (June 2019-March 2021). Clavien-Dindo classification assessed 30-day complications.
Results: Eleven patients (median age: 13 years [IQR=10-15.6], weight: 40.4kg [IQR=28-55]) underwent robotic-assisted colectomy.
Surgery: Type of surgery and main indications were: ileo-cecal resection for Crohn's disease-related stenosis (n=4, 36%), sigmoidectomy for sigmoid volvulus (n=3, 27%), right colectomy after colorectal anastomosis and Duhamel procedure for Hirschsprung's disease (n=2, 18%), total proctocolectomy for familial adenomatous polyposis (n=1, 9%), left colectomy for thrombotic micro-angiopathy-related stenosis (n=1, 9%). Conventional trocar placement was used for all surgeries, apart from ileo-cecal resections, for which supra-pubic trocar placement was used (n=4, 36%). In addition to 4 trocars, an airseal trocar was used. Median operative time was 3 hours (IQR=2.8-3.3), median console time was 2.2 hours (IQR=1.9-2.4). No conversions were necessary.
30-day post-operative outcome: Complications occurred in 44% (n=5). Surgical management (Clavien-Dindo-IIIb) was required for 18% (n=2): intra-abdominal abscess drainage after ileo-cecal resection (n=1), exploratory laparoscopy for intestinal obstruction after proctocolectomy (n=1). Medical management (Clavien-Dindo-II) with antibiotics was required for abscess in 27% (n=3). Median length of stay was 6 days [IQR=4-16].
Conclusion: Our preliminary experience suggests that robotic-assisted colectomy is feasible for a variety of indications in children.

15:09 - 15:14 (61) **Left thoracoscopic thymectomy with articulated wristed instruments: first introduction in pediatric surgical oncology.** Tommaso Gargano, Giovanni Parente, Eduje

Thomas, Neil Di Salvo, Tosca Cerasoli, Francesca Ruspi, Mario Lima. Pediatric Surgery Department, IRCCS Sant'Orsola-Malpighi University Hospital. Bologna, Italy

Introduction: Robotic assisted surgery is well-known for adding multiple advantages of minimally invasive surgery (MIS) especially due to 3D visualization and wristed instruments. Its extensive application in paediatric surgery have been hindered by excessive costs and lack of miniaturized instruments. The introduction of wristed instruments could represent a valid alternative to a surgical robotic system.
Case presentation: A 14-year-old boy was admitted to the Emergency Department in June 2020 complaining fatigue, lower limbs hyposthenia, painful muscular cramps, encumbering gait, and difficulties getting up when sitting on the floor. Several laboratory and diagnostic exams were conducted, leading to a final diagnosis of nonthymomathous Myasthenia Gravis (MG), positive for acetylcholine receptor (AChR) antibody test. MRI images showed an enlarged thymus in the anterosuperior region of the mediastinum, measuring 2x7x9,5 cm. Therefore, he was referred to our Surgical Unit for surgical treatment. Left thoracoscopic thymectomy was performed under general anesthesia. The procedure was conducted using a 5 mm port was used for the camera, two 8 mm operating ports were placed for wristed instruments and an additional 5 mm port for a pulmonary retractor. After opening the mediastinal parietal pleura, thymus and peri thymic fat were bluntly dissected from the surrounding structures until the contralateral pleura was identified. The specimen was removed in a plastic retrieval bag through one of the 8 mm ports. The entire operation was performed without complications and with minimal bleeding.
Conclusion: We present a case of left thoracoscopic thymectomy with the use of wristed instruments. Such devices offer a wider range of motion and their combined use with a 3D visor could mimic a robotic surgical system.

15:14 - 15:19 (101**) Robotic-assisted thoracoscopy thymectomy for juvenile myasthenia gravis: our experience.** Carlotta Plessi[1], Francesco Molinaro[1], Rossella Angotti[1], Giulia Fusi[1], Marina Sica[1], Camilla Todesco[1], Eugenio Campanelli[1], Luca Luzzi[2], Mario Messina[1]. [1]Department of Medical Sciences, Surgery and Neuroscience, Section of Pediatric Surgery, University of Siena, Siena, Italy. [2]Thoracic Surgery Unit, Department of Medicine, Surgery and Neuro Sciences, Diagnostic Imaging, University of Siena. Siena, Italy

Juvenile myasthenia gravis (JMG) is a rare debilitating autoimmune disease, with unclear pathogenesis. Thymectomy, providing a surgical immunomodulation, is a safe and reliable treatment for JMG in both adult and pediatric patients. In the last years, minimally invasive approach replaced sternotomy, which is widely used in adult patients. We report our experience of robot-assisted thoracoscopic thymectomies in two pediatric patients for JMG. Procedure was performed with the Da Vinci surgical robot (Xi) using left-sided approach. Left lung was kept out from mechanic ventilation. Three 8 mm ports were introduced, one on the V intercostal space on anterior axillary line (3D camera), one on the III intercostal space on midaxillary line and one on the V intercostal space on the parasternal line. Bulk resection of gland was made using Maryland grasper and Harmonic

scalpel, starting from left pericardiophrenic angle and continuing cranially. Thymus was unstick from the posterior face of the sternum until the right pleura releasing lower thymic horns. After that, controlateral right-side thymectomy was continued into the neck to include the upper horns and finally it was removed with an endocatch bag. Histopathological examination showed thymic hyperplasia. There were no perioperative and postoperative complications. The discharge was on IV post-operative day. After thymectomy, patients reported an improvement in symptoms and stopped medical therapy. VATS and robot-assisted thoracoscopic thymectomy have increasingly taken hold in recent years. The surgical treatment offered to patient an improvement in clinical status. Surgery by robotic assistance has demonstrable advantages, including three-dimensional visualization and articulating instruments. Left lateral approach provided excellent visualization of the thymic veins, anonymous vases and phrenic nerves. Three-dimensional visualization as well as articulating arms greatly facilitated the dissection compared with standard thoracoscopic technique. Literature reports few series of robotic approach for surgical treatment of JMG in children, therefore further studies are needed.

15:19 - 15:26 (46) **Pediatric Robotic Surgery. Plan for increasing complexity of procedures.**

Silvia Bisoffi[1], Francesco Fascetti Leon[1], Marco Castagnetti[2], Stefania Michelon[3], Costanza Tognon[3], Piergiorgio Gamba[1]. [1]Pediatric Surgery Unit, Women's and Children's Health Department. University of Padova., Padova, Italy. [2]Pediatric Urology Unit, Women's and Children's Health Department. University of Padova, Padova, Italy. [3]Anesthesia and Intensive Care Unit, Women's and Children's Health Department, University of Padova. Padova, Italy

Robotic surgery is acquiring a massive role in the fields of mininvasive surgery. In September 2018, the "University of Padua" Hospital started a robotic surgery program, where the DaVinci Xi system with 2 consoles for contemporary surgery and teaching was at disposal of several specialties. Two sessions per month were assigned to the pediatric surgery unit, whose trained team of 2 anesthesiologists and 2 surgeons performed all the procedures. Here we present our developing program of pediatric robotic surgery as a background for common strategies towards safety and efficacy.

Procedures that already have a published advantage with robotic technology or similar results to the current gold standard (pieloureteroplasty, fundoplication) were initially considered. Subsequently, we performed other procedures less established, which we thought would have brought benefits to the patient.

We prospectively collected data (operative time - total and console, docking time, procedure-related complications, and postoperative length of stay) from patients undergoing robotic surgery at our center in a period of 21 months.

Data for 37 patients were available with a mean age of 138 months and a mean weight of 46 kg. 14 patients underwent pieloureteroplasty and 9 antireflux procedures. 14 other procedures were executed (gastrointestinal tract, nephrourologic tract, and oncology).

The mean total operative time was 252 min (range 155-410 min). The mean console time was 166 min (range 65-305 min). The mean docking time was 13 min (range 5-25 min). The

median postoperative length of hospital stay was 6 days (IQR=2). No major complications were detected.
Repeated procedures allowed us to achieve better performance in terms of time (total, console, and docking). Simultaneously we decreased the docking time of the other procedures. We conclude that our improving performance in repeated procedures can be transposed to uncommon procedures, which are the standard scenario in pediatric surgery.

15:26 - 15:31 (142) **A Novel mattress adaptation to optimize patient positioning for robotic surgery in children.** Joseph J Wiltshire, Omar Nasher, Naved Alizai. Leeds Children's Hospital. Leeds, United Kingdom

Robotic surgery is becoming increasingly popular in paediatric practice, especially to perform complex reconstructive procedures. Full range of movement of the robotic arms is crucial to facilitate safe surgery. Small size of the patients, in comparison to the operating tables restricts robotic arm movement. The aim of creating a bespoke operating table mattress was to maximize the potential of the robotic system.
For larger children, considerations for robotic surgery such as positioning, port site location and instrument size are largely the same as in adults. In children smaller than 10kg one of the most important technical considerations is patient positioning. For all children undergoing robotic surgery, careful consideration must be made of comfortable positioning, skin protection and securing the patient to the table. The small size of these patients presents an extra challenge to ensure the robot arms retain their full range of motion. When operating on a small child lying supine on a standard operating table, the arms of the robot often collide with the edges of the table when manipulated at certain angles. To counteract this problem, our team has produced a mattress which fits on top of the standard operating table to lift the patient. The design includes a soft, ergonomically positioned patient surface to protect the skin whilst providing a stable surface onto which they are safely secured. We have produced a video demonstration of the mattress in action. The use of the bespoke designed mattress reduces robot arm clashes and maximizes arm movement arcs, in a safe and secure patient.

Session XI: Miscellaneous 2 (15:35 - 16:15)

15:35 - 15:42 (77) **Pediatric minimal invasive surgery - a bibliometric study on 30 years of research activity.** Boshen Shu, Xiaoyan Feng, Illya Martynov, Martin Lacher, Steffi Mayer. University of Leipzig, Department of Pediatric Surgery. Leipzig, Germany

Aim: In the last 30 years, pediatric minimal invasive surgery (MIS) has become a standard technique worldwide. We aimed to analyze the research activity in this field, identify hot topics and evidence levels of the 50 most cited publications on MIS.
Material and Methods: Articles on pediatric MIS (1991-2020) were analyzed from the Web of Science™ for the total number of publications, citations, journals, and impact factor (IF).

Of these, the 50 most cited publications were evaluated in detail and classified according to the level of evidence (i.e. study design) and topic (i.e. surgical procedure) studied. Robotic surgery and neonatal thoracoscopy were considered as advanced surgical techniques.
Results: 4,464 publications and 53,111 citations from 684 journals on pediatric MIS were identified. The 50 most cited papers were published 1991-2013 from 32 institutions in USA/Canada (n=28), Europe (n=19), and Asia (n=3) in 12 journals (40%: IF>4). Four first/senior authors (US/Europe) contributed to 26% of the 50 most cited papers. Gastrointestinal surgery (50%) and urology (28%) outnumbered neonatal thoracoscopy (8%) and robotics (8%). Hot topics were laparoscopic pyeloplasty (n=9), inguinal hernia repair (n=7), appendectomy, and pyloromyotomy (n=4 each). The majority of publications were retrospective studies (n=33) and case reports (n=6; mean IF 4.1±2.5). They were cited as often as articles with high evidence level (meta-analyses, n=2; randomized-controlled trials, n=7; prospective studies, n=2; mean IF 9.9±17.0), which were published on inguinal hernia repair, appendectomy, pyloromyotomy (n=3 each) as well as decortication, and CDH/EA repair (n=1 each) (mean citations 125±39.4 vs. 125±34.5).
Conclusions: Laparoscopic pyeloplasty, inguinal hernia repair, appendectomy, and pyloromyotomy drive the most cited publications in pediatric MIS. Retrospective trials still dominate the evidence circulated. Numerous studies with strong evidence are missing, especially on advanced techniques in pediatric MIS.

15:42 - 15:47 (33) **Standardization of management using laser epilation and oxygen-enriched gel dressing in pediatric patients undergoing Pediatric Endoscopic Pilonidal Sinus Treatment (PEPSIT).** Ciro Esposito, Mariapina Cerulo, Fulvia Del Conte, Vincenzo Coppola, Giuseppe Autorino, Roberto Cardone, Rachele Borgogni, Maria Escolino. Federico II University of Naples. Naples, Italy

Background: This study aimed to compare our current wound treatment protocol [laser epilation (LE) and oxygen-enriched oil-based gel dressing] with our previous protocol (silver sulfadiazine spray) and demonstrate its efficacy as means to prevent pilonidal sinus disease (PSD) recurrence in children undergoing pediatric endoscopic pilonidal sinus treatment (PEPSiT).
Methods: We retrospectively reviewed the data of 87 pediatric patients (52 boys), with an average age of 17.1 years (range 12-18), who underwent PEPSiT over a 24-month period. The patients were divided into two groups: G1 (n = 47) treated with new protocol; and G2 (n = 40) with existing protocol. The two groups were compared regarding the operative outcome, wound-healing time, disease recurrence, wound infections, and other complications.
Results: The median healing time significantly decreased in G1 (21 days) compared with G2 (28.1 days) [p=0.001]. The disease recurrence rate was significantly lower in G1 (n = 1, 2.1%) compared with G2 (n = 6, 15%) [p=0.001], and the wound infection (Clavien 2) rate was significantly lower in G1 (n = 1, 2.1%) compared with G2 (n = 4, 10%) [p=0.001].

Granuloma of the wound occurred in two G2 patients (5%), who were treated with topical silver nitrate (Clavien 2).
Conclusions: Our new standardized pre- and postoperative wound management, including LE and oxygen-enriched oil-based gel dressing, was extremely safe and effective in reducing PSD recurrence and wound infection rate in pediatric patients undergoing PEPSiT. It was also associated with significant improvement and acceleration of wound-healing time.

15:47 - 15:52 (53) **Hyperoxidized natural oils dressing in post-operative management of pilonidal sinus treated by EPSIT in children: preliminary experience.** Silvia Cavaiuolo[1], Maria ruffoli[1], Alessandro Raffaele[1], Fabrizio Vatta[1], Luigi Avolio[1], Marta Gazzaneo[1], Gian Battista Parigi[1,2], Giovanna Riccipetitoni[1,2]. [1]S.C. di Chirurgia Pediatrica - Fondazione IRCCS Policlinico San Matteo, Pavia, Italy. [2]Università degli studi di Pavia. Pavia, Italy

Aim: Pilonidal Sinus Disease (PSD) is a chronic inflammatory condition in predisposed adolescents. Development of Endoscopic Pilonidal Sinus Treatment (EPSiT) technique dramatically improved the outcome. This mini-invasive approach guarantees technical and aesthetic advantages, short hospitalization and rapid return to normal life. Despite these benefits, post-operative dressing can last several weeks. Aim of this study is to evaluate, as reported by Esposito and Mendoza- Sagaon, the advantages of using hyperoxidized natural oils (HNO) in EPSiT post-operative management. HNO is a substance creating a filmogenous protective barrier, promoting re-epithelialization by fibroblasts proliferation.
Material and Methods: We studied post-operative healing in patients less than 18 year-old undergone EPSiT from February 2020 to March 2021. HNO was suggested for all patients after surgery at alternate days with sodium hypochlorite skin solution (SH). In patients refusing HNO a daily dressing with only SH was used. We evaluated length of healing process (LH), complications, need for re-intervention, patient's satisfaction.
Results: We enrolled 10 consecutive patients, 6 M: 4F, median age 14 years old (10-16). HNO was applied in 6/10 cases while 4/10 refused it. Patients treated with HNO had a LH from 7 to 213 days (median 70 days). None of them needed reoperation or showed complications. Patients refusing HNO had a LH from 60 to 314 days (median 156 days); two patients required re-operation and reached healing using HNO after re-do surgery. Reason for refusing HNO was due to its high cost. All patients treated with HNO were satisfied from result. 3/4 patients refusing HNO complained about the duration of the dressings.
Conclusion: HNO after EPSiT seems to accelerate LH, to prevent complications or re-do surgery, with high patient satisfaction. Limit of its application is cost. More studies and Randomized Controlled Trials are needed to confirm these results.

15:52 - 15:57 (57) **Endoscopic Pilonidal Sinus Treatment (EPSiT): a novel minimally invasive technique changing the surgical approach to pilonidal cysts.** Giovanni Parente, Tommaso Gargano, Eduje Thomas, Neil Di Salvo, Mario Lima. Pediatric Surgery Department, IRCCS Sant'Orsola- Malpighi University Hospital. Bologna, Italy

Introduction: Pilonidal cysts are a type of skin infection that affect midline groove of adolescent patients especially in case of hirsute ones. The classical treatment consists in the surgical removal of the sick tissue with often extensive incisions, important post-operative pain and discomfort.
The Endoscopic Pilonidal Sinus Treatment (EPSiT) represents a novel alternative that combines efficacy and minimal invasive surgery. Aim of this study is to verify efficacy and safety of this technique in pediatric patients.
Material and Methods: A retrospective study was conducted in order to include in this study all patients operated on for pilonidal cyst inflammation using the EPSiT technique from January 2020, when our institution got equipped with all the necessary instruments. Patients with less than 3 months follow-up (FU) were excluded from the study. Data are reported as mean ± standard deviation. The technique requires the use of the following devices: a fistuloscope (8° angled eyepiece, equipped with optical channel and a working/irrigation channel, diameter: 3.2 X 4.8 mm and operative length: 18 cm), a monopolar electrode, a brush and an endoscopic forceps. The fistuloscope is connected to a 1,000 ml bag of saline solution.
Results: 10 patients were included in the study. The mean age at surgery was 14.6 ± 1.3 years (range: 12-16 years old) with a mean FU of 6.4 months (range: 3-12 months. The procedures were well tolerated, had a mean duration of 36 ± 12 minutes, and all patients were discharged 24 hours after surgery. It was recorded a 100 % of success with no postoperative complications an no recurrence. Patients didn't required analgesics after the procedure.
Conclusion: EPSiT, in our preliminary experience, seems to be an effective and safe procedure with no postoperative complication and pain and better cosmesis. We therefore encourage its diffusion in pediatric surgery units.

15:57 - 16:02 (83) **Patient-Reported Outcomes Measurements in Pediatric Endoscopic Pilonidal Sinus Treatment.** João Moreira-Pinto, Fábio Almeida, Sofia Sousa, Raquel Ramos, Susana Gregório. Hospital-Escola da Universidad Fernando Pessoa. Porto, Portugal

Aim: Pediatric Endoscopic Pilonidal Sinus Treatment (PEPSiT) has been proposed as a minimally invasive surgery for sacrococcygeal pilonidal disease (SPD). In this study, we present the outcomes of this technique reported by our patients and their parents.
Methods: All patients' parents submitted to PEPSiT in our department between 2018 and 2020 were contacted by telephone in order to consent to enter this study (N=49). All of them agreed to answer a Google Forms query, where questions regarding pain after surgery (0-10, visual scale), return to regular activities, time to complete wound closure, recurrence of the disease, and overall satisfaction (1-5, visual scale) were asked.
Results: 44 patient-parent duets responded to the query. 30 patients were male. The median age was 16 years old (range: 7-21). The median body mass index was 22 (range: 18-60). 14/44 had SPD for longer than 12 months, 7/44 had been operated before, 16/44 had at least one direct relative with SPD. Median follow-up after PEPSiT was 20 months

(range 3-32). Concerning pain median value was 3 on day one after surgery (range: 0-8) and 1 after one month (range 0-7). Every patient had their wounds completely closed after PEPSiT. The median time to complete wound closure was 3 weeks (range 1-16). 6/44 patients had a recurrence of SPD: 1 was re-operated in another hospital, 1 had a second PEPSiT in our hospital, 1 resolved with local dressings, 3 were previously lost to follow-up and will be scheduling reevaluation. 82% of respondents were 5/5 satisfied with EPSiT.
Conclusion: PEPSiT is effective in treating PSD. Recurrence of the disease remains challenging. Patient-Reported Outcome Measurements are valuable in assessing patient and parents assessment of this technique and also to regain contact to patients lost to follow-up.

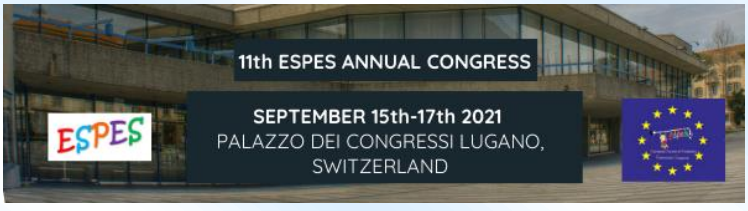
16:02 - 16:09 (117) **Pilonidal sinus disease: outcomes and results analysis between Endoscopic Treatment (PEPSiT) and classical surgical excision (SE).** Cosimo Bleve, Lorenzo Costa, Lorella Fasoli, Enrico La Pergola, Maria Luisa Conighi, Elena Carretto, Salvatore Fabio Chiarenza. Pediatric Surgery Unit, Regional Center of Pediatric Urology and Minimally Invasive Surgery and New Technologies AULSS 8 S. Bortolo Hospital. Vicenza, Italy

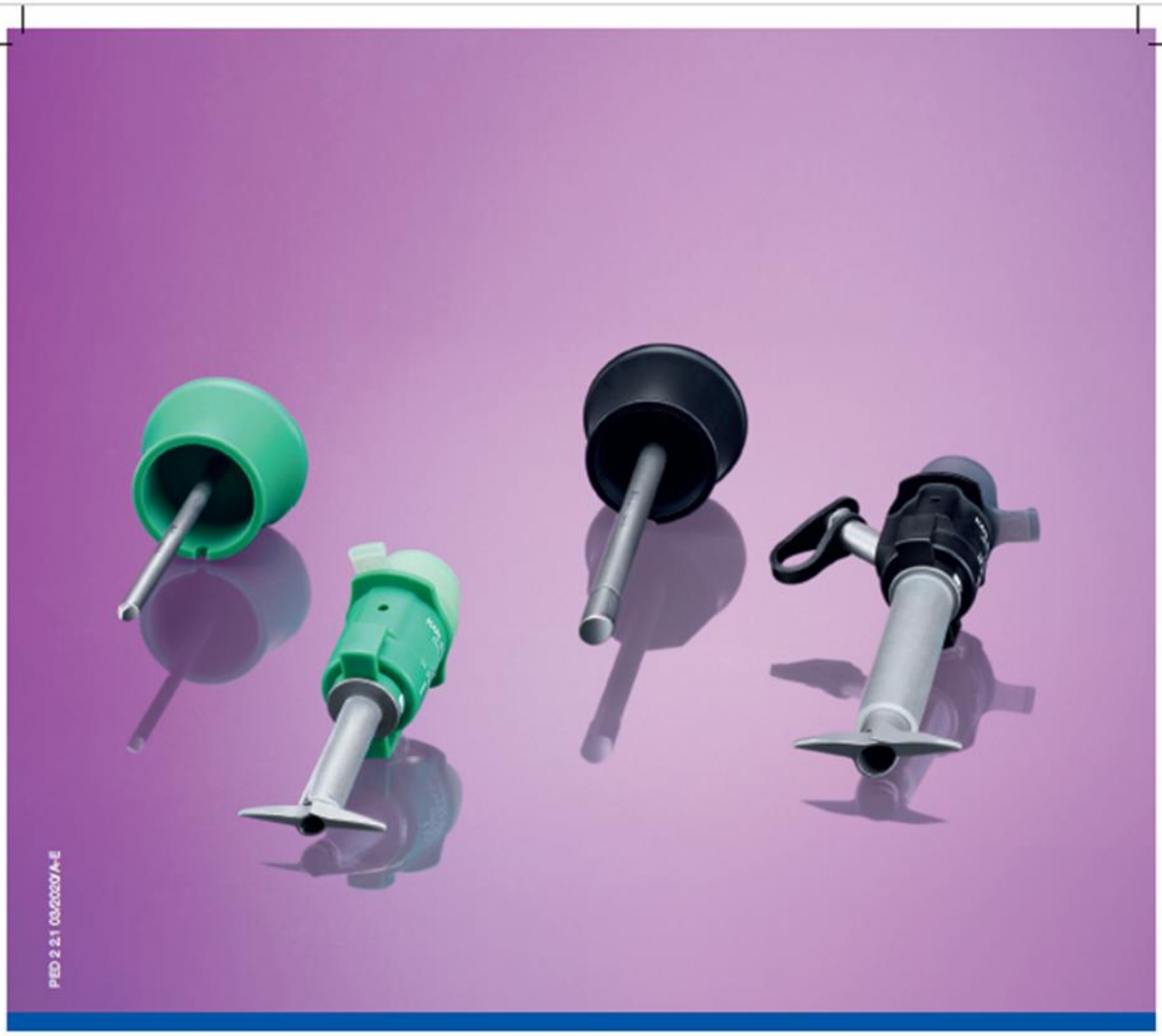
Introduction: Pilonidal sinus disease (PS) is a common inflammatory disease that usually can significantly impact the quality of life of patients. It's commonly treated with open-surgical-excision (SE) techniques (lay open with spontaneous healing/primary closure). Introduction of Pediatric Endoscopic treatment (PEPSiT) improved patient postoperative quality of life. We analyzed PEPSiT short-term results in our Centre comparing it with SE.
Methods: From January 2010 to December 2020 167patients (88males, 79females) were referred to our Centre for PS. From September 2018 we introduced PEPSiT and 53patients were treated with this technique (median follow-up 25months); the remaining (114) had a SE. We retrospectively analyzed and compared the 2groups (median follow-up 6years) that are homogeneous for demographic and clinical characteristics.
Results: SE-cohort included two patients-groups: spontaneous healing(n.=60) and primary closure(n.=54). Mean age 15,6years; 59males, 55females. In PEPSiT-group(53pts, 29males, 24females), mean age was 16,3years. PEPSiT mean operative-time was 26minutes; 45minutes in SE-group. Post-operative pain was significantly lower in PEPSiT-group. Dressing-times were longer in spontaneous-healing-group compared with primary closure and endoscopic-groups. Considering the differences among number patients groups relapse-rate is similar. In SE-group hospital-stay was 24hours. PEPSiT median hospital-stay was 6.5hours (range 5–9h) in 55% (29). In 45%patients (n=14) hospital-stay was 24hours due to Covid surgery/hospitalization planning. 55% of pts underwent surgery in spinal-anesthesia. Median-time to return to normal life was 2-3days. Median healing-time was 21days(range:15–35). We registered 4 relapses in PEPSiT-group(7%); 3 were re-treated by PEPSiT.
Conclusion: According our experience PEPSiT can be performed as a day surgery, with early return to daily activities. Lack of pain, absence of scar, easy self-management at home, faster recovery and return to daily activities, low risk of wound dehiscence/recurrence may

explain the patients request of this technique. Furthermore PEPSiT can be easily repeated, and, in cases of recurrences, patients, prefer to repeat it.

16:09 - 16:14 (141) **Laser treatment for pilonidal disease in the pediatric population.** Joana Barbosa-Sequeira[1], Mario Correira[1], Inês Cardoso[1], Catarina Carvalho[1], Berta Bonet[2], João Ribeiro-Castro[1], Fátima Carvalho[1]. [1]Centro Materno Infantil Norte, Porto, Portugal. [2]Centro Materno Infantil de Norte. Porto, Portugal

Background: Despite multiple conventional and minimally invasive approaches for pilonidal disease (PD), the optimal treatment strategy has yet to be determined. The aim of this study is to evaluate the safety, effectiveness and potential benefits of laser treatment for PD in the pediatric population.
Methods: A retrospective analysis of patients with chronic PD submitted to laser treatment in a single institution was performed. All procedures were performed using a 1470nm diode laser probe. Postoperative wound care was limited to a daily simple dressing and daily activity was resumed at 48H. Patient satisfaction was accessed using a 5 point Likert scale. Surgical outcomes such as wound healing time and postoperative complications were registered.
Results: Of a total 81 patients, the majority were male (56.6%). Median age at surgery was 16.4 years (9.9:18.3). Most patients presented with midline external openings (77,4%) and 50% presented with ≥3 openings. Median intraoperative time was 17 minutes (6:35). No intraoperative complications occurred. Eight patients were lost to follow-up. Complete wound healing occurred in 86.2% (n=56), with a median healing time of 30 days (8:190). Recurrence occurred in 22 cases (20,7%), 13 being subjected to a second procedure. Infection occurred in 9 cases (8,5%). We found no relation between time for wound closure and the number/location of openings and overall lesion size ($p>0.05$). No relation was found between healing time and whether laser was performed as a first-line treatment or after a previous approach ($p>0.05$). Median duration of follow-up was 19.2 months (8:30). All patients reported high/very high levels of satisfaction. *Conclusions:* Although prospective studies with long-term follow-up are needed, our results suggest that laser treatment might be a safe and effective approach to PD in children, with an improved post-operative recovery.





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