P002 SURGICAL TECHNIQUES FOR VISUALIZED TUNNEL FORMATION IN LAPAROSCOPIC ASSISTED ANORECTOPLASTY Long Li, PhD; Anxiao Ming, PhD; Yan Zhou, PhD; Hang Xu, MD; Xuelai Liu, PhD; Hailin Sun; Qi Li; Xu Li; Zhen Zhang; Mei Diao; Capital Institute of Pediatrics, China

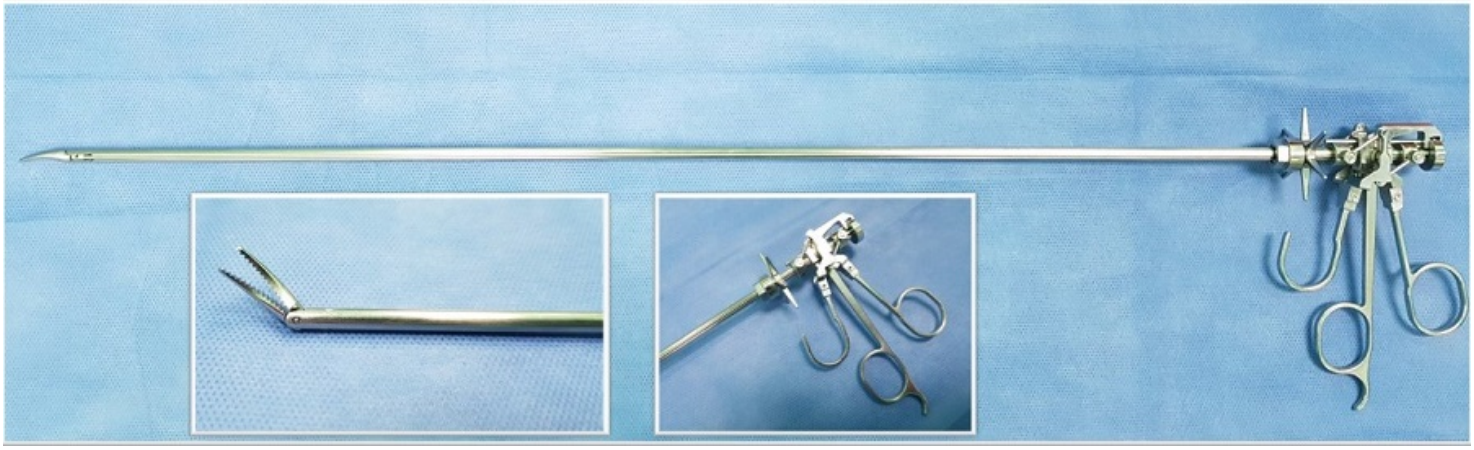
Purpose: LAARP is becoming a new optional procedure for ARM repair, however it is challenged by semi-blind tunnel formation for rectal pull- through. The aim of this study is to present a clamp-dilator introduction technique for vesualized tunnel formation in the center of the sphincter muscle complex for ARMs.

Methods: 60 patients with high and intermediate type anorectal malformations underwent LARRP in our center. The dilator introduction by laparoscopic guidance was employed for the pelvic tunnel formation in the pelvic longitudinal muscle tube (LMT) for high ARM and the clamp introduction under the direct vision was performed for the perineal tunnel formation in the perineal LMT for both high and intermediate ARMs. The two tunnels connected by advancing the clamp from the perineal LMT into the pelvic LMT under the laparoscopic guidance for the rectal pullthrough..

Results: The clamp-dilator introduction technique was performed in all patients. No patients suffered from urinary injure, recurrent rectal urethral fistula,urethral diverticulum and urinary incontinence. Postoperative MRI examination confirmed placement of the neoanorectum centrally within the LMT in all cases.

Conclusion: Our experience demonstrates that a visualized tunnel formation in the LMT center can be achieved by the clamp-dilator introduction technique in LAARP for both high and intermediate ARMs

P004 RE-INNOVATION: PEDIATRIC SURGEONS WITH ROBOTIC HANDS S Prodan, MD; E Buela; S Calello; G Dominguez; F Rabinovich; S Valverde; P Cieri; R Kaller; M Bosich; H Bignon; C Millan; Fundacion Hospitalaria



INTRODUCTION: It is well known that the versatility of the instrument movements in robotic surgery showed better results than traditional minimally invasive surgery, but this equipment is not a universal device in all institutions due to its high costs, its advantages and benefits are sought and desired.

The objective of the present work is to present our experience with a new instrument, the Robotic Emulator forceps RE (imnÒ), with manual handling but with similar characteristics of movements as robotic instruments in Minimally Invasive Surgery (MIS).

METHODS: All patients were operated with 5 mm laparoscopic instruments, assisted by the 5mm, 45 cm, articulated, Robotic Emulator Maryland (imnÒ). It performs 90º movements in all directions, total 360º rotation (Fig 1). All movements are controlled by the rings that manage the angle of the jaws, without additional devices and it is operated with both hands.

All procedures were performed by the same MIS expert surgeon. Magnetic traction devices were used in 100% of the cholecystectomies.

None of the pediatric patients had comorbidities. We assessed gender, age, operative time and complications.

RESULTS: Between February 2019 and May 2020 a total of 131 surgeries were performed with the RE Maryland, 9 patients were pediatric (5 women / 4 men). Average age: 9.5 years. 7 were cholecystectomies and 2 were Nissen fundoplications.

The total operative time for cholecystectomies was 74 min (range 45-130) and for fundoplication 78 min (40-150), without significant differences with the published literature. The RE Maryland facilitated the approach of the “Critical View of Safety” and the dissection of the esophageal hiatus, without showing complications due to the use of instruments.

CONCLUSION: The RE Maryland (imnÒ) allows dissecting at 90º angles, facilitating work in confined spaces without the need for exchange for other instruments.

Some of the robotic surgery benefits would be "mimicked" at significantly lower cost.

We believe that it can be a very effective tool in the future but we observe that we need to do a greater number of surgeries by different operators to determine the learning curve.

P006 ROBOT ASSISTED PEDIATRIC SURGERY - AN ANALYSIS OF EXISTING SYSTEMS Andreas Meinzer[1]; Jan-Hendrik Egberts[1]; Thomas F Krebs[2]; Robert Bergholz[1]; [1]UKSH Campus Kiel, Dept. of Surgery; [2]Children's Hospital of East Switzerland, Dept. of Pediatric Surgery, St. Gallen, Switzerland

INTRODUCTION: Robot-assisted surgery promises an improvement in minimally invasive surgery, especially in reconstructive procedures, thanks to its low-artifact three-dimensional visualization, improved ergonomics and camera guidance and intracorporeal movement of instruments with up to seven degrees of freedom analogous to the human hand. Currently there are two CE certified systems on the market, one of which (DaVinci, Intuitive) is also approved for use in children, the second system (Senhance, Transenterix) not yet. Nevertheless, the question arises which of the two is potentially better suited for pediatric surgery, especially for infants and babies. Therefore, based on our own experience, the respective advantages and disadvantages of both systems are presented and discussed in relation to their use in pediatric surgery.

METHODS: The experience of pediatric surgeons who have worked with both systems on inanimate or animate models or in human application have been systematically collected, categorized and their impact on pediatric surgery analyzed. In addition, an assessment of the systems for use in pediatric surgery was carried out by a proctor of Intuitive's DaVinci system.

RESULTS: The DaVinci (Xi) features four arms on one base and 5 and 8mm-diameter instruments with seven degrees of freedom, which are introduced into the body via special ports. The arms can be positioned over a bridge virtually around the patient's entire body. The pivot point is set systemically at a certain height of the ports. With the help of angled instruments, retraction and dissection can take place at the same time, which led, for example, to improved dissection of a gallbladder for cholecystectomy sparing the fourth port. The Senhance also has four arms that, unlike the DaVinci, can be positioned independently from each other. The instrumentation consists of 5mm and 3mm instruments, the 3mm instruments correspond to straight laparoscopic instruments. 5mm angled instruments are available, but offer less DOF compared to the DaVinci. The pivot point is detected automatically, therefore the instruments can be introduced without ports via stab incisions. With the 3mm instruments, procedures are possible even in small volumes in an inanimate model (91ml, corresponds approximately to a neonatal hemithorax), for the 8mm instruments of the DaVinci Xi a minimum distance of about 4cm to collision-free movement of the arms is needed and thus limits procedures in small cavities.

CONCLUSION: The DaVinci system offers the most degrees of freedom for complex intracorporeal procedures, but appears cumbersome in smaller body cavities, such as infants and neonates, compared to the Senhance system. The Senhance system appears to be better suited for small body cavities, but complex procedures are more difficult due to the lack of articulation of the 3mm instruments. An optimal system for pediatric surgery should combine the features of both existing systems.

P007 LAPAROSCOPIC TECHNOLOGIES IN MANAGEMENT OF ABDOMINAL CYSTIC LYMPHANGIOMAS IN CHILDREN Olga Karaseva, MD; Anna Timofeeva, Ms; Alexander Gorelik; Denis Golikov; Clinical and Research Institute of Emergency Pediatric Surgery and Trauma

Relevance: In clinical practice besides traditional surgical reasons of acute abdomen we deal with rare diseases, to which cystic lymphangiomas can be attributed. Surgical decision making in rare pathology is always a difficult and actual task for a pediatric surgeon.

Aim: To show the opportunities of laparoscopy in diagnosis and treatment of abdominal cystic lymphangiomas in children.

Methods: During 2017-2019 6 children were operated for abdominal cystic lymphangiomas. A boy to girl ratio was 3:3, mean age – 4.2±2.6 years. All children were emergently hospitalized with suspicion of acute appendicitis. They complained on cramping abdominal pains, vomiting and constipation. Diagnostics included ultrasound, CT and MRI on indications. In all cases final diagnosis and surgical treatment were performed using laparoscopic technologies.

Results: In 5 (83.3%) children multi-locular mesenteric lymphangiomas were diagnosed, in one child – lymphangioma of the omentum. Complications were seen in 83.3% of cases: partial bowel obstruction (2), volvulus of the ileum with bowel necrosis (1), partial twist with hemorrhage in to the cyst (2). Laparoscopy was performed under endotracheal anesthesia in supine position using traditional technique. We use three trocars: 11 mm (optic) in the umbilicus region, 5 mm (instruments) in left iliac region and in hypogastrium. After entering the abdomen to reduce the size of cystic cavities we puncture the large cysts. If the size of the cyst is extremely big then percutaneous puncture through the abdominal wall under ultrasound is possible, what allows freely enter the abdomen. In lymphangioma of the omentum a subtotal resection of the omentum with the cyst was performed using ultrasonic dissector. In lymphangiomas of the small intestine mesentery in all cases (5) the resection of the part of the bowel with adjacent cavities of lymphangiomas was performed. In 3 children the resection of the intestine with formation of end-to-end anastomosis was performed laparoscopically, in 2 cases we used minilaparotomy in the umbilicus region to remove the lymphangioma and perform anastomosis. In totally laparoscopic technique lymphangioma with part of the resected intestine was put in the endosac and then removed through the umbilicus. No intraoperative complications were observed. The postop period was normal in all children. Histological examination confirmed the diagnosis. All children were on follow-up in 6 month – no recurrence observed.

Conclusion: In cystic lymphangiomas laparoscopy allows not only to confirm the diagnosis but also to manage the pathology in minimally invasive way.

P008 ADVANCED LAPAROSCOPIC PROCEDURES IN EXTREMELY LOW BIRTH WEIGHT (ELBW) INFANTS Salmai Turial, MD[1]; Markus Knuf, MD[2]; Henriette Kuehle[1]; [1]University Medical Centre Magdeburg; [2]Helios HSK Wiesbaden

OBJECTIVES: to report results of a unique series of laparoscopic surgical procedures of advanced complexity in premature newborns with a body weight of 500 to 930 grams at time of surgery.

METHOD: Retrospective analysis of perioperative Data and postoperative course. The study included ELBW infants with a body weight less than 1000g at time of surgery undergoing microlaparoscopic complex procedures including at least intestinal suturing and no need for conversion.

RESULTS: There were six ELBW infants identified matching the study inclusion criteria in a single pediatric surgery department. For the laparoscopy, the 2mm instruments were used in all cases, exclusively. The procedures performed were: Duodeno-duodenostomy for duodenal obstruction (2), intestinal suturing for focal intestinal perforation (3) and repair of an iatrogenic rectum perforation. There were no perioperative complication noted and all procedures were completed successfully. There was no mortality related to the surgeries.

CONCLUSIONS: the present report indicate the possible progress of minimally invasive approach in pediatric surgery even for the very specific group of premature infants. There is a need for further technical development and larger studies in this field.

P009 PREMEDICATION BY MELATONIN VERSUS MIDAZOLAM IN PEDIATRICS FOR SCHEDULED SURGERY UNDER GENERAL ANAESTHESIA

Marwen Baccar[1]; Ines Koubaa[1]; Maha Ben Mansour[1]; Nahla Kechiche[2]; Elhem Kaabia[1]; Amine Ksiaa[2]; Sawsen Chakroun[1]; Faouzi Ben Salem[1]; Mourad Gahbiche[1]; [1]Anesthesia Departement; Hospital Of Monastir; [2]Pediatric Surgery, Hospital Of Fattouma Bourguiba

Background: Premedication is defined as the administration of medication prior to surgery in order to reduce anxiety.

A surgical procedure in pediatrics is a source of stress for parents and child.

It is in this context where the major interest of premedication appears.

Methods: This is a prospective, double-blind, prospective study conducted in the pediatric surgical operating room in the CHU Fattouma Bourguiba Monastir over a period of 06 months, between February 01, 2020 and July 31, 2020.

Our population was randomly distributed among 03 groups of people: one group (M) who received melatonin orally 0.5 mg/kg (maximum dose 20 mg) who received midazolam orally (B) 0.5 mg/kg (maximum dose 20 mg) and one group (P) placebo group.

This premedication was practiced 120 minutes before anaesthetic induction in children of 02 to 14 years of age, ASA 1 and 2, who have not received benzodiazepines, opioids or any other sedatives in the last days before their surgery.

Children proposed for emergency surgery who have not been part of our population.

Results: All type of surgery were included .

the main criterion is the level of pain which is evaluated by differents scores: m-Yale and FLACC scale scores.

the second outcomes are the vital parameters (heart rate and blood pressure) and also the reduction of the doses of hypnotics and morphinics.

The total number of patients was 60 divided into three equitable groups: 30 patients in each group .

We found that oral administration of melatonin significantly reduced doses of propofol required for induction of anaesthesia in paediatric patients, more than midazolam ($P < 0.001$). No statistically significant differences were found in the pre- and post-anaesthesia sedation score ($P = 0.387$ and $P = 0.525$, respectively) between the two groups.

Conclusion: This study adds new encouraging data, further supporting the potential use of melatonin premedication in reducing anxiety and improving compliance to induction of anaesthesia in children undergoing surgery.

P010 LAPAROSCOPIC VERSUS OPEN SPLENECTOMY: WHICH IS SAFER? Ben Ammar Sabrine, Dr[1]; Belhassan Samia[2]; Habachi Ghada[2]; Ben youssef Sabrine[2]; Ben Fredj Meriem[2]; Kechich Nahla[2]; Mosbahi Sana[2]; Laamiri Rachida[2]; Ksiaa Amine[2]; Bouanan Ines[2]; Sahnoun Lasaad[2]; Mekki Mongi[2]; Belghuith Mohssen[2]; Nouri Abdellatif[2]; [1]Department of pediatric surgery; [2]University Hospital Of Monastir

Introduction: In parallel with the increase of hematologic disorders in pediatric population, splenectomy procedure has also been popularized with different techniques and surgical outcomes.The purpose of this study is to compare open and laparoscopic splenectomy.

Material and methods: It's a retrospective study conducted between January 2002 to December 2019. Children under 15 years old who underwent open and laparoscopic splenectomy in the pediatric surgery department were included. Diagnosis of splenomegaly was established in a pediatric hematology department and all patients underwent ultrasonographic examination in order to determine the size of spleen. The choice of the technique was determined by the size of spleen and the preference of the surgeon. Operative time, blood loss, removing of accessory rates, postoperative stay length and complications were compared.

Results: A total of 19 cases were enrolled in this study, the mean age was 8.6 years (5-15) and 12 (63%) were female .The most common indication for surgery was thalassamia (10 cases) .The mean size of spleens was 14 cm. 11 Laparoscopic splenectomy were performed and sub costal incision was chosen in 6 cases submitted to open surgery .Operative time was statistically longer in the laparoscopy with a mean procedure time of 149 min versus 125 min in the group of classic surgery. During the laparoscopy one patient had experienced intraoperative bleeding requiring conversion to open surgery; however important hemorrhage was noted in three cases during the open technique. In the group of laparoscopy, the spleen was removed through the umbilical port in 8 patients and through a pfannestiel incision in 3 cases with a larger spleen.

Removal of accessory spleens was possible in 2 patients using both techniques.

No postoperative complication was encountered aside from 2 cases of high fever (10.5%) in patients treated laparoscopically. The introduction of oral feeds occurred on the first postoperative day in all patients in the group of laparoscopic and it varied from the first to the second day (3 cases) in the group of laparotomy. The mean length of hospital stay was 4.3 in laparoscopic versus 4.6 in laparotomy it was statically similar in both of techniques. Mean follow-up period was 9 months; there was no long term complication and no fatality.

Conclusion: In our study laparoscopic splenectomy has longer operative time and more postoperative complications but it has the potential of reducing blood loss which may further shorten the length of hospital stay; it is considered as a powerful tool in the hands of an experienced surgeon.

P012 QUALITATIVE EVALUATION OF A SEDATION PROTOCOL DURING MRI AND PEDIATRIC CT SCAN: PRACTICAL IMPLICATIONS AND EVALUATION OF GENERAL ANESTHESIA NEEDS Marwen Baccar[1]; Ines Koubaa[1]; Maha Ben Mansour[1]; Nehla Kechiche[2]; Elhem Kaabia[1]; Dorsaf Makhlouf[2]; Sawsen Chakroun[1]; Amine Ksiaa[2]; Besma Gafsi[1]; Samir Toumi[1]; Fawzi Ben Salem[1]; Mourad Gahbiche[1]; [1]Anesthesia Departement; Hospital Of Monastir; [2]Pediatric Surgery, Hospital Of Fattouma Bourguiba

Background: Sedation is defined as the use of medication to reduce anxiety, provide satisfactory analgesia and to carry out exploratory procedures for diagnostic and/or therapeutic purposes.

Even if it is not painful, an imaging exam will be a source of anxiety and even discomfort for the child and his family so he needs to be reassured and calm in order to have a quality radiological exam which depends directly on his cooperation.

Therefore, it is important to set up a suitable environment and a reassuring team to ensure the success of the exam.

Methods: This retrospective study aims to improve the protocol of sedation we use outside the operating room when sedating children for any radiological exam.

We will study the different anesthetic techniques used, the conditions of the examination room (MRI and CT-scan) and expose the various complications encountered during six months from July 2020 to December 2020.

Results: Of the 162/200 (81%) sedations successfully completed, 110/200(55%) were of excellent quality and 52/200 (26%) of sufficient quality. There were no significant differences related to weight or the age of the child.

Sedation failures were mainly due to awakenings during the examination. No severe adverse effects were identified.

Conclusion: Although suboptimal in terms of sedation quality and organization, our sedation protocol has proven to be simple to use, economical, safe and perfectible. Adapted from infant to child in school-age children, an improved sedation protocol seems more efficient than the implementation of the MRI and pediatric CT scan under general anesthesia.

P013 MANAGEMENT OF HIRSCHSPRUNG ASSOCIATED ENTEROCOLITIS – HOW DIFFERENT ARE PRACTICE STRATEGIES? AN INTERNATIONAL PEDIATRIC ENDOSURGERY GROUP (IPEG) SURVEY Wendy Jo Svetanoff, MD, MPH; Joseph J Lopez, MD; Kayla B Briggs, MD; James A Fraser, MD; Jason D Fraser, MD; Tolulope A Oyetunji, MD, MPH; Shawn D St. Peter, MD; Rebecca M Rentea, MD, MS; Children's Mercy Hospital, Kansas City

INTRODUCTION: Hirschsprung's-associated enterocolitis (HAEC) is a common postoperative problem for patients with Hirschsprung disease (HD). However, treatment strategies remain variable among providers, institutions, and even nations. The purpose of this study was to identify differences in treatment patterns for HAEC.

METHODS: A questionnaire was distributed to members of the International Pediatric Endoscopic Group (IPEG) community that consisted of three sections: surgeon demographics, initial HD management strategies, and management strategies for patients diagnosed with HAEC. All questionnaire responses were collected via the Research Electronic Data Capture (RedCap).

RESULTS: In total, 178 members responded to the survey, with 30% from North America, 20% from South America, 20% from Europe, 26% from Asia, and 4% from Australia. Most respondents (64%) took care of 1-6 HD cases/year, while 21% took care of 7-12 patients/year, and 15% took care of 13+ cases/year. 69% stated all surgeons in their practice performed pull-throughs (PT), and 37% had a dedicated pediatric colorectal center.

After initial HD diagnosis, 53% send patients home with irrigations, while 29% perform a primary PT prior to discharge, 12% perform a colostomy on all patients, and 7% took an individual approach. The type of PT varied, with 50% performing a Soave, 25% performing a Swenson, and 13% performing a Duhamel.

Most respondents (66%) stated they took care of 1-6 episodes of HAEC yearly, and 76% admitted all children diagnosed with HAEC to the hospital. However, only 29 respondents (17%) stated their institution had guidelines for HAEC management. Inpatient treatment strategies included obtaining an abdominal radiograph (93%), blood work (92%), performing rectal irrigations (95%), holding feeds (72%), performing a digital rectal exam at admission (72%), and teaching families irrigations (55%). Only 22% started total parental nutrition. The use of Botulinum injections during an acute HAEC episode was mixed: 36% never performed Botulinum injections, 33% only utilized Botulinum if the patient would not tolerate irrigations, 16% only injected Botulinum for recurrent episodes of HAEC, and 7% performed injections in all patients. At discharge, 74% of respondents sent patients home with irrigations, the duration of which ranged from 1 week to 6 months.

A variety of measures were utilized to prevent HAEC: 44% used routine anal dilations, 34% prescribed prophylactic antibiotics, 29% used probiotics, 22% used routine home irrigations, 7% performed scheduled Botulinum injections, and 5% prescribed irrigations only if needed.

CONCLUSION: There is wide variation of care in managing enterocolitis episodes in patients with Hirschsprung disease. Further research leading to consensus guidelines and standardization practices can help improve the care for these patients.

P014 CONVERSION RISK ANALYSIS FROM SINGLE-INCISION AND ONE-PUNCTURE PROCEDURE TO TWO SITE WITH THREE-PORT PROCEDURE IN PEDIATRIC LAPAROSCOPIC APPENDECTOMY Keisuke Yano, MD; Masakazu Murakami, MD; Ayaka Nagano, MD; Mayu Matsui, MD; Koshiro Sugita, MD; Toshio Harumatsu; Shun Onishi, MD, PhD; Koji Yamada, MD, PhD; Waka Yamada, MD, PhD; Makoto Matsukubo, MD; Mitsuru Muto, MD, PhD; Tatsuru Kaji, MD, PhD; Satoshi Ieiri, MD, PhD; Department of Pediatric Surgery, Kagoshima University

The aim of study: In our institution, we changed the procedure of laparoscopic appendectomy from conventional three-port laparoscopic appendectomy (CLA) to single-incision and one-puncture laparoscopic appendectomy (SIOPLA). Our randomized trial of CLA and SIOPLA and those results were already published (Moriguchi T et al, J Laparoendosc Adv Surg Tech A. 2019; 29 (3):392-395). In this report, SIOPLA was the safe and feasible operation even for surgeon in training. The 2.4 mm percutaneous insertion grasper without the use of a trocar (MiniLap; Tele?ex, Morrisville, NC, USA) had excellent grip function and the scar was very small and cosmetically favorable. Bud we sometimes experienced technically difficult cases even with SIOPLA because of severe adhesion and position of appendix. In these cases, the 2.4 mm percutaneous insertion grasper was changed to 5mm forceps with 5mm trocar. The aim of this study is to clarify the conversion risk from SIOPLA to two site with three-port laparoscopic appendectomy (TTLA) in children.

Methods: We conducted 2 and half year's retrospective study of surgical procedures performed from July 2018 to December 2019. Interval appendectomy performed by SIOPLA were excluded. Each operation was performed by 2 surgeons: 1 attending pediatric surgeons (APS) and 1 surgeon in training (SIT). Initially SIOPLA was determined at the start of each operation by APS who was an assistant operator of SIT. All cases were performed by SIT. During the operation, conversion decision from SIOPLA to TTLA was determined by APS. Fifty-four pediatric laparoscopic appendectomies were registered in this analysis. Patients' background and clinical outcomes were compared in order to analyze the conversion risk factors.

Results: Forty-two patients (77.8%) underwent the SIOPLA, and 12 (22.2%) patients underwent converted TTLA. There were no open conversion cases. Patients' background was shown in Table 1. There were no significant difference between 2 groups in age, male/female ratio and body weight. But body temperature of TTLA was significantly higher than that of (BT (?); SIOPLA vs. TTLA, 37.5 ± 1.02 vs. 38.2 ± 0.58, p<0.05). Duration from onset to visiting our hospital of TTLA was longer than that of SIOPLA (SIOPLA vs. TTLA, 1.24 ± 0.82 vs. 3.38 ± 2.30, p<0.01). CRP level of TTLA was significantly higher than of SIOPLA (SIOPLA vs. TTLA, 4.90 ± 7.27 vs. 9.96 ± 6.16, p <0.05). In the clinical outcomes, operation time (OT) and pneumoperitoneum time (PT) of TTLA were significantly longer than those of SIOPLA (OT (min) SIOPLA vs. TTLA, 98.7 ± 33.0 vs. 152 ± 45.1, p<0.01, PT (min); SIOPLA vs. TTLA, 62.5 ± 30.0 vs. 110 ± 39.1, p<0.01). However, there were no significant differences in the taken time to have meal (days: SIOPLA vs. TTLA, 2.38 ± 1.40 vs. 3.08 ± 1.38, p=0.129) and hospital stay (days: SIOPLA vs. TTLA 8.28 ± 4.56 vs. 9.25 ± 2.45, p=0.487). Regarding the pathological findings, TTLA was all gangrenous appendicitis.

Conclusion: SIOPLA performed by SIT was feasible. But body temperature, CRP, duration from onset to visiting hospital and degree of appendicitis were risk factor of conversion to TTLA.

Table 1. Patients' Background and Clinical Outcomes

	SIOPLA n = 42	TTLA n = 12	*p*-value
Patients' Background			
Age	9.14 ± 3.10	8.83 ± 1.85	0.744
Sex (Male : Female)	26 (61.9%):16 (38.1%)	7 (58.3%) : 5 (41.7%)	
Body Weight	31.5 ± 12.2	27.6 ± 7.03	0.288
Body Temperature	37.5 ± 1.02	38.2 ± 0.58	< 0.05
Duration from onset to visiting hospital	1.24 ± 0.82	3.38 ± 2.30	< 0.01
WBC	15.2 ± 5.45	16.0 ± 4.65	0.636
CRP	4.90 ± 7.27	9.96 ± 6.16	0.033
Diameter appendix (mm)	9.51 ± 2.45	10.9 ± 3.78	0.147
Clinical outcomes			
Operation time (min)	98.7 ± 33.0	152 ± 45.1	< 0.01
Pneumoperitoneum Time (min)	62.5 ± 30.0	110 ± 39.1	< 0.01
Pathological findings (C:P:G)	2 (5%) : 21 (50%) :19 (45%)	0 (0%) : 0 (0%) : 12 (100%)	
Taken time to have meal(days)	2.38 ± 1.40	3.08 ± 1.38	0.129
Hospital stay(days)	8.28 ± 4.56	9.25 ± 2.45	0.487

mean ± SD C : Catarrhalis, P : Phlegmonous, G : Gangrenous

P015 DOES SURGICAL APPROACH MATTER IN THE TREATMENT OF PEDIATRIC ULCERATIVE COLITIS? Rebecca A Saberi, MD[1]; Gareth P Gilna, MD[1]; Eva M Urrechaga, MD[1]; Alessia C Cioci, MD[1]; Joshua P Parreco, MD[2]; Amber H Langshaw, MD[3]; Chad M Thorson, MD, MSPH[1]; Juan E Sola, MD[1]; Eduardo E Perez, MD[1]; [1]University of Miami, DeWitt Daughtry Family Department of Surgery, Division of Pediatric Surgery; [2]Lawnwood Regional Medical Center, Department of Trauma and Critical Care Surgery; [3]University of Miami, Department of Pediatrics, Division of Gastroenterology

Purpose: Ulcerative colitis (UC) is often managed surgically in pediatric populations. This study aims to compare the morbidity of open versus laparoscopic colectomy using national readmission outcomes.

Methods: The 2010-2014 Nationwide Readmissions Database was used to identify patients ≤18 years (excluding newborns) who underwent colectomy or proctocolectomy for UC. Patients with planned readmissions for staged procedures were excluded from readmission analysis. Demographics, hospital course, and outcomes were compared by operative approach (open vs. laparoscopic) using standard statistical analysis. Results were weighted for national estimates.

Results: There were 1922 patients (51% female, age 13 ± 3 years) with UC who underwent colectomy or proctocolectomy during index admission. Overall, most cases were performed open (54%) and for elective admissions (68%). Elective cases were more likely to be performed open (58% vs. 43%), whereas non-elective cases were more likely to be performed laparoscopically (53% vs. 47%), p<0.001. Laparoscopy was more common in patients <13 years (35% vs. 30%, p=0.009) and those with private health insurance (71% vs. 61%, p<0.001). There was no difference in 30-day readmissions between open and laparoscopic approaches (31% vs. 27%, p=0163), however 1-year readmissions were greater following open procedures (49% vs. 42%, p=0.045). Readmission with surgical site infection was also more common following an open approach (7% vs. 0%, p<0.001).

Subjects were then stratified to control for elective and non-elective index admissions (Table 1). Laparoscopy had lower hospital cost for elective admissions and shorter length of stay in both elective and non-elective settings. There were no differences in 30-day or 1-year readmissions for open versus laparoscopic approach. There were also no differences in readmission with pouchitis, small bowel obstruction, or malnutrition. Surgical site infection at readmission was again more common following an open approach for both elective (7% vs. 0%, p=0.005) and non-elective (6% vs. 0%, p=0.023) index admissions.

Conclusion: In surgically managed pediatric patients with ulcerative colitis, open approach is utilized more often than laparoscopy. However, laparoscopy is associated with shorter length of stay and lower rate of surgical site infection for both elective and non-elective operations.

Table 1. Comparison of open versus laparoscopic surgery for pediatric ulcerative colitis.

	Open	Laparoscopic	p-value
Elective Index Admission	n=712 (58%)	n=519 (42%)	
Index Hospital LOS[a]	8 [5-11]	6 [4-9]	**<0.001**
Index Hospital Cost ($USD)[a]	$24, 357 [17,417-35,117]	$21,263 [17,352-32,009]	**0.003**
30-day RA	34%	29%	0.231
1-year RA	54%	45%	0.051
SBO on RA	25%	30%	0.393
Pouchitis on RA	10%	7%	0.316
Malnutrition on RA	7%	4%	0.260
Non-Elective Index Admission	n=327 (47%)	n=364 (53%)	
Index Hospital LOS[a]	20 [10-30]	17 [11-23]	**0.050**
Index Hospital Cost ($USD)[a]	$43,643 [23,669-71,114]	$48,622 [28,083-69,818]	**0.037**
30-day RA	27%	26%	0.779
1-year RA	40%	39%	0.846
SBO on RA	32%	20%	0.080
Pouchitis on RA	3%	0%	0.225
Malnutrition on RA	17%	10%	0.425

a. Data presented as median [interquartile range]; LOS (length of stay); SBO (small bowel Obstruction); RA (readmission)

P016 LAPAROSCOPIC TECHNIQUE IN THE MANAGEMENT OF HIGH ANORECTAL MALFORMATIONS: EXPERIENCE IN A SINGLE TUNISIAN CENTER Yosra Ben Ahmed, Dr; Meriem Oumaya; Faouzi Nouira, Dr; Intissar Chibani, Dr; Mariem Marzouki, Dr; Awatef Charieg; Said Jlidi, PhD; Children Hospital of Tunis

Introduction: The laporoscopic-assisted anorectoplasty (LAARP) has steadily increased among surgeons. It was improved with the aim of accomplishing a correction of high ARM without mid-sagittal division of any of the muscles of continence. Since then, many other centers had gained experience with this minimally invasive technique for this complex malformation.

The aim of our study is to present our experience of LAARP technique and evaluate the surgical outcomes in patients with high-type ARMs.

Methods: We retrospectively analyzed the clinical data of all patients with anorectal malformation who underwent LAARP from 2012 to 2020. LAARP was performed for full mobilization of the rectum and closure of the fstula.

Results: Five patients (4 males and one female) with high-type anorectal malformation were treated by LAARP in our center. Median age at surgery was 7 months. Four patients had rectovesical fstula and one patient had a rectourethral one The circumferential dissection of the fstula was made as close as possible to the longitudinal fibers of the rectal wall. The fistula was divided and closuref laparoscopically using endoloop in 1 case or suturing ligation in 4 patients. The Laparoscopic rectal mobilization was completed successfully in 4 patients. In the other patient it was completed through the posterior-sagittal approach.

Anal retraction and peritonitis occurred in one patient that needed a colostomy. Uretheral injury was observed in one case.

The median follow-up period was 5.8 years (range 3-8 years). Two patients had voluntary bowel movements; 4 patients were free from soiling and 1 patient suffered from constipation

Conclusion: AARP technique is benefcial to rectal mobilization, dissection and fstula closure and to improve anorectal functional outcomes. However, complications associated with this minimally invasive technique are not rare and can be serious sometimes. A larger sample would allow us to better evaluate the short and long term outcomes.

P017 DISPARITIES IN UTILIZATION OF LAPAROSCOPIC COLECTOMIES IN PEDIATRIC CROHN'S DISEASE Gareth P Gilna, MD; Rebecca A Saberi, MD; Alessia C Cioci, MD; Eva M Urrechaga, MD; Joshua P Parreco, MD, FACS; Amber H Langshaw, MD; Juan E Sola, MD, FACS; Chad M Thorson, MD, MSPH, FACS; Eduardo A Perez, MD, FACS; DeWitt Daughtry Family Department of Surgery University of Miami/Jackson Health System

Purpose: Pediatric patients with Crohn's disease often require colectomies. The laparoscopic approach is considered safe, but there is little national data on outcomes and readmissions in this population.

Methods: The Nationwide Readmissions Database was queried from 2010-2014 for patients ≤ 18 years who underwent colectomy for Crohn's disease during index admission. Patients were stratified by operative approach: laparoscopic versus open. Outcomes were compared with standard statistical methods.

Results: There were 2833 patients (47% female) who underwent a colectomy via laparoscopic (58%) vs. open (42%) approach. Index admissions were elective 55% of the time. The vast majority of operations were right hemicolectomy (86%), followed by total colectomy (8%). Of the study population, 489 (17%) were diverted with a stoma. All-cause readmission rates at 30 days and 1 year were 9% and 18%, respectively. The most common diagnoses at readmission were intra-abdominal infection (16%), small bowel obstruction (16%), and surgical site infection (9%). Right hemicolectomies had the lowest rate of readmission compared to left or total colectomies (16.0% vs 41.6% and 31.4% respectively, p<0.001).

Laparoscopy was more commonly performed during elective admissions (63% vs. 44%), for patients with private insurance (36% vs. 25%), and for patients in the highest income quartile (36% vs. 15% in the lowest income quartile), all p<0.001. Stoma creation at index admission was less likely when operating laparoscopically (15% vs 20%, p<0.001). Length of stay was longer on index admission for open colectomy (8[5-12] days vs. 6[4-11] days, p<0.001), while cost was similar ($17,754[$12,375-$30,625] vs. $17,017[$11,219-$27,336], p=0.104). There were no differences in readmission rate, incidence of intraabdominal infection or small bowel obstruction based on approach (Table 1).

Conclusion: In pediatric patients, laparoscopic colectomy for Crohn's disease is safe and is associated with shorter hospitalization compared to the open procedure. Socioeconomic disparities in laparoscopic utilization exist and warrant future investigation.

Table 1. Outcomes of laparoscopic versus open colectomy for Crohn's disease

	Laparoscopic n=1637 (57.8%)	**Open** n=1196 (44.2%)	**p-value**
Index Hospitalization			
Low Income Household[a]	35.0%	53.0%	<0.001
High Income Household[a]	36.0%	25.1%	<0.001
Private Insurance	71.7%	63.1%	<0.001
Government Funded Insurance	14.1%	22.1%	<0.001
Readmission			
Readmission Rate	17.7%	19.4%	N.S.
Intrabdominal Infection	16.9%	14.3%	N.S.
Bowel Obstruction	16.0%	14.9%	N.S.

a. Percent in lowest and highest quartiles of median household income

P018 ENDOSCOPIC PILONIDAL SINUS TREATMENT (EPSIT) - INITIAL EXPERIENCE IN AN EXCLUSIVELY PEDIATRIC HOSPITAL Elisangela Mattos e Silva, MD; Leila Grisa Telles, MD; Amanda Ginani Antunes; Karin Schulz; Giovana Camargo de Almeida; Sylvio Gilberto Avilla; Claudio Schultz; Hospital Pequeno Principe

Sinus pilonidal is a chronic process due to inflammation in the sacrococcigea region and is often associated with the presence of hair in this region. It often attends abscess, requiring surgical drainage and antibiotic therapy before definitive treatment, which presents multiple techniques described in the literature, ranging from curettage to wide resections, including rotation of skin flaps or second-intention healing. The healing process is usually long and may evolve with large scars and/or frequent recurrences. In 2013, Meneiro et al. described the EPSIT technique for minimally invasive treatment of pilonidal sinus in adults. Since then, the technique has been used with good short- and medium-term results in several services, including in the pediatric population.

The aim of this study is to describe the initial experience of minimally invasive endoscopic treatment of pilonidal sinus in an exclusively pediatric hospital.

Method: Between June 2019 to December 2019, 4 cases were operated using the video assisted technique, which consists of the introduction of a specific device with optics and work channel, for removal of hair and debris followed by cauterization of routes and the inner surface of the sinus. Preoperative data, surgical technical details, evolution and complications are reported.

Results: There were 4 cases, with an average age of 14.7 years (ranging from 12 to 16 years), with a predominance of females (3:1). Average weight and height at surgery were 72 kg and 166 cm respectively. In all cases, the EPSIT technique was the first proposed surgical treatment.

All cases had already presented previus sinus infection before endoscopic surgery and were only treated with antibiotics and simple drainage. There were no technical-related intraoperative complications. All patients were discharged the day after surgery in the morning, with little pain and using only simple oral analgesics. Only 1 patient presented infection of the surgical wound with purulent secretion drainage in the 15th postoperative day that improved after antibiotic use. The complete healing time of this patient was 45 days, and in the other patients it was not more than 1 month. Patients returned to their normal activities after an average of 10 days of surgery (ranging from 5 to 15 days). No cases have had recurrence so far.

Conclusion: The endoscopic technique for the treatment of pilonidal sinus (EPSIT) proved feasible and safe, with short length of hospitalization, little pain and rapid healing. A greater number of patients are needed to perform a comparative study with the conventional open technique in our service, but attention is drawn to aesthetic results and the rapid return to school activities in less than 2 weeks.

Keywords: abscess, children, EPSIT, pilonidal sinus, VAAFT

P019 LEARNING A NEW TECHNIQUE: IS THERE A HIGHER RECURRENCE RATE DURING LAPAROSCOPIC INGUINAL HERNIA REPAIR FOR PEDIATRIC SURGERY FELLOWS? Joseph R Esparaz, MD; Teressa Duong, BS; Michelle S Mathis, MPH; Vincent E Mortellaro, MD; University of Alabama at Birmingham

Introduction: Inguinal hernia repair remains one of the more common surgical procedures performed on infants and young children. The laparoscopic approach is well established with several techniques being utilized. Pediatric surgery fellows learn these new techniques which differ from more traditional approaches taught in general surgery residency. With the adoption of new techniques, there is concern that hernia outcomes may suffer. Therefore, we evaluated the safety and effectiveness of laparoscopic inguinal hernia repairs for pediatric surgery fellows.

Methods: A retrospective review of pediatric patients 18 years of age and younger, who underwent a laparoscopic inguinal hernia repair between 2016 and 2020, was performed. Three pediatric surgeons at our institution offered the laparoscopic approach. Cases were isolated for attending with fellow involvement and attending with residents. Resident involvement was a surrogate for the attending performing the case. Fellow cases were kept in chronologic order by date performed. Analyzed data included basic demographics, laterality of the inguinal hernia, operating time, complications, and recurrences. Statistical analysis was performed.

Results: A total of 280 children underwent laparoscopic inguinal hernia repair during this time frame. Two-thirds of the children had unilateral inguinal hernias (n=185). The median case number for the nine pediatric surgery fellows was 20 (IQR: 9-30). Learning curves varied for each fellow. We identified no significant difference in complication rate when fellows or attendings were performing the operation ($p = 0.453$). In addition, of the nine fellows reviewed, eight of them had no significant difference in hernia recurrence rate when compared to attendings (all $p > 0.40$). Lastly, there was no difference in recurrence rate based on hernia laterality or presenting symptom (all $p > 0.17$).

Conclusion: We have identified similar post-operative complication rates when learning the laparoscopic approach for inguinal hernia repairs in the pediatric population. More importantly, hernia recurrence rates were similar when fellows or attendings performed the surgery. We conclude that laparoscopic inguinal hernia repair is safe and effective during the learning phase for pediatric surgery fellows.

P020 THE USE OF ESOFLIP FOR ESOPHAGEAL STRICTURE DILATION IN CHILDREN Andrew J Hu, MD[1]; Joseph Sanchez, MD[2]; Mehul V Raval, MD, MS[1]; Katherine Barsness, MD, MS[1]; [1]Division of Pediatric Surgery, Department of Surgery, Northwestern University Feinberg School of Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL; [2]Division of General Surgery, Department of Surgery, Northwestern University Feinberg School of Medicine, Northwestern Memorial Hospital, Chicago, IL

Introduction: Esophageal stricture dilation techniques rely upon subjective measurements such as visual confirmation to determine therapeutic efficacy. Functional lumen imaging probes (FLIP) offer a novel method to objectively guide stricture dilations. FLIP utilizes impedance planimetry to measure, in real time, characteristics such as stricture and esophageal diameter, cross sectional area, pressure, and distensibility. This technique is available in two formats. EndoFLIP is a compliant balloon catheter device that allows for the performance of all the above measurements for diagnostic purposes. EsoFLIP is the therapeutic version that uses a rigid balloon allowing for dilation, although it lacks the native ability to measure distensibility and pressure. Both have been applied to a wide range of adult foregut pathology. We describe the use of EndoFLIP and EsoFLIP in the management of a recurrent esophageal stricture secondary to dyskeratosis congenita.

Methods: A 12-year-old male, with a history of dyskeratosis congenita, presented with progressive dysphagia and failure to gain weight. Dyskeratosis congenita is a rare hereditary multi-systemic disease that is associated with hyperpigmentation, nail dystrophy, leukoplakia, and esophageal strictures. We present a single patient case series illustrating the utility of EndoFLIP and EsoFLIP.

Results: Initial endoscopy revealed an esophageal web and a tight stricture in the upper third of the esophagus (Figure 1). Given these findings, he underwent EsoFLIP balloon dilation in the operating room. The rigid EsoFLIP 30 mm balloon was advanced along a wire until it was positioned across the stricture which was confirmed via endoscopy. Typically, the balloon is partially filled to confirm the identification of the waist that represents the dilation target. Given the degree of stricture, partially filling the balloon to 15 mL was sufficient to identify the waist which measured 7.3 mm in diameter compared to normal esophagus which measured 15 mm in diameter on the real-time display. Dilation began and as balloon volumes reached 40 mL, stricture diameter widened to 18.3 mm which was similar to the surrounding esophageal diameter of 18 mm. Endoscopy revealed resolution of the esophageal web and his symptoms significantly improved upon discharge. No fluoroscopy was performed. He required further dilations weeks later due to stricture recurrence. An EndoFLIP catheter was placed across the stricture in a similar fashion and assessment revealed a distensibility index of 1.46 mm^2/mmHg at 30 mL of balloon filling which is significantly lower than the normal index of at least 3 mm^2/mmHg at similar balloon volumes. His stricture was managed again with EsoFLIP which dilated the waist from 12.5 mm to 18.5 mm with resolution of his dysphagia (Figure 2). This life-long condition has required multiple outpatient dilations which were tolerated without complication.

Conclusions: This report presents the first case of functional lumen imaging probe techniques for the management of difficult recurrent esophageal strictures in the pediatric population. It shows the method to be both safe and effective at stricture enlargement. FLIP technology provides an objective measurement of stricture dilation to better guide treatment and may reduce complications.

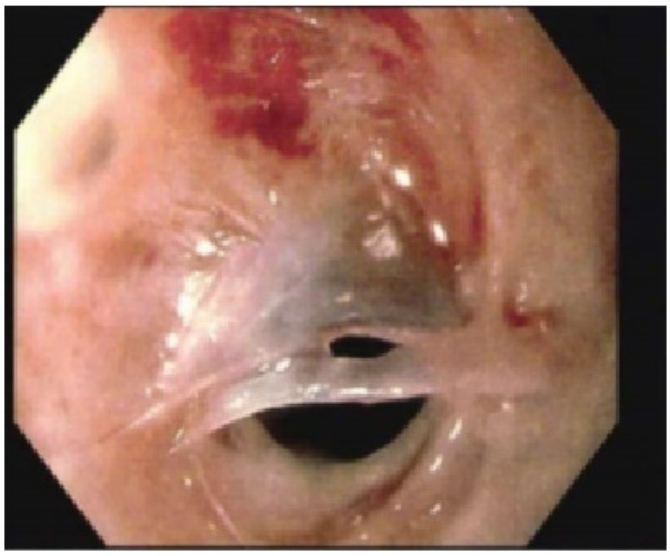


Figure 1- Web and Stricture on Esophagoscopy

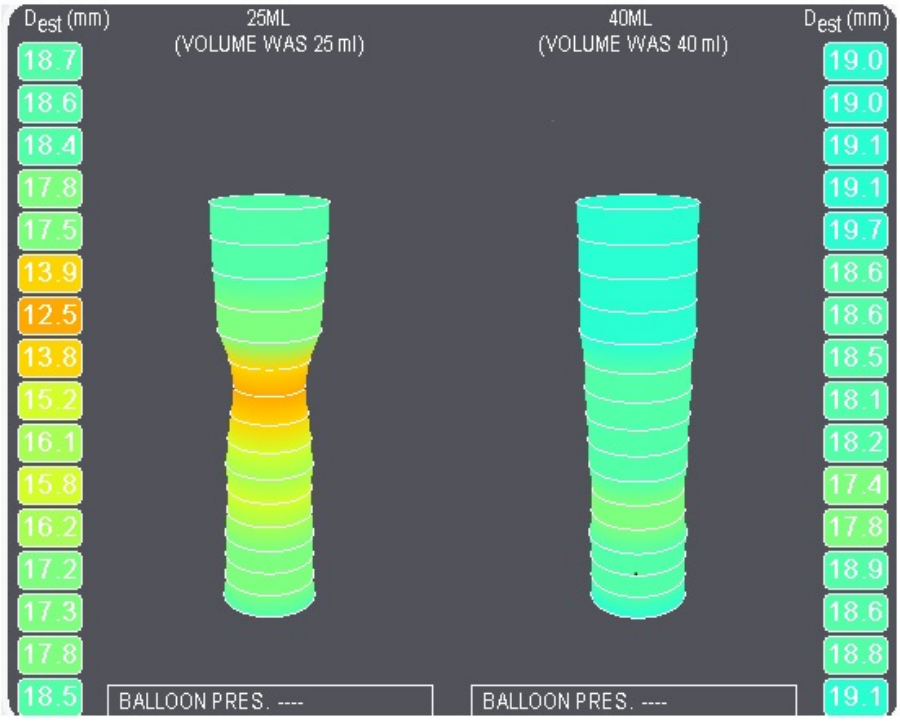


Figure 2 - Stricture Diameter Before and After EsoFLIP Balloon Dilation

P021 BENEFITS OF INTRAVENOUS LIDOCAINE USE IN LAPAROSCOPIC PEDIATRIC SURGERY Ines Koubaa[1]; Marwen Baccar[1]; Maha Ben Mansour[1]; Nehla Kechiche[2]; Hajer Hammouda[1]; Salma Mani[2]; Elhem Kaabia[1]; Sawsen Chakroun[1]; Besma Gafsi[1]; Samir Toumi[1]; Fawzi Ben Salem[1]; Amine Ksiaa[2]; Mourad Gahbiche[1]; [1]Anesthesia Departement; Hospital Of Monastir; [2]Pediatric Surgery, Hospital Of Fattouma Bourguiba

Background: Widely used in adult abdominal surgery, lidocaine has shown its benefits in morphine savings (opioid free anesthesia) during surgery as well as the analgesic effect postoperatively thanks to its anti-inflammatory properties. Many recent studies are currently focused on its benefit in laparoscopic pediatric surgery.

Methods: A prospective study was conducted in the pediatric surgery department in coordination with the surgeons for postoperative follow-up on 60 cases divided into two groups: one group (L) of 30 patients who received intravenous lidocaine 1% intraoperatively at a dose of 1.5 mg/kg body weight followed by a continuous infusion at a rate of 1.5 mg/kg body weight/hr and one group (P) of 30 patients in the placebo group.

The two main objectives of the study are postoperative opioid requirements and the incidence of postoperative nausea and vomiting (PONV).

Exclusion criteria are represented by any contraindications for the application of lidocaine (a known allergy to any local anesthetic) and the presence of hemodynamic instability.

We have limited the age range between 2 and 16 years for a good verbal evaluation of postoperative pain.

The main complication sought is the incidence of symptoms neurological (perioral tingling, numbness, tingling, paresthesia convulsions) and apparent behavioral deterioration in the post-operative period such as emergent delirium (ED)

Results: Data of 60 patients was analyzed. Of these, 30 patients received lidocaine. No signs of systemic toxicity, neurologic impairment or circulatory disturbances were noted in any of these patients.

A (non-significant) difference in the incidence of emergence delirium was observed (0 cases in the lidocaine group vs. 4 cases in the control group, $p = 0.05$).

Conclusion: This prospective analysis did not reveal any adverse effects in pediatric patients receiving intravenous

lidocaine for laparoscopic surgery under general anesthesia. However, further trials investigating beneficial effects as well as pharmacokinetic properties of intravenous lidocaine in children are required.

P022 AN INDIRECT EFFECT OF COVID-19 PANDEMIC: INCREASED PEDIATRIC PERFORATED APPENDICITIS RATE DUE TO DELAYED ADMISSION

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Introduction: Appendicitis is a common surgical emergency among children. Perforated appendicitis is associated with increased hospital stay, longer use of parenteral antibiotics, sepsis rates comparing acute appendicitis. The coronavirus pandemic affected the system of hospitals more than any other field and great amount of people were concerned about visiting the hospitals for any reason even though the situation was urgent or necessary. In this study, it was aimed to evaluate the profile of appendicitis by emphasizing perforated and acute appendicitis rates in the pandemic period and to compare the rates with previous three years.

Patients and methods: Charts of the children who underwent laparoscopic appendectomy due to appendicitis between March-September in 2017-2020 were retrospectively analyzed. Children with positive PCR test and suspicious contact of COVID-19 were managed conservatively and they were excluded from the study. Demographic data of the children, duration of symptoms, duration between hospital admission and surgery, radiologic imaging and perioperative outcomes of the children were analyzed.

Results: This study includes 467 children who underwent laparoscopic appendectomy. The mean age was 11.4 years (1-18 years). There were 97 procedure in 2020, 111 in 2019, 146 in 2018 and 113 in 2017. Seventy-two of the total cases were perforated appendicitis. Multiple comparison tests revealed that age did not show difference; but onset of symptoms in admission($p=0.004$), hospitalization time before surgery($p<0.001$), total hospitalization time($p<0.001$) showed statistically significant difference between years. Pairwise comparisons showed that these parameters were increased 2020 years compared to other years. Perforated appendicitis rate was significantly increased in 2020 comparing to previous years. Accuracy of perforated appendicitis diagnosis was evaluated between years to determine whether hospitalization time after sonographic evaluation before the surgery contribute to increase in perforation rate but no difference was found.

Conclusion: The coronavirus outbreak has affected the entire healthcare system worldwide. Although there are no direct relation between appendicitis and COVID-19 infection in current knowledge, perforated appendicitis rates were found to be increased in children during the COVID pandemic. Reason of the higher rate of perforated appendicitis may be multifactorial, however the COVID pandemic also appears to have a role in delay of hospital admissions.

P023 PREDICTORS OF CLINICAL RESPONSE OF ESOPHAGEAL DILATATIONS IN PEDIATRIC POPULATION. Silvia Aragón, MD[1]; Juan Valero, MD[1]; Laura Padilla, MD[2]; Fernando Fierro, MD[1]; Ivan Molina, MD[1]; [1]Universidad Nacional de Colombia; [2]Universidad del Bosque

Introduction: Esophageal strictures are a common condition, and pediatric surgeons confront them regularly. Despite being a procedure performed very frequently, there are no standardize protocols in the world, nor studies that clearly identify prognostic factors for pediatric patients.

Methods: Medical records of the patients who were taken to esophageal dilatation due to strictures from January 2015 to December 2018 were reviewed. Statistical analysis was performed to establish prognostic factors.

Results: Six hundred sixty-three procedures were performed in 111 patients. The majority of patients had antecedent of esophageal atresia 56%, corrosive stricture in 24%, idiopathic 11%, and Gastroesophageal Reflux (GER) in 9%. The effectiveness of the dilations was evaluated against three parameters: Dysphagia 0 or 1 in the last assessment 82%. Discharge from dilatation protocol 64%, and no need for surgery 74%. The Global effectiveness was determined by fulfilling the three previous outcomes, and was of 49%. The complication rate was 1.9%, being esophageal perforation the most frequent. The statistically significant predictors for the ineffective dilations were: airway compromise and history of feeding surgery. The length fewer than 2 centimeters of the stricture, the location in the middle third of the esophagus and the endoscope passage in the first procedure were factors associated with a better prognosis. Airway involvement was also a variable associated with more significant complications.

Conclusions: Esophageal dilations are a fundamental part of the management of strictures. The protocol used in our institution is effective and with low complication rates. This study found relevant prognostic factors for both the effectiveness of the dilations and the complications of these. More studies are needed for a gold standard of effectiveness in this condition.

Key words: Balloon Esophageal dilatations, Esophageal stricture, Predictors of clinical response, Esophageal Atresia, Corrosive strictures.

P024 SUCCESSFUL LAPAROSCOPIC MANAGEMENT OF ABDOMINAL LYMPHANGIOMA CYST IN CHILDREN: A CASE SERIES Toumi Afef[1]; Mariem Ben fredj[1]; Marwa Ben mesaoud[1]; Sabrine Ben ammar[1]; Sabrine Ben youssef[1]; Sami Sfar[1]; Nahla Kechiche[1]; Samia Belhassen[1]; Sana Mosbehi[1]; Amine Ksia[1]; Lasaad Sahnoun[1]; Marwen Baccar[2]; Sawsen Chakroun[2]; Mongi Mekki[1]; Mohsen Belghith[1]; [1]Pediatric's Surgery Department-Monastir; [2]Anesthesiology and Reanimation Department-Monastir

Introduction: abdominal lymphangioma cyst (ALC) is a rare benign tumor. Complete excision through laparotomy is the standard treatment. Since 1993 the laparoscopic route has been proposed as a minimally invasive alternative in adults and children. The aim of our study is to demonstrate the feasibility, interest and efficiency of the laparoscopic approach in the treatment of ALC among children.

Materials and methods: This is a retrospective descriptive study of patients with ALC treated by laparoscopy in our department between 2010 and 2017.

Results: 7 patients were identified, 5 boys and 2 girls with a mean age 6 years (2 months to 10 years). The most common clinical presentation was acute abdominal pain (3 cases), followed by abdominal mass (2 cases), one case of antenatal diagnosis and one case of acute abdomen due to hemorrhage of the cyst. All patients had abdominal ultrasound and in 3 cases we used a CT scan complement. The lymphatic cyst was omental in 3 cases, mesenteric in 2 cases and small bowel mesenteric cyst in 2 cases. Laparoscopic examination confirmed the diagnosis in all cases. A first puncture was performed to facilitate dissection and explore the contents of the cyst. Laparoscopic complete cyst excision was performed in 5 cases and in two cases the lymphatic cyst was externalized through the umbilicus in order to perform resection and digestive anastomosis. Mean operative time was 2 hours. No blood loss or incidents were reported during the intervention. There were no postoperative complications and mean hospital stay after laparoscopic management was 5 days. During follow-up, we did not identify any local recurrence.

Conclusion: Laparoscopic management of ALC in children has shown its safety, feasibility, and efficiency when used by an experienced pediatric surgeon and it should be considered as a treatment of choice in most cases of the abdominal lymphatic cyst.

P025 THORACOSCOPY APPROACH IN PRONE POSITION FOR ESOPHAGOPLASTY IN CHILDREN Camila G Fachin, MD, PhD; André I B dos Santos Dias, MD, PhD; Carolina Tognolo; Gustavo G Oliveira; Tatiane A Coelho; Júlia M Citon; Miguel A Agulham, MD, PhD; Pediatric Surgery Department of Federal University of Paraná

Aims of the study: Congenital esophageal stenosis (CES) is a very rare clinical condition found in 1 per 25,000 to 50,000 live births. There have been described 3 histological types of CES: tracheobronchial remnants (TBR), fibromuscular stenosis (FMS) and membranous stenosis (MS). This study aims to report two cases of CES treated thoracoscopically by esophagoplasty and to review literature.

Case reports

Case 1: 3-year-old boy with history of vomit, dysphagia and refusal of solid food starting at 6-month-old. Radiological investigation demonstrated stricture at the distal third of the esophageal lumen, and endoscopy suggested FMS type of CES. The patient was placed in prone position for a thoracoscopic approach. Esophagoplasty was performed using three 5-mm ports. The stenotic esophageal wall was incised longitudinally and transverse synthesis was performed. The FMS of the esophagus was confirmed. Patient presented with an esophageal fistula on the second postoperative day, which was clinically treated and spontaneously closed. The patient was discharged on the 22th postoperative day eating solids.

Case 2: 10-month-old boy with history of choking and dysphagia, after transition to solid diet, at 6-month-old. Radiological examination showed stenosis of the distal esophagus. On the OR, endoscopy was performed to identify the stenotic area by thoracoscopy. Esophagoplasty was done with the patient in prone position. The stenotic esophageal wall was incised longitudinally and transverse synthesis was performed. Patient had an uneventful postop, until the sixth postoperative day, when he swallowed a piece of a plastic spoon while feeding, which got stuck in the esophageal suture, causing a fistula and further mediastinal collection. Collection drainage guided by CT was performed and the fistula resolved spontaneously. Six years after surgery, patient remains asymptomatic with good diet acceptance.

Conclusion: Resection of the stenotic segment and end-to-end esophageal anastomosis was formerly presented as the most common surgical treatment option for CES. However, esophagoplasty is a safe and feasible alternative for surgical treatment of esophageal stenosis in children, as shown by our reports. The thoracoscopy approach with the patient in prone position provides an excellent exposure for esophagoplasty. In our two cases, the infants underwent thoracoscopic esophagoplasty with prompt recovery, without recurrent stenosis, and with satisfactory follow up.

P026 THE IMPORTANCE OF LAPAROSCOPY IN PATIENTS WITH ACUTE ABDOMEN: A CASE OF SPONTANEOUS BLADDER PERFORATION MIMICKING ACUTE APPENDICITIS Mehmet Sarikaya[1]; Taner Kamaci[2]; [1]Kiziltepe State Hospital; [2]Memorial Hospital

Bladder rupture often occurs due to trauma or iatrogenic injuries. Spontaneous bladder perforation (SBP) is extremely rare. In case of delay in treatment, urosepsis and death may result. We present a 6-year-old SMP case that is mimicking with acute appendicitis.

Physical examination of the patient, who has had abdominal pain for 2 days, shows tenderness and defense in the right lower quadrant of the abdomen. Acute phase reactants were high. Appendix could not be seen on abdominal ultrasonography and abdominal tomography. No additional pathology was found to explain the patient's clinic. Laparotomi was performed on the patient with a pre-diagnosis of acute appendicitis. During the operation, serous fluid was detected in the abdomen. The appendix appeared to be slightly inflamed. Appendectomy was performed. No additional pathology was observed and the operation was terminated. On the first postoperative day, the patient had abdominal distension. Abdominal ultasound was performed in the patient. Widespread serous fluid was detected in the abdomen and then cystosgraphy was performed. Bladder perforation was detected. Laparoscopy was applied to the patient. There were 2 perforated areas opening into the peritoneum in the bladder dome. Perforated areas were repaired. The patient was discharged on the 7th postoperative day. No pathological appearance was observed in the bladder in the cystography taken 3 months after the operation.

SBP develops due to underlying diseases such as recurrent urinary tract infections, bladder diverticulum, bladder outlet obstructions, neurogenic bladder, bladder stones, and tumors. SBP is a condition that should be kept in mind in cases of acute abdomen where the clinic cannot be explained by other reasons. The preference of laparoscopy in cases with suspected acute abdomen facilitates the diagnosis of rare conditions such as bladder perforation.

P028 LAPAROSCOPY : THE HERO OF CHALLENGING DIAGNOSIS Arije Zouaoui; Senda Houidi; Fatma Thamri; Oussama Mehrzi; Fatma Fitouri, MD; Sondos Sahli, MD; Yosra Kerkeni, MD; Riadh Jouini, MD; Children's Hospital, Tunis, Tunisia

INTRODUCTION: The advent of laparoscopic surgery is a landmark in surgery, and is the most preferred method for adressing a number of diagnosis especially in children. In fact, the available paraclinic tools may not lead to diagnose challenging condtions in these particular young population.

The aim of our study is to demonstrate the strong role of exploratory laparoscopy in diagnosing different conditions in children.

METHODS: We retrospectively reviewed the medical records of all patients admitted for diagnostic laparoscopy after a whole arsenal of other paraclinic diagnostic methods wich didn’t provide enough information or insight for a diagnosis, between january 2013 and december 2019 in our department.

RESULTS: Eighteen patients (10 boys and 8 girls) were reviewed. The mean age was 5,5 years (from 4 months to 13 years). The main symptom was the abdominal pain found in 12 of our patients. Fever was present in 3 patients, bleeding per rectum in 6 patients and vomiting in 4 patients. Medical history and biological findings didn’t help guide diagnosis suspicions. Ultrasonography was performed in all patients. It showed ascites, mesenteric lymph nodes, hepatomegaly and a cystic undefined intesinalt mass. CT-scan done in four patients showed the same findings. Tc-99 scintigraphy was performed in six patients. Laparoscopy showed peritoneal granulations in five cases, adhesions in three cases, Meckel diverticulum in eleven patients and cystic intesinal lymphangioma in one case. Peritoneal biopsy was performed in six cases allowing the diagnosis of peritoneal tuberculosis. Laparoscopy assisted mini laparotomy segmental resection with extra corporeal anastomosis was performed in patients with Meckel diverticulum and cystic lymphangioma. All postoperative courses were uneventful.

CONCLUSION: Exploratory laparoscopy is a safe minimally invasive method for intra abdominal diseases through direct inspection of the organs. It also allow biposy, culture aquisitions to perform diagnosis and therapeutic intervention when feasible.

P029 DUODENAL ATRESIA: IS IT TIME TO CHANGE TO LAPAROSCOPIC APPROACH? Yasmine Houas; Nesrine Chebil; Cyrine Saadi; Arije Zouaoui; Yosra Kerkeni; Sondes Sahli; Nada Sghairoun; Riadh Jouini; Children Hospital Bechir Hamza

AIM OF THE STUDY: With the advancement of laparoscopic surgery in neonates, we aimed to systematically review the literature to determine whether minimally invasive surgery is feasible and safe for the repair of duodenal atresia.

METHODS: We performed a systematic review of the literature published between 2002 and 2019 using MEDLINE, COCHRANE and EMBASE databases. The search strategy used the terms “duodenal atresia” and “laparoscopy”. We reviewed the demographic data , type of atresia, surgical techniques and complications.

RESULTS: Eighteen articles met the inclusion criteria. The number of patients included was 876. The median age at operation was 4.2 days. A minimally invasive technique (MIT) was performed for 558 patients (63.6%) with a conversion to an open technique (OT) in 5.73% of cases. In both approaches, a side-to-side duodeno-duodenostomy was performed (97.7 %) or a duodeno-jejunostomy (2.3%). Mean operative time did not differ significantly (93 min OT vs. 123 min MIT ,p > 0,05). Overall rate of complications was 19.8% and 11.4% respectively in the open and the laparoscopy group. The anastomotic leakage represented the most common complication in the MIT group (18,7 % vs.14,3 , p <0,05) . Wound infection were reduced following laparoscopic approach. Mean hospital stay was significantly shorter in the MIT group (11 vs . 27 , p <0,05). Average time to full feeds was lower following laparoscopy (12 vs 20 days , p>0,05)

CONCLUSION: Despite the longer operative time, laparoscopic approach is feasible in the treatment of duodenal atresia with a shorter hospital stay and time to achieve full feeds. Nevertheless, anastomotic leakage represent its most common complication.

P030 ARE PEGS AS SAFE AS LAPAROSCOPIC GASTROSTOMY TUBES IN CHILDREN? A COMPARISON OF OPERATIVE TIME, COMPLICATIONS AND CHARGES. Matthew T Hey[1]; Kyle J Glithero, MD[2]; Cathy A Burnweit, MD, FACS[3]; [1]Florida International University Herbert Wertheim College of Medicine; [2]Maimonides Medical Center; [3]Nicklaus Children's Hospital

Introduction: There are many techniques of gastrostomy tube placement in children. Percutaneous endoscopic gastrostomy (PEG) has been previously considered to confer more complications when compared to a laparoscopic technique. We compare our recent experience of percutaneous endoscopic gastrostomy (PEG) and laparoscopic technique (LapGT) at a tertiary care pediatric hospital.

Methods: All PEGs and LapGTs placements were reviewed at the participating institution from August 2016 through January 2018. Demographics, procedure time, operative charges, and 30-day complications were reviewed for patients who had gastrostomy tube placement, either PEG or LapGT, not in conjunction with other procedures. Means of quantitative values were compared using the student's t test. Categorical values were compared using the X^2 test. Percentages and charges were rounded to the nearest whole number.

Results: Over 18 months, 93 isolated gastrostomy tubes were placed in children aged 2 weeks to 19 years. There were 56 PEGs (60%) and 37 LapGTs (40%), based on surgeon preference. There was no significant difference in gender, mean age, or mean weight between the two groups. Mean operative time for PEG was 59% shorter (14 vs. 33 minutes, $p < 0.001$). Operating room charges averaged $4,500 less in the PEG group ($11,400 vs. $15,900, $p < 0.001$). Neither group had complications that required a return to the operating room within 30 days postoperatively. There was also no difference in the rate of return to operating room for fundoplication after gastrostomy tube placement (fundoplication rate after PEG and LapGT was 0.05 and 0.05, $p = 0.9919$). In two cases PEGs were converted to LapGTs because safety criteria for PEG were not met.

Conclusions: In a review of our experience with PEGs and LapGTs, it was found that the PEG technique, when used with clearly defined safety criteria, decreased operative time and cost without compromising safety. In the current milieu of decreasing anesthesia exposure for children and reducing healthcare costs, PEG should be considered as a safe and effective option for gastrostomy tube placement in children.

Table 1.	LapGT	PEG	p-value
Number of Cases	37 (40%)	56 (60%)	
% Female	62.16%	42.86%	0.0648
Mean Age (months)	36.08	48.3	0.16
Mean Weight (kg)	9.97	12.93	0.09
Mean OR Time	84.59	50.93	<0.001
Mean Procedure Time (min)	33.08	13.55	<0.001
Fundoplication Rate	0.0541	0.0526	0.9919
Mean Cost (USD)	15,900	11,400	<0.001

P031 UNDERSTANDING A GENERATION: EDUCATION OF Y GENERATION PEDIATRIC SURGEONS Ergun Ergun; Ufuk Ates; Gulnur Gollu; Meltem Bingol-Kologlu; Aydin Yagmurlu; Murat Cakmak; Ankara University Faculty of Medicine, Department of Pediatric Surgery

Aim: The new millenium is the internet age and Y generation – millenials are growing with it. The education systems have been changing and millenials gain unusual characteristics in it. They have a faster and more analytical stream of thought, they are more selfish and their self-confidence levels are higher. The ancient relationship of master and apprentice seems insufficient and needs additional educational methods. It is aimed to investigate the effect of checklist, video analysis and personal training in the surgical residency education on applying proper surgical algorithms.

Material and methods: The study included eight residents who completed their first year in residency. A checklist including 10 steps of the procedure for residents was created for laparoscopic appendectomy procedure in which preoperative, operative and postoperative steps were described in detail. A sample video was created by a senior faculty member. The checklist was readed and the sample video was watched by the attending resident before the operation. Additionally, the procedure was explained to resident step by step by a faculty member. Three video records of the operation performed by each resident-in total 48 cases- before and after the education process were evaluated by faculty members and the deviations were evaluated. Wilcoxon signed ranks test was conducted for statistical analysis and satisfaction degree of the residents were recorded.

Results: Median deviation from the operational algorithm was 2 (0-4) and 0 (0-2) respectively before and after the education. Deviation was observed to be reduced mean of 1.5. Among 24 procedures which were performed after the education process, deviation from algorithm was reduced in 19 ($p=0.001$). The satisfaction questionairre which was applied to residents revealed high satisfaction level (4.9/5.0).

Conclusion: Education of surgery residents with checklist, video analysis and personal training seems to be highly efficient.New educational tools and methods and personal information transfer in the pediatric surgery residents' education benefit in development.

P032 INCIDENCE, RISK FACTORS, SIGNS, AND SYMPTOMS OF SPLENIC ISCHEMIA IN ADOLESCENT LAPAROSCOPIC SLEEVE GASTRECTOMY PATIENTS. Jeffrey L Zitsman, MD[1]; Grant N Schutte, MS[2]; [1]Center for Adolescent Bariatric Surgery, Morgan Stanley Children's Hospital of New York Presbyterian, New York, NY; [2]Columbia University Institute of Human Nutrition, New York, NY

Background: With rising childhood obesity rates, it has become imperative to find safe and effective weight loss solutions. Sleeve gastrectomy (SG) is the most common bariatric surgery to combat rising obesity rates. Little is known about the postoperative complications of sleeve gastrectomy in adolescents. The technique of SG may cause the spleen may lose a portion of its blood flow, causing ischemia, particularly to the upper pole. While self-limiting and healing, splenic ischemia may have similar postoperative symptoms to more severe complications such as perforations, leaks, and severe bleeding.

Purpose: To review surgical videos to document the incidence of focal splenic ischemia in the adolescent patient population and assess any correlation of postoperative symptoms or predictive factors to help guide physicians in their diagnosis and treatment of patients postoperatively.

Methods: We retrospectively reviewed 142 surgical videos and medical records from 2010 through 2018. The videos were review for visualization of splenic ischemia and the presence and division of separate polar accessory vessels. The medical records were reviewed for postoperative symptoms of left shoulder pain, fever, leukocytosis, and tachycardia.

Results: We found an incidence of 31% for focal splenic ischemia in our adolescent patient population. We identified the division of separate polar vessels as increasing the relative risk of splenic ischemia by 2.3 (p=0.0055). We were unable to correlate any postoperative symptoms or complications with the identification of splenic ischemia.

Conclusion: The incidence of splenic ischemia during an SG in our population was higher than in other reports. Division of separate polar vessels is a risk factor for localized splenic ischemia. Our findings suggest that splenic ischemia is incidental and does not manifest with any clinical significance.

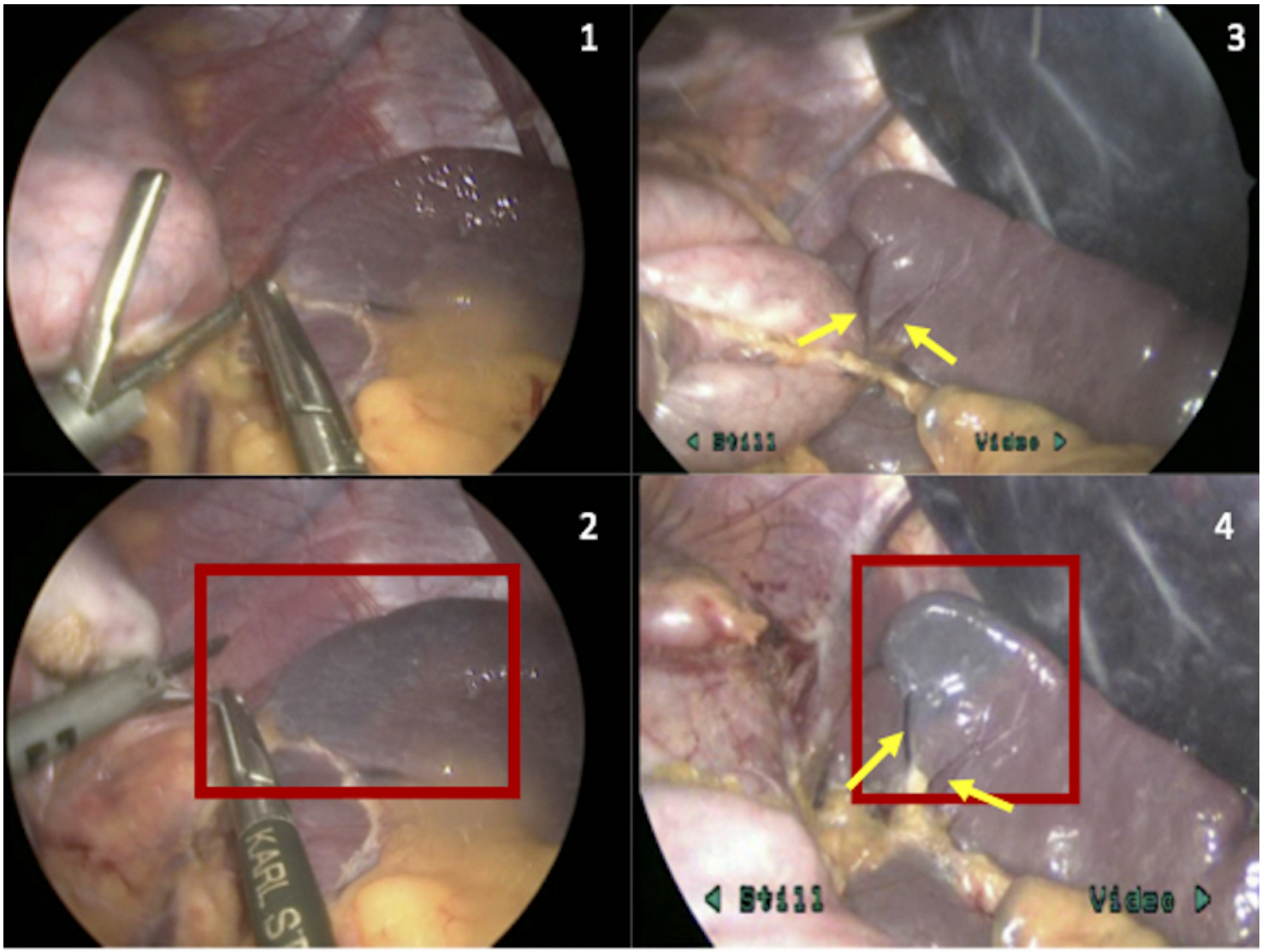

Figure A: 1. Upper pole of a healthy spleen. 2. Splenic ischemia identified in upper pole (red box)
3. Identification of separate polar vessels (yellow arrows). 4) Splenic ischemia (red box) and separate polar vessels (yellow arrows).

P033 LAPAROSCOPIC SUBCUTANEOUS T-FASTENER ANTERIOR GASTROPEXY FOR GASTRIC VOLVULUS IN PATIENTS WITH INTELLECTUAL DISABILITY: REPORT OF THREE CASES Satoko Nose, PhD; Masahiro Zenitani, PhD; Takaharu Oue, PhD; Hyogo College of Medicine

INTRODUCTION: Acute gastric volvulus (GV) is a life-threatening event that occurs in patients with increased intragastric pressure, leading to strangulation of the stomach. The current report describes three cases of acute GV associated with intellectual disability. The preferred treatment for obstructive GV is endoscopic derotation of the volvulus. However, the stomach of patients with intellectual disability complicated by aerophagia is often re-rotated because it is in an overstretched condition for a long time. The only way to prevent GV is through gastropexy, and combined gastrostomy is remarkable in reducing intragastric pressure for these patients. Here, we present a new technique for laparoscopy-assisted endoscopic percutaneous gastropexy using anchoring devices.

CASE REPORTS: Case 1: A 10-year-old girl with a chromosomal abnormality and repaired congenital diaphragmatic hernia received laparoscopic splenectomy for a giant splenic cyst. She developed secondary GV 4 months after surgery because of lack of greater curvature fixation. We performed laparoscopic subcutaneous T-fastener anterior gastropexy combined with gastrostomy after endoscopic derotation of the GV. At the 2-year follow-up, she was asymptomatic. Case 2: A 17-year-old girl with intellectual disability was admitted to the emergency department of a nearby hospital because of sudden abdominal pain and nonbilious vomiting. The insertion of a nasogastric tube was unsuccessful, and she developed gastric torsion. The GV was derotated with emergent endoscopy, and a nasogastric tube was placed. Shortly after this procedure, she underwent the same procedure as that in Case 1. At the 1-year follow-up, she was asymptomatic. Case 3: A 6-year-old girl with Pallister–Killian syndrome presented to the emergency department with sudden onset abdominal pain accompanied by nausea and abdominal bloating. Computed tomography revealed marked gastric distention, GV, and wandering spleen. Decompression of the gastric distension was performed and a nasogastric tube was successfully inserted. We used the same technique as that in Case 1 to fix the stomach and perform simultaneous laparoscopic splenopexy for the wandering spleen.

CONCLUSIONS: Acute GV associated with intellectual disability complicated by aerophagia requires decompression of the stomach even after fixation to prevent re-rotation. The present procedure using laparoscopic subcutaneous T-fastener gastropexy combined with gastrostomy is safe, easy, and remarkable in reducing intragastric pressure for patients with intellectual disability with GV.

P034 POSTOPERATIVE OUTCOMES OF OPEN VERSUS LAPAROSCOPIC APPENDECTOMY IN CHILDREN: DOES THE APPROACH REALLY MATTER? Meriem Oumaya, MD; Yosra Ben Ahmed, MD; Faouzi Nouira, PhD; Najoua Moussa, MD; Intissar Chibani, MD; Awatef Charieg, MD; Tarek Boukesra; Said Jlidi; Children Hospital of Tunis

Introduction: Many studies comparing laparoscopic appendectomy (LA) and open appendectomy (OA) have shown conflicting results concerning the influence of the surgical approach on postoperative complications. The aim of this current study was to compare post-operative morbidity rates following LA and OA in children.

Patients and Methods: We retrospectively analyzed the charts of 775 children who underwent either laparoscopic or open appendectomy, in the Department of Pediatric Surgery B of Children Hospital of Tunis , during 4 years' period between January 2013 and December 2016.

Results: The patients were divided into two groups; A group operated by laparotomy including 606 children and the other group underwent laparoscopic appendectomy including 169 children. The median age was 8 years with a male predominance (Sex ratio: 2.2).

The average operating time was 43.32 minutes for the open appendectomy group and 50.9 minutes for the laparoscopic appendectomy group.

Laparoscopic compared to open surgery was associated with a shorter length of hospital stay (2 days vs 3 days).

The major complication rate after surgery in laparoscopic group was significantly lower than in open appendectomy group (4% vs 14%, $p<0.001$).

The risk of wound infections was lower for laparoscopic appendectomy (OA 32 (5,3%) versus LA 3 (1,8%) avec $p <0.001$.

Laparoscopy was associated with a lower incidence of postoperative abdominal abscess (6.4% vs 2.4, $p =0.04$).

Over the study period, there were 16 cases of post-operative bowel obstruction after open appendectomy but no case after laparoscopic appendectomy.

Conclusion: LA may be considered a better alternative to OA for children including all stages of pediatric appendicitis with a shorter length of hospital stay and a lower incidence of postoperative abdominal abscess, wound infections and bowel obstruction.

P035 LAPAROSCOPIC TREATMENT OF PYLORIC ATRESIA Yury Kozlov, PhD[1]; Simon Poloyan[2]; Konstantin Kovalkov, MD[3]; Vadim Kapuller[4]; [1]Irkutsk Children's Hospital; [2]Krasnoyarsk Center of Maternity and Childhood; [3]Kemerovo Children's Hospital; [4]Assuta University Medical Center

Introduction: Pyloric atresia is one of the rarest surgical diseases in newborns. Laparotomy is the most common approach to correct this abnormality. In the modern scientific literature, there is only one report on the endosurgical treatment of pyloric atresia. The case of laparoscopic correction of gastric outlet atresia presented in this study is another reference to the successful treatment of this condition.

Materials and methods: The clinical case is presented by a newborn boy in whom a prenatal ultrasound examination at 31 weeks of gestation revealed polyhydramnios and an enlarged stomach. The baby's birth weight was 2660 grams. In the first hours of life, the child showed symptoms of high intestinal obstruction in the form of vomiting of gastric contents. Postnatal ultrasound and X-ray examination established the diagnosis of pyloric atresia. During laparoscopy, performed on the 2nd day of life, the morphological type of anomaly was assessed and type I atresia, represented by a membrane, was established. A laparoscopic membranectomy with Heineke – Mikulicz pyloroplasty was performed. In the final part of the scientific work, the early and late results of the operation were investigated.

Results: The duration of the operation was 70 minutes. The postoperative period was uneventful. The start of enteral nutrition occured on the 3rd day after the operation. A complete enteral diet became possible on day 7. The newborn was discharged from the hospital on the 9th postoperative day. Histological examination confirmed the diagnosis of membranous type of pyloric atresia. During follow-up for 12 months, no complications associated with the surgical procedure were found.

Conclusion: Description of the case of laparoscopic treatment of type I pyloric atresia in a newborn expands the use of laparoscopy in pediatric practice.

P036 THE COMPARISON OF GASTROSTOMY PROCEDURES FOR NEUROLOGICALLY DISABLED PATIENTS -OUR EXPERIENCE IN 22 YEARS- Keisuke Yano; Masakazu Murakami; Ayaka Nagano; Mayu Matsui; Koshiro Sugita; Toshio Harumatsu; Shun Onishi; Koji Yamada; Waka Yamada; Makoto Matsukubo; Mitsuru Muto; Tatsuru Kaji; Satoshi Ieiri; Department of Pediatric Surgery, Kagoshima University

Aim of the study: Gastrostomy is one of the most performed operations for neurologically disabled patients. However, because they have deformity of body trunk and stomach, we experience atypical cases having severe complications during operation or postoperative complications. It is not clear which procedure of gastrostomy is the most safety techniques to avoid complications. Comparing the procedures of gastrostomy for neurologically disabled patients underwent in our institution, we clarified the most safety techniques of gastrostomy for them.

Methods: We retrospectively reviewed sixty-seven neurologically disabled patients who underwent gastrostomy without fundoplication in our institution for 22 years. According to procedures of the gastrostomy, they were divided into 3 groups.

Results: Male / female ratio of total patients was 36 / 31, and age was 3 months to 59 years; the mean was 12.7 ± 11.8 years old. 9 patients were underwent percutaneous endoscopic gastrostomy (PEG) (PEG group), 35 patients were underwent open gastrostomy, and 16 patients were underwent laparoscopic assisted PEG (Lap-PEG group). There were no significant differences for patients' age among three groups; PEG group: 10.7 ± 7.1, Open group: 13.8 ± 13.0, Lap-PEG group: 16.6 ± 16.9 (years old). Operation time was not significantly differenced among three groups, PEG group: 65.0 ± 60.6, Open group: 93.5 ± 34.9, Lap-PEG group: 96.9 ± 23.2 (minutes). In PEG group, we experienced 2 severe complications such as perforation of small intestine because of puncture.

Conclusion: We modified the procedures of gastrostomy for neurologically disabled patients to avoid complications for recent years. Previously, PEG is the most convenient procedure, but intraabdominal stomach is invisible. It would cause puncture of small intestine during operation. Gastrostomy with laparotomy has visible stomach and others, so it is not cause small intestine injury, but it has the most size of scar, therefore it is the most invasive procedure for patients. Lap-PEG has clear visuality and small scar, although long-term follow up and additional studies are needed to evaluate chronic outcomes, we suggest that Lap-PEG is safety and less invasive procedure for neurologically disabled patients.

P037 INTERVAL LAPAROSCOPIC SINGLE PORT APPENDECTOMY FOR PRESCHOOL CHILDREN. Shun Onishi, MD, PhD[1]; Genshiro Esumi, MD, PhD[2]; Tomoe Sato, MD[2]; Masahiro Fukuhara, MD[2]; Satoshi Ieiri, MD, PhD[1]; [1]Department of Pediatric Surgery, Kagoshima University; [2]Department of Pediatric Surgery, Oita Prefectural Hospital

The aim of study: Recently, conservative management of advanced complicated appendicitis in children is widely accepted. And it is also known that acute appendicitis in preschool children remains a diagnostic challenge and they present late and with some complications. However, there are few reports about interval appendectomy (IA) focused on preschool children. We present our experience of interval laparoscopic appendectomy in our institution especially focused on preschool children who are under 6 years old.

Methods: All children who were performed single port laparoscopic appendectomy between January 2010 and December 2019 were included. We performed conservative management for patients with appendiceal mass, otherwise emergency operation was perfomed. Data was collected retrospectively included demographic, duration of symptoms, method of diagnosis, days of antibiotics, length of interval operative time, length of hospital stay (conservative treatment and total length of hospital stay), complication and histology. We divided patients with acute appendicitis into 4 groups; preschooler with IA (PS-IA group), school age with IA (S-IA group), preschooler with emergency operation (PS-EO group) and school age with emergency operation (S-EO group).

Result: Two hundred and twenty one patients, median age was 9.7 years old, were offered laparoscopic appendectomy. There were 119 boys and 102 girls. There were 13 patients in the PS-IA group, 29 patients in the S-IA group, 32 patients in the PS-EO group and 147 patients in the S-EO group, respectively. One patients in the S-IA group had recurrence of appendicitis 17 days after antibiotic treatment and was undergone emergency operation. Median age of patients in the PS-IA group was 4 year olds (range 2-5). It was significant younger than other three groups ($p<0.01$). They came our hospital with higher C-reactive protein level than other 3 groups (median 14.31, range 5.71-22.61). Median length of stay for conservative treatment was 11 days (range, 7–20 days) in the PS-IA group and 13 days (range 8-31) in the S-IA group. Two children in the PS-IA group and 8 children in the S-IA group required drainage during conservative management. There were no significant difference in operation time and blood loss. Median length of hospital stay after operation in the PS-IA group was 4 days (range 3-8) and it was significantly shorter than other three groups ($p<0.01$). Microscopically, most of IA cases were diagnosed chronic appendicitis. The rate of appendicitis gangrenosa and perforated were higher in preschool children than school children. There were no complications following interval laparoscopic appendectomy in the IA-PS group.

Conclusion: Patients with appendiceal mass was significantly younger and had more severe appendicitis than older children. Conservative management of appendiceal mass and single port laparoscopic appendectomy are safe and accurate management even for preschool children.

Table 1

	PS-IA	S-IA	PS-EO	S-EO
No. of Cases	13	29	32	147
Age (years)	4[a,b,c] (2-5)	10[b] (6-14)	5 (3-6)	10 (7-16)
Body temprature (°C)	38.2 (36.6-39.4)	38.5 (36.4-40)	38.3 (36.6-39.6)	16150 (5420-27660)
White blood cell (/μl^3)	19555 (6950-26910)	15300 (9390-23300)	16150 (5420-27660)	14910 (5080-26110)
CRP (mg/dL)	14.31[b,c] (5.71-22.61)	10.13 (0.37-28.4)	8.10 (0.02-29.9)	2.66 (0.01-23.99)
Operation time (min)	65 (33-173)	69 (37-152)	71.5 (30-146)	65 (26-260)
Blood loss (ml)	0 (0-20)	0 (0-80)	0 (0-80)	0 (0-660)
Length of stay for conservative treatment (day)	11 (7-20)	12 (4-31)	-	-
Interval (day)	90 (56-148)	89 (17-169)	-	-
Length of hospital stay after operation (days)	4[b] (3-8)	5 (3-11)	7 (4-16)	6 (3-42)
Total length of hospital stay (days)	16[a,b,c] (11-25)	18[b,c] (11-38)	7 (4-14)	6 (4-43)
Pathology				
Catarrhalis	3	2	0	7
Phlegmonosa	1	1	4	46
Gangrenosa	0	1	12	57
Perforated	0	0	15	34
Chronic	10	23	1	2

CRP: C-Reactive Protein,
Values are median and range, [a]$p < 0.05$ vs. S-IA, [b]$p < 0.05$ vs. PS-EO, [c]$p < 0.05$ vs. S-EO

P038 MANAGEMENT TACTICS FOR PATIENTS WITH COMPLICATED COURSE OF CROHN'S DISEASE STENOTIC FORM IN CHILDREN

Alexander Bekin; Elena Dyakonova; Alexey Gusev; Evgeniy Okulov; Andrey Surkov; Sergey Yatsyk; Andrey Fisenko; FSAI "NMRC for Children's Health" MH RF

Relevance: refractory to pharmacological treatment of Crohn's disease in children in 1/3 of the cases lead to complications (fistulas, stricture, intestinal obstruction) that requires surgical intervention. The timing and volume of surgical interventions - actual problem of pediatric surgeons and gastroenterologists.

Purpose: To justify the need for a multidisciplinary approach to the diagnosis and treatment of children with complicated course of stenotic form of Crohn's disease

Results: diagnostic measures revealed the localization and degree of stenosis of the intestinal tract. In all cases, the affected segments were the terminal ileum and the ileocecal region, which was an indication for treatment and diagnostic laparoscopy, since it was the cause of the development of partial intestinal obstruction. Intraoperative in 5 patients diagnosed conglomerate including teraminalny ileum, ileocecal angle involving adjacent organs and small bowel loops emerging interintestinal fistulas. In 4 cases, the pathological process covered the terminal ileum and the ileocecal angle. All patients underwent resection of the ileocecal angle with the changed portion of the ileum and elimination ileostomy. In the postoperative period, after stabilization, specific therapy was carried out with the participation of gastroenterologists.

Conclusion: thus, the inefficiency of specific therapy for stenotic forms of Crohn’s disease with the subsequent development of partial intestinal obstruction suggests a surgical stage in the treatment of this patient population. The degree and extent of surgery is determined by the results of a comprehensive preliminary examination. The effectiveness of surgical intervention against the background of ongoing specific therapy is possible only with the cooperation with gastroenterologists.

P040 INFLAMMATORY BOWEL DISEASE MASKS IN SURGICAL PRACTICE Alexander Bekin; Elena Dyakonova; Andrey Surkov; Evgeniy Okulov; Alexey Gusev; Andrey Fisenko; Sergey Yatsyk; FSAI "NMRC for Children's Health" MH RF

Relevance: Under the guise of a simple infection of pararectal fiber, a fistulous form of Crohn's disease (CD) can occur. Perianal changes (10-15% of all CD cases) are one of the most serious manifestations of CD; can cause significant inconvenience to the patient, have a torpid course, affect the quality of life. An interdisciplinary approach by a gastroenterologist and surgeon is necessary for the management of patients with fistulous form of CD.

Objective: Identify debut Crohn's disease in acute purulent paraproctitis and justify the need for surgical correction. Patients: From 2017 to 2018 in the clinic, 9 children were diagnosed with a relapse acute purulent paraproctitis, who were subsequently diagnosed with CD, which accounted for 3.5% of all children with CD in the clinic. All patients were males between the ages of 8 years and 17 years.

Results: All children turned to the surgeon with complaints of inflammation in the perianal region. According to the anamnesis, all 9 children were repeatedly operated on in various surgical clinics for purulent diseases of the pararectal region. After examining the children, the debut of CD is suspected. According to the results of a colonoscopy with a biopsy, the diagnosis was confirmed, after which fistulous passages were revised. Fistulas were drained with silicone turnstiles, the ends of which were fixed to each other by flashing. All patients were prescribed treatment with genetically engineered biologicals (HIF). In 7 patients (77.8%), the treatment had a positive result; subsequently, the onset of clinical and laboratory remission of CD was noted. In 2 patients, the course was continuously recurring in nature, in connection with which laparoscopically-assisted ileostomies were performed.

Conclusion: Even a single episode of purulent paraproctitis in an older child should be the basis for excluding the debut of CD. Ligature drainage in combination with conservative management tactics (prescribing HIPP therapy) is an effective and integral part of the treatment of children with fistulous form of CD.

P041 WHY DOES NISSEN FUNDOPLICATION MIGRATE IN CHILDREN ?. Carlos García-Hernández, MD; Lourdes Carvajal-Figueroa, MD; Christian Archibaldo-García, MD; Ariadna Alvelais, MD; Sergio Landa-Juarez, MD; Hospital Infantil Privado

Introduction: The migration of the fundoplication is reported up to 40%. The possibility of correcting this complication by laparoscopy has been documented, but the findings in these reoperations are not mentioned. It has been considered secondary to technical problems, but there must be other factors that predispose this complication. The objective of this study is to analyze the type of initial surgery, migration moment and intraoperative findings with displacement of the fundoplication requiring a new operation, in order to know the pathophysiology of this complication.

Material and methods: The clinical records of patients who presented migration of the fundoplication and required a new operation for correction were retrospectively reviewed in a 20-year-old period, initial approach, as well as analysis of video recordings of reoperation surgery, describing the reoperation findings. The results were evaluated with descriptive statistics as measures of relative and central frequency.

Results: From 2010 to 2020. 42 were included, 83.33% were operated by laparoscopy and 16.66% by open surgery. 26.19% had neurological damage. Migration occurred on average at 37.61 months. The findings were; migration occurred in the anterior and left portion of the hiatus in 80.95%. The greatest curvature was the part of the stomach that herniated in 88.09%. In 90.47%, the herniated greater curvature omentum was found, which was in the deepest part of the mediastinal cavity. The integrity of the hiatal plasty and fundoplication was presented in 85.71%.

Discussion: The real cause of migration is unknown, it has been considered that it is due to a defect in the surgical technique, which has led to the proposal of multiple modifications. In this series there is no data that supports migration as a technical defect since it appeared on average 3 years after the initial surgery, in addition to the fact that the integrity of the fundoplication and sutures were found in more than 80% of the operated patients and migration occurred despite placing sutures or meshes to the diaphragm. The origin of this complication can be multifactorial, of adherent nature since we found the omentum of the greater curvature, in more than 90% of patients, in the deepest part of the chest cavity, thus responsible for ascending the greater stomach curvature, which was found in 88% of the patients. With these findings, we consider that in addition to a correct hiatal reconstruction, adequate closure of the diaphragm with reconstruction of esophageal brake membrane, construction of tension-free fundoplication, taking into account adequate length, reducing the possibility of adhesions at the level of the hiatus with careful dissection and reverse suture placement, as well as resection of the omentum of greater stomach curvature.

P042 AMOXYCILLIN/CLAVULANIC ACID MONOTHERAPY IN COMPLICATED PAEDIATRIC APPENDICITIS: GOOD ENOUGH? Rochelle van Coller, Dr[1]; Marion Arnold, Dr[2]; Hettie le Roux, Dr[1]; Abdullah Bin Hidarah, Dr[1]; Olivia de Klerk, Dr[1]; Aneesa Solwa, Dr[1]; Nathan English, Dr[1]; Tasneem Ismail, Dr[1]; Kolosa Bangani, Dr[1]; Haneem Schroeder, Dr[1]; Razeena Kaskar, Dr[1]; Matthew Payne, Dr[1]; Brittany Gibson, Ms[1]; Stefan Pretorius, Mr[1]; Dirk von Delft, Dr[1]; James Nuttal, Dr[1]; Hafsah Tootla, Dr[1]; Stewart Dix-Peek, Dr[1]; Sharon Cox, Prof[1]; Alp Numanoglu, Prof[1]; [1]Red Cross War Memorial Children's Hospital; [2]University of Cape Town Division of Paediatric Surgery

Introduction: Appendicitis carries a major healthcare burden, particularly in low- and middle-income areas where late presentation is common. A single antibiotic regimen with similar broad-spectrum antimicrobial activity is easier to administer and is more cost-effective than traditional triple antibiotic cover for appendicitis. However, data are limited on the efficacy of amoxicillin/clavulanic acid as sole antibiotic therapy for acute appendicitis in children.

Aim: To compare the outcome of acute appendicitis following antibiotic regimen switch (from triple ampicillin, gentamycin and metronidazole to amoxycillin/clavulanic acid) for surgically treated acute appendicitis in a middle-income country during 2016. The surgical approach and severity of appendicitis were evaluated as potential confounders.

Methods: Surgical site infection (SSI) rate, repeat surgical intervention rate and length of hospital stay were retrospectively reviewed at a tertiary government-funded, freestanding paediatric hospital. This was done for all patients treated for acute appendicitis in the two years preceding the antibiotic policy change: (2014, 2015; “triple-therapy, TT”) and following the change (2017, 2018; “single agent, SA”). Patients with incomplete data or crossover antibiotic regimens were excluded.

Results: Medical records of 455 patients were reviewed. Complete data on the post-operative course were available for 260 patients (57%; 128 in TT and 132 in SA). The rate of complicated appendicitis was similar between groups with 72.6% in TT and 66% with SA ($p = 0.239$). SSI occurred at a similar rate in laparotomies (17.3%) and laparoscopic appendicectomies (20.6%) ($F(2, 254) = 2.637$, $p = 0.074$, partial $\eta 2 = 0.020$). Although the use of laparoscopy increased from 31% in TT to 89% in SA, this was not associated with increased SSI (17.3% in open and 20.6% in laparoscopic) (OR 0.841, 95% CI 0.409-1.728, $p = 0.637$). SSI occurred in 22.7% of the SA group, compared to 13.3% in the TT group (OR 1.920, 95% CI 1.000-3.689, $p = 0.048$). The relook procedure rate (OR 1.444, 95% CI 0.595-3.507, $p = 0.093$), length of hospital stay ($U = 6859$, $z = -1.163$, $p = 0.245$) and ICU admission ($U = 7683$, $z = 0.634$ $p = 0.522$) were similar between the groups. There were no mortalities in either group. Although intra-abdominal cultures were only taken in 40 patients, there were no cases of resistance to either regimen. Laparoscopic procedures converted to laparotomy 3 in TT and 11 in SA) had high SSI rates (50% of cases; 5 in TT and 2 in SA).

Conclusion: Of the four parameters evaluated for morbidity, only SSI showed a difference. The group using amoxicillin/clavulanic acid as single therapy had a statistically significant higher SSI compared to TT therapy. There was no significant difference in morbidity when comparing antibiotics in the length of hospital stay, length of ICU stay, or relook rate between the two treatment groups. The overall impact did not suggest the need to revert back to TT.

P043 HETEROTOPIC GASTROINTESTINAL CYST MIMICKING CHRONIC CHOLECYSTITIS MANAGED LAPAROSCOPICALLY Salma Mani; Nahla Kechiche; Rachida Lamiri; Afef Toumi; Meriem Ben Fredj; Samia Belhassen; Amine Ksiaa; Lassaad Sahnoun; Mongi Mekki; Sawsen Chakroun; Marouen Baccar; Mohsen Belguith; Department of Pediatric Surgery Monastir

Introduction: Heterotopic gastric mucosa is described almost everywhere in the gastro-intestinal tract, from the oral cavity to the rectum. The occurrence of heterotopic gastric tissue in the gallbladder is rare.

A choristoma can be defined as a new growth developing from a displaced anlage (primordium or first gathering of embryonic cells) not normally present in the anatomical site where it has developed.

We present an extremely uncommon case of a cyst attached to the gallbladder, which contained gastric mucosa managed laparoscopically.

Case report: A 13-month-old girl presented with a 2-week history of episodic abdominal pain, nausea and weight loss. There was no history of abdominal trauma. Abdominal examination showed tenderness in the right hypochondrium. The liver was palpable two fingers below the costal margins. No rigidity or distension was noted. Serum transaminases, bilirubin and alkaline phosphatase were normal. Abdominal ultrasound showed a gallbladder perforation with a bile collection under the liver capsule. CT scan abdomen showed a large collection in the subcapsular location of the right lobe without gallbladder sludge or calculi. The patient received parenteral antibiotics. But, one week later, she returned with recurrent significant abdominal pain and fever. We performed laparoscopic cholecystectomy based on the clinical diagnosis of subcapsular gallbladder perforation. During laparoscopy, it was thick-walled with dense, inflammatory adhesions. Based on the grossly abnormal appearance of the gallbladder, laparoscopic cholecystectomy was performed. No gallstones were found. The patient remained well during the immediate postoperative period. She was discharged home 7 days after surgery. Microscopic examination revealed that the removed cyst contained fundic-type gastric mucosa.

Conclusion: The clinical presentation of a heterotopic gastric cyst is non-specific and is associated with chronic cholecystitis. The clinical symptoms are generally biliary attacks, nausea and vomiting. The most interesting finding of this report is that tissue from a common origin can be present in an uncommon anatomical position and mimic a completely different pathogenesis.

P044 LAPAROSCOPIC TREATMENT OF DUODENAL DUPLICATION Arije Zouaoui, Resident in Pediatric Surgery; Sondes Sahli, Medical Doctor; Oussema Mehrzi, Resident in Pediatric Surgery; Senda Houidi; Departement of Pediatric Surgery A, Hospital of Children, Tunis,Tunisia

Introduction: Duodenal duplications account for 5 to 8.3% of all digestive duplications. Despite advances in imaging, they continue to pose diagnostic and therapeutic challenges. The authors report a new observation treated by the coelioscopic route and discuss the place of this first in the diagnosis and treatment of this malformation.

Observation: Ten-year-old boy hospitalized for epigastric pain that had been going on for a month. The clinical examination was normal. The radiological assessment showed a juxta-duodenal cystic formation, of 43 22 millimetres in diameter, with clean wall having a digestive structure in contact with the posterior wall of the 2nd duodenum and not communicating. The coelioscopic scan confirmed the diagnosis. The duplication was spherical and had a common wall with D2. A subtotal excision was performed leaving the bottom of the egg cup electrocoagulated. The aftermath was simple. Anatomopathological examination revealed an antral gastric wall with intestinal metaplasia and marked atrophy. The decline is 15 months.

Conclusion: The coelioscopic approach of duodenal duplication allows for safe exploration, dissection and exeresis.

P046 THE IMPACT OF THE COVID-19 PANDEMIC ON THE RATE OF ACUTE APPENDICITIS AND ITS COMPLICATIONS AMONG CHILDREN IN KUWAIT

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Introduction: Appendicitis is the is one of the causes of surgical acute abdomen among the pediatric age group, that may have a variety of detrimental consequences. With the ongoing pandemic of Corona Virius Respiratory Disease (COVID-19) and the continuous spread of COVID-19, it is unclear how much impact it will have on acute appendicitis and its complications. The aim of this study is to compare the prevalence of missed appendicitis between the era pf COVID-19 and the non-COVID-19 era.

Methods: This retrospective, national cohort analysis was conducted in Pediatric Surgery Hospital in Kuwait. Approval was sought and obtained from the Kuwaiti ministry of health, as well as the ethical committee in the Faculty of Medicine, Kuwait University.

This study used the diagnostic codes of the ICD-10 for the identification of pediatric appendicitis cases. Cases were identified from the hospital's database, and the patients who fit the inclusion criteria between 1st of March and 30thof June, 2016 until 2019 and they were compared to the patients who visited since the announcement of COVID-19 as a pandemic, until the 30th of June, 2020.

Results: A total of 136 participants were included in this study. Of note, only 13 admissions included in the study were from 2020. In addition, the majority of patients in 2020 were females, in contrast to previous years, in which most participants were males. Average age of patients in 2020 was 4.8 years compared to 5 years in the previous years. Moreover, the average length of hospital-stay during the pandemic period in 2020 was 7.4 days. Compared to the average rate of missed appendicitis in the years 2016-2019, the rate of missed appendicitis in 2020 was higher (38.6%, 18.3% respectively). Additionally, the rate of patients that underwent interval appendectomies were higher in 2020 compared to the average rate in 2016-2019 (15.4%, 4.9% respectively). Furthermore, the rate of patients that developed a complicating post-operative collection in 2020 was higher than 2016-2019 (23.1%, 5.5% respectively).

Conclusion: The COVID-19 pandemic led to a decrease in the number of cases of appendicitis presenting to the hospital and delayed care of such cases. This delayed presentation was associated with an increase in the rate of complications and length of hospital stay. In addition to that, a higher number of missed appendicitis cases was also noted during the COVID-19 period compared to the pervious years. Therefore, healthcare public awareness strategies should be implemented in order to aid in decreasing complications associated with appendicitis and other reversible conditions.

P047 OUTCOME OF NON-OPERATIVE TREATMENT FOR SIMPLE ACUTE APPENDICITIS (NOTA) IN CHILDREN DURING COVID -19 PANDEMIC IN COMPARISON TO SURGICAL APPROACH

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Background: Coronavirus (COVID-19) is the newest major pandemic communicable disease. The surgical management of acute appendicitis has been the gold standard since decades. There are many studies suggesting the safety of antibiotics treatment alone. NOTA will avoid unnecessary surgery, risks of general anesthesia; long hospital stay (LOS) and unnecessary risk of corona virus exposure especially with laparoscopy.

Aim: To study the safety, cost effectiveness and outcome of NOTA during Covid-19 pandemic and compare it to Single incision pediatric endo-surgery appendectomy (SIPESA)

Methods: A prospective cohort study for NOTA of patients from 6 -12 years old presented with diagnosis of acute uncomplicated appendicitis in Covid-19 pandemic period in our institute from 1st April 2020 to 30th September 2020. Patients divided in 2 groups: Group I managed by SIPESA, group II managed by NOTA. Team was formed (Multidisciplinary team from pediatric surgery and pediatrics ER and I&D). All children below 6 years of age, patients presented with symptoms of more than 72 hours and complicated appendicitis like mass formation and perforation were excluded. We follow the new international guidelines for medical treatment of appendicitis. Family education and assurance with detailed explanation of the possible complication of treatment with close follow up for early detection of any complication. Continue monitoring of the patients until complete recovery. Descriptive statistics were carried out; categorical variables were summarized by number and percent, whereas continuous variables were summarized by the mean and standard deviation. Data displayed run charts to examine variation occurring at the aggregate level as well as linearity trend lines by using linear regression analysis to test a significant slope. All statistical analysis was performed by using SPSS.

Results: A total of 30 patients of uncomplicated simple acute appendicitis were managed from 1st April 2020 to 30th September. Group I had 12 cases (40%), mean age 9.3 years. 8 patients (66%) were boys and 4 (34%) were girls. Group II had 18 cases (60%), mean age 9.1 years. 10 patients (55%) were boys and 8 (45%) were girls. Three cases (17%) in group II were converted to surgical management in the first 2 month of study. Mean length of hospital stay dropped from 72 hours in April to 18 hours in September. The mean cost dropped from 2736$/day in April to 400$/day in September. Therefore, we saved 47760$. Mean psychological stress for the children improved from 4.4 in April to 2 in September. Mean follow up was 3.5 months. Conclusions: NOTA is safe and cost effective modality of treatment of simple acute appendicitis in children in comparison to SIPESA and we recommend it especially during the COVID-19 pandemic.

P048 SINGLE PORT LAPAROSCOPIC REPAIR OF HIATAL HERNIA COMPLICATED WITH ACUTE GASTRIC VOLVULUS IN A CHILD: A CASE REPORT Chtourou Rahma; Dghaies Rim; Zouari Mohamed; Meherzi Oussama; Aziza Bochra; Laaribi Cyrine; Krichene Emna; Seethamah Med mozakkir; Ben Dhaou Mahdi; Mhiri Riadh; Pediatric Surgery Department, Hedi Chaker Hospital, Sfax, Tunisia

Introduction: Gastric volvulus in children is an extremely rare but potentially life-threatening condition.

We present a rare case of an acute presentation form of gastric volvulus complicating a large hiatal hernia successfully managed by minimally invasive approach.

Case report: A 9-year-old girl, presented in our department with an acute abdominal pain and vomiting with fever. A history of chronic regurgitation was noted.

On first clinical examination, she had a deterioration of the general condition with stage-one dehydration. The patient was hemodynamically stable. Abdominal examination revealed epigastric tenderness. Blood sampling work-up revealed biological inflammatory syndrome. The thoraco-abdominal x-ray revealed an antrerocardiac air-filled mass, suggestive of a huge hiatal hernia with a unique epigastric air fluid level. At abdomino-pelvic tomography, we observed a markedly distended stomach, which was folded. The gastric antrum and the pylorus were accessioned at the thoracic cavity. The all suggested a mesentero-axial gastric volvulus associated with intraperitoneal effusion of moderate abundance. The patient subsequently underwent emergent exploratory single site laparoscopic approach. There were no sign of gastric necrosis, so the stomach and esophagus were mobilized from the thorax to abdomen, the hernia sac was resected and the hiatal defect was closed. Then a Nissen fundoplicature was performed. At 1 and 3 months follow-up, the child was well with total disappearance of symptoms.

Conclusion: Hiatal hernia in children can be discovered by a severe complication such as gastric volvulus. A prompt diagnosis and appropriate treatment are mandatory to improve outcomes. Single port laparoscopic approach seems to be safe and effective for the treatment of this condition.

P049 CAN APPENDICITIS 'STAY HOME' ? A COMPARISON OF PEDIATRIC APPENDICITIS PATIENTS DURING COVID-19 PANDEMIC AND THE SAME PERIOD LAST YEAR Mesut Demir, MD; Aydin Unal, MD; Nurdan Kol, MD; Ali Ihsan Dokucu, Prof, Dr; Sisli Hamidiye Etfal Research and Education Hospital

Aim: We aimed to investigate the effects of anxiety of virus infection and curfew on complications and morbidity in pediatric appendicitis cases due to COVID-19(Coronavirus disease) pandemic, which has reached serious number of cases worldwide and caused many deaths.

Methods: Pandemic period was determined to be 2 months from the first positive case reported in Turkey. Pandemic period and the same period of 2019 were compared for acute appendicitis in age group of 0-18 years, and the data were compared retrospectively in terms of epidemiologic features, symptom duration, operation time, complication rates, drain use, hospitalization time and complicated appendicitis rates.

Results: Fortyfour patients in pandemic period(2020) and 86 patients in 2019 were included in the study. Boy / Girl: 32/12 was in pandemic group, Boy / Girl: 64/24 was in 2019 group. The average age was 11.98 ± 2.91 years in pandemic group, 11.16 ± 3.95 years in 2019. The rate of complicated appendicitis (perforated, gangrenous) was 25% in the pandemic group and 37% in the other group. While 86% of operations were completed laparoscopically during pandemic period, conversion occurred in 4.5% of cases. These rates were 93% and 2.3% respectively in 2019. There was no significant difference in symptom duration between the two groups ($p = 0.21$). No statistically significant difference was observed in complicated appendicitis and in all appendicitis (3.11 days) in terms of hospital stay. There was no difference between groups in terms of drain use ($p = 0.16$). Complications of wound infection, temporary stump fistula, peroperative bleeding, abdominal abscess formation, empyema and ileus were encountered and no difference was found between two groups ($p = 0.36$). Rate of access to ultrasound (77% and 69%) and tomography use (25% and 24%) were similar.

Conclusion: In our country, where the curfews were performed intermittently during COVID -19 pandemic, no difference was found between symptom duration, age and gender distribution, complication rate, operation time and length of hospital stay. The results may show that the psychosocial effects of pandemic period do not prevent patients with acute abdomen from coming to hospitals. However, we still need more data from larger studies in countries with longer curfews to support this conclusion.

P050 HYBRID ROBOTIC/LAPAROSCOPIC SURGERY FOR CHOLEDOCHAL CYST WITH INTESTINAL MALROTATION. CASE REPORT AND LITERATURE REVIEW. Sakika Shimaizu, MD; Hiroyuyki Koga, MD; Shogo Seo, MD; Yuichiro Miyake, MD; Geoffrey J Lane, MD; Atsuyuki Yamataka, MD; Department of Pediatric Surgery Juntendo University School of Medicine

Aim: The association of choledochal cyst (CC) and intestinal malrotation is very rare. Here we report hybrid robotic/laparoscopic (robolap) surgery for CC associated with intestinal malrotation. A brief literature review is also presented.

Case: A 2-year-old Japanese girl diagnosed prenatally with double outlet right ventricle (DORV) was referred for management of elevated serum hepatobiliary enzymes identified during postoperative follow-up for DORV. Ultrasonography (US) and magnetic resonance cholangiopancreatography (MRCP) identified CC with intrahepatic bile duct dilation. Computed tomography identified left-right reversal of the superior mesenteric artery (SMA) and superior mesenteric vein (SMV) so that the SMV was positioned to the right of the SMA, suggestive of intestinal malrotation. An upper gastrointestinal contrast study showed that the duodenojejunal junction was not located normally on the right side of the spine. Contrast barium enema also identified a high right-sided cecum.

Robolap repair for CC and malrotation was performed using a conventional 4-trocar approach. On laparoscopic examination, the midgut mesentery had enough range to be extended without Ladd's band compressing the duodenum. Therefore, a Ladd procedure was not required. Complete CC excision was performed laparoscopically. The Roux-en-Y jejunal loop was fashioned extracorporeally, the Roux-en-Y limb was returned to the abdominal cavity, and the jejunal limb passed through a retrocolic window to lie without tension at the porta hepatis. The da Vinci Surgical system (Intuitive Surgical, Sunnyvale, CA) was used for hepaticojejunostomy. Laparoscopic trocars were replaced with da Vinci trocars. A robotic platform was prepared and docked. Hepaticojejunostomy with 5mm anastomosis diameter was performed with interrupted 5/0 absorbable sutures with all knots tied intracorporeally. The postoperative course was uneventful, and she was discharged 6 days after her robolap procedure.

Literature review: A literature search performed using CC and intestinal malrotation as key words resulted in 10 reports in children and 4 reports in adults. The majority (11/14; 79%) were diagnosed incidentally during surgery with only 3 (21 %) cases being diagnosed unrelated to surgical intervention. In all reports, CC excision was performed as an open laparotomic procedure, of which 5 (36%) required Ladd's procedure.

Conclusion: To the best of our knowledge, this is the first report of hybrid robolap treatment for CC associated with intestinal malrotation. The limited literature review confirmed the indications for treatment and our case highlights the advantage of combining different technologies to enhance performance and reduce surgical stress for the patient. Robolap is viable,safe, and practical for treating cases requiring a variety of maneuvers that may not be best performed solely using one form of technology.

Table: Limited literature review for choledochal cyst with intestinal malrotation

	Age at surgery	Sex	Presenting symptoms/signs	Type of CC	Malrotation with volvulus	Surgery for malrotation	Preoperative diagnosis	Operative technique
Children								
1	1 day	M	Non-bilious vomiting Abdominal mass	Cystic	(-)	Ladd	(+)	NA
2	2 days	M	Jaundice	Cystic	NA	(-)	(-)	Laparotomy
3	2 days	M	Bilious vomiting	NA	(-)	Ladd	(-)	Laparotomy
4	100 days	M	Liver dysfunction Acholic stools	Fusiform	Incomplete volvulus	Ladd	(-)	NA
5	17 months	F	Jaundice Acholic stools	Fusiform	NA	Ladd	(-)	NA
6	2 years	M	Abdominal pain Acholic stools	Fusiform	(-)	Ladd	(-)	Laparotomy
7	9 years	F	Abdominal pain	NA	(-)	(-)	(+)	NA
8	15 years	F	Jaundice	Cystic	NA	(-)	(-)	NA
9	15 years	M	Abdominal pain	Fusiform	NA	NA	(-)	NA
10	2.5 years (our case)	F	Liver dysfunction	Cystic	(-)	(-)	(+)	Robolap
Adults								
11	24 years	F	Abdominal pain	Cystic	NA	(-)	(-)	Laparotomy
12	32 years	F	Upper abdominal pain	Cystic	(-)	(-)	(-)	Laparotomy
13	44 years	F	Right upper quadrant pain	Cystic	(-)	(-)	(-)	Laparotomy
14	50 years	F	Right abdominal pain	Cystic	(-)	(-)	(-)	Laparotomy

CC: Choledochal cyst, M: male, F: female, NA: Not available, Robolap: hybrid robotic/laparoscopic surgery

P051 HEPATICODUODENOSTOMY VS HEPATICOJEJUNOSTOMY IN CHOLEDOCHAL MALFORMATION VIA MINIMALLY INVASIVE SURGERY

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Background: Choledochal malformations (CMs) rare, especially in the Western World. CMs may be characterized as abnormal dilatation of the biliary tract in the absence of any acute obstruction. We aimed to share our experience inminimally invasive surgery (MIS) for CMs surgical treatment.

Objective: The aim of the study is to evaluate two types of laparoscopically performed biliary-digestive reconstructions - hepaticoduodenostomy and hepaticojejunostomy - in 36 patientswith with CMs, who underwent surgical treatment National Specialized Children's Hospital "Okhmatdyt", Kyiv, between January 2013 till October 2020.

Patients and methods: Data from 36 patients with CMs were retrospectively analyzed. Median patients' age was 3,6 years old (ranged 2,5 months ÷ 14 years). According to the King`s Cross College Hospital CM classification there were 23 (63,8%) patients with type 1 CMs (1F type n=7 (19,9%) and 1C type n=16 (44,4%)) and 13 (36,1%) patients with type 4 CMs (4F type n=5 (13,8%) and 4C type n=8 (22,2%)). Pre-operative evaluation included sonography of abdomen and MRCP. All 36 patients underwent laparoscopic operation with 0% rate of conversion to laparotomy. The median follow-up period was 65,4±6,2 months (range 2÷85 months).

Results: In all 36 cases five 3mm or 5mm ports were used. All patients were placed into supine split-leg ("French") position. The cyst was identified and liver traction was performed by two stay-sutures of the gall bladder to the abdominal wall. The CMs was isolated and dissected. After revising the length of the biliary tract remnant and cholecystectomy, the biliary-digestive continuity was reestablished by hepaticoduodenostomy (HD) in 25 (69,5%) patients or hepaticojejunostomy (HJ) in 11 (30,5%) patients. The mean operation time was shorter for the HD than HJ (125±37minutes to 260±45 minutes respectively; p=0,0013). There was no perioperative mortality. In one patient of HJ group Roux-en-Y loop had twisted intraoperatively (managed successfully within same procedure). Blood loss during operation in both groups was less than 50 ml. In HJ group postoperative complications (n=3) were: 1 postoperative pancreatitis, 1 cholangitis and 1 patient suffered longstanding abdominal pain, that resolved after conservative therapy in 2-3 weeks. Early postoperative complications in HD group (n=4) were 1 cholangitis, 1 biliary leakage, 1 acute gastritis due to doudenogastric reflux and 1 abdominal pain syndrome with no difference in early postoperative complications rate(Fisher's test; p=0,85) between HD and HJ groups. 1 patient of HD group developed anastomotic stenosis in 6 months after initial procedure and underwent reoperation. The average postoperative hospital stay was 5,8±0,5 days.

Conclusions: Laparoscopic management of CMs is an excellent treatment option. It is safe for little blood loss, short operation time and postoperative hospital stay when performed by highly proficient surgeon. The type of biliary-digestive reconstruction (HD or HJ) on Roux-en-Y loop should be based on CMs size and localization and the length of the biliary tract remnant after resection. HJ group showed longer operation time in comparison to HD group (p=0,0013). No significant difference found in early postoperative complications rate (p=0,85).

P053 LAPAROSCOPIC TREATMENT OF LIVER HYDATID CYST IN CHILDREN: TWO CASES REPORT Asma Slimani[1]; Wafa Maamatou, Residente[1]; Asma Jabloun, Associate Professor[2]; Aida Daib, Associate Professor[2]; Hellal Youssef, Professor agrege[2]; Kabar Najib, Professor[1]; [1]Hopital Habib Thameur; [2]Hôpital Habib Thameur

Background: Human echinococcosis remains a significant medical issue in endemic areas. Diagnosis of hydatid cyst of the liver is made by history, physical, radiological and serological findings. Surgery remains the gold standard in terms of therapy for patients with echinococcosis of the liver. Laparoscopy, as a minimally invasive surgery, has well-known clinical advantages over traditional surgery. Several reports have confirmed the benefit of a laparoscopic approach for liver hydatid disease.

Purpose: This study evaluated the place of the laparoscopic surgery in hydatic liver cysts in children.

Case report: we report two patients underwent laparoscopic treatment of hydatid cysts of the liver in the pediatric surgery department of Habib Thameur's hospital. The patients' mean average age was six years and six months (range 4 -9 years) .The two patients had chest x-ray, abdominal sonography, and hydatid serology. The main symptom is the appearance of an epigastric abdominal mass. Chest x-ray (face + profile) in both cases did not show any hydatic localizations. The abdominal ultrasound showed a hydatic cyst type 1 of the left lobe of the liver in both. The serology tests was negative. There was only one cysts with 68mm to 75 mm diameter of (mean diameter, 71.5 mm). The different stages of laparoscopic procedure were the same as in open surgery: puncture, aspiration, injection of scolicidal agent, reaspiration, removal of proligerous membrane, and resection of the dome. No per- or postoperative complications were reported.

Conclusion: Hydatic disease is still a problem in endemic countries and needs epidemiologic prevention for its eradication. Laparoscopy represents an excellent approach for the treatment of hydatid cyst of the liver in children.

P054 ABDOMINAL COMPLICATIONS AFTER VENTRICULOPERITONEAL SHUNT PLACEMENT Anna Timofeeva, Ms; Andrey Melnikov, PhD; Olga Karaseva, MD; Clinical and Research Institute of Emergency Pediatric Surgery and Trauma

Aim: To study the reasons of peritoneal end of ventriculoperitoneal shunt (VPS) dysfunctions.

Materials: Over the past 10 years, 26 cases of distal VPS dysfunctions have been identified.

Results: Boys:girls=52%:48%. Mean age was 6.9±5.2 years. Peritoneal end dysfunction was diagnosed in 22.6% of all VPS dysfunctions. Main reasons were shunt infection and changes in cerebrospinal fluid composition (high protein), what leads to massive adhesive process in the abdomen(26.9%) and/or formation of pseudocysts(26.9%). We performed laparoscopy, adhesiolysis or punctured pseudocysts. The surgery ends by externalization of the peritoneal end of VPS. When the cerebrospinal fluid becomes sterile, a new VPS system was placed in the abdomen with laparoscopic assistance.

The second reason were mechanical causes: disconnection of the system(15.4%), peritoneal end obstruction usually by omentum(11.5%) or shunt flexing(3.9%). Laparoscopically we removed the cause of obturation, freely lying parts of VPS were removed or the shunt was shortened if flexing was diagnosed.

The third cause was perforation of hollow organs(15.4%). The peritoneal end was externalized,perforations of the intestines were sutured laparoscopically. In one case there was a perforation of the urinary bladder. Due to very massive adhesions we couldn’t manage that laparoscopically and had to perform laparotomy, get the peritoneal end out of the bladder and stich it.

Conclusion: VPS placement is an operation that can have abdominal complications. Surgeons should be aware of that, know how to diagnose the distal dysfunction of VPS and be ready to help neurosurgeons to manage them. Mostly the problems could be solved laparoscopically.

P055 CLINICAL, MORPHOLOGICAL AND IMMUNOHISTOCHEMICAL JUSTIFICATION ON THE SURGICAL TREATMENT OF CHRONIC APPENDICITIS IN CHILDREN I N Khvorostov[1]; A G Sinitsyn[1]; G L Snigyr[1]; A A Gusev[2]; E Y Dyakonova[2]; S P Yatsyk[2]; [1]Volgograd State Medical University; [2]FSAI "NMRC for Children's Health" MH RF

Introduction: Chronic appendicitis (CA) is a diagnosis characterized by long-standing right lower quadrant pain. We analyzed clinic, morphologe and immunohistochemical studies of the appendix in order to confirm the adeguacy of surgical treatment CA in children.

Materials and methods: We carried out comparative studies of the clinical picture, results of morphological and immunohistochemical studies of remote appendicitis in 55 CA children and 35 children with acute appendicitis (AA).

Results: The low prognostic significance of appendicular scales for the determination of indications to the surgical treatment of CA was established. The management method of choice for chronic appendicitis is surgical exploration by laparocoscopicaly. Morphological examination in most cases CA revealed signs of chronic inflammation with fibrosis of the mucosa and submucosa layers of the appendix. In patients with AA, changes corresponding to the criteria of acute inflammation Immunohistochemical studies in CA revealed the pronounced expression of protein VEGF, MMP-9 and VCAM-1 predominantly in the submucosal and the muscular layers, moderate expression for Collagen-II-alpha-1. The low number of positively stained cells for the VIP protein located both in the mucosa and in the submucosa. The number of MMP-9-positive cells was the largest, there was seen a moderate amount of VEGF, VIP and Collagen-II - alpha-1-positive cells was found. In patients with AA, an immunohistochemical study showed a decrease in the expression of all the proteins studied, which could be due to damage to the antigenic determinants by hydrolytic enzymes of neutrophilic segmented granulocytes in the focus of active acute inflammation. VEGF expression was moderate, insignificant for VIP (mainly in the blood vessels of the muscle layer) and Collagen-IIIalpha- 1, and doubtful for MMP-9 and VIP. All the proteins studied were detected in single cells, mainly the muscle and serosa layers. The disappearance of the abdominal syndrome after appendectomy was noted in 6% of CA patients. Recurrence of pain was observed in girls of pubertal age with the irregular menstrual cycle.

Conclusions: We have identifieded immunohistochemical and morphological changes pointing to autoimmune and vascular mechanisms of appendix damage in CA children. Laparoscopic appendectomy helps to eliminate abdominal pain in most CA patients.

P056 SINGLE INCISION PEDIATRIC ENDO-SURGERY (SIPES) HERNIOTOMY BY TRAINEE: SINGLE CENTER EXPERIENCE Ameen A Alsaggaf, MD[1]; Yazeed Owiwi, MD[1]; Mohamed M Shalaby, MD[2]; Alaa Ghallab, MD[1]; Mazen Zidan, MD[1]; Ahmef Alawi, MD[1]; Mohamed Fayez, MD[1]; Ahmef Atta, MD[1]; Enaam Raboe, MD[3]; [1]KFAFH; [2]Tanta University, Egypt; [3]Medical Reference Center

Background: Open herniotomy (OH) is still considered the gold standard approach for children, OH is the most common procedure performed by pediatric surgery trainees, but recently laparoscopic repair (LR) has emerged as an alternative option. SIPES laparoscopic Percutaneous internal ring suturing technique (PIRS) is a minimally invasive technique in pediatric inguinal hernia repair and could be performed by trainees under supervision.

Aim: To Study the feasibility, expediency and outcome of SIPES PIRS performed by trainees

Methods: Retrospective study of all patients operated by SIPES PIRS technique from 01st January 2017 to 30th November 2020 at the Department of Pediatric Surgery, King Fahd Armed forces Hospital, Jeddah. Mean operative time (MOT), perioperative complications, recurrence, cosmetic results, contra-lateral patency of processus vaginalis (CPPV), and negative contra-lateral side exploration were recorded.

Results: Total 100 SIPES PIRS for 74 patients were operated. 48 patients (64.9%) were male, and 26 patients (35.1%) were female. Mean age was 3.2 years (1 month- 11 years). Right side inguinal hernia were 28 (37.8%), left were 20 (27%), and bilateral sides were 26 (35.1%). Mean follow up period was 2 years. Two stitch granulomas (2%) and 2 ended by recurrences in this series.

Conclusion: SIPES PIRS done by trainees is safe and feasible with a good learning curve for treatment of pediatric inguinal hernia including neonates with good outcome and cosmetic result.

P057 PLACE OF LAPAROSCOPY IN THE MANAGEMENT OF PERITONEAL TUBERCULOSIS Maamatou Wafa; Jabloun Asma; Daib Ayda; Jarray Leila; Ben Abdallah Rabia; Trabelssi Fatma; Hellal Youssef; Gharbi Youssef; Kaabar Nejib; Paediatric Surgery Department, Hôpital Habib Thameur

Introduction: Peritoneal tuberculosis (PT) is a rare form of extra-pulmonary tuberculosis in children. Diagnosis is difficult because of its clinical polymorphism. Actually, the Laparoscopy is the gold standard to make the diagnosis by exploring and performing peritoneal biopsies.

Aims: Our aim was to show the place of laparoscopy in the diagnosis of PT, to compare the anatomo-pathological results of peritoneal biopsies with a macroscopic appearance for contribution to quick starting anti-tuberculosis treatment.

Case reports: We report four patients with PT. They were three girls and a boy. The middle age was 9 years old. The revealing symptomatology was ascites in all cases, abdominal pain in three cases and fever with anorexia in one case. Radiological exploration was not contributing. Laparoscopic was performed for all patients. The exploration revealed an abdominal effusion associated with agglutination of the intestinal loops and omentum with the presence of whitish micronodules scattered over the entire abdominal cavity. Peritoneal biopsies were done. Histological examination confirmed the diagnosis of PT for all of these patients. The anti-tuberculosis treatment was indicated. There were a good clinical evolution with a follow-up of 30 months.

Conclusion: Peritoneal tuberculosis is a public health problem due to its clinical and biological polymorphism. Laparoscopy with peritoneal biopsies remains the essential means for the diagnosis of this pathology in children.

P058 ENDOSCOPIC PILONIDAL SINUS TREATMENT (EPSIT): A NOVEL MINIMALLY INVASIVE TECHNIQUE CHANGING THE SURGICAL APPROACH TO PILONIDAL DISEASE. Giovanni Parente; Tommaso Gargano; Neil Di Salvo; Eduje Thomas; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

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 Pilonal 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 ?stuloscope (8° angled eyepiece, equipped with an optical channel and a working and irrigation channel, diameter: 3.2 X 4.8 mm and operative length: 18 cm), a monopolar electrode, a brush and an endoscopic forceps. The ?stuloscope 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 did not require 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.

P059 LAPAROSCOPIC INGUINAL HERNIA REPAIR IN THE PEDIATRIC POPULATION - ARTICLE REVIEW AND THE MALTESE CURRENT EXPERIENCE Gabriella Grech; Julie Galea; Mohamed Shoukry; Mater Dei Hospital, Malta

Minimally invasive techniques have been accepted for many surgical procedures, including inguinal hernia repair in infants and children. The aim of this review is to carry out a retrospective analysis of articles and reports dealing with laparoscopic hernia repair (LHR) in children. Moreover, the Maltese current experience is described.

Methods: Data was obtained from universal database sources. Publications covering from 2002 to 2019. The endpoints for this review are including: patient demographics, clinical presentations, laparoscopic tools, ports, type of suture used and technical remarks, as well as length of surgery, postoperative care, hospital stay, complications and follow-up.

Results: 29 studies were included with a total of 6,186 patients aged from 4 days to 15 years. 67.9% of patients were boys and presenting side was dominant on right side. Ten centres reported the used of three working ports while 12 centres documented the use of 1 port and 5 centres used 2 ports. 72.4% of studies reported use of non-absorbable sutures with 4-0 size being the most commonly used. Length of surgery ranged from an average of 13 minutes to 138 minutes. Ipsilateral recurrences were reported in 1.20 % of cases, while 0.27 % required conversion to open. Metachronous recurrence was reported in 0.15 % of cases.

The Maltese Current Experience: In our centre, a population of 514, 564 persons are covered with 16 per cent of the total population under the age of 18. A total of 14 cases of laparoscopic inguinal hernia repair were carried out from August 2018 till October 2020.

64 % (9 patients) of the patients were male while 36 % (5 patients) were born prematurely. 28.5 % (4 patients) presented with bilateral inguinal hernia, another 43 % (6 patients) with right inguinal hernia and 28.5 % (4 patients) with left inguinal hernia.

The neonatal laparoscopic set-up in our centre involves a 30° laparoscope, inserted via a 5 mm umbilical port, with 2 stab incisions that allow the use of 3 mm devices. Intra-corporeal purse string suture technique was used in all cases. Prolene 4-0 was the suture of choice. The length of surgery documented included the anaesthetic time and this ranged from 1 hr to 2 hr 30 minutes.

With regards to complications, there was 1 case of ipsilateral recurrence in a pre-term neonate with high oxygen requirements in view of respiratory distress syndrome. There was 1 case of conversion to open surgery in view of anaesthetic concerns, following CO_2 retention after induction and intubation. Of note, one of the patients was noted to have closed deep inguinal rings bilaterally at laparoscopy with no femoral or Spigelian hernias, in spite of a history from parent of a left groin swelling. This highlights the benefits of the laparoscopic approach as a diagnostic tool.

Conclusion: Laparoscopic inguinal hernia repair in children is a versatile and safe procedure that can be carried out with minimal complications and low reoperation rate

P060 COMPARISON OF SINGLE AND DOUBLE LIGATION IN SINGLE INCISION LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE FOR INGUINAL HERNIA Shinya Takazawa, MD, PhD; Akira Nishi, MD; Tomohiro Sunouchi, MD; Kenta Kikuchi, MD; Ryota Koyama; Department of Pediatric Surgery, Gunma Children's Medical Center

Purpose: Single incision laparoscopic percutaneous extraperitoneal closure (SILPEC) for children with inguinal hernia shows good cosmetic results, and we have used this method since July 2013. In SILPEC, a special needle having one or two threads is used to encircle the hernia orifice. In February 2017, we began routine double ligation of the hernia orifice since recurrence after single ligation had occurred. The aim of this study was to compare surgical results between the single ligation cases and the double ligation cases.

Methods: A retrospective chart review was performed on patients who underwent SILPEC at a single children's hospital from July 2013 to June 2018. Patient characteristics, operation time, insufflation time, and complications were analyzed. In the double ligation procedure, the needle grabs two threads initially and these threads are tied separately after encircling the hernia orifice.

Results: Three hundred and forty-six cases of SILPEC were performed during the study period. Table 1 shows the patient characteristics and operative data. One case underwent reoperation for recurrence in the single ligation group, but there were no recurrence cases in the double ligation group. Operation time and incidence of hematoma were reduced in the double ligation group compared to that in the single ligation group, and may be due to maturation of surgical team skills.

Conclusions: There were no disadvantages of double ligation in SILPEC. Further research is needed to confirm whether routine double ligation decreases the recurrence rate.

Table 1. Patient characteristics and operative data

	Single ligation	**Double ligation**	**P-value**
Number of patients	195	151	
Age (months)	48 ± 30	63 ± 42	<0.01*
Gender (male/female)	38 / 157	58 / 93	<0.01*
Ligation site (right / left / bilateral)	53 / 53 / 89	48 / 29 / 74	ns
Operation time (minutes)	37 ± 15	33 ± 12	<0.01*
Insufflation time (minutes)	23 ± 9.5	22 ± 9.5	ns
Injury of peritoneum	33 (17%)	22 (15%)	ns
Hematoma	11 (5.6%)	2 (1.3%)	<0.05*
Surgical site Infection	4 (2.1%)	5 (3.3%)	ns
Ascending testis	1 (0.5%)	1 (0.7%)	ns
Recurrence	1 (0.5%)	0 (0%)	ns
Follow up period (months)	55 ± 13	31 ± 9.6	<0.01*

Demographic data are expressed as mean ± standard deviation or number (percentage), and analyzed using student T test or Chi-squared test.

*statistically significant.

P061 EFFECTIVENESS OF LAPAROSCOPIC REMOVAL OF ABDOMINAL LYMPHANGIOMA: A SINGLE CENTRE EXPERIENCE Mirko Bertozzi, MD[1]; A Raffaele, MD[1]; Fabrizio Vatta, MD[1]; Giulia Del Re, MD[2]; Giovanna Riccipetitoni, MD, PhD[1]; [1]Department of Pediatric Surgery – Fondazione IRCCS Policlinico San Matteo – University of Pavia - Italy; [2]Department of Perdiatric Surgery – Buzzi Children Hospital – Milan – Italy

Background: Lymphangiomas are congenital malformations that arise from sequestrated lymphatic tissue, resulting in a cystic mass that fails to communicate with the normal lymphatic system. Representing 5% of all benign pediatric tumors, 95% in the neck and axilla. Abdominal lymphangiomas (ALs) are extremely rare accounting for less than 5% of all cases, more common under 5 years of age. Therapy includes different procedures: open and laparoscopic surgery, sclerotherapy and pharmacological treatment. Laparoscopic resection has been already described, but mainly as case reports. The aim of this study is to present our series of 10 cases of ALs laparoscopic resection highlighting the technical details.

Matherials & methods: From 2007 to 2020, 10 cases of ALs were electively treated by laparoscopic resection (LR). Patients' age ranged from 4 months to 14 years (mean age 6 years); M:F = 1:4. The preoperative diagnosis was achieved by US and MRI for the following reasons: 1 prenatal detection, 7 progressive abdominal distension, 1 back-pain (recurrent adrenal lesion) and 1 cystic adrenal incidentaloma. Laparoscopy was performed with 4 trocars: 10mm transumbilical trocar for camera and extraction; three 3-5 mm operative trocars; 3 and 5 mm radiofrequency sealers were used for resection.

Results: The root of lymphangiomas arises from mesocolon in 5 giant cases (2 of them involving the hepatic ilum), ileal mesentery in 3 (2 chylous type, adherent to the bowel) and right adrenal gland in 2. The average operating time was 109 minutes. Complete resection was achieved without intraoperative complications and need of conversion. In two cases, the large size of the masses required percutaneous puncture and aspiration of the cysts' content under laparoscopic view. A minimal ileal resection by video-assisted procedure was carried out in the 2 chylous types. A right adrenalectomy was done in the suspicion of cystic neuroblastoma in the incidentaloma case, a lymphangioma excision in the recurrent adrenal lesion. The median hospitalization time was 4 days; follow-up ranged from 1 month to 13 years, showing no recurrence of disease at serial ultrasound examinations. Cosmetic results were excellent.

Discussion: Several approach have been proposed for ALs treatment. The huge dimension of these lesions, the difficulty to achieve a complete resection and the risk of recurrence are the main challenges. Sclerotherapy can be performed, but it requires several sections under general anesthesia with risk of inflammation and intestinal complications. Pharmacological therapy, such as Sirolimus, may be used in complex lymphatic disease, after biopsy and genetic study, despite possible adverse effects. Cysts' marsupialization have a too high recurrence rate and therefore not effective. Conservative treatment, reported in very few cases in literature, cannot be generally recommended. Laparotomy has to be limited to very urgent cases. In this series, elective laparoscopic removal of ALs resulted feasible and effective, and, in our opinion, it may be considered the standard surgical therapy.

P062 ATYPICAL FINDINGS DURING PEDIATRIC LAPAROSCOPIC INGUINAL HERNIA REPAIR Lachlan Dick, Mr[1]; Wisam Abbas, Mr[2]; Merrill Mchoney, Mr[3]; [1]Borders General Hospital; [2]Royal College of Surgeons of Edinburgh; [3]Royal Hospital for Chikdren Edinburgh

Aim: To share our experience in laparoscopic repair of inguinal hernia and present the surgical findings and operative management of some rare variants.

Method: Retrospective review of all laparoscopic inguinal hernia repair cases over 6 years(01/09/2013-01/04/2019). Unexpected variants were identified.

Results: all patients underwent laparoscopic surgery for inguinal hernia repair were included.

Table1: Laparoscopic Hernia Repair Patients

Total Number	117
Male:Female	93:24
Median Age	9 months(range 4-159)
Elective:Emergency	98:19

6 (5%) patients underwent laparoscopic repair of recurrent hernia; of which 4 were recurrent hernia following open repair and 2 following previous laparoscopic repair.

78 (66.7%) patients had symptomatic right inguinal hernia,29 (24.8%) left and 10 (8.5%) bilateral. Of the 103 patients with primary unilateral hernia, 29 (28.2 per cent) had contralateral open internal ring identified at laparoscopy and thus proceeded to bilateral closure.

Recurrence after laparoscopy was noted in 1.7% during study period.

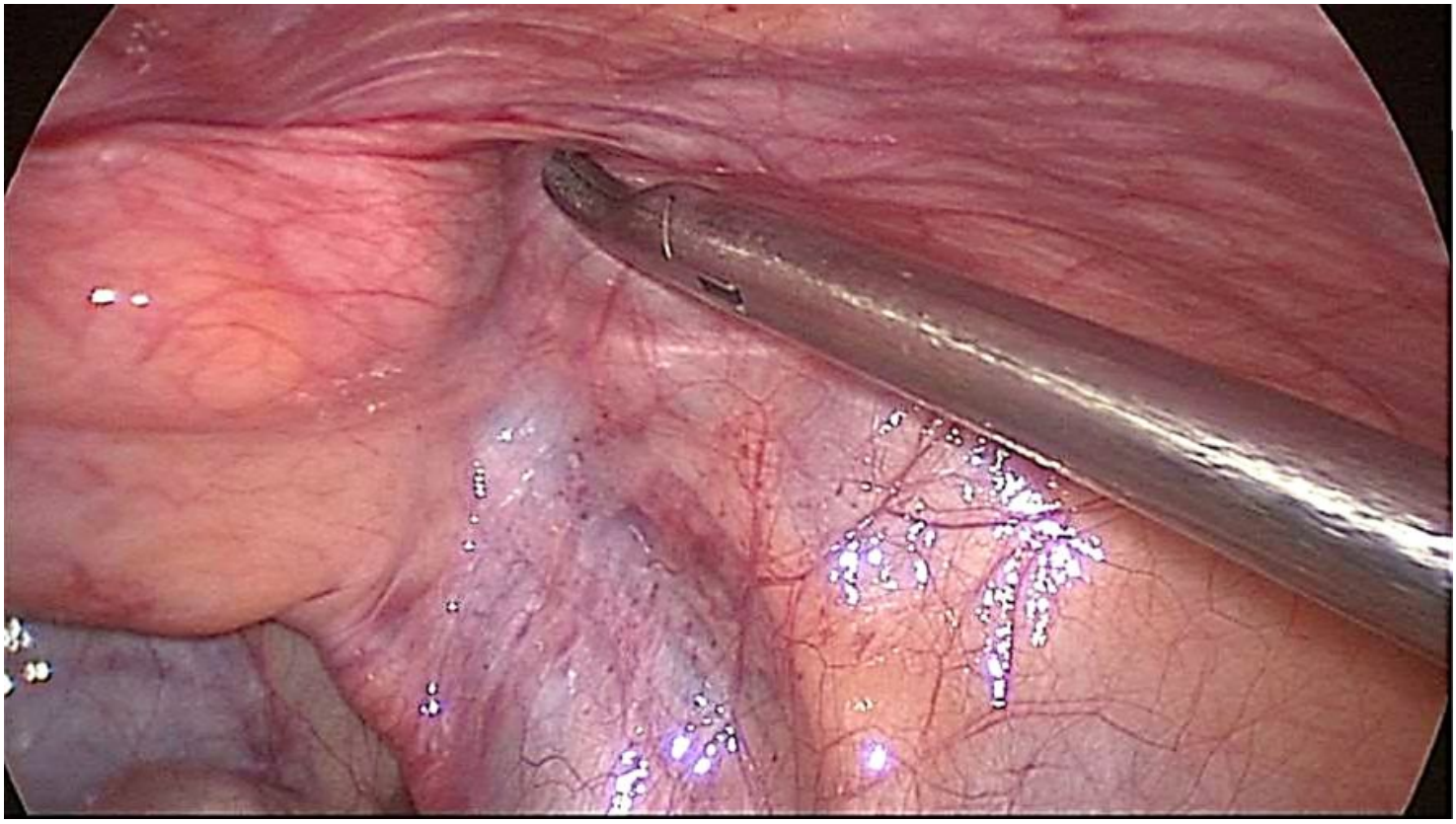
Rare variants: One patient had a defect above and lateral to the cord outside Hasselebach triangle (see image).

Three patients underwent recurrent hernia repair were found to have intact internal rings and had defects medial to the internal ring identified (direct hernia variants). In addition, one of these patients had a femoral hernia identified on the contralateral side and was repaired.

Two patients required mesh repair. one had previous suture closure of a defect above the inguinal ligament lateral to the internal inguinal ring, with no new defect found at re-do.Thus, the old repair was taken down and an Optilene mesh used in preperitoneal space for repair. Second patient had spigelian hernia repaired using a polyprolene mesh in preperitoneal space. No recurrence in either patient was noted.

One female had bilateral testes identified at laparoscopy in addition to bilateral hernias and subsequently diagnosed with complete androgen insensitivity syndrome.

Conclusion: Laparoscopy is useful in the definitive diagnosis of inguinal hernia and managing rare variant and unfamiliar findings. Laparoscopic approach to these rare variants was successful.



P063 CURRENT STATUS OF PEDIATRIC MINIMALLY INVASIVE SURGERY IN COLOMBIA: A NATIONAL SURVEY OF PEDIATRIC SURGEONS

Sergio Zavaleta, MD, FACS; Daniella Chacon, MD; Clinica Materno Infantil San Luis

PURPOSE: identify the status of the general patterns of practice in Minimally Invasive Surgery (MIS) in Colombia that will guide the design of future clinical studies to establish recommendations for improvement in education and practice of MIS.

METHOD: Cross-sectional, analytical study in July 2020. We made a voluntary and anonymous online survey to the Colombian Pediatric Surgeons. Variables such as the place of training, years of experience, if they performed MIS and how they acquired the skill, barriers for not doing it, the number of procedures and the level of complexity. Statistical analysis was performed using the STATA system.

RESULTS: 137 of 148 interviewed responded. 73% of Pediatric Surgeons who perform MIS works in 3 cities of the country. 58% have more than 15 years of graduate. 24.8% answered they don´t perform MIS, of these 67% answered not having had training in MIS, 26% prefers open surgery, 20.5% don´t have instruments, 14.7% don´t have a work team trained, and 8.8% due to non-authorization of the health system. 7.2% of all surgeons had some training and don´t practice MIS. 83% of those who don´t practice MIS are interested in learning. 33% who do practice MIS responded wanting to learn more. 51,4% learned MIS with Hands on courses, 42% had training during their residency, 37% in a rotation with experts, 62% had combined training. 70% of those who practice MIS performs less than 10 surgeries per month; 36% do basic MIS, 51% basic and intermediate MIS, and 10.5% advanced MIS. The correlation of variables showed that having more than 10 years of experience is related to not performing routine MIS ($p = 0.002$).

CONCLUSION: We conclude the development of pediatric MIS in Colombia is evolving, there are multiple barriers identified; however there is a dominant interest in learning MIS, this requires collaboration and union of the members of the Colombian scientific societies for the development of recommendations that improves the practice of MIS in Colombia.

P064 LAPAROSCOPIC-ASSISTED TENCKHOFF CATHETER INSERTION IN CHILDREN Bernardita A Troncoso, Dr[1]; Pilar Gras, Dr[2]; Renato Gana, Dr[3]; [1]Hospital San Juan de Dios; [2]Hospital Roberto del Río; [3]Clínica Las Condes

Introduction: Peritoneal dialysis (PD) is the preferred method of renal replacement therapy in children with kidney failure. The main concern with the insertion of PD catheters (PDC) is the high risk of leakage and consequent failure of PD. Laparoscopy offers the advantage of preserving the entry site, reducing the risk of leakage; allows for proper catheter placement, and facilitates partial omentectomy. Insertion with the Seldinger technique, of choice in adults, has a high risk of inadvertent puncture of intra-abdominal viscera.

For this reason, we describe a laparoscopic-assisted percutaneous technique with the puncture under direct vision.

Methodology: The modification of the technique was introduced in February 2020. The patient is positioned supine with the laparoscopy stack by the end of the bed. Subumbilical incision and insertion of a 5mm trocar, with Hasson technique. Introduction of a 5mm/30° telescope for abdominal inspection. Trocar removal and insertion of an 8Fr feeding tube connected to CO2, the telescope, and a 3mm grasper to externalize the omentum and perform a partial omentectomy. Trocar re-insertion with the telescope, followed by injection of local anesthetics in the suprapubic area, a small stab incision and puncture with a 18G cannula under direct vision. A guidewire is fed through the cannula into the pelvis, the cannula is removed, and a blunt dilator (Peel-away sheath) is placed over the guidewire. The introducer is withdrawn, and the catheter is inserted through the Peel-away sheath up to the proximal cuff, directing the tip towards the pelvis. Once the correct position of the PDC has been verified, a subcutaneous tunnel is performed towards the subumbilical incision, and subsequently towards the flank with a downward direction, simulating a “swan neck”. At the end of the procedure, the permeability of the catheter is evaluated by instillation of normal saline, assessing the infusion and drainage, and ruling out leaks.

Results: Over a period of 10 months, we have applied this technique in 6 patients aged 8 months to 13 years. Three had to be dialysed on the same day of insertion (1 HUS, 1 AKI, 1 CKD with acute postoperative deterioration). PD volumes ranged from 10 to 30cc/kg per cycle; in two patients with AKI continuous dialysis was used. The duration of PD ranged from 1 to 19 weeks. No complications were reported.

Conclusions: This minimally invasive technique is safe and successful, because of the combination of essential aspects that determine a stable and effective function of the catheter, with a reduction in the risk of complications: a puncture performed under direct vision; a direct entry into the pelvis; a longer and minimally traumatic subcutaneous tunnel, and a shorter intraperitoneal segment, which contributes to its stability, reducing the risk of catheter migration/rotation. It also provides better cosmesis, compared to the traditional open approach.

P065 LAPAROSCOPIC MANAGEMENT OF AN UNUSUAL PENETRATING ABDOMINAL TRAUMA IN CHILDREN Ben Dhaou Mahdi, MD; Dghaies Rim, MD; Ammar Saloua, MD; Cheickrouhou Taycir, MD; Zouari Mohamed, MD; Zitouni Hayet, MD; Mhiri Riadh, Professor, Doctor; Department of Pediatric Surgery, Hedi Chaker Hospital, Sfax, Tunisia

Background: Laparoscopic management of penetrating abdominal injuries in children can be quite challenging and often requires rapid assessment and therapeutic intervention. We present two unusual cases who get penetrating abdominal trauma (PAT) and were managed successfully using single site laparoscopy (SSL).

Case report: The first case was a 2-year-old boy, victim of an accidental gunshot, he was hemodynamically stable, computed tomography (CT) scan showed: a low abundance pneumoperitoneum, the bullet was located in front of the fifth segment of the liver, there were no contrast product extravasation or vascular blunt. The laparoscopic removal of the bullet was performed successfully. Post-operative follow-up was simple. The second case was a 10-year-old girl presenting with acute abdominal pain, 3 days after fall from on a metal rod while biking. She was hemodynamically stable. Ultrasonography and CT scan revealed localized peritonitis and a doubt about a digestive perforation or vaginal rupture. The SSL exploration revealed peritoneal effusion, a rupture of the uterine dome, which was clogged by an infected hematoma and false membranes with an adherent omentum and an extrinsic contusion on the anterior surface of the rectum with no obvious puncture lesion. She had laparoscopic sutures of the uterine rupture, peritoneal toilet and aspiration of the hematoma. Post-operative follow-up was simple. The mean follow-up period was 6 months and 3 months respectively.

Conclusion: Laparoscopic single site approach seems to be safe in the management of hemodynamic stable patients with PAT. It can be used for both the diagnosis and the management of multiple injuries. It provides benefits of minimally invasive surgery and the speed and versatility of laparotomy. More studies are needed to confirm these findings.

P066 LESS IS NOT MORE: OUTCOMES OF SINGLE PORT LAPAROSCOPIC APPENDECTOMY VERSUS TRIPLE PORT IN RUPTURED PEDIATRIC APPENDICITIS Angela E Hargis-Villanueva, MD; David M Notrica, MD; Daniel J Ostlie, MD; Justin Lee, MD; Phoenix Children's Hospital

Background: Traditional triple port (TP) laparoscopic appendectomy is a common way to treat appendicitis in children. With the rise in single port laparoscopic appendectomy, there is limited data on the outcomes of single port (SP) laparoscopic appendectomy in ruptured pediatric appendicitis. Previous reports discouraged SP approach due to concerns for increased wound complications especially in obese pediatric patients. To date, outcomes for TP versus SP laparoscopic appendectomy have not been compared in the setting of ruptured pediatric appendicitis.

Purpose: The purpose of this study was to assess initial outcomes of SP laparoscopic appendectomy in ruptured pediatric appendicitis compared to TP laparoscopic appendectomy.

Methods: This was a multicenter prospective observational study from June, 2017 to May, 2020. Demographics including mean age and weight were analyzed. Clinical outcomes measures intra-abdominal abscess rate, wound complications, length of stay, postoperative emergency room visits, and unplanned readmission.

Results: A total of 162 patients were enrolled, 151 TP versus 11 SP laparoscopic appendectomy cases. There was no difference in gender (p=0.51), mean age (9.5 versus 8.4, p=0.38), mean weight (41.5 kg versus 32.0 kg versus, p=0.11), or number of prehospital days with symptoms (2.3 days versus 1.3 days, p=0.07). For TP versus SP approach, we found no difference in postoperative intra-abdominal abscess rates (14.57% versus 18.18%, p=0.67) or wound complication rates (3.97% versus 18.18%, p=0.094). We also found no difference in mean length of stay (5.7 days versus 6.3 days, p=0.55), or postoperative emergency room visits (17.82% versus 11.11%, p=1.00) or unplanned readmission rate (9.6% versus 9.1%, p=1.00).

Conclusion: While TP laparoscopic appendectomy continues to be a preferred approach for pediatric ruptured appendicitis, the SP laparoscopic approach (when feasible) is not associated with an increase in intra-abdominal abscess rate. The frequency of wound complications did not reach statistical significance, but identifies an area for possible modification.

P067 SUPPORT FOR INTRODUCTION OF PEDIATRIC ENDOSURGERY IN NEPAL AS GLOBAL PEDIATRIC SURGERY: PRELIMINARY NEEDS ASSESSMENT SURVEY

Masakazu Murakami[1]; Saseem Poudel[2]; Masahiro Fukuhara[3]; Tatsuru Kaji[1]; Hiroyuki Noguchi[4]; Yo Kurashima[5]; Satoshi Ieiri[1]; [1]Department of Pediatric Surgery, Research Field in Medical and Health Sciences, Medical and Dental Area, Research and Education Assembly, Kagoshima University; [2]Department of Surgery, Steel Memorial Muroran Hospital, Muroran, JAPAN; [3]Department of Pediatric Surgery, Oita Prefectural Hospital, Oita, JAPAN; [4]Department of Pediatric Surgery, Kagoshima City Hospital, Kagoshima, JAPAN; [5]Clinical Simulation Center, Hokkaido University, Sapporo, JAPAN

Purpose: The Lancet Commission published a report on global surgery in 2015. According to the report, 16.9 million lives were lost due to conditions requiring surgical care in 2010. Furthermore, 5 billion people cannot access and undergo affordable surgical care when needed. Endosurgery provides several advantages over open surgery in the context of global surgery; however, there are several barriers to its introduction. The preliminary assessment of needs and barriers is essential for carrying out effective support as Global Surgery. However, no report has described the initiation of support for endosurgery based on a preliminary survey. The present survey study aimed to determine the needs and barriers of pediatric endosurgery in Nepal.

Method: In cooperation with the Nepal Association of Pediatric Surgeons, a needs assessment survey was conducted among all pediatric surgeons in Nepal via an online platform in 2019. This was followed up by workshop on endosurgical skills in Nepal. To assess the skill of participants and effectiveness of workshop, the skill evaluation tests and the questionnaire survey were conducted. The needs assessment survey and questionnaire survey of the workshop were analyzed according to the number of respondents (%) or 5-point Likert-type scale responses. In the skill evaluation tests, the time taken to complete tasks was recorded.

Results: Fourteen pediatric surgeons (response rate: 60.9%) responded to the needs assessment survey. More than 70% of the participants did not have any experience with advanced endosurgical procedures. However, advanced endosurgical procedures were strongly needed. A lack of training was indicated as a major barrier for the introduction of pediatric endosurgery by more than 70% of the respondents. Based on these results, we conducted a workshop on pediatric endosurgery in Nepal. The workshop was held over 2 days. Fifteen participants completed the workshop. Participants' confidence in their endosurgical skills improved significantly after the workshop. The skill evaluation tests revealed that participants' endosurgical skills also improved significantly after the workshop, although even after the workshop, participants still took an average of 415.6 seconds to place and knot one suture (table 1).

Conclusion: The needs assessment survey and workshop for Nepalese pediatric surgeons helped clarify the skill level in this population, their needs for endosurgery and the barriers to the introduction of pediatric endosurgery. We planned to provide continuous support in 2020, including live surgery, however, it become impossible due to the spread of COVID-19. We think that tele-simulation training is essential in the current world situation.

Table 1. Participants' skill evaluations

	before workshop	**after workshop**	***p*-value**
Peg transfer (sec, mean ± SD)	175.1 ± 75.6	119.8 ± 32.8	0.021
Suture (sec, mean ± SD)	523.8 ± 265.3	415.8 ± 177.4	0.013

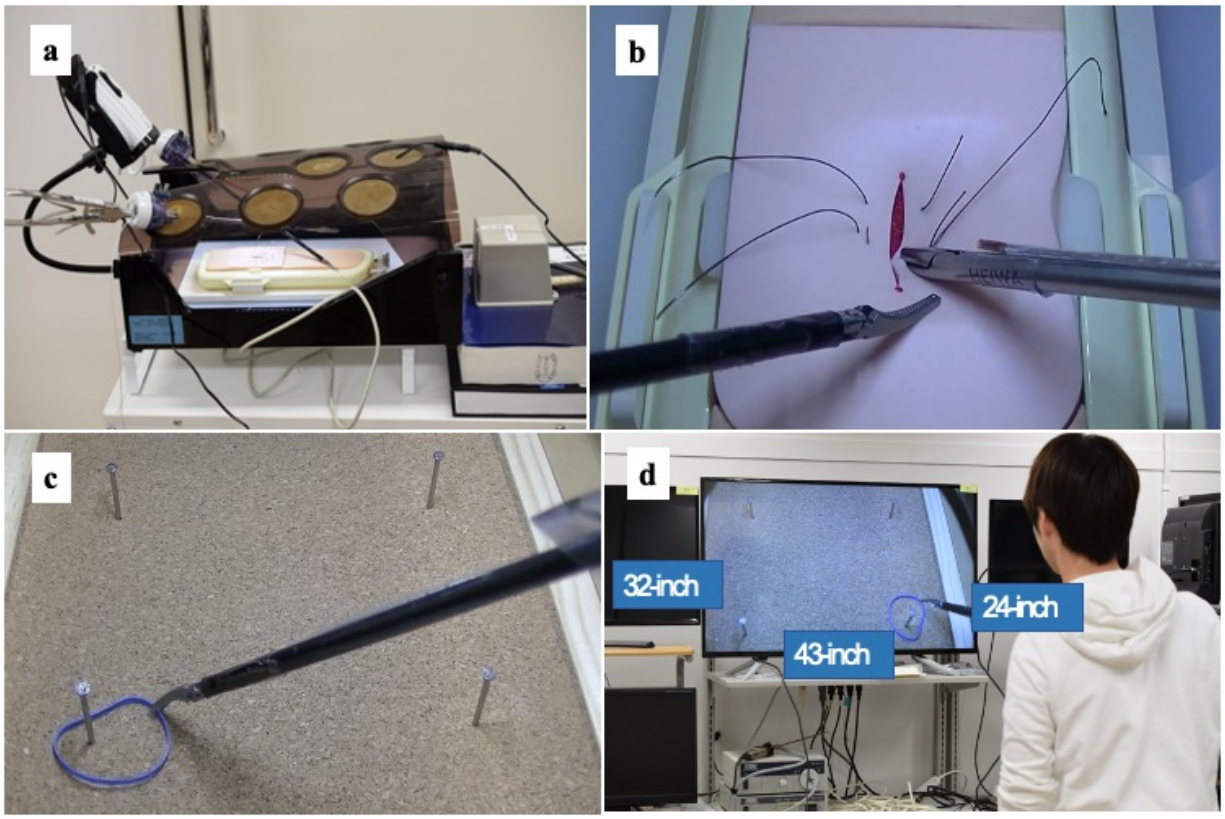
P068 EFFECT OF MONITOR SIZE ON FORCEPS MANIPULATION OF ENDOSCOPIC SURGERY USING MEDICAL STUDENTS AND PEDIATRIC SURGEONS Koji Yamada, MD, PhD; Teppei Yamashita; Shunya Yonemori; Keisuke Yano, MD; Toshio Harumatsu, MD; Waka Yamada, MD, PhD; Makoto Matsukubo, MD; Mitsuru Muto, MD, PhD; Tatsuru Kaji, MD, PhD; Satoshi Ieiri, MD, PhD; Kagoshima University

Background and Aim: Recently, an image technology innovations have progressed in the field of endoscopic surgery, such as high resolution 4K/ 8K camera and 3D camera. Therefore, the size of the monitor used for endoscopic surgery tends to be larger, but the effect of the monitor size on forceps manipulation is unclear. The aim of this study is to clarify the effect of monitor size on endoscopic surgical procedures.

Materials and Methods: Participants were divided into two groups (group PS: 8 pediatric surgeons, group MS: 12 medical students). They performed different tasks using dry box (Figure 1a). Task of group PS was suturing procedures using needle driver (3 independent needle driving and ligatures, Figure 1b). Task of group MS was basic task of using grasper forceps (repeating procedures of a rubber band transfer, Figure 1c). They performed the task using 3 different size of monitors (43, 32, and 24 inch, Figure 1d). The movement of the forceps during the task were measured by using electromagnetic spatial 3D position-measuring instrument. Assessment points was as follows: time required to complete the task, total path length of forceps, average velocity of forceps, and accuracy of the task.

Results: Group PS: There were no significant differences between three monitor size in the time required to complete the task, total path length of forceps, average velocity of forceps, and accuracy of the task. After the task, participants were asked which monitor felt the most difficult or easiest. Six participants answered the easiest monitor was 43 inches, and 2 answered 32 inches. All participants answered the most difficult monitor was 24 inches. Group MS: The time required to complete the task using 32-inch monitor was significantly shorter than the others. There were no significant differences between 3 monitor sizes in the average velocity of forceps. The total path length of forceps using 43-inch monitor tended to be longer than the others. The number of errors during the task tended to be increased using 43 inches comparing with 32 inches.

Conclusion: The study design of group PS showed no effect of monitor size, but all participants felt that the task was difficult using small size monitor. This suggests that the monitor size may have affected the mental of surgeons. The study design of group MS performed best on a 32-inch monitor. Large sized monitor is not always effective for forceps manipulation. It was suggested that there might be an optimal monitor size according to the procedure.



P069 TRAINEE PERCEPTIONS AROUND THE NEED FOR A HIGH FIDELITY PORTABLE SIMULATION FOR ESOPHAGEAL ATRESIA/TRACHEO-ESOPHAGEAL FISTULA REPAIR Jonathan Wells[1]; David Nair[1]; Rory Jones[2]; Nick Cook[1]; Spencer W Beasley[1]; [1]Christchurch Hospital; [2]Symulus

Introduction: Surgical simulation may have a role in technical skill acquisition for neonatal surgery. Recent advances in 3D-printing of high fidelity simulators for esophageal atresia/tracheo-esophageal fistula (EA/TEF) that are portable have the potential to overcome the barrier of difficult access to surgical simulators. We studied the demand for and perceived impediments around regular technical skills development using a portable simulator.

Methods: An on-line survey was sent to Australasian pediatric surgery trainees. The survey asked about experience in EA/TEF repair, both as an assistant and as the primary surgeon, as well as perceptions and barriers around the use of simulation as a training tool. Responses were anonymous.

Results: Ten pediatric surgical trainees responded. Only one trainee had performed an open EA/TEF repair and none had performed any thoracoscopic EA/TEF repairs. Seven had scrubbed for a median of 4 open EA/TEF repairs and 3 had scrubbed for a median of 4 thoracoscopic EA/TEF repairs. All 10 thought access to high fidelity simulators would benefit their training. The reasons given included: ‘more frequent access to practice skills required for low volume, complex procedures’; ‘better to practice and upskill in a low-harm setting’; and ‘a way to develop skills in using instruments and improving dexterity.’

Only two trainees had access to technical skill simulation once or twice a month. The other eight had no regular access to simulators or allocated work time for technical skill simulation training.

The barriers to technical skill simulation were reported as: difficult or limited access, lack of simulation facilities, lack of free time to use them during work hours; lack of quality simulation equipment; lack of simulation programs; and lack of suitable educators to provide feedback.

The ability to take home a neonatal simulator was strongly supported: the median score of how likely they would use it was 4 on a score of 1 (unlikely) – 5 (highly likely); and the median time they thought they would use it was 1-2 hours a week.

Conclusions: Overall, there was limited opportunity for pediatric surgical trainees to perform an open EA/TEF repair and none had performed a thoracoscopic repair. All the trainees reported the need for high fidelity simulator training. Barriers to this related to access, time and resources. There was an enthusiasm for a take-home simulator for EA/TEF and the advantages that that provided. They estimated that the practice time in their convenience of their home would involve between 1-2 hours a week. With the limited exposure to rare complex procedures during training, high fidelity portable simulation is likely to have an increasing role in technical skill development, and this study shows it would be supported by trainees as a significant adjunct to other modes of training.

P070 MINIMALLY INVASIVE NECK SURGERY: AN ANIMAL MODEL STUDY Inês Pessanha[1]; Diana Coimbra[1]; Marianna Scuglia[2]; Alice MIranda[2]; Jorge Correia-Pinto, MD, PhD[2]; [1]Pediatric Surgery Department - Hospital Pediatrico - CHUC; [2]ICVS - Life and Health Sciences Research Institute

Background: Minimally invasive surgery needs no introduction by now and it has been replacing conventional surgery as a “gold standard” in different surgical areas. Minimally invasive cervical surgery is already a reality in adult surgery around the world, but its use in children is recent and still controversial. The obstacles to this approach are the absence of a natural cavity with the inherent complications of creating one artificially and the limited workspace specially in paediatric patients.

Endoscopic techniques in the field of neck surgery try to address mainly a problem regarding high cosmetic expectations and the transoral cervical approach as a natural orifice surgery-technique excels at it.

Aim: Besides the goal of feasibility, we aim to report on their pitfalls, by using an experimental rabbit model for minimally invasive thyroidectomy.

Material and Methods: Transoral endoscopic thyroidectomies using a vestibular approach were performed in ten anesthetized rabbits to evaluate the feasibility of the approach. All surgeries were video recorded. The surgical time, anatomy identified, difficulties and intraoperative complications were documented.

Main Results: Through one trocar in the vestibular area and two lateral stab incisions, it was possible to create a working space and to reach the peritracheal area.

Total thyroidectomies were completed in the 10 animals with a mean operative time of 44 min (range 30-81 min). In all of them we were able to identify the fascial spaces of the neck and the major vessels. The laryngeal recurrent nerve it was not found in its normal course.

The major difficulty found during the surgery was the lack of space that required surgical gestures to be very soft and gentle.

There were 2 cases with a small amount of bleeding and one mild trachea laceration during the procedure but none of those required suspension or conversion to an open procedure. Animals were euthanized immediately after the surgical procedure and before the anaesthesia recovery.

Conclusions: Vestibular approach seems to be a feasible and safe technique to access paediatric neck masses. Despite the limited workspace and the differences in the cervical anatomy, the rabbit seems to be a suitable model for delicate gestures training, the cornerstone of Peadiatric Minimally Invasive Cervical Surgery.

P071 SIMULATION IN PEDIATRIC MINIMAL INVASIVE SURGERY: A SIMPLE SERIES OF EXERCISES AND EVALUATION THE PERFORMANCE IN AN INITIAL IMPLEMENTATION OF A RESIDENT TRAINING PROGRAM Elisangela Mattos e Silva, MD[1]; Arnon Cesar Brunet Schultze[2]; Bruno Berardi Gazola[2]; Amanda Ginani Antunes[1]; Karin Lucilda Schulz[1]; Fernando Antonio Bersani Amado[1]; [1]Hospital Pequeno Principe; [2]Faculdades Pequeno Principe

Minimal invasive surgery simulation is increasingly used as a learning strategy and training of skills and competencies necessary for the pediatric surgeon in training. The possibility of performing different exercises, over and over again, allows errors to be corrected, in addition to providing monitoring of technical evolution. The aim of this study was to propose a series of exercises in a black box videosurgery simulator and to evaluate the performance of pediatric surgery residents in an initial implementation of a training program.

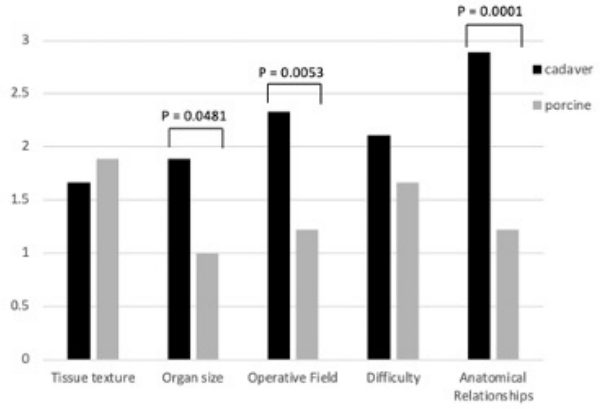
Method: Seven exercises have been developed to train basic skills in videosurgery, based on series already published and the FLS (Fundamentals of Laparoscopic Surgery) program. Six residents received the instructions and performed the series of exercises in 2 moments, with an interval of approximately 15 days, being evaluated by an instrument containing the objectives of the exercises and assigning scores to evaluate the performance of the residents.

Results: There were no difficulties in relation to the proposed models and exercises, all of which were easy to understand and evaluate during the study. Considering the individual averages in the seven exercises together in both sets, five of the six residents increased the score the second time they performed the series. Regarding the average stake of the residents per exercise, they obtained a higher score in five of the seven tasks in the second time they performed them. In the first grade, the average time to perform all exercises was 25 minutes and 30 seconds, decreasing to 20 minutes and 15 seconds in the second. All residents made series 2 in less time than Series 1. Surgical training in a simulation environment improves movements, trains skills, and decreases the risk of complications in the patient. Despite the small number of participants and repetition of the series, it was already possible to observe a tendency to a better performance and decrease in the execution time with a single repetition of the exercises. All participants considered that the exercises were able to reproduce skills and essential movements of the most common surgical procedures of the specialty.

Conclusion: Given the challenges of promoting effective learning with skills gain in pediatric videosurgery, it is clear the benefit of a continuous training program of residents, with series of exercises that can be repeated several times and simulate real situations. A pre-established schedule and supervision by experienced surgeons is of fundamental importance to ensure evolution of surgeons in training.

Key words: simulation, training program, FLS, minimal invasive surgery, pediatric laparoscopic surgery

P072 USE OF HUMAN ADULT CADAVERS FOR MINIMALLY INVASIVE PEDIATRIC SURGICAL TRAINING: A FIRST TRIAL Shiho Yoshida; Go Miyano; Michiaki Ikegami; Haruki Kato; Shogo Seo; Takanori Ochi; Hiroyuki Koga; Geoffrey Lane; Koichiro Ichimura; Atsuyuki Yamataka; Juntendo University



Aim: The use of cadavers in pediatric surgical training has not been previously reported. In the current study, we performed multiple procedures using human adult cadavers to learn minimally invasive surgical (MIS) techniques for pediatric surgery (PS) and assess their practical value.

Methods: Five procedures were performed on a single human cadaver: (1) thoracoscopic esophagoesophagostomy (TEE); (2) pulmonary resection (right lower lobectomy; TRL); (3) laparoscopic fundoplication (LFN); (4) hepatico-duodenostomy (LHD); and (5) uretero-ureterostomy (LUU). All procedures were performed by a team consisting of a board-certified consultant surgeon (CS; more than 10 years of general PS experience, and more than 50 MIS cases), a senior trainee (ST; 3–7 years of general PS experience, and more than 10 MIS cases), and a junior PS trainee (JT; 1 year of general PS experience, and less than 5 MIS cases). The reproducibility of each procedure was assessed by nine surgeons in three groups (3 CS, 3 ST, and 3 JT). All participants were asked to complete an assessment questionnaire about each procedure using an adult human cadaver and a live pig. Five criteria (tissue texture, organ size, operative field, difficulty, and anatomical relationships) were evaluated on a 4-point scale (low scores were unfavorable, high scores were favorable) to grade the extent to which a human cadaver or a pig was representative of a pediatric patient (Table 1). The scores for each criterion for each procedure were averaged for each group (JT, ST, and CS) and compared. Institutional Review Board approval was obtained from our university (Juntendo Univ. 2019173).

Results: End-point (1): Among the five procedures, TRL tended to be considered the most realistic, followed by LFN, TEE, LUU, and LHD (p = NS). End-point (2): Among the five criteria, anatomical relationship, difficulty, and operative field tended to score highly for each of the five procedures (p = NS). End-point (3): The cadaver scores were significantly higher than those of the live-pig in terms of anatomical relationship (p = 0.0001), operative field (p = 0.0053) , and organ size (p = 0.0481) (Figure 1). End-point (4): Although without statistical significance, the CS and ST tended to score “representative” higher than the JT.

Conclusions: This cadaver model for pediatric MIS techniques can be applied to various surgeries with high similarity to actual pediatric surgery. Thus, the contribution of human cadavers donated for the advancement of science and medicine could be broadened by their application to surgical training, in particular, to assist with mastering minimally invasive surgical skills, even in the pediatric surgical field.

Table 1. Procedures, criterion, and scoring system in this study

Participant	Procedure	Evaluation Criteria	Score (0-3)
CS	TEE	Tissue Texture	(3) Strongly Agreed
ST	TRL	Organ Size	(2) Agreed
JT	LFN	Operative Field	(1) Disagreed
	LHD	Difficulty	(0) Storongly Disagreed
	LUU	Anatomical Relationships	

P073 HOW IMPORTANT IS TECHNICAL EXPERTISE IN ASSESSING TECHNICAL EXPERTISE? David Nair; Jonathan M Wells; Ma Yi; NIck Cook; Spencer W Beasley; Christchurch Hospital

Background: Simulation has an increasing role in improving surgical technical skills. However, the rating of videoed simulated attempts by experts using validated tools such as the Objective Structured Assessment of Technical Skills (OSATS) is time-consuming and a potential barrier to simulation-based training and of assessing acquisition of technical competence. This study tests the hypothesis that assessors with technical expertise are necessary to objectively score a technical task.

Methods: Three tasks: (1) Ring transfer, (2) Needle pass and (3) Atresia cut were performed using a synthetic thoracoscopic esophageal atresia/tracheo-esophageal fistula simulator. 12 blinded assessors, 3 pediatric surgeons defined as 'Surgeon', 6 novice adults and 3 children aged 9-13 years, defined as 'Non-surgeon' scored each attempt using the overall global OSATS rating from 1 – 5 (1 – 'repeated tentative or awkward moves with instruments' to 5 'fluid movement with instruments. No awkwardness'). Appropriate parametric (one-way ANOVA test) and non-parametric (Kruskal-Wallis test) statistical tests were used. Inter-observer reliability was calculated using intraclass correlation coefficient (ICC).

Results: 23 participants, 13 novice (medical students, house surgeons), 5 intermediate (registrar) and 5 experts (consultant surgeons) performed the three tasks which were video-recorded and deidentified.

For the ring transfer task, novice participants scores were significantly less than expert and intermediate scores for all assessors, Surgeon (p=0.0004), Non-surgeon adults (p=0.0009) and children (p=0.0003). There was no difference between expert and intermediate participants for any assessor group.

For the needle pass, Surgeon assessors gave significantly different scores between novices and experts (p=0.0007) and novices and intermediates (p=0.0007) but not between experts and intermediates. For Non-surgeon assessors, children (p=0.0040) and adult (p=0.0008) detected a significant difference between novice and experts, but no difference between novice and intermediate or intermediate and expert.

For the atresia cut, Surgeon assessors gave significantly higher scores for experts and intermediate and novice (p=0,0004). Non-surgeon assessors gave experts and intermediates significantly higher scores than novices (0.0001). Non-surgeon assessors did not give significantly different scores for intermediates and experts.

The ICC was poor for Non-surgeon assessors for the ring transfer (0.3959) and moderate for the needle pass (0.6551) and atresia cut (0.5212) tasks. Surgeon assessors achieved good reliability for ring transfer (0.8252) and needle pass (0.7769) tasks but poor reliability for the atresia cut (0.2297).

Conclusions: For the ring transfer children and adult Non-surgeon assessors scores were similar to Surgeon assessors scores and were able to distinguish lower skill levels in novices compared to intermediates and experts for the ring transfer. However Non-surgeon assessors were unable to differentiate between intermediates and experts for the needle pass task whereas Surgeon assessors could. The inter-observer reliability was less for Non-surgeon assessors than for Surgeon assessors for ring transfer and needle pass. This variability between Non-surgeon assessors suggest that although a score for these tasks may be appropriate for formative assessments it is inappropriate for high stakes assessments of competence. Summative assessment will likely require at least one surgeon/expert assessor to provide reliability.

P074 LAPSIM: A TUNISIAN EXPERIENCE WITH THEORETICAL 3D LEARNING. Ghada Habachi[1]; Samia Belhassen[1]; Sabrine Ben Ammar[1]; Nahla Kechiche[1]; Sabrine Ben Youssef[1]; Mariem Ben Fredj[1]; Sana Mosbahi[1]; Rachida Laamiri[1]; Amine Ksiaa[1]; Ines Bouanen[2]; Sahnoun Lassaad[1]; Mekki Mongi[1]; Belguith Mohsen[1]; Abdellatif Nouri[1]; [1]Department of Pediatric Surgery, University Hospital of Monastir (TUNISIA) Research Laboratory, LR 12SP13: Malformative and Tumoral Pathology of Child, Monastir, Tunisia; [2]Department of Epidemiology and Preventive Medicine University Hospital of Monastir (TUNISIA)

Introduction: Basic surgical skills are usually learnt through practice and mentoring in the operating room. However with more advanced and complex techniques developing and with the increasing legal and ethical concerns, other methods have been raising.

Purpose: The faculty of medicine of Monastir has been using LapSim in the schooling of its residents. The aim of this study is to evaluate its value in resident training programs and test their satisfaction.

Methods: It's a prospective study led in the faculty of medicine of Monastir in 2018. Study participants from different surgical specialties were included. Residents had a two-day cycle. After the briefing, a simulation using this 3D video technique was practiced and participants were scored accordingly. A second-day debriefing followed with a second evaluation. A score was developed and results were compared.

Results: 26 residents from 4 surgical specialties were included. 6 sets of skills were learned: camera navigation, instrumental navigation, staple using, cutting, gripping and fine dissection. We compared results from first and second day. There was a significant improvement in the two tested dexterity: 87.5% vs 60% in gripping (p=0.001) and 80% vs 40 % in fine dissection (p=0.001). All the participants rated the course favorably with a 100% satisfaction.

Conclusion: 3D simulators are new educational mechanisms that enable residents to practice safely surgical procedures in less stressful environment upgrade their basic skills and boost their self-confidence. A particular mention of this pandemic situation with less performed surgeries and misadvised laparoscopy.

P075 THE IMPORTANCE OF SIMULATED TRAINNING COURSES CLOSELY INSTRUCTED BY EXPERTS FOR SELF-EVALUATION OF SKILLS IN MINIMAL INVASIVE SURGERY Amanda Ginani Antunes; Fernando Antonio Bersani Amado; Karin Lucilda Schulz; Claudia Maria Baroni Fernandes; Elisangela Mattos e Silva, MD; Hospital Pequeno Principe

Minimal invasive surgery simulation is already well established as an efficient strategy for learning and training surgical skills and competencies. The possibility to perform different exercises and procedures in a simulated environment allows safe correction of technical mistakes, even in challenging and specific tasks. The aim of this study was to compare the self-assessment of each surgeon in relation to their skills in laparoscopic surgery, before and after a training course closely instructed by experts.

Methodology: In a laparocopic surgery simulation course, with 14 practical stations and total duration of 12 hours, each participant performed their self-assessment through two questionnaires, applied at the moment immediately before and after the course. The initial questionnaire had 10 questions to qualify their own skills in videosurgery: notion of depth, bimanual maneuvers, motor coordination, ergonomics, handling and positioning of the needle in the needle chain, making simple intracorporeal, extracorporeal knots, sliding knots, anastomosis and global evaluation. The final questionnaire had the same questions to reassess whether after the course, they had less skill than they thought, whether it confirmed the answer of the previous self-assessment or if they had more skill than he previously thought.

Results: Only 4 out of the 15 participants, considered themselves good in their initial overall evaluation and one considered himself very good at making extracorporeal knots prior to the course. Analyzing the self-assessments in each exercise, doing a anastomosis (Very Bad= 2; Bad = 10) and making sliding knots (Very Bad =3; Bad = 4) were the items with the worst initial self-assessment. The item with the best initial self-evaluation was the preparation of extracorporeal knot (Good = 7; Very Good = 1). After the course, each participant had the opportunity to evaluate if their initial impression was confirmed (re-assessments). Regarding global evaluation, 10 participants confirmed their previous skills, one considered lower skilled than imagined, and 4 thought they had more skill than previously considered. As for exercises specifically, in most questions the surgeons realized that they had more skill than they had thought before being trainned by experts and performing the movements correctly with supervision.

Exercises more related to the perception of lower skills than previously imagined were: notion of depth and needle handling in the needle carrier. Exercises in which the participants realized that they had more skills than they imagined were: making extracorporeal knots and sliding knots. All the participants agreed that the supervised simulation course contributed significantly to the improvement of the technique and to the perception of their abilities in minimally invasive surgery.

Conclusion: Simulation courses in laparoscopic surgery promotes learning and practice of movements and specific technical details of surgeons in an assisted and supervised way by experts. Series of exercises, repeated several times, improve the training from a technical and practical point of view, besides offering greater self-confidence to the surgeon to identify their difficulties and improve their abilities.

Key words: simulation, laparoscopic training, laparoscopic surgery skills, minimal invasive surgery

P076 MINI THORACIC CT ADEQUATELY DETERMINES HALLER INDEX AND DECREASES RADIATION EXPOSURE IN CHILDREN WITH PECTUS EXCAVATUM Carolyn Gosztyla, MD[1]; Grace Ma, MD[2]; Sunil Valaparla, PhD[2]; Dorothy Bulas, MD[2]; Tim Kane, MD[2]; Mikael Petrosyan, MD[2]; Jeffrey Lukish, MD[2]; [1]Uniformed Services University of the Health Sciences; [2]Children's National Medical Center

Purpose: The preoperative assessment of Pectus Excavatum (PE) is resource intensive. Objective image acquisition for the purpose of calculating a Haller index (HI) remains a central component of this assessment and is often a criterion for third-party reimbursment for surgical correction. Computed tomography (CT) of the chest is the modality of choice in determining HI. With the goal of minimizing radiation exposure, a strategy was introduced to perform a mini-Thoracic CT (mini-CT) for the calculation of HI.

Methods: A IRB approved retrospective analysis of all children who met clinical criteria for PE repair that underwent mini-CT for the calculation of HI from May to October 2020 was performed. These children were compared to age and weight matched children who underwent the standard low dose CT protocol (chest-CT) during the same time period. The mini-CT consisted of the placement of a radio opaque marker (ROM) on the anterior chest wall at the clinical location of the deepest point of deflection of the PE defect and 5 mm slices were performed 3 cm above and below the ROM. The chest-CT performed 10 mm slices from the sternal inlet to the costal margin. HI was calculated accordingly. Radiation doses were evaluated using dose length product (DLP) and effective dose (mSv) between the two groups, significance was determined using the students t test.

Results: Seven children underwent mini-CT and were compared to seven children who underwent chest-CT during the 6 month time period. There was no significant difference in age, weight or HI between the groups. The DLP of mini-CT compared to chest-CT was 17.9 vs 48.9,mGycm respectively. ($p< 0.001$) The mSv of the mini-CT compared to chest-CT was 0.32 vs 0.88, sMV respectively. ($p<0.001$) Both DLP and mSv were reduced by 63% in children who received a mini-CT. All children obtained insurance authorization and underwent uncomplicated Nuss repair.

Conclusions: For children with pectus excavatum deformities the mini Thoracic CT is an effective method to calculate the HI. Compard to the conventional low dose chest CT, the mini-CT strategy markedly reduces radiation exposure to the child by 63% with no impact on third-party authorizations or Nuss repair.

P077 BAR REMOVAL FOLLOWING MINIMALLY INVASIVE PECTUS EXCAVATUM REPAIR - DOES REMOVAL AT 2 YEARS AFFECT RECURRENCE OR SATISFACTION RATES? Wendy Jo Svetanoff, MD, MPH; James A Fraser, MD; Kayla B Briggs, MD; Pablo Aguayo, MD; Charles L Snyder, MD; David Juang, MD; Jason D Fraser, MD; Tolulope A Oyetunji, MD, MPH; Shawn D St. Peter, MD; Children's Mercy Hospital, Kansas City

INTRODUCTION: Some patients with pectus excavatum require bar removal despite having the bar in for less than three years after minimally invasive placement (MIRPE). It is unknown whether early removal is associated with a higher recurrence rate or lower cosmetic satisfaction. The aim of this study was to review post-operative outcomes, specifically recurrence rate, and patient satisfaction in patients who underwent bar removal prior to three years.

METHODS: A retrospective review was performed of patients who underwent MIRPE between October 2006 and June 2017 and had bar removal less than 3 years after repair. Demographics, reason for bar removal, recurrence rate, and postoperative complications were captured. Telephone follow-up of patients was performed to evaluate for long-term recurrence and patient's satisfaction with their chest appearance.

RESULTS: 44 patients underwent bar removal at a median of 2.1 years (IQR 1.99, 2.38). The median age at bar placement was 13.3 years old (IQR 11.5, 15.6), with a Haller Index of 4.0 (IQR 3.5, 4.5). The most common reasons for bar removal included over-correction or new pectus carinatum deformity (n=7, 16%) and moving away from home (n=5, 11%). Seventeen patients (39%) had no reason recorded. Post-operatively, two patients had a recurrence. One required bracing, and one developed a bar infection requiring removal and subsequently underwent an osteotomy for combined pectus excavatum/ carinatum deformity. Another patient subsequently underwent bracing for pectus carinatum. Four patients underwent additional surgery for costal cartilage resection (n=3) or scar revision (n=1).

Seventeen of 34 patients (50%) with existing phone numbers in our hospital records were able to be contacted. The median time between bar removal and follow-up was 9.0 years (range: 0.64-11.0 years); 9 patients (53%) were contacted > 9 years following bar removal. Nine patients felt they had some recurrence; however, only 2 stated this deformity was > 25% in depth. One patient felt the deformity was severe enough to seek re-evaluation, with bracing and exercises recommended. Overall, 7 patients (41%) were "very satisfied" with their chest appearance, including 3 who noted a residual deformity. Ten (59%) were "somewhat satisfied" with their chest appearance: five noted that part of their chest still slightly protrudes, and three stated that the deformity was not severe enough to warrant any intervention. No patient was "not satisfied" with their appearance.

CONCLUSION: Bar removal prior to 3 years in patients with symptoms does not increase the need for redo correction and maintains good patient cosmetic satisfaction. This data also suggests that garnering more long-term follow-up information is warranted.

P078 TREATMENT OF ASYMMETRIC PECTUS EXCAVATUM: AN ALTERNATIVE APPROACH Anthony I Squillaro, MD, MPH[1]; Doruk Ozgediz, MD[1]; Olajire Idowu, MD[2]; Barnard Palmar, MD[3]; Sunghoon Kim, MD[2]; [1]University of California San Francisco; [2]UCSF Benioff Children's Hospital Of Oakland; [3]University of California San Francisco-East Bay

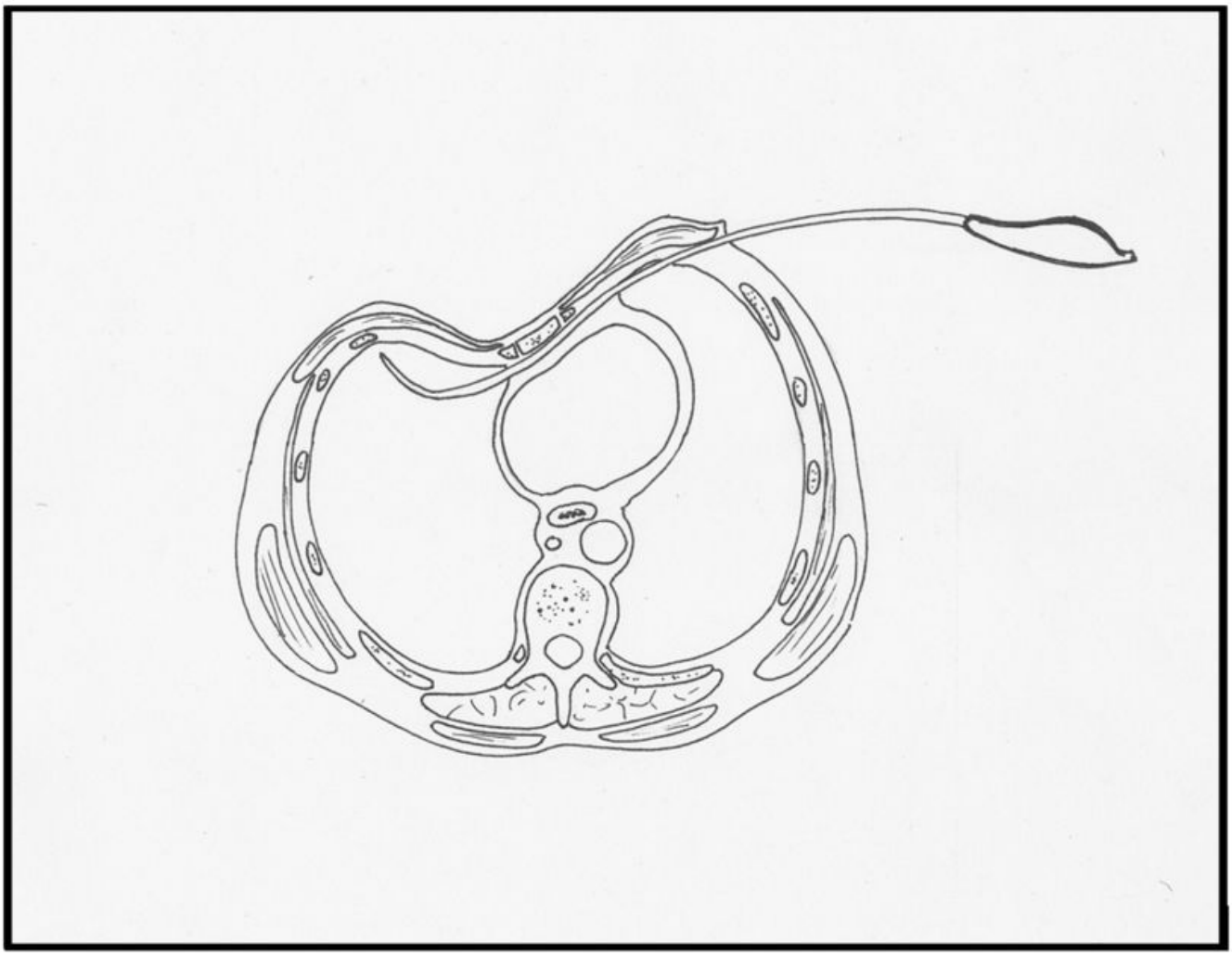
Background: Nuss procedure has become the gold standard for pectus excavatum repair. Pectus excavatum appearance can be broadly divided into two categories: symmetric or asymmetric defects. To optimize the Nuss procedure outcome for asymmetric pectus excavatum repair, previous work has suggested a morphology-tailored bar shaping technique; the bar to be inserted is shaped asymmetrically to adjust to the outer contour of the chest prior to the passage of the introducer across the chest. We describe an alternate technique that emphasizes the location of the chest introducer entry and exit sites which are dependent on the shape of chest asymmetry. The shape of the bar is determined after the introducer has been placed into the chest.

Technique: Prior to the start of the operation, the highest points on both sides of the chest are marked. For a typical asymmetric pectus excavatum, the apex on the side of the chest that is higher than the contralateral side lies closer to the sternum, and the apex of the side that is lower lies farther out from sternum. Bilateral thoracoscopy is utilized. To elevate the chest prior to introducer passage is optional. The introducer enters the chest at the apex point of the higher side of the chest (Fig. 1). Then, it crosses the anterior mediastinum under camera guidance. The introducer then exits the contralateral chest at its apex point. After the passage of the introducer, the chest appearance is typically close to the desired shape. The metal bar is shaped to optimize the chest appearance with the introducer in place. The metal bar is pulled across the chest with the aid of the introducer and rotated to complete the repair. Stabilizers are placed.

Results: Insertion of the introducer at the site of apex on the higher side of the chest facilitates easier insertion of the introducer into the chest. Exiting of the introducer at the lower apex of the opposite side allows easier passage of the introducer across the chest. Since the medial locations of the two apex points are asymmetric, it allows asymmetric compression of the higher side of the asymmetric chest and simultaneous elevation of the opposite side that is severely depressed. Shaping of the metal bar after the introducer placement allows fine tuning to optimize chest appearance.

Conclusion: The locations of entry and exit sites of the introducer for the treatment of asymmetric pectus excavatum make significant differences in the ease of the operation and the eventual outcome of the chest appearance after the metal bar placement.

Fig 1. Cross-sectional in situ schematic of introducer insertion. Insertion at the defect apex facilitates easier passage of bar and eventual correction of deformity.



P079 THORACOSCOPIC PARTIAL/SEGMENTAL LUNG RESECTION FOR CHILDREN. Chiyoe Shirota; Takahisa Tainaka, MD; Wataru Sumida, MD; Kazuki Yokota, MD; Satoshi Makita, MD; Masamune Okamoto; Akihiro Yasui, MD; Aitaro Takimoto, MD; Hiroshi Nakagawa, MD; Akinari Hinoki, MD, Phd; Hiroo Uchida, MD, Phd; Nagoya University Graduate School of Medicine

Introduction: With the development of new devices and navigation, treatment strategies, especially surgical ones, are bound to change. We historically performed thoracoscopic lobectomy for children as a basic method because of the lack of devices suitable for small working spaces and the anatomical characteristics of children, such as incomplete lobulation of lung. In recent years, in cases with a relatively small pathological lesion or a lesion that extends over multiple lobes, we challenge anatomical partial resection of lung, using a combination of a 5-mm linear stapler and the blood flow evaluation using indocyanine green (ICG) fluorescence. With this new approach, we attempt to preserve as much of the normal lung as possible.

Subjects and Methods: We obtained approval from our institutional ethics board to conduct this study. We reviewed the patients under 15 years of age who underwent thoracoscopic lung surgery in our hospital between 2019 and 2020 using ICG fluorescence. Surgery was performed under general anesthesia with intubation, generally without one-lung ventilation, and with 3–8 mm of artificial pneumothorax. ICG fluorescence navigation was performed using 1–5 intravenous 0.01–0.02 mg/kg injections of ICG; then blood flow was assessed using a near-infrared fluorescent camera (OPAL1®?ICG/NIR system, Karl Storz). In 2019, we acquired a 5 mm automatic anastomotic device and began resecting bronchi and lungs.

Results: Preoperatively, MDCT was performed to confirm the location of the lesion, and patients who determined that partial resection was possible were subjected to ICG fluorescence. ICG fluorescence was performed in six cases, and partial resection was possible in five of these cases. In one case, lobectomy was performed because the pathological lesion is unclear under operation.

The diagnosis of 5 patients who underwent thoracoscopic partial resection was bronchial atresia in 3 patients and congenital pulmonary airway malformation in 2 patients. At the surgery, the median age was 1years, the median weight was 9.74 kg, the median operating time was 190 min, the median blood loss volume was 5 mL, and none of these patients developed surgical complications. In one patients, residual lesions were suspected following postoperative computed tomography scans.

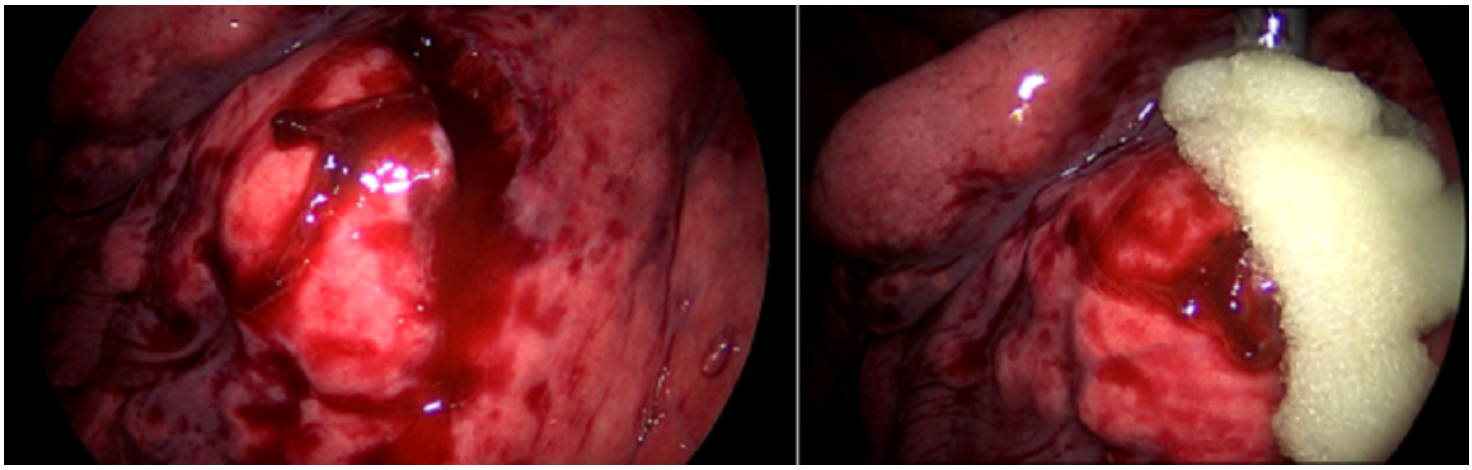
Conclusion: Partial lung resection and even segmental resection, which have been considered difficult in pediatric thoracoscopic surgery, may be able to be performed safely by MDCT and ICG navigation. We will continue to carefully consider indications in the future.

P080 PENETRATING CHEST TRAUMA: THORACOSCOPIC APPROACH AND USE OF FIBRIN SEALANT IN A UK PAEDIATRIC MAJOR TRAUMA CENTRE W R Fradley, BSc, BMBS; M Jancauskaite, MRCS; E Gavens, FRCS; S Marven, FRCS; Sheffield Children's Hospital

The use of video-assisted thoracoscopic surgery (VATS) is becoming increasingly popular in selected adult cases of thoracic trauma. Its use in the paediatric population is not as widely documented. Paediatric major trauma centres should be able to effectively manage cases related to knife violence, which has shown a concerning increasing trend in recent years. VATS allow for a detailed assessment of intrathoracic injury and timely intervention in a minimally invasive manner. We present a case of 15-year-old boy with penetrating chest trauma managed with an emergency VATS.

The patient was brought into the Emergency Department by paramedics 30 minutes following an isolated stab wound through the right 4th intercostal space, adjacent to the sternum. An air-occlusive dressing had been placed over the wound by the pre-hospital team. On removal of the dressing revealed a sucking chest wound approximately 5cm in length and indeterminate depth. Tranexamic acid was given. He was initially haemodynamically unstable requiring resuscitation with O negative red cells. CXR findings were in keeping with a haemopneumothorax.

Following resuscitation with blood products and tube thoracostomy, the patient was transferred to theatre and intubated with a view to perform VATS or thoracotomy. He remained stable during induction of anaesthesia and a decision was made to proceed with assessment via VATS. The patient was placed in the supine position with a lateral tilt, allowing access to the right hemithorax. Two lung ventilation was maintained. The chest drain site was used as the primary port insertion site. The stab wound conveniently allowed a second access site for a balloon port to be inserted under direct vision. Retained clot was evacuated. Intrathoracic structures were visualised; no hilar, diaphragmatic, or cardiac injury was identified. An isolated laceration was present in the middle lobe of the right lung with ongoing bleeding. A fibrin sealant (Tisseel™) was applied to the lung laceration, which efficaciously achieved haemostasis (image).



Postoperative course was uncomplicated. The patient was observed on the Paediatric Critical Care Unit overnight prior to stepping down to ward-based care. Chest drain was removed on day 3 and he was medically fit for discharge on day 4. A 7-day course of Co-amoxiclav was completed. The patient did not develop any complications in the 6-month follow up period.

In specific contexts, fibrin sealants have proven benefit in a wide variety of surgical specialties. This includes as a haemostatic agent and tissue adhesive. The evidence of benefit in lung surgery is limited to elective lung resection. To our knowledge, this is the first report demonstrating successful use of a fibrin sealant (Tisseel™) to achieve haemostasis of moderate venous bleeding from an isolated pulmonary laceration in a paediatric trauma patient. Future studies should prospectively compare the use of such methods relative to open repairs and other methods of haemostasis in terms of morbidity suffered in this population.

P081 SURGICAL MANAGEMENT OF CHILDREN WITH CONGENITAL LUNG MALFORMATIONS: A SINGLE CENTER EXPERIENCE. Tommaso Gargano; Giovanni Parente; Neil Di Salvo; Simone D'Antonio; Vincenzo Davide Catania; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

Purpose: Congenital lung malformation (CLM) is a rare developmental anomaly of the lower respiratory tract. CLM could be also associated with respiratory symptoms that require proper medical and surgical management. The aim of our study is to summarize our experience drawn from treatment of children with CLM

Methods: We conducted a retrospective review of patients who were referred to our centre for CLM from 2004 to 2018. Demographic data, prenatal diagnosis, presenting symptoms, CLM's characteristics, operative and postoperative data were collected. Patients were divided into two groups based on the presence or not of respiratory symptoms. Data were compared using Fisher's exact test for qualitative values and Mann-Whitney test for quantitative values. P values less than 0,05 were considered statistically significant.

Results: 186 patients were treated for CLM. Asymptomatic patients were 137 (74%), while symptomatic patients were 49 (26%). The most common presenting symptoms were respiratory distress (n=30,61%) followed by pneumonia (n=18,38%). Prenatal diagnosis of CLM was performed in 98% of asymptomatic patients compared to 30% of symptomatic (p=0.001). Surgical excision was performed in all cases, and in 50% via thoracoscopy without difference between the two groups. In 97% of all cases a lung sparing surgery was performed without difference between the groups. Symptoms are significantly associated with older age, location in the upper lobe, and lobar emphysema. Post-operative complication and reintervention rate were significantly higher in symptomatic group compared to asymptomatic.

Conclusions: The study describes a comprehensive picture of CLM. In addition we emphasize the role of early postnatal management and thoracoscopic surgery in order to prevent the onset of symptoms that are associated with a worse outcome.

P082 PREDICTORS OF OUTCOMES OF ENDOSCOPIC BALLOON DILATATION IN STRICTURES AFTER OESOPHAGEAL ATRESIA REPAIR: A RETROSPECTIVE STUDY

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Oesophageal stricture is a serious complication in a variety of otherwise benign conditions in children, associated with a high grade of morbidity because of dysphagia, regurgitation, and failure to thrive. The most common cause of benign oesophageal stenosis in children is an anastomotic stricture following repair of esophageal atresia (EA). Endoscopic balloon dilatation (EBD) has become the first line of therapy for benign esophageal strictures (ES). The purpose of the present study was to assess the predictive factors for the outcomes of EBD treatment for strictures after esophageal atresia (EA) repair.

METHODS: Children with anastomotic ES after esophageal atresia repair treated by EBD from January 2005 to November 2020 were included. All procedures were performed under tracheal intubation and intravenous anesthesia.

Outcome parameters measured included the number of dilatations, age of patients, presence of gastroesophageal reflux (GOR) and interval between surgery and the first dilatation.

Primary clinical success was defined as an absence of dysphagia for at least 1 year and weight gain appropriate to the patient's age after initial balloon dilation. Secondary clinical success was defined as an absence of dysphagia for at least 1 year after the final dilation and weight gain appropriate to the patient's age after one or more balloon dilatation sessions.

RESULTS: A total of 77 patients were included in this analysis. The prevalence of anastomotic stenosis was about 22%. The age of our patients at the time of diagnosis of stenosis ranged from 1 to 4 years with a mean age of 22 months with a male predominance; a sex ratio 1.2

The age of intervention for the treatment of oesophageal atresia was before 72 hours of life in 84% of cases.

GOR was present in 61.8% of our patients. Its main risk factor is tension anastomosis, which was noted in 64.7% of cases.

Dysphasia was the main revealing symptom in 77% of cases. In our series, 221 sessions were performed with an average of 2.8 sessions per patient over an average duration of 6 months. The result was judged good in 94.5% of the cases before the resolution of the dysphagia.

Young age (<6 months with a mean age of 3 months) was associated with low dilatation (2 sessions/patient versus 4 sessions/patient in the >6 months age group). Similarly, GOR was implicated in the resistance of stenoses to dilatation with a higher number of sessions in the reflux group (4/patient) than in the GOR-free group (2/patient). Esophageal perforation occurred in 6.4% of cases due to high pressures and large-caliber catheters. A longer interval between surgery and the first dilatation was related to more sessions and a poorer response.

CONCLUSION: The risk factors for anastomotic stenosis following repair of esophageal atresia are numerous.

Pneumatic dilatation is the treatment of choice. The other therapeutic modalities vary in indication from one patient to another, requiring large prospective studies to determine the best indication and evaluate the results of each therapeutic modality.

P083 LIPOSOMAL BUPIVACAINE INJECTION IN NUSS PROCEDURE ALLOW NARCOTIC AVOIDANCE AND IMPROVED OUTCOMES Paul M Jeziorczak, MD, MPH[1]; Riley S Frenette, BA[2]; Charles J Aprahamian, MD[1]; [1]Children's Hospital of Illinois; [2]A.T. Still University- Kirksville College of Osteopathic Medicine

Background: The NUSS procedure has provided a minimally invasive surgical solution for Pectus Excavatum with excellent long-term outcomes. However, Epidural catheter avoidance, opioid administration and length of stay still offer room for improvement. The focus of this study is to identify the impact of Bupivacaine liposome injectable suspension (Exparel) on outcomes.

Methods: A retrospective review at a Pediatric specialty hospital from October 1, 2014 to December 31, 2019 was performed. All included patients underwent a Nuss procedure (n=19) for pectus excavatum. The cohort comprised of a control group that did not use liposomal Bupivacaine (Standard, n=9) and an interventional group that received liposomal Bupivacaine (n=10). Standard two-tailed t-tests were conducted to compare the means or proportions ($P<0.05$)*.

Results: Overall, the entire population was 68.4% male and had an average age of 15 years old. There was a significant difference between the Standard and liposomal Bupivacaine groups for Total Morphine Milligram Equivalents (249.68 vs. 92.54 MME) and Epidural catheter usage (100% vs. 0%). There was also a significant difference between groups for length of stay (4.67 vs. 2.80 days) and Foley catheter usage (100% vs. 20%). There was no significant difference observed for Re-hospitalizations, average pain score and % of PCA requests administered.

Table 1. Post-operative outcomes for NUSS procedure

	Standard (n=9)	**liposomal Bupivacaine (n=10)**
Total MME ±SEM	249.68 ±35.23*	92.54 ±19.84*
Epidural catheter	100%*	0%*
Length of Stay (days)±SEM	4.67 ±0.44*	2.80 ±0.25*
Foley catheter	100%*	20%*
Re-hospitalizations	22.2%	0%
Avg Pain Score ±SEM	3.92 ±0.64	4.82 ±0.61
PCA requests administered	82%	92%

Conclusions: There is a significant impact of liposomal Bupivacaine usage on epidural catheter avoidance and opioid administration leading to a decreased length of stay and no significant difference in pain scores. While more study is necessary, liposomal Bupivacaine for NUSS procedure offers improvement of post-operative patient outcomes.

P084 TREATMENT OF PECTUS CARINATUM DURING THE COVID-19 PANDEMIC: TELEPECTUS. Cecilia Gigena, MD[1]; Marcela Di Vincenzo, MD[1]; Luzia Toselli, MD[2]; Daniela Sanjurjo, MD[2]; Jorge Martinez, MD[2]; Maxroxia Valle, MD[2]; Maximiliano Nazar Peirano, MD[2]; Gaston Bellia Munzon, MD[1]; [1]Hospital Elizalde; [2]Clinica Mi Pectus

Introduction: Due to the Covid 19 outbreak and the consequent isolation, the implementation of telemedicine has increased. The use of telepectus, telemedicine for the diagnosis, treatment, and follow-up of pectus carinatum patients has not been described. Our aim was to report the feasibility, impact, and satisfaction rates of telemedicine for the treatment of patients with pectus carinatum using the FMF® Dynamic Compressor System. We also analyzed the extent of treatment adherence in comparison with the previous year.

Materials and methods: This was a retrospective analysis including patients with pectus carinatum using telemedicine at the Chest Wall centers from two hospitals, private and public, between April and July 2020. A free video conference platform was employed and a tutorial with instructions of use was provided to the patients. Patients' demographics and the number of patients in each phase of treatment were analyzed. To assess adherence, we compared our cohort with an in-house cohort during the same time frame of the previous year. To evaluate patient satisfaction, a survey was performed comprising questions related to socioeconomic status, likeability of telemedicine, simplicity of modification of the system, and desire to continue with telepectus after the pandemic.

Results: One hundred and thirty-six telepectus consultations were performed in 76 patients. Telepectus patients were discriminated into 5 groups according to the phase of treatment (Table 1). Noteworthy, although all consultations were virtual, 15 (20%) patients were able to initiate treatment with an FMF® Dynamic Compressor System during this period. When compared to the previous year, the number of consultations per patient was similar (2019: 1.9±1.0 vs. 2020: 1.8±0.8, p=0.32) and there was a significant reduction in the number of dropouts with the use of telemedicine (9% vs. 1%, p=0.025). The satisfaction survey was answered by 59 patients (70%). All of them stated that their doubts were solved through telemedicine. Overall 94,9% of the patients found telemedicine comfortable. Irrespective of social-economical status, all the patients showed high rates of satisfaction with telemedicine. Of note, those with fewer means evidenced the highest intention in continuing with telemedicine.

Conclusions: In this study, we demonstrated the feasibility of remote care of patients with pectus carinatum using the FMF® Dynamic Compressor System with a comparable frequency of consultations as in-house medical care. Patients revealed a high rate of satisfaction with telemedicine for the non-operative treatment of pectus carinatum irrespective of their socioeconomic status.

Table 1. Phases of treatment in TELEPECTUS patients treated with FMF®.

	N = 76 (%)
First consultation	12 (16)
Brace prescription	15 (20)
Correction phase	33 (42)
Finished treatment	11 (15)
Follow-up	5 (7)

P085 APPLICABILITY OF THORACOSCOPY FOR PEDIATRIC THORACIC NEUROGENIC TUMORS WITH IMAGE-DEFINED RISK FACTORS

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Aim: Minimally invasive surgery (MIS) has gained importance in the treatment of thoracic neurogenic tumors (TNT) in children. However, MIS use in the treatment of TNT with Image-Defined Risk Factors (IDRF) is still debatable. In this study, we aimed to evaluate the applicability of thoracoscopic excision of TNT with IDRF in children.

Methods: After ethical approval, the hospital records and national health data recording system (e-nabiz) of patients who had undergone thoracoscopic exploration with a diagnosis of TNT in our institution between May 2006 and September 2020 were reviewed. Demographics, initial complaints, radiological and histopathological features of the masses and surgical results (complication, conversion to open approach and residual mass) of the patients were evaluated. Two groups (Risk+ and Risk-) were constituted according to the presence of IDRF and results were then compared.

Results: A total of 19 patients (6 females, 13 males) with a median age of two years (0.5-15 years) were included. The majority of the patients had neurological findings (n=7) and persistent cough (n=5) whereas 3 patients were incidentally detected. Localization of the masses were apical in six, in the middle zone in seven and thoracoabdominal in six. The median largest diameter of the masses was 7.3cm (2-12cm), and the IDRF's were positive in 52.6% of the cases. In three out of nine patients with an extension to neural foramen, thoracoscopy was performed as second stage at least two weeks after neurosurgical dorsal laminectomy. Thoracoscopic partial costal excision was also performed in one patient with vertebral and costal invasion. Histopathological diagnoses were neuroblastoma (n=15), ganglioneuroma (n=3), and ganglioneuroblastoma (n=1). Convertion was necessary in three patients (15.7%) due to diffuse adhesions and/or major bleeding. Postoperative complications (26.3%) were; chylothorax in three and Horner Syndrome in two. There were minimal residual masses (<1cm) in three patients postoperatively. Three patients were lost to follow-up. Median largest diameter of the masses (8.5cm) was significantly higher in IDRF(+) group whereas patient ages, rates of complications, conversions and resiual masses were similar between two groups.

Conclusion: Thoracoscopic total excision can safely be performed in TNT with IDRF. The thoracoscopic approach should be considered primarily for these patients in experienced centers.

P086 SIMPLE ASSESSMENT OF THE CARDIOPULMONARY FUNCTION IN PATIENTS WITH PECTUS EXCAVATUM USING THE 6-MINUTE WALK TEST Daniela Sanjurjo; Luzia Toselli; Gastón Bellía Munzón; Jorge Martinez; Maximiliano Nazar Peirano; Maxroxia Vallee; Marcelo Martinez Ferro; Clínica Mi Pectus, Pediatric Surgery Department, Fundación Hospitalaria

Background / Purpose: A non-negligible fraction of patients with pectus excavatum (PEX) have exercise intolerance, that has been related to diverse cardiac and/or pulmonary structural and functional abnormalities. The identification of such findings, usually required to support the indication of surgical correction, demands various complex diagnostic procedures. The six-minute walk test (6MWT) is a simple, safe, and well established tool for the assessment of functional exercise capacity.

We sought to explore the usefulness, findings, and relationship with malformation indexes of the 6MWT in PEX.

Methods: We performed a retrospective analysis of a consecutive cohort of patients with PEX between October 2018 and September 2020 that underwent 6MWT in our Pectus Clinic. The 6MWT comprises instructing the patient to walk as fast as possible (without running) on a flat surface in 6 minutes. The heart rate (before and after), transcutaneous oxygen saturation (before and after, being clinically relevant a drop larger than 3%), dyspnea (Borg scale), and maximum distance walked (with percent of maximum expected according to age and sex; %max, being 80% max the lower normal threshold and clinically relevant a distance shorter than 0.35 miles) were recorded. Among patients who also underwent chest computed tomography (CT) or 3D Scanner, the 6MWT results were related to the Haller Index (HI), Pectus Depth (De), and Correction Index (CI)

Results: 43 PEX patients with a mean age 17.8±6.7 years (range between 12 and 36 years) underwent 6MWT. The mean De was 3.1±1.1 cm, the mean CI was 31.5±12.1%, and the mean HI was 5.1±1.4 in CT. Nine (21%) patients had a saturation drop larger than 3% after walking, and 1 (2%) had a baseline saturation lower than 93%. The mean achieved maximum distance walked was 600.8±67.6 meters, comprising a %max of 76.2±9.6%. In 12 (28%) patients, the maximum distance achieved was lower than 0.35 miles (563 meters).

We did not identify significant associations between malformation indexes and 6MWT, although patients with a saturation drop larger than 3% showed a trend towards higher CI (47.0±12.1 vs. 38.1±13.2, p= 0.09).

Conclusion: Among patients with PEX, the 6MWT might emerge as an unsophisticated means to evaluate and quantify functional exercise capacity. In this pilot study, we identified a number of abnormal 6MWT findings in PEX including a meaningful saturation drop and limited walking distance in a fraction of the patients.

P087 PREDICTIVE FACTORS OF WORST OUTCOME IN CONGENITAL LUNG MALFORMATIONS. Giovanni Parente; Neil Di Salvo; Simone D'Antonio; Vincenzo Davide Catania; Marzia Vastano; Michele Libri; Tommaso Gargano; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

Purpose: Congenital Lung Malformations (CLMs) represent a spectrum of disease. Our purpose was to identify factiors potentially predictive of worst outcome.

Materials and methods: all patients treated in our Centre from year 2000 to 2018, with a supposed or confirmed diagnosis of CLM, were included in the study. Diagnosis was confirmed by anatomopathological analysis. Most of the study was therefore performed on a population of 160 subjects. 11 patients with supposed diagnosis, later found incorrect, were added to calculate the efficacy of diagnostic imaging techniques.

Results: the most frequent lesion was CPAM (28,7%), followed by Intra-Pulmonary Sequestration (20,6%), Extra-Pulmonary Sequestration (17,5%) and Congenital Lobar Emphysema (15,6%). Bronchogenic Cysts were very rare, whilst hybrid lesions accounted for 12,5% of the total. 23,8% of the subjects presented with coexistent malformations, of which the most common were cardiovascular and musculoskeletal ones. 14 patients presented with major antenatal complications, 4 of which requiring prenatal surgery. A total of 59 subjects (36,9%) showed symptoms before surgery: 26 presented with symptoms at birth and 33 at later age. 135 patients out of 171 received a prenatal diagnosis, by US and possibly by MRI (n=54). US showed a sensibility of 78,9% in detecting malformations, however specificity and accuracy were lower. In our Centre, we are favourable to a surgical approach. The preferred operation is a lung-sparing wedge resection via Video Thoracoscopy, which has proven to be either as effective or superior to others, in terms of type of resection, surgical approach, duration of surgery, intra- and post-operative complications, length of hospital stay and outcome. Predictive of a worst outcome were: for short term, development of symptoms ($p<0,009$), not being antenatally diagnosed ($p<0,05$), undergoing surgery before 5 months ($p<0,05$) and undergoing an emergency procedure ($p<0,03$); for medium term, development of symptoms ($p<0,01$) and undergoing an emergency procedure ($p<0,007$); for long term, showing antenatal complications ($p<0,04$).

Conclusion: Factors predictive of a worst outcome in terms of long term complications were: development of symptoms during neonatal period with emergency surgery and concomitant malformations.

P088 THE ROLE OF MRI IN THE POST-NATAL ASSESSMENT OF CONGENITAL LUNG MALFORMATIONS (CLMS): CONCORDANCE WITH CT SCAN FINDINGS. Neil Di Salvo; Tommaso Gargano; Giovanni Parente; Beatrice Randi; Giovanni Ruggeri; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

Aim of the Study: To evaluate the agreement between postnatal MRI and preoperative CT scan findings.

Methods: From 2015 to 2019, we prospectively enrolled all asymptomatic newborns with a prenatal suspicion of CLMs. We performed an MRI without contrast in the neonatal period and a preoperative contrast-enhanced CT before surgical removal within the 6th month of life. Concordance between MRI and CT was assessed by evaluation of the following key features: site, presence of cysts, solid component, overinflated areas, bronchocele, abnormal vessels. Radiological findings were furtherly compared to pathology reports. For statistics, the Cohen's kappa test was used.

Main result: We investigated 24 malformations. MRI detected all prenatally suspected malformations. Agreement between MRI and CT on the malformations' main fey features are reported in tab. 1. MRI and CT correctly agreed in identifying the abnormal arterial vessels in all cases of sequestrations but one (9/10, sensibility 90%). MRI correctly identified the abnormal venous drainage, thus defining the type of sequestration, in 3 cases only (sensibility 30%, specificity 100%).

tab. 1

MRI-CT CONCORDANCE	kappa	Agreement
Side	1	Perfect
Involved lobe	0.88	Almost perfect
Position within the lobe	0.93	Almost perfect
Presence of cysts	0.67	Substantial
Presence of overinflated areas	0.44	Moderate
Presence of solid component	0.50	Moderate
Presence of bronchocele	0.51	Moderate
Final radiological diagnosis	0.62	Substantial

Conclusions: Early MRI is useful at confirming the presence of a prenatally suspected CLMs, thus avoiding radiation exposure and intravenous contrast administration in the neonatal period. Our study showed a high degree of concordance, not yet perfect, between MRI and CT findings. Further studies must be encouraged to increase the full potential of MRI in order to progressively reduce the need for CT, still essential for a lung sparing surgery.

P090 THORACOSCOPIC TREATMENT OF PEDIATRIC CHYLOTHORAX Salma Mani; Nahla Kechich; Rachida Laamiri; Nouha Boukhrissa; Sawsen Chakroun; Mawen Baccar; Meriem Ben Fredj; Sabrine Ben Youssef; Sami Sfar; Sana Mosbahi; Samia Belhassen; Amine Ksiaa; Lassaad Sahnoun; Mongi Mekki; Mohsen Belguith; Department of Pediatric Surgery, University Hospital of Monastir (TUNISIA)

Introduction: Chylothorax is defined as an accumulation of chyle within the pleural space. Causes include congenital malformation, trauma, and neoplasm. If improperly managed, chylothorax can lead to significant morbidity and mortality with complications ranging from electrolyte imbalances to nutritional deficiencies and immunodeficiency. Regarding the management of chylothorax in infants and children, there is at present no evidence-based consensus. Different treatment algorithms have been proposed

However, when non-operative treatment of chylothorax fails, thoracic duct ligation is usually performed through a thoracotomy. We describe a case of persistent chylothorax, in a child, successfully treated with thoracoscopic ligation of the thoracic duct.

Case report: A 6-month-old boy presented to the emergency department with refusal to feed and severe respiratory distress. The baby was full term, delivered normal vaginally with a birth weight of 3.1 kg. There were no abnormality recorded in mother, on regular antenatal check-up and on antenatal sonography. There was no history of birth trauma. The baby was asymptomatic until day thirds of life with normal feed. On examination, the child was in severe respiratory distress with decrease air entry on the left side of the chest, no others any associated congenital anomalies were found. Chest X-ray revealed left pleural effusion. Pleural tap done which revealed milky white aspirate. On biochemical analysis of pleural fluid suggest chyle with a high level of triglyceride. The patient was initially treated with by Octreotide and intercostal drainage. In view of persistent drainage in the tube in spite of diet and somatostatin, he was successfully treated with thoracoscopic ligation of the thoracic duct. Drainage of the pleural cavity was done and the chest tube output started reducing with each passing day, stopping completely on the 6th day. It was removed on the 7th day. So, the child was discharged. He has been on normal diet and is doing well at 6-months follow up.

Conclusion: Chylothorax is a rare cause of pleural effusion in children.

Failure of initial measures associated with the presence of complications such as infection, malnutrition, fluid imbalance and prolonged hospitalization should result in early surgical intervention. Thoracoscopic ligation of the thoracic duct provides a safe and effective treatment of chylothorax and may avoid thoracotomy and its associated morbidity.

P091 RECURRENCE RATES AFTER VIDEO-ASSISTED THORACOSCOPIC SURGERY (VATS) FOR SPONTANEOUS PNEUMOTHORAX Kelli N Patterson, DO, MS; Amy E Lawrence, MD; Tariku Beyene, PhD, DVM, MS; Jennifer H Aldrink, MD; Marc Michalsky, MD, MBA; Peter C Minneci, MD, MHSc; Nationwide Children's Hospital

Background: The goal of surgical intervention for primary spontaneous pneumothorax (sPTX) is to prevent recurrence. Data regarding the optimal surgical procedure are mixed in adults and currently lacking in pediatrics. Video-assisted thoracoscopic surgery (VATS) with pulmonary apical wedge resection is the most common procedure performed, however, there is variability in adjunctive techniques, including pleurectomy or mechanical pleurodesis, used to prevent recurrences. The objectives of this study were to determine pneumothorax recurrence rates after VATS, and to determine the comparative efficacy of adjunct pleurectomy versus mechanical pleurodesis in patients undergoing their first operation for sPTX.

Methods: Patients 11-21 years of age who experienced sPTX and underwent VATS from December 2011 to December 2018 were identified at a single institution. Descriptive analyses and Fisher's exact tests were performed to identify factors associated with ipsilateral pneumothorax recurrence after surgery.

Results: Forty-six patients underwent 47 primary VATS (one patient underwent bilateral VATS). The majority of patients were white (85%), male (87%), and non-smokers (80%). Forty-one percent underwent VATS for their occurrence of first sPTX. Apical wedge resection was performed in 45 (96%) patients. Pleurectomy was performed in 26 (55%) patients and mechanical pleurodesis in 21 (45%). Overall, 11 patients (23%) experienced any post-operative recurrence, and 6 of these (55%) required intervention (tube thoracostomy and/or repeat VATS) (Table 1). Recurrences occurred in the range of 1 week to 33 months. There was no significant difference in rates of overall recurrence between pleurectomy and pleurodesis (6/26 (23%) vs. 5/21 (24%), p>0.99) or recurrences requiring intervention between the two adjunctive techniques (3/6 vs. 3/5, p=0.61). However, patients who did not undergo wedge resection were more likely to experience a recurrence (2/2 (100%), p=0.05).

Conclusion: A substantial number of patients experience recurrence of sPTX after surgery with over half requiring re-intervention. While apical wedge resection significantly reduced the rates of recurrence, rates were similar whether pleurectomy or pleurodesis were performed. Further prospective studies are needed to establish the optimal strategy to limit recurrence rates for patients with sPTX.

Table 1. Recurrence rates after VATS for sPTX

	Recurrence	No recurrence	P	Recurrence requiring intervention	Recurrence without intervention	P
First sPTX	3 (16%)	16 (84%)	0.32	1 (33%)	2 (67%)	0.42
Second or greater sPTX	8 (30%)	19 (70%)		5 (63%)	3 (37%)	
Apical wedge resection						
Yes	9 (20%)	36 (80%)	0.05	4 (44%)	5 (56%)	0.27
No	2 (100%)	0 (0%)		2 (100%)	0 (0%)	
Pleurectomy	6 (23%)	20 (77%)	>0.99	3 (50%)	3 (50%)	0.61
Pleurodesis	5 (24%)	16 (76%)		3 (60%)	2 (40%)	

P092 A COMPERATIVE STUDY OF THORACOSCOPIC AND OPEN TRACHEAESOPHAGEAL FISTULA AND ESOPHAGEAL ATRESIA REPAIR

Ergun Ergun, MD[1]; Sumeyye Sozduyar, MD[1]; Ufuk Ates[1]; Aynur Gurbanova, MD[1]; Ege Evin, MD[1]; Ozlem Selvi Can[2]; Gulnur Gollu[1]; Meltem Bingol-Kologlu[1]; Murat Cakmak[1]; Aydin Yagmurlu[1]; [1]Ankara University Faculty of Medicine, Department of Pediatric Surgery; [2]Ankara University Faculty of Medicine, Department of Anesthesiology and Renimation

Aim: The focus of EA treatment is now on reducing hospitalization and common morbidities and prevent complications such as anastomotic leak and esophageal stricture formation. The objective of this paper was to compare the perioperative and postoperative outcome measures such as operation times, anastomotic leak and stricture formation in children who underwent Thoracoscopic and open repair of EA/TEF in newborns in a single institution.

Patients and methods: Children who underwent surgery due to TEF-EA between 2014-2020 were enrolled to the study. Charts of patients were reviewed retrospectively demographic and perioperative data such as operative time, vena azygos preservation rates were analyzed. Postoperative outcome measures such as stricture formation rates, anastomotic leak more than one week, removal of the chest tube were compared.

Results: There were 22 children in the study. Among these, 14 underwent thoracoscopic repair and 8 underwent open repair. Both groups were similar in terms of gestational age, birth weight and associated major anomalies. Operative times were similar (Thoracoscopic repair: 169 and Open repair: 175 minutes, p=0.68). Stricture formation was observed in 3 children in thoracoscopic group (21%) and 4 children in open group (50%). Anastomotic leak lasted more than a week in three children in thoracoscopic group (25%) and two in open group (25%). Stricture rates and anastomotic leak lasted more than one week rates were statistically similar between groups. Vena azygos were preserved in 11 of 14 children in thoracoscopic group while none in eight children in open group.

Conclusion: Thoracoscopic repair seems similar to open repair regarding operative time and postoperative outcome measures such as esophageal stricture formation and anastomotic leak more than one week in the study. It seems as feasible as OR with advantage of preserving vena azygos. Randomized controlled studies with larger patient groups addressing these aspects may let us acquire more objective perspectives.

P093 VIDEO-ASSISTED THORACOSCOPIC SURGERY FOR PEDIATRIC EMPYEMA Ergun Ergun; Anar Qurbanov; Pari Khalilova; Sumeyye Sozduyar; Gulnur Gollu; Meltem Bingol-Kologlu; Aydin Yagmurlu; Murat Cakmak; Ufuk Ates; Ankara University Faculty of Medicine, Department of Pediatric Surgery

Aim: The aim of this study is to determine efficacy, safety, and feasibility of video-assisted thoracoscopic surgery (VATS) in childhood empyema with two port technique.

Methods: The data of 27 patients who underwent VATS decortication with two port between 2014-2019 were retrospectively reviewed. Demographic and clinical data of the patients were recorded.

Results: The mean age of patients was 57 months (8-165 months) and mean weight was 22.3 kg (8.5-60 kg). There were 19 boys(70%) and eight girls(30%). Mean duration of symptoms was 11,5 (2-46) days. Thorax CT was performed in all patients before surgery. All children had advanced disease.The empyemas were in right hemithorax in 19 children and left in seven. One patient underwent bilateral decortication. In one patient due to the misfunction of chest tube VATS was repeated postoperative third day. Chest tube was removed after a mean of 10.4 (2-26) days. The mean length of hospital stay after the procedure was 16 (5-28) days even though clinical recovery was earlier. Minor complications such as emphysema (14.8%, n=4) and bronchopleural fistula (11%, n=3) were observed in the postoperative period and spontaneously regressed. Streptococcus pneumoniae was the most common microorganism in empyema samples(22%, n=6) There was no mortality due to VATS and empyema in any patient.

Conclusion: In advanced diseases, decortication and surgical drainage of empyema is only choice. Two-port VATS decortication procedure is a minimally invasive and safe treatment method with better cosmetic result and pain relief.

P094 DOUBLE AORTIC ARCH IN CHILDREN: HOW TO DIAGNOSE AND WHICH SURGICAL APPROACH IS BETTER? Afef Toumi[1]; Sabrine Ben youssef[1]; Nouha Boukhrissa[1]; Mariem Ben fredj[1]; Salma Mani[1]; Marwen Baccar[2]; Sami Sfar[1]; Samia Belhassen[1]; Sana Mosbehi[1]; Amine Ksia[1]; Rachida Lamiri[1]; Mongi Mekki[1]; Mohsen Belghith[1]; [1]Pediatric's Surgery Department-Monastir; [2]Reanimation and Anesthesiology Department-Monastir

Introduction: Double aortic arch (DAA) is a rare congenital vascular malformation. DAA is an anomaly of the aortic arch in which two aortic arches form a complete vascular ring. This condition is traditionally treated via an open thoracotomy, however, in recent years the use of thoracoscopy has increased

Aim: This study aims to summarize the experience of diagnosis and the laparoscopic approach to treat congenital double aortic arch.

Materials and methods: A retrospective study of the clinical data of children treated for DAA in our department of pediatric surgery was conducted from January 1987 to January 2020.

Results: We identified 10 patients (70% males) presenting at a median age of 11,8 months (range: 2 to 27 months). The mean time between the beginning of the symptoms and the diagnosis was 14 months Respiratory symptoms were present in 100%, including stridor in 80%. Gastrointestinal symptoms were present in 30%, choking with feeds being most common. The dominant branch of the double aortic arch was right in 80%. Associated cardiac anomalies were present in 2 cases.

The most common modality used in the initial evaluation was a chest X-ray, performed on our 10 patients. TOGD has shown double imprint on the esophagus in 4 cases and one simple imprint in 2 cases. Diagnosis modalities included computed tomography scan in 8 cases, cardiac ultrasound in 1 case, and chest-MRI in 1 case

Surgical repair was performed in all patients, thoracoscopic video-assisted surgery (VATS) was used in 5 cases (50%). There was no significant difference in the procedure time between thoracotomy and the thoracoscopic approach (median operative time 135 minutes). we did not report any per operative incident nor immediate post-operative complications.

The median hospital stay was 4,1 days for children operated by VATS vs 5,2 days for those operated by thoracotomy. There was no mortality. Median follow up was 3,4 years

Outcomes after surgery were satisfying in 70% of the cases with resolution of their symptoms and the rest of the patients retained respiratory symptoms with a remarkable improvement. There were no late reoperations.

Conclusion: Tracheal and esophageal compression is commonly seen in patients with DAA. the correct diagnosis of DAA could be established with chest computed tomography. Thoracoscopic approach in pediatric patients is a feasible alternative to thoracotomy and is associated with comparable rates of symptom resolution and decreased length of hospital stay.

P095 A ONE TUNISIAN CENTER EXPERIENCE WITH THORACOSCOPY IN A PAEDIATRIC CHILDREN DEPARTMENT Afef Toumi[1]; Sabrine Ben Youssef[1]; Nouha Boukhrissa[1]; Marwa Messaoud[1]; Salma Mani[1]; Mariem Ben fredj[1]; Sami Sfar[1]; Samia Belhassen[1]; Sana Mosbehi[1]; Rachida Lamiri[1]; Marwen Baccar[2]; Sawssen Chakroun[2]; Lasaad Sahnoun[1]; Amine Ksiaa[1]; Mongi Mekki[2]; Mohsen Belghith[1]; [1]Pediatric's Surgery Department-Monastir; [2]Anesthesiology and Reanimation Department-Monastir

Introduction: Thoracoscopic surgery and other minimally invasive approaches in children has known an expansion to include several disciplines in the last decade because it is not only safe and efficient but also it reduces hospital stay in a significant way. The aim of this study is to report our experience with thoracoscopy with particular emphasis on indications and outcomes.

Materials and methods: This is a retrospective study of charts of all patients undergoing thoracoscopic operation at the department of pediatric surgery of Fattouma Bourguiba Hospital in Monastir from 2005 to 2020.

Results: During the study period, 66 thoracoscopic procedures were done on patients whose ages ranged from 3 months to 16 years old with a mean age 5,9 years. The thoracoscopic approach was used to treat 40 cases of hydatic cyst in which no conversion was needed but 2 patients presented emphysema that needed a reintervention and follow up was without complications. Thoracoscopy was also performed for decortication and debridement in 8 cases with empyema and in 3 cases of recurrent pleurisy this procedure had diagnosis purpose. Thoracoscopic lobectomy was performed in 5 cases: 2 pulmonary sequestrations, 2 cystic adenomatoid malformations and 1 bronchogenic cyst, among them conversion was needed in 1 patient with cystic adenomatoid malformation and 6 months follow up did not show any recurrence. Five neonates were operated by thoracoscopy for aortic artery abnormalities (double bow) and 3 patients were operated for diaphragmatic hernia and diaphragmatic eventration, they were aged respectively 3 months, 9 months and 1 year. We did not report, in these cases, any per or post-operative complications and at mean follow up of 3 and 6 months, all patients were asymptomatic. A 18-months girl was operated for right nephroblastoma complicated by bilateral pulmonary metastases. She underwent a thoracoscopic complete metastasectomy and another child aged 3 years was presented with a post traumatic pneumothorax that did not resolve after simple chest tube drainage so he underwent a diagnosis and therapeutic thoracoscopy.

The average operative time was 92,5 min, the mean time of chest tube drainage in all these cases was 3,2 days and hospital length of stay ranged from 3 to 15 days. Overall, no major intraoperative thoracoscopic complications were reported. Early and mi-term outcomes were satisfactory

Conclusion: Thoracoscopy is preferred because it is associated with reduced tissue trauma, decreased pain, reduced hospital stay, and equal or even better clinical outcomes when compared to the standard surgical approaches

P096 PILOT STUDY TO ASSESS PRIMARY CILIARY DYSKINESIA IN PATIENTS WITH ESOPHAGEAL ATRESIA Stefaan Tytgat; E. Sofie van Tuyll van Serooskerken; Hetty Raeven; Gimano Amatngalim; Jeffrey Beekman; Johannes Verweij; David Van der Zee; Maud Lindeboom; University Medical Center Utrecht

Aim of the study: Respiratory tract disorders are a major cause of morbidity after esophageal atresia (EA). Previous studies suggest that this is caused by ciliary dyskinesia in respiratory epithelial cells. However, whether this defect is primary or secondary remains unresolved. The aim of this study is to evaluate the feasibility to culture respiratory epithelial cells from individuals with EA , which potentially can be used to assess the underlying cause of cilia dysfunction.

Methods: Pediatric EA patients (n=8 donors) that underwent a surgical procedure with anesthesia and had an indication for bronchoalveolar lavage (BAL) were included in the study. During surgical intervention, a nose brushing and BAL were performed. Nasal and bronchial airway epithelial stem cells were isolated from nose brushings and BAL respectively. Thereafter, stem cells were differentiated in an air-liquid interface and 3D organoid model. Mucociliary differentiation of paired nasal and bronchial airway epithelial cultures were subsequently evaluated. High speed video microscopy was used to evaluate amplitude and wave pattern.

Main results: Culturing of either the nasal or bronchial samples was successful in seven patients. Airway epithelial cultures were well-differentiated in six nose samples and in three bronchial samples. All samples displayed high numbers of ciliated cells with a normal beat frequency. A normal wave pattern and amplitude was observed in all 3D organoids.

Conclusions: In this pilot study, we showed that it is feasible to culture differentiated epithelial cells from upper and lower airway samples from EA patients. Furthermore, this study showed that cilia activity was present in both nasal and bronchial epithelial cells. A normal beat frequency, wave pattern and amplitude was observed, indicating normal primary ciliary function in EA patients.

P097 PREDICTIVE FACTORS OUTCOMES OF ENDOSCOPIC DILATATION IN CAUSTIC ESOPHAGEAL STRICTURES Marwa Messaoud[1]; Samia Belhassen[1]; Salma Mani[1]; Sami Sfar[1]; Sabrine Ben Youssef[1]; Myriam Ben Fredj[1]; Sana Mosbahi[1]; Nahla Kechiche[1]; Rachida Laamiri[1]; Amine Ksia[1]; Ines Bouanen[2]; Lassaad Sahnoun[1]; Mohsen Belghith[1]; Abdelatif Nouri[1]; Mongi Mekki[1]; [1]Department of Pediatric Surgery Monastir Tunisia; [2]Department of Epidemiology and Preventive Medicine Monastir Tunisia

Introduction: Caustic ingestion produces a progressive and devastating injury to the esophagus and stomach. Caustic material ingestion is mostly accidental in children. Medium and long-term complications include essentially esophageal stricture. Treatment strategies for corrosive strictures have been designed to establish the patency of the esophageal lumen, disrupt and displace the fibrotic tissue of strictures to restore a satisfactory diameter of the lumen. The most common treatment for benign oesophageal strictures is endoscopic dilation. This study aims to assess the predictive factors outcomes of endoscopic dilation in caustic esophageal strictures (CES).

Methods: A retrospective study was conducted in our department between 1998 and 2019, 382 cases were diagnosed with an esophageal stricture. Corrosive ingestion was incriminated in 34,2%. The data were analyzed using the Statistical Package for the Social Sciences software program, version 21. P values less than 0.05 were considered statistically significant.

Results: A total of 131 patients with caustic esophageal stricture were treated at our center. The mean age at corrosive ingestion was 3, 5 years (ranged from 1 to 12 years). There was a male predominance (82 boys, 49 girls), 58 % of patients ingested an alkaline corrosive substance (potash). Multiple strictures were funded in 79 cases (60%) and the middle esophageal region was the predominant site of stricture. Long segment esophageal strictures (more than 5 cm) were funded in 55 cases. The total number of dilatation sessions was 971; patients required a median of 6, 2 (1-36) sessions. Perforation occurred in 35 cases which required only medical treatment. The interval between sessions averaged 5.3 months. The result was considered good (reduction of stenosis) in 79%, average 17.7%, poor 3.3%.

A statistically significant correlation was found between the high number of dilation sessions (greater than or equal to 6) and the following parameters: Long delay between ingestion of caustic at the first session (p=0.02), multiple strictures (p=0.032), very tight strictures (p=0.007), irregular stenosis (p=0.015), extended stenosis (p=0.009) and occurrence of complications (p=0.01)

Conclusion: CES is a serious disease. The endoscopic dilation remains the mainstay treatment because it is feasible, less invasive, and preserves the native esophagus.

P098 LAPAROSCOPIC TREATMENT OF THORACIC-ABDOMINAL DUPLICATION Yosra El Mansouri, Medical Doctor; Sondes Sahli, Medical Doctor; Senda Houidi, Resident in Pediatric Surgery; Riadh Jouini, Medical Professor; Departement of Pediatric Surgery A, Hospital of Children, Tunis,Tunisia

Introduction: Thoracic-abdominal digestive duplications are exceptional and pose diagnostic and therapeutic difficulties. The authors report a particular paediatric observation and discuss the contribution of imaging and the feasibility of laparoscopy

Observation: 12 years aged girl, admitted for epigastric pain and defense. The imaging objectified a thoracic-abdominal duplication, non-communicating, intra-pancreatic, emerging from the second duodenum and extending into the postero-inferior mediastinum. Through a coelioscopic pathway, the diagnosis was confirmed and subtotal removal was performed. The aftermath was simple with a recoil of 8 months.

Conclusion: The mode of disclosure of chest-abdominal duplications is variable, often non-specific. Complete surgical resection, at best in a single time, is imperative and is feasible by the coelioscopic route.

P099 THORACOSCOPIC MESH FIXATION BY TACKER IN NEONATAL REPAIR OF CONGENITAL DIAPHRAGMATIC HERNIA: CASE REPORT

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The use of Mesh reinforcement and closure of defects in Thoracoscopic repair of congenital diaphragmatic hernia (CDH) is a well-known but it is technically difficult and time consuming. This is augmented also by the limited working space and the need to decrease operative time in neonates. We report a neonate with large CDH where we used non absorbable helicoidal tacks for mesh fixation. We assess the feasibility, efficacy, and safety of this new technique that reduce operating time and increase simplicity, and could be a good choice in cases of recurrence.

Keywords: Diaphragmatic hernia, Thoracoscopy, Mesh, Tacker

P101 SURGICAL TREATMENT OF PATIENTS WITH FULL TRACHEAL RINGS – OUR EXPERIENCE A B Alkhasov[1]; A Y Razumovskiy[2]; S A Ratnikov[1]; A A Lezhnev[1]; R F Tepaev[1]; E A Romanova[1]; E I Komina[1]; E Y Dyakonova[1]; A A Gusev[1]; A P Fisenko[1]; S P Yatsyk[1]; [1]FSAI "NMRC for Children's Health" MH RF; [2]Russian National Research Medical University Named after N.I. Pirogov

Introduction: Full tracheal rings is a rare malformation, occurring at a frequency of 1: 100,000 live births. The treatment tactics and method of surgical correction have not yet been finally determined and remain an urgent problem in modern pediatric surgery. Until recently, the prognosis for patients with full tracheal rings remained extremely difficult. Today, the most effective method of surgical treatment of full tracheal rings is the slide tracheoplasty proposed by Tsang. This technique allows you to increase the lumen of the trachea even when it is damaged over its entire length. Our clique has little experience in treating children with this severe pathology in children.

Purpose: to improve the treatment results of children with full tracheal rings.

Materials and methods: in 2019, 4 children with full tracheal rings. Their age at the time of admission was 8 months, 9 months, 10 months and 1 year 1 month. All patients had a clinic of respiratory failure of varying severity. Laryngotracheoscopy and CT scan with contrast was performed in all patients before surgical treatment. All four patients had an isolated malformation of the trachea. The lumen of the trachea did not exceed 3 mm, and the length of the stenosis was 40 - 70% of its length. All patients underwent slide tracheoplasty according to the Tsang technique in ECMO conditions. All patients were examined after surgery after 1 month - 6 months.

Results: in the postoperative period, patients were on mechanical ventilation for 3 to 6 days. There were no fatal cases. Insolvency and stenosis of the tracheal anastomosis was not observed in any case. All patients were discharged home on days 14-18 after surgery. In one patient, 3 months after the surgical corection, a small granulation was revealed, which was removed using laser vaporization. In the long-term period, a good result was obtained in all patients; respiratory failure was eliminated.

Conclusions: our experience in the surgical treatment of full tracheal rings using slide tracheoplasty under ECMO conditions demonstrates its high efficiency and safety and can significantly improve the prognosis of such a difficult group of patients.

P102 COMPARISON OF TRADITIONAL MULTIPORT VERSUS SINGLE PORT VIDEO ASSISTED THORACOSCOPIC SURGERY FOR PEDIATRIC PNEUMOTHORAX Marla A Sacks, MD; Laura F Goodman, MD, MPH; Faraz A Khan, MD; Andrei Radulescu, MD, PhD; Loma Linda University Children's Hospital

Background: As single site laparoscopic and thoracoscopic techniques become more popular in children, the indications suitable for their application are also expanding. In this small case series, we compared the outcomes of single port versus multiport surgical technique for Video Assisted Thoracoscopic Surgery (VATS) in Primary Spontaneous Pneumothorax (PSP) in children. While PSP is more common in adults, performing the most minimally invasive techniques to treat children is a benchmark to decrease operating time, opioid usage, and morbidity.

Aim: Comparison of operative outcomes in single port vs multiport VATS for PSP in children.

Methods: This retrospective study of a single surgeon's experienced in thoracoscopic technique over a two-year period reviews thoracoscopic cases for PSP in children (less than 18 years). Seven cases classified into three traditional multiport VATS (MP-VATS) and four single port VATS (SP-VATS). Times were compared between initial chest tube placement, surgery, chest tube removal, discharge, and follow up. Morphine Milligram Equivalents (MME) were calculated for opioids using the opioid conversion guide by the Center for Disease Control.

Results: The median age was 14.88 years [range 12-17 years], but similar between the groups. Both groups had predominant male presence 67% MP and 75% SP. The average time from chest tube placement to surgery was 3.6 days (MP 4.32 vs SP 3.06, p=0.21). Operating time averaged 1.2 hours and was similar between the groups: MP 1.04 vs SP 1.33 hours (p=0.09). The estimated blood loss was higher for MP 5.33ml vs SP 2.25ml (p=0.11). Intraoperative pain medications were delivered weight-based including Ofirmev™ and 0.25% Marcaine™. MME were similar intraoperative and post-operative until chest tube removal. The chest tube removal occurred at 5.54 vs 3.59 days MP vs SP respectively (p<0.05*). Length of stay was 10.46 vs 8.33 days for MP and SP (p=0.30). Averaging a 10 month follow up, one SP patient had a recurrent pneumothorax after chest tube removal, requiring replacement of chest tube, and one MP patient required an additional surgery for contralateral PSP.

Conclusion: In this small case series, outcomes were not significantly different for single port when compared with traditional multiport VATS for PSP. This provides a convincing basis to expand the usage for this technique and analyze with a larger group.

Table 1. Surgery timing and analgesia

	<	Timing	>		in terms of	Morphine Miligram Equivalent>
Procedure	OR Time (hours)	CT removal (days)	Overall LOS (days)	24 hours post operative	Postoperative until CT removal	Surgery & postoperative periods
All cases	1.20	4.43	9.25	0.15	0.28	0.37
MP-VATS	1.04	5.54	10.46	0.19	0.33	0.42
SP VATS	1.325	3.59	8.33	0.12	0.25	0.31
p-value	0.09	0.02*	0.30	0.17	0.40	0.41

P103 PROTECTIVE PNEUMOTHORAX FOR PLEURAL IRRADIATION Spyros B Spyrakos, MD[1]; George Kritselis, MD[2]; [1]General And Maternity Hospital "Elena Venizelou"; [2]Oncocare

Pleural metastases account for the vast majority of malignant lesions of the pleura.The infiltration of the pleura usually manifests as pleural effusion. The most common primaries to result in pleural metastases, beside lung cancer, include: breast cancer, ovarian cancer, lymphoma, gastric carcinoma, invasive thymoma, neuroblastoma, cutaneous malignant melanoma, renal cell carcinoma, bladder cancer, osteosarcoma and endometrial carcinoma.

A 4-year old boy with the history of a desmoplastic retroperitoneal tumour presented with dyspnoea 5 months after the resection of the primary tumour. CT scan of the chest revealed pleural effusion and thoracoscopy showed multiple nodular metastasis in the pleura. The patient was submitted to radiation of the chest. Prior to the irradiation air was introduced to the chest cavity through the chest tube and tension pneumothorax was established until the lung was completely collapsed. At the end of the irradiation the air was gradually removed and the lung was fully expanded. The patient tolerated the procedure without any complications and he did not develop any signs of radiation pneumonitis in the following 6 months after the completion of the treatment.

Radiation induced lung injury has been a treatment limiting factor for patients requiring thoracic radiation. Radiation induced damage to the type I pneumocytes is the triggering factor to initiate early or late phase reactions leading to pulmonary fibrosis.

The concept of protective pneumothorax evolved from the therapeutic use of pneumothorax in pulmonary tuberculosis by Forlanini. Percutaneous creation of a protective pneumothorax has also been applied as a safer approach for needle biopsy of deep lesions in the chest. The establishment of pneumothorax prior to the irradiation of the pleura has never been described. It is safe procedure and the protective effect to the lung is based on the fact that the radiation intensity is inversely related to the square of the distance. Further application of pneumothorax prior to the irradiation of the pleura is required in order to determine its protective role.

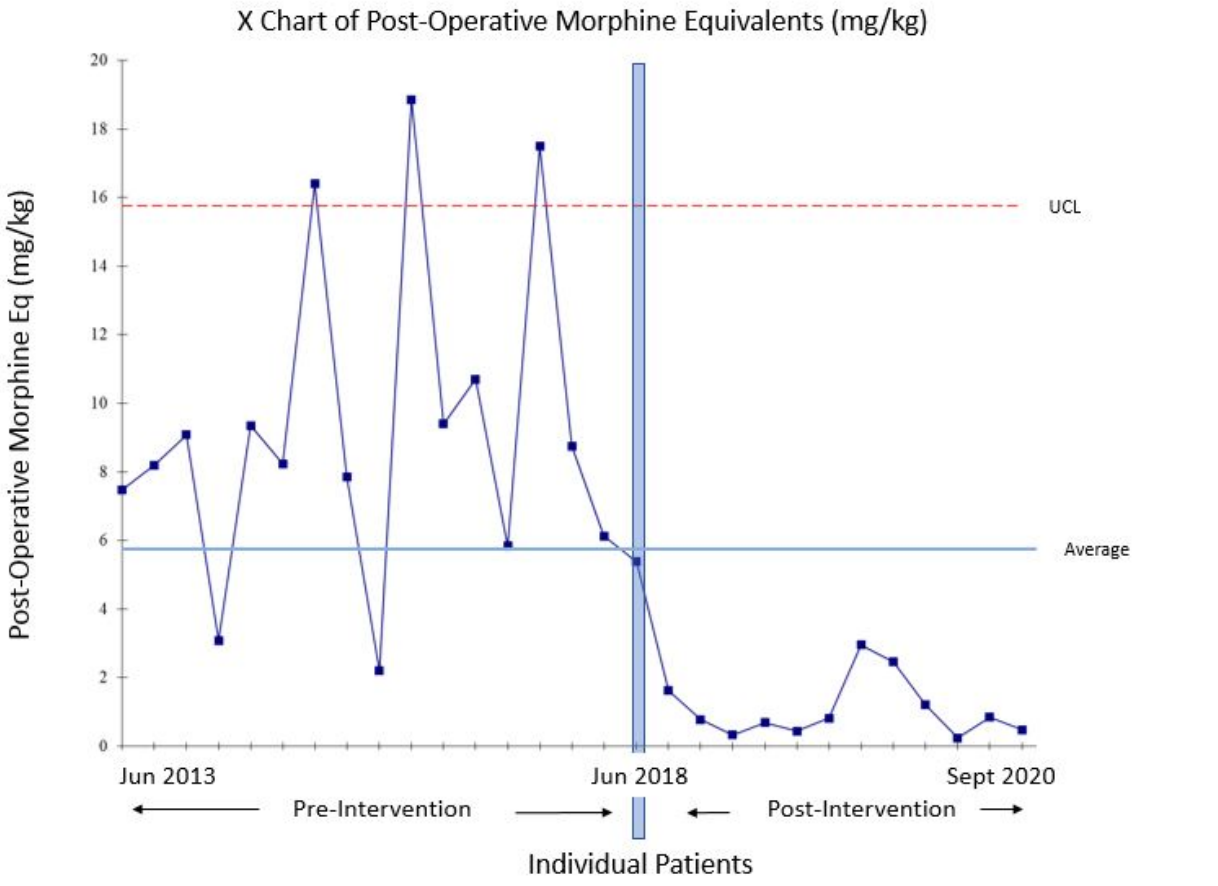
P104 AN ENHANCED RECOVERY PROTOCOL UTILIZING LIPOSOMAL BUPIVICAINE RIB BLOCKS LEADS TO OPIOID REDUCTION IN PATIENTS UNDERGOING MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUM Alicia L Eubanks, MD; Jessica Pollack; David Grabski, MD; Jeffrey Gander, MD; University of Virginia

Objective: A major challenge associated with the Nuss procedure for pectus excavatum repair is post-operative pain control. Enhanced Recovery After Surgery (ERAS) protocols for the Nuss procedure are becoming more common. However, there is a paucity of experience with using liposomal bupivacaine (LB), a long acting local anesthetic, for a rib block in adolescents as part of the protocol. The purpose of our study was to determine whether an ERAS protocol incorporating LB rib block for pain management decreased opioid use after the Nuss procedure. We hypothesized that, compared to historical controls, patients in the ERAS cohort would have equivalent pain control with less opioid administration.

Methods: All adolescent patients undergoing the Nuss procedure for repair of pectus excavatum between 2013 and 2020 at our institution were included. Patients were divided into a pre-intervention historical control cohort (2013-2018) and a post-intervention ERAS cohort (2018-2020). Patients in both groups received scheduled acetaminophen and non-steroidals post-operatively. The post-operative pain management strategy for the pre-intervention cohort consisted of an opioid based PCA with a transition to oral opiates. The post-intervention cohort received pre-operative acetaminophen, celecoxib and gabapentin in addition to peri-operative bilateral rib blocks with 1.3% LB (2.25 mg/kg). Standing gabapentin was continued and patients were given as oral opiates as needed. We performed a before-and-after analysis between cohorts utilizing the Student t-test, Chi-Squared or Wilcoxon Rank Sum Test as appropriate. Additionally, we used process control charts to investigate time trends in cumulative post-operative opioid use.

Results: Twenty-nine patients were included in the study, 16 in the pre-intervention and 13 in the post-intervention cohorts. There was no significant difference in age, gender distribution, or Haller Index between groups. ERAS patients received 85% fewer opioids (Morphine equivalent mg/kg) compared to the pre-intervention cohort (1.40 vs 9.31 MMEq/kg, $p<0.0001$), with no significant difference in postoperative pain scores between groups. Hospital length of stay was decreased by an average of almost a full day among the ERAS cohort (3.46 vs. 4.37 days, $p=0.051$). There were no readmissions for pain control and no evidence of bupivicaine toxicity.

Conclusion: A significant decrease in opioid use and length of stay after the Nuss procedure without increase in patient-reported pain scores was achieved by the implementation of an ERAS protocol for pain management. To our knowledge, this is the first protocol in adolescents utilizing LB for rib blocks.



P105 SINGLE-CENTER EXPERIENCE OF PECTUS EXCAVATUM SURGICAL REPAIR Oleg Godik; Anatolii Levytskyi, MD, Professor; Vlasii Pylypko; Daria Diehtiarova, MD; National Medical University

Introduction: Nowadays pectus excavatum (PE) surgical treatment is a field where innovations are developed and improvements are implemented. A gold standard of treatment that provides a stable deformity correction is Nuss procedure, with retrosternal conduction of pre-modeled bar, its rotation and fixation to the sternocostal complex. The top priority of Nuss procedure is its safety, with all the other clinical benefits of minimally invasive surgery techniques.

Purpose: The aim of the study is to compare the clinical outcome of patients that underwent PE surgical treatment in three different methods, with or without thoracoscopic guidance.

Materials and Methods: Pediatric patients (n=153) with male to female ratio 116:37 were divided 3 groups. Patients of Group 1 (n=61) underwent surgical treatment by means of Nuss procedure modification with subxiphoid approach and tactile control to introduce the bar. Group 2 patients (n=39) underwent Nuss procedure under thoracoscopic guidance where 1 bar with stabilizer was inserted and fixed to the ribs by unabsorbable suture or wire. Group 3 (n=53) patients underwent Nuss procedure under thoracoscopic guidance with two bars (bridge system) without fixation to the ribs.

Patients' average age was 11,3 years and did not vary in 3 groups (p=0,08).

Follow-up period ranged from 1 to 5 years. Kruskal–Wallis test, Chi-square criteria and Dunn criteria were used for multiple on dependent variables by the techniques (tactile control vs. Nuss 1 bar vs. Nuss (bridge system) were performed with p = 0.05.

Results: Results are presented at table 1:

	Group 1(n=61)	Group2 (n=39)	Group 3 (n=53)	P value
Median procedure duration (min)	75 (IQR 70-79)	40 (IQR 38-46)	40 (IQR 35-42)	p<0,001
Blood loss (ml)	87 (70÷115)	10 (4÷18)	10 (4÷30)	p<0,001
Hospital stay (days)	11(10÷13)	8 (10÷13)	6 (10÷13)	p<0,001
Pneumothorax without draining, patients	12	3	4	p=0,052

51 (78.46%) patients of Group 1required drainage of anterior mediastinum for 12-24 hours after procedure, which was not performed for the patients of the second and third groups. Pneumothorax that required thoracocentesis and aspiration occurred in 4 patients of Group 1 and in 1 patient of Group 3. 2 patients of Group 1 required pleural draining, and 1 developed acute pericarditis. No major complications were registered.

Conclusion: While no significant difference was detected in postoperative pneumothorax occurrence rate (p=0,052), it was shown that in all other assessed aspects of patients' procedures and clinical outcomes using of thoracoscopy offered significant advantages for shorter operation duration (p<0,001), less blood loss (p<0,001) and shorter hospital stay. Patients of groups 2 and 3 showed no significant difference between their clinical outcomes.

Thoracoscopic guidance surely benefits the quality of PE surgical treatment, being safe and providing less hospital stay.

P106 A SINGLE-CENTER EXPERIENCE WITH LAPAROSCOPIC RENAL BIOPSY IN CHILDREN: A MUCH-DEFENDED CHOICE Ghada Habachi; Marwa Messaoud; Myriam Ben Fredj; Sabrine Ben Youssef; Sabrine Ben Ammar; Sami Sfar; Sana Mosbahi; Samia Belhassen; Rachida Laamiri; Amine Ksia; Lassaad Sahnoun; Mohsen Belghith; Abdelatif Nouri; Mongi Mekki; Department of Pediatric Surgery Monastir Tunisia

Objectives: Renal histological evaluation is an essential element in defining the etiology, treatment, and prognosis of various kidney and systemic diseases. In spite of the progression of percutaneous renal biopsy indications, we still defend the laparoscopic approach in children with more accessibility safety and acceptance. We represent our experience with this procedure by studying 95 children who underwent laparoscopic biopsy.

Materials and methods: A retrospective study was conducted in the department of pediatric surgery of Monastir between 2002 and 2020. We reviewed the epidemiological factors, the indications, outcome, and complications of laparoscopic renal biopsy.

Results: A register of 95 children were included in this study aged between 23 days and 18 years (mean age 41 months). The sex ratio was 0.7 with 42% females and 48% males. The indications for renal biopsy were nephrotic syndrome (42%), and then asymptomatic hematuria (23%) followed by proteinuria (18%), acute (7%) and chronic preterminal kidney injury (8%). In the case of nephritic syndrome (NS): 17.5% had a frequent relapsing SN, 20% had an atypical age of presentation, 15% had a steroid-dependent syndrome and 47.5% had a steroid-resistant syndrome. In 77% of cases, the biopsy involved the left kidney. Mainly a single port was used (61%). The biopsy was retroperitoneal in 89 cases. The 6 remaining cases had a simultaneous procedure programmed such as drainage, placing a peritoneal dialysis catheter, or liver biopsy.

All the fragments were ad equally removed and studied. Most commonly the glomerulonephritis (34.5%) then glomerulosclerosis (10.5%) and Finnish type congenital NS (5.2%). The specimen was normal in 52% of cases. Only two complications occurred. It was a peritoneal breach. No bleeding complication was noted.

Conclusion: Laparoscopic kidney biopsy is a safe choice that prevents the complications from a percutaneous approach and with less contraindication and allows a less invasive approach with a direct vision of the kidney.

P110 SHOULD WE PRACTICE SYSTEMATICALLY OOPHOROPEXY TO PREVENT RECURRENCE OF OVARIAN TORSION IN CHILDREN Senda Houidi, Resident in Pediatric Surgery; Arije Zouaoui, Resident in Pediatric Surgery; Fatma Thamri, Resident in Pediatric Surgery; Oussema Mehrzi, Resident in Pediatric Surgery; Fatma Fitouri, Medical Doctor; Sondes Sahli, Medical Doctor; Yosra Kerkeni, Medical Doctor; Riadh Jouini, Medical Professor; Departement of Pediatric Surgery A, Hospital of Children, Tunis,Tunisia

Introduction: There are no guidelines or consent statements with regards to surgical approach of ovarian torsion in children. Oophoropexy remains controversial. Through a review of our series and literature we tried to assess the efficacity of oophoropexy in obviating recurrent torsion and it's possible long term effect.

Methods: We performed a retrospective study of 50 girls operated for ovarian torsion from January 2010 to November 2020. Retrieved information included epidemiological data, surgical methods, recurrence and follow-up.

Results: The ages of patients ranged from 6 days to 13 years, with a mean age of 10 years old. Thirty-four percent of patients were menarche. Fifteen patients described in their history, a recurrent pelvic pain. Thirty-four patients had a pelvic Doppler –Ultrasound showing images suggrstive of ovarian torsion in 29%.

Median duration of symptoms before first presentation was 51 hours and median interval from hospital admission to surgery was 4 hours. The right ovary appears to be more likely torsed than the left(35 vs 15). Open surgery and laparoscopy was done in 10 and 40 girls respectively.

Detorsion of twisted ovary (n=49) with resection of ovarian cyst(n=10), oophorectomy of severely affected ovary(n=1) and ispsilateral oophoropexy by suturing the ovary to the pelvic sidewall(n= 20)were performed .on follow up one contralateral torsion recurrence was noticed in a patient presenting a year ago a torsion on a healthy ovary. Detorsion with bilateral oophoropexy were done.

Conclusion: The occurrence of even single episode on recurrence leads us to consider oophoropexy of the ipsilatéral and contralateral ovary as a raisonnable way to prevent recurrences in patients at higher risk of recurrent ovarian torsion. Future reason should focus on techniques and long-term outcomes of oophoropexy.

P111 MANAGEMENT OF ACUTE OBSTRUCTIVE UROPATHY IN CHILDREN AND ITS OUTCOME AT A TERTIARY CARE CENTRE: STUDY OF 5 YEARS Milind Joshi, Professor; Pankaj Chaudhari; Ruturaj Kakad; Shriyash Sonawane; Sagar Vyas; Devendra Chaudhari; Shivaji Sadulwad; Dr Ulhas Patil Medical College & Hospital, Jalgaon

Introduction: Acute obstructive uropathy due to urinary calculi is a difficult proposition due to multimodal involvement. It needs close cooperation between pediatric surgeon/urologist, pediatrician, pediatric nephrologists, critical care physician. We present our experience of management of these children at a tertiary care center over a period of 5 years and its outcome.

Aim and objectives: Study of management of acute obstructive uropathy due to stone in children below 18 years of age

Methods: All the patients below 18 years presented to pediatric surgery unit due to acute obstructive uropathy were operated by single surgeon by different endourological procedures and were followed up

Results: 37children were operated for acute obstructive uropathy between 2014- 2019 by a single surgeon. 12 children had bilateral acute obstruction and rest had unilateral obstruction. 14 had renal calculi, 11 had renal and ureteric calculi, 18 had ureteric calculi & 5 had vesical calculi. Per cutaneous nephrolithotomy, ureterolithotripsy, percutaneous cystolithotripsy, open surgeries were performed for the management of calculi.

Results: All the patients had successful surgeries. 32 patients had excellent recovery. 3 patients continue to have chronic renal insufficiency in spite of removal of calculi, 2 patients died due to disease.

Conclusion: Acute obstuctive uropathy in children needs aggressive, multimodal approach for good outcome.

P112 ROLE OF LAPAROSCOPY IN THE TREATMENT OF VARICOCELES IN CHILDREN Asma Slimani, Residente in pediatric surgery[1]; Eya Lamloum, Residente[2]; Asma Jabloun, Associate Professor[1]; Aida Daib, Associate Professor[1]; Hellal Youssef, Professor agrege[1]; Nejib Kabar, Professor[2]; [1]Hôpital Habib Thameur; [2]Hopital Habib Thameur

Introduction: Varicocele is defined by an anomaly of the venous return of the spermatic vein in which a retrograde flow is formed. In children, pain and asymmetry in testicular growth are usually the revealing symptoms. The principle of treatment is the obliteration of pathological veins. Several routes have been described, including the laparoscopic route.

Goal: Evaluate the results of laparoscopic treatment of varicoceles in children.

Method: This was a retrospective study with 18 cases of varicocele operated in our department, including 7 cases operated by laparoscopic way over a period of 5 years, from January 2015 to January 2020.

Results: The average age of our patients was 13 years with extremes ranging from 8 years to 16 years. It was a left varicocele in all cases. The indication for surgery was chronic testicular pain in all cases. The testicular ultrasound showed 85.72% of grade III varicoceles, 14.28% of grade II. Minimally invasive surgery was performed by transperitoneal laparoscopy. The operation consisted of identification, dissection and then coagulation of the spermatic veins. The average duration of the intervention was 26 min. The postoperative course was marked by the disappearance of the pain, after an average of 15 days. No recurrence in all cases.

Conclusion: Laparoscopy allows very good exploration of all the venous networks, in particular the deferential and allows selective ligation of the spermatic veins. This approach is a good alternative to open surgery, the short-term results are satisfactory clinically and morphologically, but long-term follow-up is essential to properly study the impact on fertility in adulthood.

P113 A NATIONAL SURVEY STUDY AMONG PEDIATRIC SURGEONS ON INGUINAL HERNIA REPAIR TECHNIQUES IN CHILDREN Kutay Bahadir; Firat Serttürk; Ergun Ergün; Gülnur Göllü; Ege Evin; Murat Çakmak; Ufuk Ates; Ankara University Faculty of Medicine, Department of Pediatric Surgery

Aim: Inguinal hernia(IH) is one of the most common surgical pathologies treated by pediatric surgeons. Although the standard procedure has been considered open repair for a long time, the number of pediatric surgeons who prefer laparoscopic techniques is increasing day by day. In this study, it was aimed to determine how pediatric surgeons in our country approach patients with IH and manage the treatment process.

Methods: After the literature review controversial issues on IH repair were identified and a questionnaire was prepared to reveal the current situation. The questionnaire was delivered to members of Turkish Association of Pediatric Surgery on the official website of the association.

Results: The survey was directed to 420 people, 92 people returned with the answers to the questionnaire. Thirtysix (%39) of the surgeons prefer the laparoscopic method for IH repair. In a multi-answer question in which the reason for choosing open surgery was questionned, the most frequent answer was to be more experienced and to have more cumulative knowledge on open repair method. According to survey, the greatest advantage of laparoscopy was stated to be the better evaluation of the contralateral inguinal canal (n=16, %44,4). Twelve of surgeons (%33) who performed laparoscopic treatment in the selection of patients stated that gender is important and prefer laparoscopic surgery for female patients. Thirty percent (n = 11) of the participants stated that they prefer laparoscopy in patients between 3 months and 13 years old, while the rest prefer laparoscopy at all ages.

Conclusion: Thirty nine percent of surgeons in Turkey prefer laparoscopic repair. Open repair is stil preferred in ourcountry. There is stil no consensus on perfect method and patient selection yet.

P114 A GIANT OVARIAN MUCINOUS CYSTADENOMA IN A 14-YEAR-OLD PREMENARCHAL GIRL: A CASE REPORT Ammar Saloua, MD[1]; Dghaies Rim, MD[1]; Zitouni Hayet, MD[1]; Chtourou Rahma, MD[1]; Cheickrouhou Taycir, MD[1]; Jarraya Anouar, MD[2]; Mhiri Riadh, Professor, Doctor[1]; [1]Department of Pediatric Surgery, Hedi Chaker Hospital, Sfax, Tunisia; [2]Department of Anesthesilogy and Reanimation, Hedi Chaker Hospital, Sfax, Tunisia

Background: Mucinous cystadenomas (MCAs) are benign epithelial ovarian tumors that occur rarely in children and adolescents, and extremely unusual before menarche. It usually presents with vague, unspecific abdominal symptoms. If not detected early, they have the potential to grow to a substantial size and can present with huge abdominal distention leading to various compression symptoms.

Case Report: We report the case of a 14-year-old girl, followed for hypothyroidism, who presented a urinary tract infection. Physical examination revealed a pelvic mass. Ultrasonographic examination revealed an abdominopelvic cystic mass measuring 23 cm exerting compression on the left urinary tract. Pelvic MRI concluded to a huge left ovarian cystadenoma. This Cyst was surgically removed. A pfannestiel incision was used. The preservation of normal left ovarian tissue was not possible. The final histopathological report showed a benign ovarian mucinous cystadenoma.

Conclusions: Mucinous cystadenomas are benign neoplastic diseases that can reach a massive size. They are rarely seen in the pediatric population. As children and adolescents typically have their childbearing years ahead of them, conservative therapy is indicated. This case report highlights the importance of early detection and management of adnexal masses in order to decrease preoperative and postoperative complications and to preserve the gonadic parenchyma..

P115 WHAT IS THE BEST LAPAROSCOPIC TREATMENT MODALITY FOR NON-PALPABLE TESTES? A LITERATURE REVIEW AND CLINICAL RESULTS Fatma Thamri, Resident in Pediatric Surgery; Rim Dghaies, Resident in Pediatric Surgery; Senda Houidi, Resident in Pediatric Surgery; Arije Zouaoui, Resident in Pediatric Surgery; Fatma Fitouri, Medical Doctor; Sondes Sahli, Medical Doctor; Yosra Kerkeni, Medical Doctor; Riadh Jouini, Medical Professor; Department of Pediatric Surgery "A", Hospital of Children, University of Tunis El Manar, Tunis Tunisia

Background: The undescended testis represents one of the most common disorders of childhood. Nearly 20% of the non-scrotal testis is not palpable and necessitate a laparoscopic management. However, the best operative intervention for non-palpable testes (NPT) has not been standardized as yet, making the ideal laparoscopic approach challenging and controversial.

Objective: The aim of this study was to evaluate outcomes of laparoscopic approaches to determine the best surgical intervention.

Methods: To meet our goal, literature review was performed, analyzing laparoscopic treatment modalities for intra-abdominal testes (IAT) and its results. Additionally, we reviewed IAT cases treated in our Department between January 2013 and December 2019 and evaluated the outcomes of different operative interventions.

Statistical analysis was performed with SPSS 20.0

Results: The literature supports the laparoscopic two-stage Fowler-Stephens technique in the management of IAT, especially when the child is over 2 years old and the testicles are high located.

In our experience, we had better results with Shehata technique and one stage laparoscopic orchidopexy. In fact, in the twenty-three five-year-old middle aged patients operated for IAT, 8 patients (34,8%) had staged Fowler-Stephens orchidopexy, 9 (39,1%) had one stage laparoscopic orchidopexy, 4 (17,4%) had Shehata technique and 2 (4,9%) had laparoscopic orchiectomy because of testicular atrophy. After a mean follow-up period of 3,7 years [2-7 years], testicles treated with the Shehata technique and one stage laparoscopic orchidopexy were of good size and viable. The laparoscopically staged Fowler-Stephens orchidopexy group showed atrophy in one testis (12,5%).

Conclusion: The laparoscopic approach is still the first procedure to face a NPT, for diagnosis and therapeutic. The surgical technique for non-palpable testes is still controversial and depends on the location of the testicles.

P116 THE ROLE OF LAPAROSCOPY IN THE MANAGEMENT OF PATIENTS WITH VANISHING TESTES Fatma Thamri, Resident in Pediatric Surgery; Rim Dghaies, Resident in Pediatric Surgery; Arije Zouaoui, Resident in Pediatric Surgery; Senda Houidi, Resident in Pediatric Surgery; Fatma Fitouri, Medical Doctor; Sondes Sahli, Medical Doctor; Yosra Kerkeni, Medical Doctor; Riadh Jouini, Medical Professor; Department of Pediatric Surgery "A", Hospital of Children, University of Tunis El Manar, Tunis Tunisia

Background: Vanishing testis syndrome is defined as the absence or an incomplete development of the testis in boys with normal external genitalia. Generally, the diagnosis of such an anomaly is made by an exploratory laparoscopy.

The aim of our study was to determine the place of laparoscopy in the evaluation and the management of vanishing testis in pediatric patients.

Patients and methods: We retrospectively analyzed all data of patients who underwent laparoscopy for nonpalpable testes between January 2012 and June 2019 and determined those with vanishing testes. The vanishing testis was diagnosed when no testicle was palpable on physical examination under anesthesia with the presence of blind ending vas and/or vessel in exploration.

The role of laparoscopy in diagnosing and treating those testes was evaluated.

Results: Laparoscopy was performed for 41 boys to localize 45 nonpalpable testes, among which 16 were vanished. The mean age of patients with vanishing testes was 7,7 years [2,3 – 13,8 years]. The testis was right-sided in 9 (56,3%) and left-sided in 7 (43,7%). Of patients with vanishing testes, 3 patients had blind-ending vas and vessels near from a closed internal inguinal ring, 11 had blind-ending vas and vessels terminated in the abdomen with a testicular nubbin and 2 without an identifiable nubbin. The 11 patients with remnant testicular nubbin had orchiectomy. For other patients, no therapeutic attitude has taken place. No patient had an inguinal exploration. Histological evaluation resulted in identification of non-viable tubular structures in all cases.

Conclusion: Laparoscopy is safe and accurate in the evaluation of vanishing testes in children. It allows direct visualization and definitive management of a remnant testicular nubbin avoiding an unnecessary inguinal incision.

P117 THE ROLE OF ENDOSCOPY IN PEDIATRIC FEMALE UROGENITAL DISORDERS Ben Ammar Sabrine[1]; Ben Fredj Meriem[1]; Massoud Marwa[1]; Toumi Afef[2]; Ben youssef Sabrine[1]; Sfar Sami[1]; Boukhrissa Nouha[1]; Mosbahi Sana[1]; Belhassan Samia[1]; Laamiri Rachida[1]; Ksiaa Amine[1]; Sahnoun Lasaad[1]; Mekki Mongi[1]; Belghuith Mohssen[1]; [1]University Hospital Of Monastir; [2]Department of pediatric surgery

Introduction: Various urogenital complaints are encountered in the pediatric female population such as congenital anomalies and their reconstruction depends mainly on accurate preoperative illustration. As a diagnostic technique endoscopy allows the description of the fundamental anatomy of these anomalies.

Objective: to review endoscopy in female patients with urogenital malformations in order to clarify its usefulness in diagnosis devising subsequent therapeutic strategies

Patients and methods: it is a retrospective review of all female patients under 15 year old who underwent endoscopy for urogenital anomalies in the pediatric surgery‘s department between January 2010 and November 2020.

Results: 16 girls underwent endoscopic evaluation for urogenital malformations. All procedure was under general anesthesia and in dorso lithotomic position. A 3 mm endoscope was used. The mean age at the time of technique was 18 months. Indications were disorders of sex development (DSD) in 8 cases, complete cloacal anomalies in 4 cases, urogenital sinus in 3 cases, and in 1 case of caudal duplication.

The mean age in the group of DSD was 14 months, endoscopy was carried out immediately before surgery to explore and to guide dissection, it allows the determination of the vaginal opening’s level and the placement of a catheter in all cases. For complete cloacal anomalies colostomy was firstly performed for all children, by endoscopy the confluence was located in 3 cases(3/4), in the 4th patient who had 2 endoscopic procedures only the vaginal orifice was found. In the group of urogenital sinus, the length of the common channel was estimed in two cases (2/3), in one case it was estimated at 1 cm and it shows 2 small blind diverticula which correspond to 2 vaginal cavities ; in the 3th case endoscopy had revealed many findings of unclear significance. Endoscopic‘s finding in caudal duplication were 2 communicating urinary orifices with a single urethra and a single bladder, 2 communicating vaginal orifices with one vaginal cavity.

Only 2 patients (12.5%) underwent more than 1 procedure and no complication was noted.

Conclusion: Among the various modalities to delineate the urogenital anomalies, endoscopy may add valuable information to the assessment before the reconstruction of this challenging condition but this technique require considerable skill and experience.

P118 SINGLE INCISION PEDIATRIC ENDOSCOPIC SURGERY ORCHIDOPEXY (SIPESO) SHEHATA'S TECHNIQUE FOR IMPALPABLE TESTES: CASE REPORT Ameen Alsaggaf, MD[1]; Mohamed Shalaby, MD[2]; Yazeed Owiwi, MD[1]; Enaam Raboei, MD[3]; [1]KFAFH; [2]Tanta University, Egypt; [3]Medical Reference Center

Shehata laparoscopic orchiopexy for intra-abdominal testis is a recognized and frequently practiced technique. The traction technique is based on elongation of the testicular vessels, in contrast to Fowler-Stephens technique in which the testicular vessels are cut and divided.

SIPES technique is gaining popularity and adopted in our institution for most laparoscopic procedures.

We report here one-year-old boy with left intra-abdominal testis managed by Shehata’s technique in two staged SIPES.

To our knowledge, this is the first case of Shehata technique to be managed through single incision laparoscopic technique.

P120 SIMPLIFIED STENTING METHODS DURING LAPAROSCOPIC PYELOPLASTY IN CHILDREN. Rustem Bishmanov, PhD[1]; Mirzakarim Alchinbayev, MD, Prof[2]; [1]Scientific Center of Paediatrics and Children Surgery; [2]The Asfendiyarov Kazakh National Medical University

We are dedicated to evaluate a simplified methods for ureteric stent insertion during laparoscopic pyeloplasty in children. After detect the cause of obstruction, UPJ resection was made. At that stage, we performed antegrade extracorporeal installation of stent by removing the proximal ureter through the lower skin defect after extraction of the trocar. That allowed for successful stenting under precise tactile and visual control. Then the ureter was reintroduced back into abdominal cavity. Dismembered LP by Hynnes-Andersen technique was made using 6/0 absorbable monofilament suture. The second method of ureteric stenting: after the anastomosis of posterior pelvis wall is complete, puncturing with Veress needle between the optics and the upper trocar. The stylet was removed, after that we can introduce a stent through the needle hole with ensure accurate tactile sensations, maximum control over the stent direction. Since January 2017, we have used this method in 32 children with congenital hydronephrosis were operated by LP. The proposed methods of ureteric stenting allowed reducing that stage to 3-10 minutes, with successful outcome in all cases. The children were discharged 5-7 days after surgery. No conversion to open surgery had to be performed. Our experience shows that LP in children with congenital HN reduces the surgical burden on the patient, improves post-surgery quality of life. The proposed methods of antegrade intraoperative stenting significantly reduce the duration of surgery while improving the success rate of this key manipulation.

We obtained approval from our institutional internal review board (The Asfendiyarov Kazakh National Medical University, Institutional Ethics Committee No. 414/17), all parents provided written informed consent and all patients provided written assent when appropriate. All children underwent diagnostic testing including ultrasound examination of the urinary system, voiding cystography, and excretory urography. All patients were diagnosed with unilateral congenital HN. The indications for LP included HN of third degree with a healthy contralateral kidney, without significant renal compromise (GFR higher than G3 or CKD lower than 60 ml/min/1,73m2), fusion abnormality or kidney position anomalies.

P121 LAPAROSCOPIC URETERO-PYELOSTOMY FOR DUPLICATION ANOMALIES Sugandh Chadha, Doctor; Ramesh babu Srinivasan, Doctor; Sri Ramachandra Institute of Higher Education and research

While laparosopic heminephrectomy is performed for poorly functioning moieties, Laparoscopic reconstruction with renal preservation is feasible when the affected moiety is functioning. Laparoscopic uretero ureterostomy at the level of pelvic brim is often reported. Methods: We retrospectively reviewed the records of the patients treated between 2017 & 2019 with renal duplication anomalies, and a preserved function. Five such patients were identified. All underwent laparoscopic high internal diversion after placing a retrograde double J stenting of receiving moiety. Stents were removed 8 weeks post-op. Age Diagnosis Procedure Case 1 6m; female: UTI Left lower moiety VUR + PUJO Lap lower to upper pyelopyelostomy Case 2 4m; Male: UTI Left upper moiety HUN; ectopic ureter Lap upper to lower ureteropyelostomy Case 3 2yr; Female: UTI Right upper moiety PUJO Lap upper to lower pyelopyelostomy Case 4 2yr; male: UTI Right lower moiety VUR Lap lower to upper ureteropyelostomy Case 5 6m; female: UTI Left upper moiety PUJO+ ectopic ureter Lap upper to lower pyelopyelostomy Results: All patients had uneventful post-operative recovery and showed clinical and radiological improvement at 1-year follow-up with no further episodes of UTI. The mean operative time was 155 (130-170) minutes and mean time to discharge was 4 (2-5) days. Conclusion: The management of the duplex renal systems should be individualized for every patient. In the presence of functioning moiety, laparosopic reconstruction can accomplished by pyelo-pyelostomy or pyelo-ureterostomy. This approach gives wider anastomosis than laparoscopic uretero ureterostomy where the receiving ureter is often narrow potentially risking the normal moiety.

P122 DOES ENDOSCOPIC PUNCTURE OF URETEROCELE ON SIMPLEX URETERS PROVIDE A DEFINITIVE TREATMENT IN CHILDREN ? Afef Toumi[1]; Sabrine Ben youssef[1]; Nouha Boukhrissa[1]; Dorsaf Makhlouf[1]; Mariem Ben fredj[1]; Sami Sfar[1]; Nahla Kechiche[1]; Rachida Lamiri[1]; Samia Belhassen[1]; Amine Kisa[1]; Lasaad Sahnoun[1]; Mawen Baccar[2]; Sawsen Chakroun[2]; Mekki Mongi[1]; Mohsen Belghith[1]; [1]Pediatric's Surgery Department-Monastir; [2]Reanimation and Anesthesiology Department-Monastir

Introduction: Ureterocele is a rare urologic disorder characterized by pseudocystic dilatation of the terminal submucosal ureter. Most cases of ureteroceles are associated with complete ureteral duplicity and ureterohydronephrosis, whereas ureteroceles on simplex ureters (USU) are rare. The goals of treatment are preservation of renal function, elimination of obstruction, prevention of urinary tract infection, and maintenance of continence.

Aim: The purpose of this study is to evaluate the success of endoscopic puncture as a primary treatment modality of ureterocele on simplex ureters.

Patients and methods: We have retrospectively evaluated all patients who underwent endoscopic puncture (EP) of USU at pediatric surgery department of Fattouma Bourguiba hospital of Monastir over the last 15 years. Demographic information, including age at EP, clinical manifestations, radiologic examinations, surgical technique, perioperative complications and postoperative follow-up were recorded.

Results: From 2005 to 2020, 21 patients (13 females, 8 males) were treated with primary endoscopic puncture of a USU. The mean age of the patients was 2.3 years (range 7 days to 12 years). A febrile urinary tract infection was the most common presentation of ureterocele (66,6 %). Antenatal ultrasound detected the ureterocele in 3patients and fetal ureterohydronephrosis in 12 cases and in the rest of the cases no antenatal diagnosis was done. Renal ultrasonography confirmed the diagnosis of USU in 90,5%. A total of 22 single system ureterocele were operated. Puncture is made high enough on the ureterocele, away from the bladder neck to avoid reobstruction at the bladder outlet. The mean time for EP was 30 minutes. None of these children have presented intra-operative complications. Mean follow-up was 4,6 years. US examination confirmed complete decompression of the ureterocele in 20 children and showed improvement or resolution of ureterohydronephrosis. We reported one case of recurrence confirmed on post-operative ultrasound

Conclusion: Our data show that EP of ureterocele is a durable and long term effective procedure in vast majority of the children. Furthermore, an improvement in instrumentation allows the surgeon to drain the ureterocele without creating any VUR. Prenatal diagnosis of ureteroceles is essential to plan early multidisciplinary care to avoid long-term renal consequence

P123 ABOUT TRANS-PERITONEAL LAPAROSCOPY NEPHRECTOMIES IN CHILDREN Arije Zouaoui; Sondes Sahli; Oussama Mehrzi; Senda Houidi; Riadh Jouini; Departement of Pediatric Surgery A, Hospital of Children, Tunis,Tunisia

Introduction: Laparoscopic nephrectomy in children has grown in recent years and its indications continue to expand.

Objective: We report our experience in coelioscopic nephrectomy by trans-peritoneal route with analysis of its feasibility and results. Patients and Methods: Retrospective study of 13 transperitoneal laparoscopic nephectomies, collected in the paediatric surgery department ‘A” of the Tunis Children’s Hospital, between May 2007 and November 2020.

Results: These were 10 girls and 3 boys. The age of the patients ranged from 9 months to 12 years (less than 2 years in 2 cases). The non-functional kidney was left in 4 cases. The indication of nephrectomy was multi-cystic renal dysplasia, an abnormality of the pyelo-ureteral junction and vesico-ureteral reflux. The coelioscopic first was trans-peritoneal in all cases, with the introduction in ‘open-coelio’ of an umbilical optical trocar (5 mm: 5 cases; 10 mm: 2 cases) and 2 trocarts operators in the hypochondrium and iliac fossa. The resuscitation pressure of the pneumoperitoine ranged from 8 to 10 cm of water. The average duration of the intervention was 165 minutes (85 to 250 minutes). No incidents were observed per-operative. For dysplastic kidneys, the largest cysts were punctured into trans-peritoneal. The piece was extracted through the orifice of the iliac trocart, enlarged on demand. A drainage of the renal chamber was left in place in only one case, because of the large volume of the dysplastic kidney. The average stay was 2 days and the surgical suites were simple in all cases.

Conclusion: The first laparoscopic peritoneal nephrectomy is feasible in children and may represent an alternative to open-pit surgery. Its benefits are manifold. Further studies are needed to compare these results with those of lomboscopia and posterior first.

P124 A COMBINED ENDOSCOPIC TRANSURETHRAL AND SUPRAPUBIC APPROACH FOR THE REMOVAL OF 178 MAGNETIC BALLS FROM THE BLADDER OF AN ADOLESCENT

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Introduction: Transurethral insertion of a variety of foreign bodies into the urinary bladder has been reported over the decades. Magnetic balls inside the bladder have occasionally been detected in adults. As the modern toys often consist of very small parts, the foreign bodies can be found in almost every cavity of a child's body. An emergency treatment of a retained foreign body within the urethra and bladder is an uncommon clinical scenario in pediatric urology. Placement of an object into the urethra is known as a "urethral sounding" and encompasses a sexual practice performed to heighten arousal and pleasure.

Case description: A 15-year-old boy presented to the emergency room with lower abdominal pain and dysuria. His medical history was uneventful and he denied any "extraordinary" circumstances. Except for a mild suprapubic tenderness there were no other signs on physical examination. An abdominal plain X ray revealed a radio-opaque shadow in the region of the bladder. The patient was taken to the operating room and an offset pediatric cystourethroscope (13F) was used as the initial procedure. Numerous small magnetic balls forming a magnetized cluster were found in the bladder. Only five balls could have been removed one by one while employing a grasping forceps. To avoid an urethral injury the procedure was ceased. On the following day a 22 Fr resectoscope was used but endoscopic transurethral removal of the balls proved to be impossible because of a huge number of magnets and their interactions with the metallic sheath of the instrument. During the same session the bladder was filled up with physiologic saline and the disposable 5mm plastic trocar was introduced suprapubicly under direct visual control. Such a combined approach allowed for all magnets to be successfully removed with a 5 mm grasper. The X ray confirmed no residual foreign bodies.

Summary: Small magnetic balls are dangerous new toys in the pediatric population as they can be introduced through almost every "open" orifice. Magnetic foreign bodies might bring additional risks and they should be probably removed as soon as possible. The transurethral approach seems to be the most straight forward procedure for removing any intravesical foreign bodies. However, the lumen of the urethra in children is too small to allow using a bigger size instrument and long lasting manipulation can bring an additional risk of urethral injury. Furthermore, the rigid cystoscopes are made of metal which causes interaction with a magnetic foreign body. We believe a combined endoscopic suprapubic and transurethral access to the bladder to be optimal in the management of a large number of magnetic balls the in urinary bladder in children.

Videos will be provided during presentation.

P125 RISK FACTORS FOR RECURRENT URETEROPELVIC JUNCTION OBSTRUCTION AFTER PEDIATRIC LAPAROSCOPIC PYELOPLASTY: A SYSTEMATIC REVIEW AND META-ANALYSIS Fatma Thamri, Resident in Pediatric Surgery; Senda Houidi, Resident in Pediatric Surgery; Oussema Meherzi, Resident in Pediatric Surgery; Yosra EL Mansouri, Resident in Pediatric Surgery; Fatma Fitouri, Medical Doctor; Sondes Sahli, Medical Doctor; Yosra Kerkeni, Medical Doctor; Riadh Jouini, Medical Professor; Department of Pediatric Surgery "A", Hospital of Children, University of Tunis El Manar, Tunis Tunisia

Background: Recurrent ureteropelvic junction obstruction after pediatric laparoscopic pyeloplasty is a serious complication for which treatment remains challenging. To avoid this unfortunate evolution, some authors have attempted to determine the predictors of failure after laparoscopic pyeloplasty.

Objective: The aim of this study was to systematically review the literature to summarize and assess the potential risk factors for ureteropelvic junction obstruction recurrence after surgery.

Methods: A systematic literature searches of the EMBASE, MEDLINE and COCHRANE libraries was conducted to find studies on laparoscopic pyeloplasty in children, published between 2010 and 2019. Consequently, 43 non duplicated studies were identified. Among those latter, studies that are interested in the predictors of surgical treatment failure were included, and the various risk factors were noted. These factors were divided into pre-, per and post-operative factors.

Statistical analysis was performed with SPSS 20.0 and p-value was fixed to 0,05.

Results: We identified 10 publications, that strictly met our eligibility criteria. The total number of patients having had laparoscopic pyeloplasty was 3992, in whome 227 patients (5,7%) had a failed one. Mean age at operation and the mean follow-up time after pyeloplasty was 31.2 (+/- 28.5) and 42 (+/- 37.7) months.

Pre-operative predictors of failure were: age <6 months (p<0,01), presence of preoperative diversion (p=0,02), preoperative pyelography (p=0,044) and decreased cortex/pelvis ratio in renal ultrasound (p=0,034). Per-operative predictors of failure were: decreased parenchymal thickness (p=0,02) and the lack of stenting (p<0,01). Among the post-operative factors studied, presence of early and late complications (p < 0.001 and p=0,005 respectively) after pyeloplasty was significantly related to recurrence.

Conclusion: Studies on predictors of failure in pediatric laparoscopic pyeloplasty are lacking. The need for multi-center studies is required to determine all the risk factors for recurrent ureteropelvic junction obstruction.

P126 CAN ENDOSCOPIC APPROACH BY SUBURETERAL DEXTRANOMER/HYALURONIC ACID INJECTION BE A FIRST LINE TREATMENT IN THE MANAGEMENT OF VESICOURETERAL REFLUX IN CHILDREN? Afef Toumi; Sabrine Ben youssef; Nouha Boukhrissa; Salma Mani; Mariem Ben fredj; Sami Sfar; Nahla Kechiche; Sana Mosebhi; Rachida Lamiri; Samia Belhassen; Amine Ksia; Lasaad Sahnoun; Mongi Mekki; Mohsen Belghith; Pediatric's Surgery Department-Monastir

Introduction: Vesicoureteral reflux (VUR) is the most common urologic anomaly in childhood, affecting 1% of the paediatric population. Endoscopic treatment has become an established alternative to open surgery for the management VUR in children. We present our experience in the endoscopic treatment of VUR.

Methods: We have performed a retrospective study including patients that underwent endoscopic treatment for VUR in the department of pediatric surgery of Fattouma Bourguiba Hospital between 2005 and 2020. Ultrasound was performed 3 months after intervention and once a year after. Voiding cystourethrography was practiced in case of the occurrence of urinary tract infection or ultrasound abnormalities.

Results: Fifty-one cases were collected and divided into 33 girls and 18 boys. Reflux was unilateral in 29 cases and bilateral in 22 cases (73 ureters). High grade VUR was noted in 24 cases. 7 ureters were injected with polytetrafluorethylene (Teflon) and 66 ureters with dextranomer/hyaluronic Acid (Deflux or Dexell). The overall resolution after endoscopic injection was 75% (73,1% for low and intermediate grade reflux versus 42,3% for High grade reflux) and the overall improvement of the grade of reflux was 4,6%. No patient benefited from second injection. Vesicoureteral reimplantation was performed in 14 patients. Of a total of 16 operated ureters, 10 meatus were gaping of which 8 were ectopic. This procedure did not require hospitalization and patients were discharged within 24 hours. The evolution was uncomplicated in all cases. The mean follow up was 6 months to 3 years.

Conclusion: Endoscopic treatment of VUR is a minimally invasive, efficient and safe alternative to open surgery mainly for low and intermediate grade reflux. However, its high cost limits its use as well as the repetition of injections in our country. This endoscopic injection may be routinely recommended as a first-line treatment for VUR following a short period of prophylactic antibiotic treatment.

P127 CONGENITAL URETHRAL POLYPS IN CHILDREN: REPORT OF 4 PATIENTS Salma Mani; Nahla Kechiche; Rachida Lamiri; Afef Toumi; Nouha Boukhrisaa; Sami Sfar; Mariem Ben Fredj; Ben Youssef Sabrine; Samia Belhsan; Amine Ksia; Lassaad Sahnoun; Monji Mekki; Mohsen Monji; Department of Pediatric Surgery Monastir

Introduction: Urethral polyp is an uncommon lesion of congenital origin. It often presents in the first decade of life with obstructive symptoms. It has been often described in boys. Their occurrence in girls is exceptional The posterior urethra is the predominant location. Solitary polyps are called different names, such as prostatic urethral polyps, fibroepithelial polyps of the urethra (FEP) or benign urethral polyps of the urethra. Diagnosis is made by voiding cystourethrography (VCUG) and urography and also by ultrasonography. Surgery is performed by transurethral or transvesical resection. The secondary obstructive symptoms improve, and recurrence is rare. We report four cases of children urethral polyp collected in our department of paediatric surgery from 2012 to 2017.

Results: These are 4 male infants aged 9, 15,17 and 21 months respectively. Urinary tract infection was the finding circumstance in all cases. Two patients had previous episodes of urinary retention and hematuria was noted in only one case. Renal ultrasound revealed a mobile hyperechoic nodule in the bladder in 3 cases. Retrograde urethrocystogram showed posterior chamber dilatation with a subtraction image in 3 cases.

On the other hand, it was in favor of a polyp of the anterior urethra in only one case. The treatment was an endoscopic resection of the polyp in all our patients and histology confirmed the diagnosis in all cases. The postoperative course was simple with no cases of recurrence; the average follow-up was 3 years.

Conclusion: Urethral polyps must be considered in every child with history of triad of recurrent intermittent urinary retention, hematuria and lower urinary tract symptoms. In all children who present with sudden interruptions of their urinary flow and no obvious bladder or urethral stones, urethral polyps must also be kept in mind as a differential diagnosis. The cure can be achieved in all cases by an endoscopic approach. This type of tumor is always benign and very rarely recurs, unless the pedicle stalk is not resected.

P128 URETHRAL STRICTURE AFTER PSARP SURGERY : A CASE REPORT AND REVIEW OF LITERATURE Senda Houidi; Sondes Sahli; Arije Zouaoui; Oussema Mehrzi; Riadh Jouini; Departement of Pediatric Surgery A, Hospital of Children, Tunis,Tunisia

Introduction: Urethral stricture in children is not uncommon as assumed. The most common etiologies of pediatric strictures are known to be traumatic, idiopathic or iatrogenic causes as seen after postero-sgittalanorectoplasty (PSARP) procedure. We present a four-year-old boy observation with Urethral stricture after PSARP surgery The patient presented urethral stricture after surgery and was treated with endoscopic dilation.

Case report: We present a case of four-year-old child, with ARM, partial sacral agenesis, horseshoe kidney and vesicoureteral reflux. A fistula between the rectum and the urinary tract was identified. He was operated by a posterior sagittal approach at the age of 7 months. Urinary retention was observed in the 2nd day after surgery. A supra- pubic catheter was performed. A cystourethrography was made showing a stricture located in the posterior urethra. We decided to perform endoscopy. The endoscope was introduced through the supra pubic catheter hole. The distal end of the urethral stricture was first identified by passing the guidewire of a nephrostomy tube through the external urethral meatus. The nephsrostomy tube was passed under view-control through the guidewire. The dilation by this tube of 3 mm and was successful. The endoscope could easily pass the the native urethra by the end of the dilation. The urethral diameter was calibrated by a Foley tube number 10. No recurrence of the stricture was noticed after a 7 months.

Conclusion: The risk of urethral stenosis is associated with the repair of ARM andurethral dilatation is now recommended as the procedure of choice for pediatric urethral stricture repair.

P129 SECONDARY URETERO-PELVIC JUNCTION OBSTRUCTION:ENDOUROLOGIC RETROGRADE BALLOON DILATION CAN BE AN INTERESTING THERAPEUTIC OPTION? Marwa Messaoud; Sana Mosbahi; Afef Toumi; Nouha Boukhrisa; Samia Belhasen; Myriam Ben Frejd; Sabrine Ben Youssef; Sami Sfar; Rachida Laamiri; Nahla Kechiche; Amine Ksia; Lassaad Sahnoun; Mohsen Belghith; Abdellatif Nouri; Mongi Mekki; Department of Pediatric Surgery Monastir Tunisia

Introduction: Uretero-pelvic junction obstruction (UPJO) is the most common congenital cause of upper urinary tract obstruction in children. Over the years UPJO was treated by open pyeloplasty or by lapaoscopic approach with a success rate higher than 90 %. However, after a failed primary pyloplasty many authors reported several techniques among them high-pressure balloon dilatation had been reported.

Aim: Reporting our experience and analyzing the use of balloon dilatation in the treatment of secondary UPJO in children.

Materials and Methods: A retrospective study of endoscopic dilatation of secondary UPJO after Anderson-Hynes pyeloplasty (2 laparoscopic and 3 open surgery), was performed at our department of pediatric surgery.

Results: From 2012 to 2020, five patients underwent secondary treatment after a failure of Anderson-Hynes pyeloplasty, age ranged from 1-17 years (median 7 years). Only one patient was initially operated for a single kidney associated to UPJO. The postoperative follow-up was marked by a severe hydronephrosis due to anastomotic stenosis so endoscopic dilatation was our first therapeutic choice. The time between the surgery and the first endoscopic dilatation ranged from 15 days to 16 months. Overall, Six dilatations were performed in which the mean operative time was 30 ± 10 minutes. We performed an endourologic retrograde balloon dilatation under fluoroscopic guidance. The dilating balloon, which is inserted over the guidewire to be placed across the stenotic segment, had a diameter ranged from 4 mm to 8 mm. The balloon was then inflated until its waist disappeared on fluoroscopic imaging, that is when the pressure rises up to 8-10atm. A Double-J ureteral stent was inserted in all cases and its caliber and length depended on the patient's age. Foley catheter drainage remained in place for 24 hours in all children and minimum length of hospital stay was 1 day. All patients received antibiotic cover during the procedure and until removal of the stent. During follow-up, resolution of hydronephrosis was observed in 3 cases, 1 patient was proposed for resumption of the pyeloplasty and a second dilatation was necessary in 1 patient, 4 years after his intervention because of the reappearance of hydronephrosis on the renal ultrasound. The double-J stent was withdrawn using cystoscopy after 4 to 8 weeks. All patients remain under regular clinical and radiological review up to now.

Conclusion: Endoscopic high-pressure balloon dilatation could be a valid and safe option in the minimally invasive treatment of secondary UPJ obstruction in infants.

P130 VASCULAR HITCH PYELOPLASTY: CASE SERIES A. Ghallab; A. Alsaggaf; M. Zidan; A. Alawy; M. Shalaby; Y Owiwi; A. Zienelabdeen; M. Fayez; A. Atta; E. Raboei; King Fahd Armed Forces Hospital Jeddah

Background: Vascular hitch (VH) technique has been described as an alternative to open dismembered pyeloplasty in children, with the largest series reported in 1999 by Pesce. Many published articles are supporting this technique for ureteropelvic junction obstruction (UPJO) by crossing vessels (CV) as it is less technically demanding than laparoscopic pyeloplasty. We here report our cases of laparoscopic VH pyeloplasty for lower pole CV and discuss technical tips and tricks.

Material & Methods: Four patients included in our study from January 2018 to January 2020, Pre-operative study including U/S Doppler scan, MAG3-Renogram, MRU and CT angiogram. Intraoperative diuretic test done after transposition of the vessels. Follow up of resolving hydronephrosis and improved renal function was assessed clinically and radiologically.

Results: Age ranged from 2 - 11 years, 3 cases were female and one case was male, Mean operative time was 110 ± 14 minutes, no intra operative complication. Mean length of hospital stay was 3±1 days. Follow up period ranged from 6 months to 24 months, all four cases showed improvement in hydronephrosis by U/S and MAG3-Renogram

Conclusion: Vascular hitch technique is a safe, feasible and attractive alternative, time saving, avoid anastomotic complication (leakage and stricture) and JJ stenting and reduced length of hospital stay.

Keywords: Vascular, Hitch, Pyeloplasty, hydronephrosis, pediatric

P131 SINGLE SITE LAPAROSCOPY FOR THE MANAGEMENT OF VARICOCELE IN CHILDREN: ABOUT 10 CASES Ammar Saloua, MD; Dghaies Rim, MD; Krichen Emna, MD; Sallemi Sahla, MD; Chtourou Rahma, MD; Zitouni Hayet, MD; Ben Dhaou Mahdi, MD; Mhiri Riadh, Professor, Doctor; Department of Pediatric Surgery, Hedi Chaker Hospital, Sfax, Tunisia

Introduction: Varicocele is a dilatation or tortuosity of the veins of the pampiniform plexus. Several surgical approaches were described. Laparoscopic treatment is increasingly used. We describe our experience in the management of varicocele in children using single site laparoscopy (SSL).

Material and methods: This is a retrospective study of chart of children operated using SSL for varicocele the department of pediatric surgery of Sfax between the years 2013 and 2019. All the patients underwent a bilateral, comparative, scrotal examination in both the recumbent and upright positions associated with Valsalva maneuver. A radiological assessment was performed for all patients (testicular echo, Doppler echo of the sperm vessels, renal echo). Surgery was indicated for symptomatic varicocele.

Results: Ten children were operated in our department. The mean age of diagnosis was 11.2 years.The main clinical manifestations were increase in scrotal volume (60%) and testicular pain(40%). Varicocele was unilateral in the left side in 9 cases and bilateral only in one case. It was associated with a homolateral-undescended testis in one case. 90 % of cases had grade 3 and 10 % grade 2. One patient had a grade 3-left sided varicocele complicating an anterior Nut Crocker syndrome. All patients underwent laparoscopic single site ligation of the dilated spermatic vessels using ‘’Ligasure’’ in 4 cases or ‘’clips then section in 6 cases’. There was no intraperitoneal bleeding, no injury of intraperitoneal organs and no conversion. Average duration of the intervention was 35 min. The hospital stay was 24 hours. The mean follow-up was 2.6 years. The outcome was marked by the disappearance of symptoms and a normal clinical examination for all patients. Postoperative Doppler ultrasound realized for 6 patients was normal. No testicular atrophy, nor ipsilateral hydrocele during clinical and ultrasound checks were noted.

Conclusion: SSL approach seems technically easy and quick to perform, painless, and scarless surgery.

P132 ENDOSCOPIC TREATMENT OF UROLITHIASIS IN CHILDREN: OUR EXPERIENCE Nedjema Brinis, Associate Professor[1]; Hyem Louchen, SPECIALIST[2]; Houssam Eddine Ouarhlent, Associate Professor[3]; [1]EHS Mother And Child Meriem Bouatoura Batna Mostapha Benboulaid University Batna2; [2]EPH Ain Touta Batna; [3]CHU Of Batna Mostapha Benboulaid University Batna2

Introduction: Urolithiasis in children is rare. It poses problems of care specific Its incidence, epidemiological and etiological profile vary from country to country. Infection, malformative uropathies and hereditary diseases are the causes the most frequent. Over the past two decades with the introduction of new techniques minimally invasive and endourology in pediatric surgery and which have radically modified the management of urinary stones namely: lithotripsy extracorporeal, percutaneous nephrolithotomy and especially urinary endoscopy (ureteroscopy)

We report our experience with the use of endourology in our service

Materials and methods: We report the results of 30 children treated in the surgical department Surgery Department EHS Mother and Child Meriem bouatoura Batna between January 2018 and January 2020 for urinary lithiasis, including 09 bladder lithiasis and 21 obstructive ureteral lithiasis. The children treated were between 2.5 and 15 years old. Urinary endoscopy was performed in all patients with:

- 09Cystoscopies with total destruction of the lithiasis
- 21 ureterscopies with total destruction of the lithiasis and verification of the Permeability of the ureter.

Very good results and short hospitalization

Conclusion: Currently The place of open surgery in the management of childhood urolithiasis is redefined by its advent and by the development of minimally invasive techniques.

Certain that ECL is considered the gold standard treatment for kidney stones and ureter, although there is still some uncertainty as to the exact modalities of its performance in pediatrics.

Endourology with especially ureteroscopy begins to have an increasing place more important in pediatric surgery but which requires:

- a material suitable for children
- trained hands

P134 POST TRAUMATIC URETHRAL RUPTURE IN A GIRL : A SAFE DELAYED DILATATION MANAGEMENT Arije Zouaoui; Fatma Thamri; Senda Houidi; Yosra Mansouri; Sondos Sahli, MD; Fatma Fitouri, MD; Yosra Kerkeni, MD; Riadh Jouini, MD; Children's Hospital, Tunis, Tunisia

INTRODUCTION: Blunt trauma to the pediatric pelvis can be associated with urethral rupture. Female urethral injury is rare and had not revieved enough attention and the management remains non consensual. We report a case of a girl with blunt trauma and a pelvic fracture with urethrovaginal injury.

CASE REPORT AND LITERATURE REVIEW: A 6-year-old had a blunt polytrauma. A wall fell on her left body side. We operated the patient for a ruptured bladder. The exploration showed a shredded 4x3cm bladder wall sore wich was sutured. The attempt to catheterize the urethra failed. We decided to put a suprapubic cystostomy. Cystourethrography was performed 3 weeks postoperatively, by the cystostomy and showed no communication between the bladder neck and the urethra when the patient tried to void suggesting the complete urethral rupture with no evident vaginal fistula. Tha patient was lost to follow-up for 2 yeas. When returned, he decision was to perform urethra realignment endoscopically with a suprapubic and transurethral approaches. The urethra had a 1cm-lenght with a dead end. When introduced the endoscope in the cystostomy and saw a well developped but stenosed bladder neck. A metallic guidwire was introduced by the urethra until seen in the bladder by the suprapubic endoscope. We performed a dilation of the urethral path with a nephrostomy tube dilator until a CH10 bladder catheter diameter was reached. We decided to keep the suprapubic cystostomy and the transuretral cathter at least 6 weeks to acheive a neoethpitelisation of the urethral path. The control cystoscopy showed a partial epithelisation of the urethral path so we kept the catheter for 12 more weeks. The result was a urethral path of 1.5cm permitting the a normal voiding behaviour after the closure of the suprapubic opening.

The literature review before 2019 was quite poor and counted about 168 girls with urethral injuries. The managment varied from immediate repair via primary alignment, or anastomotic repair, to a delayed repair with the same techniques and dilatation when the injury is punctual or short.

CONLUSION: Post traumatic urethral injury in girls is rare and difficult to deal with. Our case showed that simple delayed dilatation can be a safe effective way to reestablish urethral coninuity along with continence.

P135 ENDOSCOPIC TREATMENT OF VESICO-URETERAL REFLUX IN CHILDREN: NEW TECHNIQUE IN OUR DEPARTMENT Nedjema Brinis, Associate Professor; EHS Mother And Child Meriem Bouatoura Batna Mostapha Benboulaid University Batna2

Introduction: The vesico-ureteral reflux is a frequent and serious malformation uropathy whose evolution without treatment leads to the destruction of the kidney and the renal insufficiency especially if the pathology is bilateral.

Its purpose is to protect the kidney against renal reflux disease secondary to repeated pyelonephritis. Conventional surgery and antibiotic therapy remain an effective but heavy treatment, endoscopic treatment as an alternative to reimplantation surgery and antibiotic therapy has enriched the therapeutic arsenal of this pathology.

Materials and methods: We report the results of our experience with 60 children treated (85 ureters) at the Pediatric Surgery Department EHS Mother and Child Meriem bouatoura Batna between March 2017 and January 2020.

All children have an RVU of different grades II, III, IV, V and different types, primitive or secondary were injected.

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The safety and the possibility of repetition of the gesture, the low morbidity compared to surgery, classic, a short follow-up and without impact on the socio-economic life of the parents, finally a low cost make this endoscopic treatment minimally invasive a treatment of choice that can be practiced even as an outpatient.

Key words: Vesico-ureteral reflux, child, endoscopic treatment, Deflux.

P137 ROBOTIC REMOVAL OF MüLLERIAN DUCT REMNANTS: CASE SERIES AND REVIEW OF LITERATURE. Tommaso Gargano; Neil Di Salvo; Vincenzo Davide Catania; Giovanni Parente; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

Persistent Müllerian Duct Syndrome (PMDS) is a disorder of sexual development which features a failure of involution of Müllerian structures including a uterus, a cervix, fallopian tubes and the upper two thirds of vagina. An enlarged prostatic utricle (EPU) is a kind of Müllerian Duct Remnant (MDR) with a tubular shaped structure communicating with the prostatic urethra. Treatment is aimed at relieving symptoms when present, preserve fertility and prevent neoplastic degeneration. Several open surgical approaches and endoscopic techniques have been used, but laparoscopy has become the gold standard treatment in the last two decades. We describe three cases of successful robot assisted-removal of symptomatic MDRs. The first case came to our attention for pseudoincontinence; the other two for recurrent urinary tract infections. The patients have not presented such symptoms anymore on follow-up. We then reviewed existent literature on authors who have recently investigated the main issues concerning MDRs and have attempted a robotic-assisted approach on them. Robot-assisted laparoscopy, by improving anatomic of the retrovesical structures and surgical precision when performing a challenging dissection within the deep pelvis, can be considered a valid, safe and effective minimally invasive technique for the primary treatment of prostatic utricle.

P138 OBSTRUCTED HEMI-VAGINA AND IPSILATERAL RENAL ANOMALIES (OHVIRA) SYNDROME: INTRODUCTION OF 3D ENDOANAL ULTRASOUND IN A CASE-SERIES OF 9 PATIENTS Neil Di Salvo; Giovanni Ruggeri; Giovanni Parente; Michela Maffi; Tommaso Gargano; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

STUDY OBJECTIVE: describing a case series of 9 patients with OHVIRA syndrome.

DESIGN: a retrospective study on patients admitted for uterovaginal anomalies between 1995 and 2020.

SETTING: a Pediatric Surgical Unit in a University-Hospital.

PARTICIPANTS: 9 patients with a confirmed diagnosis of OHVIRA syndrome.

INTERVENTIONS and MAIN OUTCOME MEASURES: patient demographics, presenting symptoms, clinical course, preoperative radiologic investigations, intraoperative findings, and operative management were assessed. For the first time, we used 3D endoanal ultrasound pelvic reconstruction in the assessment of the vaginal malformation.

RESULTS: the median age of presentation was 9,5 years. Of 9 patients, 6 presented symptoms (abdominal pain and/or perineal bulging) while 3 were asymptomatic. Five patients had renal agenesia; two multicystic dysplastic kidney (MCDK); one an ectopic ureter. All patients were initially assessed preoperatively with abdominal ultrasound; some underwent MRI and laparoscopy; in the last two cases, a 2D and 3D endoanal ultrasound pelvic reconstruction was performed before proceeding with the surgical procedure. All but one patients were sufficiently treated by septectomy or removal of the common vaginal wall in case of vaginal duplication.

CONCLUSIONS: ipsilateral renal anomalies, non-ipsilateral renal agenesis, should be considered part of the definition of OHVIRA syndrome and pediatric surgeons need to be aware of the spectrum of renal anomalies in this syndrome. While abdominal ultrasound and MRI are considered the gold standard for diagnosis, laparoscopy can be useful in selected cases; 3D endoanal ultrasound might play a diagnostic role in the assessment of uterovaginal anomalies during childhood.

P139 COMBINED LAPAROSCOPIC AND HYSTEROSCOPIC APPROACH FOR THE TREATMENT OF A HYBRID MULLERIAN DUCT ANOMALY: A CASE REPORT Neil Di Salvo; Giovanni Ruggeri; Eduje Thomas; Vincenzo Davide Catania; Tommaso Gargano; Giovanni Parente; Mario Lima; Pediatric Surgery Unit, Sant'Orsola University-Hospital, Bologna

MÜllerian duct anomalies include a wide spectrum of genital tract defects resulting from a development alteration of the genital tract.

An 11-year-old girl with a hybrid septate variety uterus with left hemi-obstruction was identified. Beside preoperative imaging evaluation done with ultrasound, magnetic resonance, and hystero-salpingography, a combined laparoscopic and hysteroscopic procedure was fundamental for the diagnosis.

We started with the laparoscopic procedure. A 5-mm port (for the optic) was inserted just below the umbilicus. The pneumoperitoneum was created with CO2 (10mmHg; 1L/ min). Two 5-mm operative trocars were placed under direct vision in the right and left lower quadrants. The first step was the exploration of the abdominal cavity. We visualized a bicornuate uterus with a deep fundal depression that reached the middle third of the uterine corpus; the left Fallopian tube and the left uterine horn were dilated, whereas the homolateral ovary was unremarkable. The right ovary, Fallopian tube, and uterine horn were normal. At the same time, a diagnostic hysteroscopy was performed with a 17 Ch, 30° cystoscope. The vagina appeared unique and regular. At the end of the vaginal canal there was a single external portion. After an initial single part (almost one-third of the entire length), the cervical canal split into two parts in the presence of an asymmetric fibrous septum. The right hemi- cavity was easily accessible by the scope: it was a tubular canal with thin endometrium and regular tubal ostium. The left uterus was tortuous, and it had blood clots in it. The left tubal ostium appeared normal. We decided to perform a septum resection under laparoscopic surveillance. We obtained cervical dilatation with 10 Ch Hegar bougies. Later a resectoscope was introduced into the left hemi-uterus, and the monopolar hook was used to perforate the septum near the cervical part. This maneuver facilitated the access to the left uterus. Laparoscopic surveil- lance helped as a reassuring guide. The resection was stopped when the residual septum was almost 0.5 cm long. The left tube appeared dilated and damaged. We replaced the umbilical trocar with a 10-mm one in order to remove the tube after endoloop ligation.

The surgical procedure also allowed us to perform a successful and safe treatment. We propose that the American Fertility Society classification of these anomalies should be revised and that hybrid entities should be considered in the differential diagnosis of genital tract malformations.

P140 ANALYSIS OF URINARY STONE COMPOSITION OF 236 UYGHUR CHILDREN IN XINJIANG Yeerfan Aierken, MD; Dong Liu, MD; Abudusaimi Abudureyimu, MD; Shuixue Li, MD; Hanikezi Keyoumu, RN; Xinjiang Children Hospital

Objective: To explore the clinical characteristics of pediatric urinary calculus in Xinjiang Uyghur children, to analyze the relationship between stone composition with gender, age and location of stone, and ultimately to provide clinical basis for the prevention as well as treatment of urinay stone.

Method: 236 urinary tract stone samples were collected from pediatric patients during January 2018 to Novemberl 2020, and those samples were analyzed by infrared spectroscopy. The clinical data of those patients were also explored. All reported values were 2-sided and statistical significance was considered at p-value ≤0.05.

Results: Of the 236 stones, 148 (62.72%) were renal, 52 (22.03%) ureteric, 17 (7.20%) bladder and 19 (8.05%) urethral stones. The mean age of children was 4.90 ± 3.41 years (3 months to 12 years) old with a M:F ratio 2.37:1. Of the 412 stones, 107(45.34%) were pure stones composed of one compound and 129(54.66%) were mixtures. Frequency of compound in stones was Ammonium Hydrogen Urate (AmUr) (40.68%), Calcium Oxalate (CaOx) (79.24%), Carbonate Apatite (CA) (28.92%), Magnesium Ammonium Phosphate (MAP) (6.63%), Uric Acid (5%), Sodium Urate(SU) (2.12%), Proteins (PROT) (1.27%), Calcite(CALC) (0.85%) and Sodium Hydrogen Urate(Na+Urate) (0.42%). Frequency of compounds analysed in four ages groups, which included infant (0<age≤1), children (1<age≤3), preschool (3<age≤6) and school (6<age≤12) group, showed high frequency of AmUr (80.77%) in infant group as compared to others (P<0.001) and it presented a downward trend (P<0.001). CaOx (91.36%) in school age group as compared to other groups (P<0.001) and it increased with age (P<0.001). AmUr was more prevalent in bladder (70.59%) and male patient (42.17%) while CaOx was in ureter (88.46%) and female patient (81.43%). However, There was no significant difference in the distribution of different stone components among gender and stone location.

Conclusion: The pediatric urinary calculus in Xinjiang are mainly complex stones, and Ammonium Hydrogen Urate is one of the representative stone components. Its age of onset was early and variation changes with age, which reflects the severity of pediatric urolithiasis in Xinjiang. It is of great importance to further explore the etiology of ammonium hydrogen urate stone for the diagnosis, treatment and prevention of pediatric urolithiasis in this area.

P141 PORCINE BLADDER EXTRACELLULAR MATRIX AS A TISSUE REGENERATIVE STRATEGY IN A NEONATE WITH OMPHALOCELE AND DIAPHRAGMATIC AGENESIS Ruchi Amin, MD; Kathryn D Bass, MD, MBA; University at Buffalo

Objective: Porcine bladder extracellular matrix (PEBM) is a biologic membrane that facilitates tissue regrowth in neonates with complex surgical disease. We present a case demonstrating the feasibility of this matrix as a tissue regenerative strategy in a patient that presented with both omphalocele and diaphragmatic agenesis.

Methods: PEBM provides a bimodal scaffold composed of an intact basement membrane and lamina propria which promotes cellular infiltration and capillary ingrowth. This membrane allows for site-appropriate tissue deposition which will remodel into the host tissue, providing both form and function to the native tissue. Neutrophils initiate the remodeling response, and fibroblasts deposit various collagens that provide strength and structure for the new tissue. Neovascularization will transport blood and nutrients to the site of repair. Instead of promoting scar, this biologic agent will incorporate to create healthy tissue that mimics the structure and biomechanical functionality of the surrounding anatomy. Over time, this device will fully resorb and completely remodel into the host tissue, leaving no foreign body behind.

An ex 36+1 week (2.3kg) infant with prenatally diagnosed omphalocele containing mostly liver underwent operative closure on day of life (DOL) 2. The hernia sac was excised. There was adequate fascia laterally and inferiorly, however, it became thin and attenuated towards the midline cephalad with hepatic veins running along the skin flap requiring additional dissection. Furthermore, the posterior half of the right diaphragm appeared to absent. A 5x5 cm PEBM patch was placed in the posterior aspect of the right upper quadrant for diaphragmatic replacement using 4-0 vicryl tacking sutures along the cephalad and caudad aspect of the defect both laterally and medially. An additional 10x7 cm sheath of PEBM was then placed over the liver and tacked inferiorly to the fascia to create an underlay with a subsequent layered closure with complete apposition of the overlying skin edges.

Results: Patient was extubated DOL 5, advanced to goal oral feeds DOL 18, and discharged home on DOL 23. An ultrasound of the chest was obtained 6 months after repair which showed normal diaphragmatic motion bilaterally. At 1 year follow up patient had no evidence of an abdominal wall defect on exam. Chest radiograph at that time showed normal diaphragmatic contour. Patient is currently 4 years old without clinical or radiographic evidence of recurrence of either defect. Basement Mmbrane: A thin, dense structure idea

Conclusion/Future Direction: PEBM provides surgeons with a durable biologic tissue regenerative strategy with wide applicability for neonates with complex surgical disease.

P142 CERVIX ATRESIA COMPLICATED WITH HEMATOMETRA MANAGED BY COMBINED VAGINOSCOPY & ULTRASOUND-GUIDED CERVICOTOMY & SERIAL BALLOON DILATATIONS Iftikhar A Jan, Dr; Mona AlShehhi; Saqi L Zahid; Sheikh Shakhbout Medical City, Abu Dhabi

Introduction: Hematometra is a known presentation of cervix atresia at puberty. The management of cervix atresia is complex and not standardized. We present a novel technique of management of cervix atresia in a 13 years girl who presented with severe abdominal pain secondary to hematometra. Hematometra was confirmed by radiological evaluations and managed by ultrasound-guided vaginoscopic cervicotomy , drainage of hematometra, and serial ultrasound-guided cervical dilatation.

Case report: A 13 years female child presented with severe abdominal pain & mass in the lower abdomen. Examination revealed normal external genitalia with a tender mass palpable in the suprapubic area. An Ultrasound and MRI of the abdomen suggested a large hematometra with a normal vagina and cervix atresia with about 1 cm thickness. The child had vaginal reconstruction in infancy due to vaginal atresia.

An emergency vaginoscopy was performed under anesthesia that showed a normal-looking vagina and a blind cervix. During vaginoscopy, a pelvic ultrasound was added to guide a spinal needle through the vagina & center of the atretic cervix into the uterine cavity containing the hemolyzed blood. Aspiration of hemolyzed blood and ultrasound visualization confirmed the location of the needle in the uterine cavity. A guidewire was then passed, and a 3 steps (esophageal) balloon dilator was passed through the atretic area over the guidewire. The balloon dilator was dilated up to 8 mm using the pressure-controlled dilatation. A satisfactory dilation was achieved, and all the retained hemolyzed blood was drained through the newly created channel. A size 24 Foleys catheter was passed through the vagina and cervix and placed in the uterine cavity. The catheter was retained to keep the newly created cervix channel patent & removed after one week. The child followed up before the next menstruation cycle. A repeat US showed a recurrent collection and obliteration of the cervix. A vaginoscopy & ultrasound-guided serial balloon dilatations were repeated twice due to closure of the cervix opening. After the third dilation, the child remained well and had regular periods without the need for further dilations and is symptoms free. We feel the child may need a few more sessions of cervix dilatations; however, at the moment, she is having regular periods without any signs of recurrent cervix closure.

Conclusion: Vaginoscopic, ultrasound-guided uterine balloon dilation may be a useful technique for cervix atresia causing hematometra. It avoids major surgical reconstructions and is a simpler and minimally invasive procedure, and can be used in selected cervix atresia cases.

P143 MANAGEMENT OF BILATERAL NONPALPABLE TESTES- SINGLE CENTER EXPERIENCE Sadik Abidoglu, Dr[1]; Ahsen Karagözlü Akgül, Dr[2]; Mert Berke Gür[3]; [1]Marmara University, Department of Pediatric Surgery, Division of Pediatric Urology; [2]Marmara University Pendik Education and Research Hospital, Division of Pediatric Urology; [3]Marmara University Faculty of Medicine

Introduction: Twenty percent of undescended testis are non-palpable. Most of these non-palpable testes (NPT) are unilateral and already had discussed in the literature. The management of bilateral NPT is still a challenge due to the risk of infertility and lack of the reported studies in this issue. We presented our single centre experience in the management of bilateral NPT.

Methods: The patients who underwent surgery for NPT (n: 164) in our department between 2010 and 2020 were reviewed retrospectively. Patients with bilateral NPT (n: 36) included the study. Age, peroperative location and status of the testis, single or two stage orchiopexy, associated anomalies, presence of mullerian duct remnants, postoperative location of the testis, complications were recorded.

Results: Seventy two testes of 36 boys were analyzed. In the laparoscopy, vas deference and spermatic vessels of 14 testis were entering the ipsilateral inguinal canal. Nubbin testes were found in inguinal exploration in 7 of them and orchiectomy was performed for these atrophic testes. Viable testes were found and inguinal orchiopexy were performed for six testes. Blind ended vas deference and spermatic vessels were found in one inguinal exploration. Laparoscopic exploration revealed 52 intra-abdominal testes, five vanishing testes and one atrophic testis. In case of vanishing testis, the laparoscopy was finalized. Five of these 52 intra-abdomial testes were in the high intraabdominal localization. Fifty of 52 testes were located in the scrotum at the end of the procedure. In the follow up, one atrophic testis, two ascended testis placed in the inguinal region, four high scrotal and 43 scrotal testes were recorded. Inguinal orchiopexy was performed for these two ascended testes later. Two of 52 testes were waiting for second session of Fowler Stephens (FS) procedure. In 14 patients, two session FS procedure were performed synchronously for both testes. In four cases, first session of FS were performed for both testes synchronously and second session were performed respectively beginning with the better testis. In four cases, first session FS procedure was performed for one side during the second session FS procedure for the contralateral side. Single session orchiopexy was preferred for three cases. Mullerian duct remnants were found in four cases during laparoscopy. The patient with unilateral atrophic intraabdominal testis underwent several surgeries for gastrochisis. Associated anomalies were Hirschsprung disease, Prune Belly Syndrome, high grade vesicourethral reflux, Denys Drash Syndrome, cerebral palsy, Beckwith Wideman Syndrome, hypospadias, Meckel diverticulum, nephrolithiasis, biotinidase deficiency, cholelithiasis, urachus remnant, Robenstein Taybi Syndrome, micropenis and microcephaly and hypothyroidism in one patient, Prader Willi Syndrome.

Conclusion: Laparoscopic synchronous or non-synchronous FS procedure are safe for bilateral inta-abdominal testes. To reduce the number of procedures for bilateral cases, FS procedure may be performed for both sides synchronously.

P145 IMPROVEMENTS IN URETEROSCOPIC STONE-FREE RATES AFTER URETERAL PRE-STENTING IN VERY YOUNG CHILDREN AND LARGE LITHIASIS Maria Rosa Ibarra Rodriguez; Alberto Parente Hernández; Veronica Vargas Cruz; Alvaro Escassi Gil; Ornella Bertzabe Grijalva Estrada; Rosa Maria Paredes Esteban; Hospital Reina Sofia De Cordoba

Purpose: The aim of our study is to evaluate the feasibility and outcome of passive dilatation by ureteral stenting in very young children with primary unaccessible ureter or large lithiasis before an ureteroscopic management of renal and ureteral stone disease.

We check if this procedure could ease the expulsive phase of stones assessing the existence of residual lithiasis after treatment.

Materials and Methods: We present 2 patients under 3 years-old treated by ureteroscopy in a single procedure after prior double J-stent placement. The first patient was a 7 months-age and 7 kg-weight twin with 20 mm renal lithiasis. The second patient was a 3-year-old boy with a 3 cm distal ureteral lithiasis. We evaluate results, complications and need for further treatments.

Results: In both patients, a ureteral stent was placed for 2 weeks. Ureteroscopy was performed without incident with 7.5 Fr ureteroscope, performing Holmiun laser lithotripsy in both children. Small lithiasic fragments were left in both cases due to the large size of the lithiasis, so a new ureteral stent was placed during the procedure. In the postoperative controls 4 weeks later, both children were free of lithiasic remains. The non-existence of lithiasic remains was verified by ureteroscopy during the double J-stent withdrawal. There were no intra or postoperative complications.

Conclusions: Our study shows that passive dilatation of the ureter in preparation for ureteroscopy is a straightforward, successful and beneficial technique in very low weight young children with large lithiasis with no complications associated.

P146 ANALYSIS ABOUT DIAGNOSIS AND THERAPY OF CONGENITAL DIAPHRAGMATIC HERNIA WITH THE MULTI-DISCIPLINARY TREATMENT MODEL Lishuang Ma, MD; Capital Institute of Pediatrics

Objective: To summarize the process of diagnosis and treatment of neonatal congenital diaphragmatic hernia by multidisciplinary diagnosis and treatment mode, and to explore the risk factors of poor prognosis of children under this mode.

Methods: The clinical data of children with congenital diaphragmatic hernia who were diagnosed and treated by multidisciplinary in children's Hospital Affiliated to Capital Institute of Pediatrics from April 2014 to July 2020 were retrospectively analyzed. Among the 73 cases of CDH treated, 58 cases were left side and 15 cases were right side. Among them, 63 cases were diagnosed by prenatal diagnosis, and the average gestational age was (26.76 ± 5.14) w; the average birth weight was (2.90 ± 0.66) kg; the average gestational age was (37.06 ± 2.59) w. Ten cases were diagnosed by chest X-ray due to postnatal respiratory distress. Seventy three patients with CDH were divided into good prognosis group (54 cases) and poor prognosis group (19 cases). Univariate analysis and multivariate logistic regression analysis were used to analyze the risk factors of poor prognosis.

Results: Among 73 cases, 54 cases survived and 19 cases died. In six years, the survival rate of children was 73.9%, increased from 60% in 2014 to 92.9% in 2020; the postoperative survival rate of children was 77.1%, increased from 60% in 2014 to 92.9% in 2020; the utilization rate of minimally invasive endoscopic surgery was 74.3%, increased from 60% in 2014 to 95.5% in 2019; the survival rate of minimally invasive endoscopic surgery was 89.3%, increased from 50% in 2014 to 100% in 2020. Univariate and multivariate logistic regression analysis showed that low birth weight, open surgery, prenatal diagnosis < 25 w, operation time < 24 h were risk factors (all $P < 0.05$).

Conclusion: The multidisciplinary diagnosis and treatment mode of CDH is helpful to improve the overall survival rate of CDH and effectively improve the prognosis of children. Low birth weight, open surgery, prenatal diagnosis < 25 w, operation time < 24 h were risk factors for neonatal diaphragmatic hernia.

P147 HIGH-PRESSURE BALLOON ASSESSMENT OF PELVIURETERIC JUNCTION PRIOR TO LAPAROSCOPIC "VASCULAR HITCH" Maria Rosa Ibarra Rodriguez; Veronica Vargas Cruz; Alberto Parente Hernández; Sandra Rocio Wiesner Torres; Rosa Maria Paredes Esteban; Hospital Reina Sofia Córdoba

Aim: Congenital hydronephrosis due to uretero-pelvic-junction (UPJ) obstruction (UPJO) is a common problem in childhood. UPJO may be caused by intrinsic disorganization or by extrinsic compression from crossing vessels (CV); extrinsic causes usually present symptomatically in older children. Laparoscopic vascular hitch (VH) can be performed after assessing if calibration of UPJ.

Case report: We present a 12-year-old male referred by VUR grade III that has worsened to grade IV-V with obstructive renogram and renal parenchymal involvement. Stenosis is suspected at the UPJ level and so we plan the surgery. By cystoscopy, a high-pressure balloon is sited at the UPJ and the balloon inflated to 8-12 atm under radiological screening. We considered that there was no intrinsic PUJO where a ‘waist’ was not observed at the PUJ on inflation of the balloon. On suspicion of extrinsic compression, a laparoscopic VH is performed at the same surgical act. This technique consists of a laparoscopic transperitoneal exposure of the lower pole vessel with the patient in a lateral position. Three 5mm ports were used. The lower pole vessel was dissected free from the PUJ and full mobility of the pelvis and PUJ was confirmed. Inspection for evidence of peristalsis across the junction was performed.

The lower pole vessel was then fixed in a cephalic position away from the PUJ by suturing the pelvis on either side of the vessels with two to three absorbable sutures without tension.

Conclusion: Laparoscopic VH can be performed in patients with CV after assessing if calibration of UPJ using a high-pressure balloon inflated at the UPJ level. This could help to make the differentiate between intrinsic and extrinsic stenosis prior to surgery and perform it at the same surgical act.

P148 POSTOPERATIVE PULMONARY FUNCTION EXERCISE IN CHILDREN WITH CONGENITAL DIAPHRAGMATIC HERNIA Lishuang Ma, MD; Capital Institute of Pediatrics

Objective: Congenital diaphragmatic hernia (CDH) is characterized by diaphragmatic defect. The contents of the abdominal cavity herniate into the thoracic cavity and compress the heart and lung. The combined pulmonary dysplasia can be life-threatening. It is reported that 25% - 67% of children with CDH have obstructive ventilation dysfunction after operation, and this disease can last until adulthood, which is an important cause of death in children with diaphragmatic hernia after operation. The latest research shows that fetal lung development starts from the fourth week of embryo and continues until the third year after birth. This study aims to explore the effect of postoperative active rehabilitation exercise on the prognosis of children with congenital diaphragmatic hernia, which is of great significance to improve the clinical treatment level of CDH pulmonary dysplasia and improve the overall treatment effect.

Methods: The data of children with CDH admitted to the pediatric surgery department of Capital Institute of Pediatrics in recent 15 years were retrospectively analyzed to evaluate the effect of postoperative active rehabilitation exercise on postoperative lung development of children with congenital diaphragmatic hernia. We take the lead in proposing early operation for children with congenital diaphragmatic hernia, and actively carry out lung rehabilitation exercise after operation. Children with diaphragmatic hernia need to carry out lung function exercise with the help of their parents after operation. Specifically, children can be stimulated to cry by patting and snapping the soles of their feet. The intensity of crying is based on the standard that children's thorax is obviously undulating, shortness of breath, continuous loud crying and ruddy complexion can be seen. Require effective crying for 5-10 minutes at least twice a day. In order to make the affected lung fully active expansion, promote the improvement of lung function and lung development, until imaging examination, lung function test is normal. The discharged children were reexamined at 1 week, 2 weeks, 1 month, 3 months, 6 months and 12 months after the operation. The follow-up team composed of neonatal surgery, respiratory medicine, neonatal medicine and gastroenterology was "postoperative respiratory health follow-up clinic", which provided professional late functional exercise and nursing guidance, and helped to contact relevant majors for treatment of other malformations. After that, review once every 1-2 years as appropriate. Observe the overall situation of children, review chest X-ray, lung function, chest CT, outpatient physical examination, observe the respiratory rate, exercise ability, intellectual development level of children, guide the method and degree of respiratory function exercise of children's parents, and timely correct the problems found.

Results: By summarizing the long-term follow-up results of 69 cases with diaphragmatic hernia who were followed up for more than 10 years and up to 15 years, postoperative active rehabilitation exercise significantly improved the status of postoperative pulmonary dysplasia and pulmonary dysfunction in children with CDH.

Conclusion: Active rehabilitation exercise is of great significance for children with congenital diaphragmatic hernia to catch up with lung development and improve lung dysplasia.

P149 LAPAROSCOPIC HILL-SNOW GASTROPEXI FOR CHRONIC GASTRIC VOLVULUS TREATMENT IN PEDIATRIC AGE. A RARE CONDITION WITH DIFFICULT DIAGNOSIS. Cosimo Bleve, MD; Maria Luisa Conighi, MD; Lorenzo Costa, MD; Elisa Zolpi, MD; Salvatore Fabio Chiarenza, Prof; Department of Pediatric Surgery and Pediatric Minimally Invasive Surgery and New Technologies San Bortolo Hospital, Vicenza, Italy

Objective of the technology or device: to describe and demonstrate the success of Laparoscopic Hill-Snow gastropexi in chronic gastric volvulus associated to hiatal hernia(HH).

Background: Gastric volvulus(GV) is a rare and life-threatening condition if not treated promptly or wrongly diagnosed. The main complication is foregut obstruction. The extreme rotation can cut-off blood supply to the stomach and even distal organs, which can lead to ischemia and necrosis of the affected area. It is a clinically significant cause of acute or recurrent abdominal pain and chronic vomiting in children. GV can be classified into primary or secondary; organoaxial, mesenteroaxial and combined. It can be acute or chronic.

Description of the technology and method of its use or application: five baby males were admitted to our Department for recurrent postprandial vomiting associated with paleness and hypo-reactivity, transitory abdominal distension, failure to thrive, and respiratory infections (only 1). Median age 6months (range 2-9months). Metabolic and neurological evaluations were normal in all patients. A barium swallow study allowed definitive diagnosis of chronic organoaxial/mesenteroaxial-GV. Pre-operative Rx-barium swallow study and esophagogastroduodenoscopy(EGDS) showed an abnormal dilation of the stomach(fundus), HH in 4patients, and discrepancy between large and small curvature in 3patients, confirming the diagnosis. Three were chronic organoaxial-GV, two chronic mesenteroaxial. All patients underwent laparoscopic Hill-Snow gastropexi with correction of HH.

The patient is placed on the operating table supine, in 20° to 45° of reverse-Trendelenburg position. The lower extremities are abducted. 3mm instruments of 18–20cm length are used. 5 trocars: an umbilical for the optic (30-degree angled scope), 2 operative (upper right and left abdomen), 1 for liver retractor (epigastrium), and 1 for gastric traction/mobilization (left lower abdomen). Pneumoperitoneum: 6-8mmHg according to age's patient. The crura of the diaphragm is exposed until its confluence. Oesophagus and gastroesophageal junction(GEJ) dissection is performed with HH reduction. Anterior and posterior vagus nerves and their hepatic branches are preserved. Crura is approximated using interrupted-non-absorbable sutures. The posterior gastropexy between GEJ and right crura is performed. Next step is the His-angle reconstruction followed by some sutures among fundus and diaphragm and oesophagus and diaphragm to secure stomach. Nasogastric tube is placed during the procedure and is left in place for 2-3days after surgery.

Preliminary results: Nor intraoperative/postoperative complications were recorded. Re-feeding was started in first postoperative day without vomiting recurrence. Average hospital stay: 8days. No stenosis or symptoms resumption were recorded at 9years follow-up.

Conclusions/future directions: GV is an extremely rare disorder in paediatric population and a complex clinical condition considering aetiology and management. It may have a signi?cant related morbidity and mortality rate. The presence of vomiting as well as the presence of HH on imaging studies should suggest GV regardless the stable patient's condition. Chronic-GV can manifests as atypical chest, abdomen and gastro-intestinal symptoms. Early diagnosis and treatment will reduce the risk of developing chronic GV to acute form. The success of Laparoscopic Hill-Snow-gastropexy is due to the HH correction preventing in this way volvulus. It is effective and safe with low complication rate, and rapid feeding resumption.

P150 CLINICAL DIAGNOSIS AND TREATMENT OF 12 CASES OF ESOPHAGEAL HIATAL HERNIA DIAGNOSED BY PRENATAL DIAGNOSIS

Lishuang Ma, MD; Capital Institute of Pediatrics

Objective: to explore the clinical classification, surgical indication and timing of prenatal diagnosis of esophageal hiatal hernia in children.

Methods: This study retrospectively studied 12 children(8males,4 females)with a prenatal diagnosis of hiatal hernia from May 2015 to January 2020 at our department, The age at admission was 1-92 days, and the gestational weeks of abnormal prenatal diagnosis were 32-39 weeks, all of which were diagnosed by prenatal ultrasound.The birth weight was 2.68-3.80kg. All the children had abnormal altrasound showing gastric blister hernia into the thoracic cavity, suggesting suspicious esophageal hiatus hernia or diaphragmatic hernia. Prenatal consultation was performed in the outpatient department of our hospital. Among them, 11 cases were transferred from the maternity hospital to our hospital after birth. One parent requested conservative observation and was discharged from the maternity hospital. He was admitted to the hospital due to repeated vomiting and weight gain in 3 months after birth. After admission, all the children were fasted and underwent chest CT and upper gastrointestinal angiography, and the diagnosis was confirmed as hiatal hernia. 12 children had mixed hiatal hernia, 11 of them had gastric volvulus.One case of hiatal hernia without gastric volvulus had a small part of gastric fundus hernia into the thoracic cavity, and was discharged from the hospital after conservative treatments such as postural therapy and improved feeding methods. The remaining 11 cases underwent laparoscopic hiatus hernia repair + fundoplication.

Results: All 11 cases underwent laparoscopic hiatus hernia repair + fundoplication, 9 cases were treated by Nissen's operation and 2 cases were Thal's operation. The operation time was 120-230min, the postoperative recovery time was 2-5d, and the hospital stay was 12-25d. One case was improved under conservative treatment and is currently being followed up. All the children were followed up for 3-60m, no obvious vomiting, no milk and cough, normal growth and development.

Conclusion: The prenatal diagnosis of hiatal hernia is of great significance for children with hiatal hernia as soon as possible after birth, to determine the treatment plan, and prevent the occurrence of complications such as repeated vomiting, pneumonia, and growth retardation. In order to avoid gastric volvulus and incarceration, it is safe and reliable to perform laparoscopic surgery in the neonatal period for the prenatal diagnosis of hiatal hernia.

P151 ANALYSIS OF TECHNICAL DIFFICULTIES IN THORACOSCOPIC REPAIR FOR CONGENITAL DIAPHRAGMATIC HERNIA IN PRETERM LOW-BIRTH-WEIGHT-INFANTS Lishuang Ma, MD; Capital Institute of Pediatrics

Objective of the technology or device: In recent years, thoracoscopic repair of diaphragmatic hernia has become the main method for surgical treatment of CDH. The objective of the technology is to reduce several thoracoscopy-related complications and relapse.

Operation methods: Thoracoscopic CDH repair was performed in the right-side decubitus position for a left CDH, with a small block placed under the right hemithorax to rule out the intercostal spaces. A 3 mm trocar was inserted in the sixth intercostal space under the scapula. Two additional 3 mm ports were placed under direct visualization, one in the seventh intercostal space on the anterior axillary align and the other one in the seventh intercostal space between the scapula and the spine. Then the chest was insufflated gently with low pressure CO2 insufflation (4–6 mmHg). When possible, the insufflation pressure was decreased once the viscera were reduced back into the abdomen. Hernia viscera were sequentially restored into the abdomen. Avoid using of traumatic instrumentation directly especially in the spleen reduction, and that process could be assisted with the stomach and colon. After the reduction, the defect size could be evaluated and classified. If primary closure was possible, primary closure was performed by interrupted suture with non-absorbable 4-0 proline thread. For severe defect of the posterolateral diaphragm, we suggested a special suture technique that the needle is going through the diaphragm margin - intercostal muscle - diaphragm margin and moderately tightening of the wire knot. It was considered as a safe and reliable way to close the diaphragm defects in our institute, which could effectively reduce recurrence. For a large diaphragmatic defect which was hard to be closed primarily, we prefer a patch to repair the defect without tension after continuous suture which had closed the defect as much as possible, and the fixed patch should be tightly attached to the weak part of the diaphragm, followed by interrupted suture with non-absorbable 4-0 proline thread. Then a prophylactic chest tube was left in place. Conversion from minimally invasive to open surgery was based on conditions like hemodynamic instability. The open surgery was usually done by thoracotomy in our institute.

Conclusions / future directions: It was considered as a safe and reliable way to close the diaphragm defects in our institute. But that needs more future studies and data to confirm it.

P152 DEVELOPMENT AND IMPLEMENTATION OF A SPECIALLY DESIGNED VACUOMETER FOR THE VACUUM BELL TREATMENT OF PECTUS EXCAVATUM. Luzia Toselli, MD[1]; Maxroxia Vallee, MD[1]; Gaston Elmo, MD[2]; Jorge Martinez[1]; Daniela Sanjurjo[1]; Maximiliano Nazar-Peirano[1]; Gaston Bellia Munzon[1]; [1]Fundacion Hospitalaria; [2]Hospital Italiano de Buenos Aires

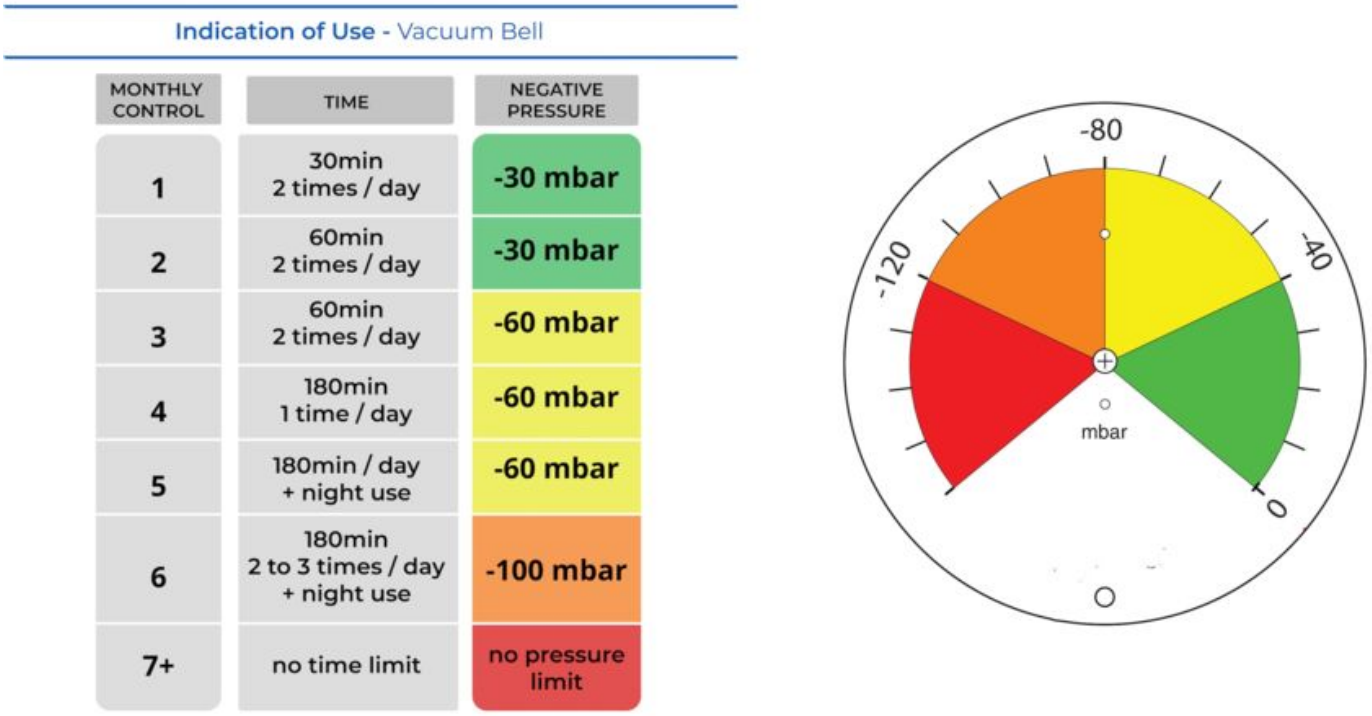
Objective of the device: The non-operative treatment of pectus excavatum with a vacuum bell (VB) has become popular in the last ten years. To avoid skin lesions, some centers initiate treatment with a protocol of gradual increase of negative pressure using a digital vacuometer. However, when patients try to comply with their chest wall surgeon's indications, they don't have a vacuometer back at home to apply the exact negative pressure that was prescribed. Instead, they can only count the number of pumps to the vacuum pump of the VB, this being a very imprecise strategy to achieve an exact suction power.

Description of the technology and method of its use or application: A specially designed pectus vacuometer was developed for the ambulatory measurement of the exact negative pressure self-applied by the patient when using a VB for the treatment of pectus excavatum. Patients receive precise indications of time and negative pressure according to our VB treatment protocol together with the pectus vacuometer (Figure 1). To achieve a clearer visualization, the protocol and the vacuometer have matching colors. Once the prescribed negative pressure is reached, a check valve is closed and the vacuometer is disconnected from the VB.

Preliminary results: Between October 2018 and June 2020, all patients with pectus excavatum who received a VB at our Pectus Clinic were provided with a specially designed pectus vacuometer for their personal use. Of 76 patients with indication of VB, 72 received a vacuometer. We conducted a patient satisfaction survey which was responded to by 54. The mean general satisfaction score was 4.4±0.7 (where 1 was poor and 5 was excellent). The implementation of the vacuometer was feasible in 53 patients (98%). No skin lesions were detected while using the combination of the VB and the vacuometer. A patient who considered himself cured was the only dropout during the study.

Conclusions / future directions: We demonstrated the feasibility of the implementation of a pectus vacuometer to enable patients to self-apply accurately the prescribed VB negative pressure. The device had high patient satisfaction rates. We think it might help avoid skin lesions secondary to the VB and foster adhesion to treatment.

Figure 1:



On the left, the time/negative pressure protocol with different colors as the stages increase is shown. On the right, the vacuometer's interface with matching colors with the protocol is depicted.

P153 SUCCESSFUL TREATMENT OF GENERALIZED PERITONITIS IN PEDIATRIC PATIENTS USING VAC SYSTEM THROUGH UMBILICAL LAPAROSCOPIC PORT Edgar Salamanca, MD[1]; Maria Eugenia Ruiz-Botero, MD[2]; [1]Fundación Cardioinfantil; [2]Universidad del Rosario

INTRODUCTION: Vacuum assisted closure (VAC) appeared at the end of the 20th century and is nowadays extensively used in different fields of medicine due to its multiple action mechanisms, including promotion of cellular migration and bacterial growth inhibition, which provides special value during treatment of abdominal sepsis. Usually, the collocation of this kind of device is made through a laparotomy, nonetheless we present 3 cases in which patients were successfully treated for severe abdominal sepsis with laparoscopic inserted VAC systems.

DESCRIPTION:

CASE 1:

12-year-old, previously healthy male, presented to the emergency department with abdominal pain, fever diarrhea and emesis. Physical examination revealed tenderness of the right lower quadrant. Laparoscopic appendectomy due to perforated appendix and peritonitis drainage was performed. A piece of 'WhiteFoam' was inserted through the umbilical port, and then a piece of 'GranuFoam' was placed above. A VAC device was coupled and continuous pressure at -75 mmHg applied. The device was withdrawn, and the abdominal wall closed on the 5th day postop; the patient discharged 12 days after initial procedure.

CASE 2:

2-year-old, previously healthy female, presents to the emergency department with 3 days of abdominal pain, fever, diarrhea, and emesis. Physical examination showed a distended abdomen with generalized tenderness and peritoneal irritation signs. A laparoscopic appendectomy was performed finding generalized peritonitis with approximately 400 cc of purulent material in the abdominal cavity which was drained. 2 'WhiteFoam' pieces were inserted through the umbilical port and then coupled to a VAC device at -50 mmHg continuous pressure. The Foam was replaced after 3 days, then retired and the abdominal wall closed 8 days after the initial intervention. The patient developed a small collection in her right lower quadrant that resolved without surgical intervention. She was discharged 18 days after retirement of the VAC device.

CASE 3:

5-year-old, previously healthy female, presented to the emergency department with three days of abdominal pain and emesis. Physical examination revealed a distended abdomen with generalized tenderness and peritoneal irritation signs. Laparoscopic appendectomy was performed, revealing the presence of purulent material within the abdominal cavity which was drained. 2 pieces of 'WhiteFoam' were introduced through the umbilical port into the abdominal cavity and coupled to a VAC system at -50 mmHg continuous pressure. Three days after, the device was withdrawn, and the patient was discharged on the 14th day of hospitalization.



CONCLUSION: Even though more studies are needed in the field of negative pressure therapy in the treatment of abdominal sepsis in children, as well as the insertion technique, we show our experience with complex cases, in which, taking advantage of the benefit offered by the laparoscopic approach, VAC therapy was used to successfully treat three patients with severe peritonitis, with no mayor complications.

P154 NOVEL TECHNIQUE OF USING EPIDURAL NEEDLES TO 'RETRIEVE' BURIED BUMPERS! Ferzine Mohamed, MS; Ravi Anbarasan, Mr; Ashok DayaRam, Mr; Norfolk and Norwich University Hospital, United Kingdom

OBJECTIVE: Description of a novel technique using a Tuohy epidural needle and a prolene suture to retrieve a buried Freka Gastrostomy bumper.

DESCRIPTION: A 4 year old patient presented to us with a buried bumper of a 9Fr Freka gastrostomy tube which allowed only a narrow jet of saline to pass through an endoscopically visible pinhole opening in the stomach with complete overgrowth of gastric mucosa . The tube could not be advanced forward.

Due to the presence of the external length of tube, it is difficult to enter the stomach at the same gastrostomy site often warranting tube placement adjacent to the previous site.With our technique, the previous gastrostomy site can be preserved and the PEG replacement performed safely.

Details: The external tube was cut to have sufficient length to manipulate.The puncture needle with the sheath that comes with the Freka gastrostomy kit could not used through the external tube due to size discrepancy.

A Tuohy epidural needle was used instead, (18 G ,8cm in length) with a blunt bevel and curved tip(Fig:1) to insert into the external tube which was then visualised through the pinpoint gastrostomy site via the endoscopy. Prior to insertion,a 3-0 prolene suture was introduced as a loop through the sharp end of the epidural needle. (Fig:2).The placement thread was passed through this loop and hooked into the Tuohys and brought out through the needle. The suture was removed and the thread withdrawn to just within the needle. This placement wire was then retrieved by the endoscope into the oral cavity as the regular procedure. The bumper was dissected off subcutaneously through a minimal incision.

PRELIMINARY RESULTS: The technique used in this patient enabled the patient to be discharged the same day after establishing feeds and so far the gastrostomy tube has been in use successfully without any further trouble.

CONCLUSIONS/FUTURE DIRECTIONS: Buried bumper syndrome is a serious complication of PEG resulting in migration of the internal fixation device outside the stomach to a subcutaneous plane.Excessive traction leading to compression between the external and internal fixing devices is thought to be the culprit. There have been various techniques described in literature and while they have been quite succesful, they often necessitate resiting the tube at a separate position.We describe a novel technique that precludes this and utilises components easily available at surgical theatres.

We propose that these elements be made part of a buried bumper retrieval kit that can be packaged separately for use in patients who have been diagnosed to have a buried bumper endoscopically.

Figures Below:

Fig:1-Bevelled and curved Tuohy epidural needle tip

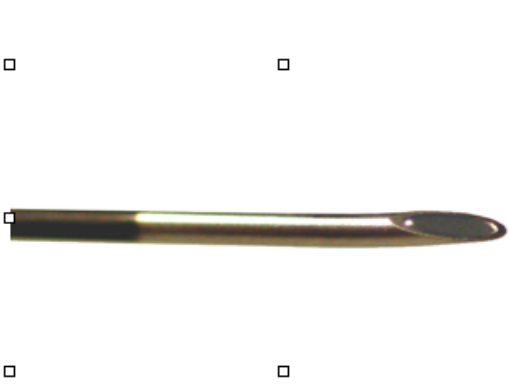
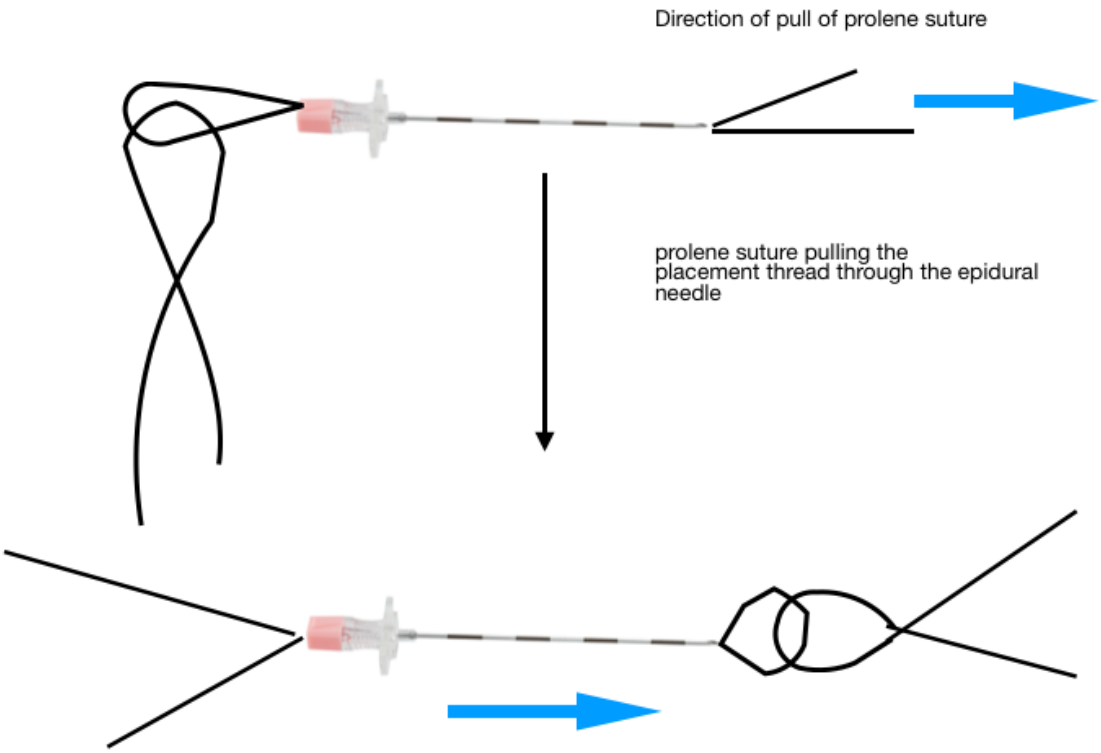


Fig:1-Bevelled and curved Tuohy epidural needle tip

Fig:2-Tuohy needle-Prolene suture being passed through needle to snag the placement thread which is then withdrawn slightly to sit just short of the tip. The needle is then advanced through the cut external tube all the way to the original gastrostomy opening


Direction of pull of prolene suture
prolene suture pulling the placement thread through the epidural needle