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SESSION I, APPENDICITIS
TRANSUMBILICAL LAPAROSCOPIC-ASSISTED APPENDECTOMY (TULAA):
A SINGLE CENTER EXPERIENCE

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INTRODUCTION

In our Department transumbilical laparoscopic-assisted appendectomy (TULAA) is the first approach for acute appendicitis. TULAA can be easily converted to a three-trocar conventional laparoscopic appendectomy (VLA) and furtherly to open appendectomy (OA). The aim of our study was to analyze the feasibility of this technique for both non-perforated (NPA) and gangrenous/perforated (GPA) acute appendicitis.

METHODS:

We retrospectively reviewed clinical charts of cases of NPA and GPA, confirmed by histology, from 2003 to 2016. Demographic and operative data were compared using Fisher's exact test for qualitative values and Mann-Whitney test for quantitative values.

RESULTS:

TULAA was initiated in 1160 children (M/F1.5) with 947(82%) NPA and 213(18%) GPA. No difference for age (NPA 10 ± 2.7 ;GPA 9 ± 3 years) and weight (NPA 33 ± 12 ; GPA 30 ± 13 kilograms) between the two groups. Overall conversion rate was 17%(VLA 13%; OA 5%), it was lower for NPA (11%,VLA 8%;OA 3%) compared to GPA (50,3%,VLA 36%;OA 15%) $p<0,05$. Causes of conversion were: retrocecal appendicitis, peritoneal adhesions and appendicular abscesses. Median operative time was shorter for NPA (70 ± 35 mins) compared to GPA (105 ± 44 mins) $p<0,05$. Median length of hospitalization was shorter for NPA(3.7 ± 3 days) compared to GPA(7 ± 5 days) $p<0,05$.

CONCLUSION:

We report one of the widest experience of TULAA in children. Despite the high rate of conversion and longer operative time for GPA, the possibility to pass to VLA and OA should encourage the use of this technique as first approach for acute appendicitis.

SESSION I, APPENDICITIS
ENDOLOOP VERSUS ENDOSTAPLER: WHAT IS THE BEST OPTION FOR
APPENDICEAL STUMP CLOSURE IN CHILDREN WITH COMPLICATED
APPENDICITIS?
RESULTS OF A MULTICENTRIC INTERNATIONAL SURVEY

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AIM:

We aimed to compare endoloop (EL) vs endostapler (ES) for stump closure during LA for complicated perforated appendicitis in children.

METHODS:

We retrospectively reviewed the records of 708 patients with an average age of 9.8 years who underwent LA for complicated appendicitis in 5 international centers of Pediatric Surgery over a 5-years period. The appendix was perforated with localized peritonitis in 470 cases and diffuse peritonitis in 238 patients. EL was used in 374 cases (G1), ES was adopted in 334 cases (G2).

RESULTS:

No intra-operative complication occurred in both groups but 5 conversions to open surgery were reported in G1 (1.3%) and 4 in G2 (1.1%) (OR 1.1; 95% CI 0.30-4.19). Use of EL was significantly associated with higher incidence of intra-abdominal abscess (OR 1.36; 95% CI 0.84-2.18), postoperative ileus (OR 3.61; 95% CI 0.76-17.11) and re-operations/readmissions (OR 6.46; 95% CI 1.46-28.62) compared to ES. The average cost of supplies for LA was significantly higher in G2. The average cost of re-operations/readmissions was significantly higher in G1.

CONCLUSIONS:

Our study is the first in the pediatric population to demonstrate that the method used for appendiceal stump closure may influence the outcome of LA in complicated appendicitis. Although ES is more expensive compared to EL, appendix stump closure should be performed using ES rather than EL in complicated perforated appendicitis since its use was associated with a lower incidence of postoperative intra-abdominal abscess and postoperative ileus and lower re-operations and readmissions rates and costs.

SESSION I, APPENDICITIS

**DOES THE AGE OF THE SURGEON INFLUENCE THE CHOSEN SURGICAL METHOD
TREATING ACUTE APPENDICITIS IN CHILDREN?**

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AIM OF THE STUDY

The surgical workforce is aging worldwide while the complexity of surgical practice is expanding at an exponential rate. However, the insistence to former familiar techniques associated with aging limits the aging surgeon's ability to keep up. As a result, older surgeons do not fully adhere to modern standards of care. Our aim was to confirm the above hypothesis in the treatment of appendicitis in our department.

METHODS

At the first author's institute 317 appendectomies were performed in children in 2016 and 2017. Surgical preference and length of stay were retrospectively studied in relation with the age and experience of the surgeon. For statistical analysis we used Fisher's exact and Chi² for trend tests.

RESULTS

Three age groups were defined: trainee-young specialists (median age 33 years), experienced specialists (median age 41 years) and surgeons facing retirement (median age 61.5 years). Surgeons in the experienced specialist age group perform laparoscopic appendectomy more often (73.1% vs. 22.9%), than surgeons in the pre-retirement age group ($p < 0.0001$). In complicated acute appendicitis cases, the difference between the two groups were even more pronounced (79.2% vs. 4.3%; $p < 0.0001$). The length of stay was significantly shorter in the patients operated by surgeons in the experienced specialist age group than by the pre-retirement group. ($p < 0.0005$)

CONCLUSION

Although the higher age and greater experience might be considered a benefit, our results confirm that there is an inverse and paradoxical relationship between the higher age of the surgeon and the use of state-of-art surgical techniques treating appendicitis.

SESSION I, APPENDICITIS

APPENDECTOMY IN CHILDREN, COMPARING MINIMALLY INVASIVE VERSUS OPEN APPROACH- HIGHER ACCURACY OF MACROSCOPICAL FINDING REGARDING TECHNICAL VISUALIZATION IN MINIMALLY INVASIVE SURGERY

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INTRODUCTION:

This study contributes to the understanding of treatment strategies of appendicitis as one of the most prevalent conditions in pediatric surgery. The aim is to compare open and minimally invasive approach towards appendectomy in children.

OBJECTIVES:

Evaluate the effect of laparoscopic appendectomy (LA) on the days of postoperative hospital stay, on the incidence of postoperative complications. Evaluate effect of the operation type on the accuracy of perioperative diagnosis in comparison with the definitive histopathological diagnosis.

METHODS:

Retrospective analysis of medical files of patients who had undergone an appendectomy at the Department of Pediatric Surgery in Bratislava between years 2011 and 2015.

RESULTS:

The study group consisted of 531 children, 458 after LA, out of which 37 patients after SILA (single incision LA), and 73 after open appendectomy. There was a significant effect of LA on the reduction of the postoperative hospital stay, 6 vs. 7 days ($p < 0.05$). The rate of postoperative wound infection was lower in LA group, 2.90% vs. 9.86%. Perioperative diagnosis accuracy has higher currency rate in LA, 74.86% vs. 57.89%.

CONCLUSION:

LA seems to be a safe operative method in children, with a positive effect on the postoperative length of stay, with a lower rate of postoperative wound infection. In LA, macroscopic image is closer to the objective reality than evaluation of findings in open surgery. We assume that this difference is caused by quality of reproduction of real image, possibility of magnification of the image and possibility to visualization of the whole affected area.

SESSION I, APPENDICITIS
LAPAROSCOPIC OR OPEN APPENDECTOMY FOR
COMPLICATED APPENDICITIS IN CHILDREN

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AIM OF THE STUDY:

Comparison of the outcome of laparoscopic appendectomy (LA) for complicated appendicitis (CA), with open appendectomy (OA). The incidence of intra- and post-operative complications was documented and analysed.

METHODS:

This is a single-centre, retrospective non-randomized study reviewing children, 4 – 12 years of age, who had either an OA or LA for CA. Data collection for the period: August 2012 - June 2016. Relevant ethics review board approval was obtained. (Reference number: S16/06/103)

MAIN RESULTS:

A total of 155 patients with CA were recorded during the study period. Both groups were well matched in terms of patient age, duration of symptoms and pathology. Fourteen patients with incomplete information, or ages falling outside the specified age range, were excluded. Ninety had OA and 43 LA. Eight (18.6%) LA patients had to be converted to OA. There was no difference in the overall intra- and post-operative complication rate. Post-operative infective complications occurred in 11/43 (25.6 %) of the LA, and in 23/90 (25.6 %) of the OA ($p=1$) and in 2/8 (25%), who needed a conversion from LA to OA.

CONCLUSIONS:

There is no difference in outcome between LA and OA for CA, in spite of the fact that trainees being experienced with OA yet novices in LA. We conclude that LA appendectomy, even for CA, is an ideal training model. Surgical trainees acquire the skill over a short period of time and the learning curve is steep.

**SESSION I, APPENDICITIS
PRELIMINARY RESULTS OF TRANSUMBILICAL LAPAROSCOPIC ASSISTED
APPENDECTOMY (TULAA)**

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INTRODUCTION

Development of minimal invasive surgery concept in the last two decades, determined many surgical teams to experience many techniques that are able to simplify the act of surgery. This simplification process is related to: shortening of the operation time, insertion of a reduced number of trocars and instruments, all of these reflected in low costs and short hospital stay.

MATERIAL & METHODS

The authors are presenting a serie of 31 cases of TULAA. From all cases 23 were successful intervention and 8 of them were only TULAA attempts. The age of patiens was between 2,5 to 16 years. From all cases included in the study, 19 were girls. In the serie two types of mesoappendix approach was used: ligation and monopolar coagulation.

RESULTS

74,19% of appendectomies were successfull and 69,56% from these cases were girls. Mean duration of surgery was 12,5 min and mean hospital stay was 1,5 days. No serious complications were recorded. In 8 cases the appendectomy was converted to the technique with three trocars. In 10 cases hematoma of the right iliac fossa was noted. In 3 cases bleeding from the mesoappendix.

CONCLUSIONS

TULAA is representing an excellent alternative to any appendectomy technique. Is a short intervention, painless, with ideal aesthetic results. Mean hospital stay is reduced but is necessary to select the cases based on some clinical parameters.

SESSION I, APPENDICITIS
LAPAROSCOPIC ONE PORT APPENDECTOMY: EVALUATION IN PAEDIATRIC SURGERY

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Background

Appendectomy is a well-established surgical procedure in pediatric surgery used in the management of acute appendicitis. With the continuous advancement in the field of minimal invasive surgery, the recent focus is on single incision laparoscopic (SIL) surgery. SILA also go further in order to decrease pain, improve recovery and enhance patient satisfaction. However, this approach is still not a well-established technique and not widely practiced, especially in pediatric surgery.

Methods

We prospectively recorded the data in our pediatric university hospital center since January, 01 2017 to July, 01 2017. Patients included in this study were randomized in two groups: SILA group (managed by one-port laparoscopy, n=40) and LA group (conventional laparoscopy using three trocars, n=40).

Results

The mean operative time for SILA was significantly lower ($p=0.049$). There were no postoperative complications in SILA group. If peritonitis was associated with appendicitis, the operative duration was not significantly different between each group. The duration in recovery room after surgery was significantly lower in SILA group ($p=0.02$). The morphine consumption was significantly lower for SILA group according to patient weight ($p=0.05$). SILA is less painful significantly than CLA for the first postoperative 6 hours. After, even if SILA appears less painful, difference is not significant. The hospital length of stay was significantly higher in LA than SILA group.

Conclusions

SILA procedure for appendectomy appears to be safe and efficient for appendicitis management in children. This technique could be applied in routine as in emergency tome.

SESSION I, APPENDICITIS
LAPAROSCOPIC APPENDECTOMY: JUNIOR SURGEONS PRACTICE AND
COMPLICATIONS

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Introduction

Appendicitis is a frequent diagnosis among paediatric patients (USA incidence=1/1000). Nowadays, laparoscopic appendectomy (LA) is considered the gold standard technique. The mentioned postoperative complication rate is 10-15%. We report the experience with LA performed by junior surgeons during the last 5 years.

Materials & Methods:

We performed a retrospective review (April 2013–April 2018) considering only patients treated for acute appendicitis (flegmon, gangrenous, perforated and peritonitis). Surgery was routinely performed by junior surgeons following a standardized technique: 3 trocars with open umbilical access; the appendix was removed using endobag, drains were placed in peritonitis. Demographic data, laboratory and imaging results and surgical details were collected. Special attention was paid to complications and re-intervention rates.

Results:

We performed 457 LA; 111/457 (24%) perforated. Mean age at surgery was 11 years. We had 18/457 complications (4%): abscesses (6), obstructions (5), wound infections (4), bleeding (1), others (2). All abscesses and obstructions occurred in perforated appendix and peritonitis. Redo-surgery was required in 6/18 (0,3%) cases (5 obstructions and 1 abscess). Discussion: Multiple meta-analysis and reviews have shown that compared to open surgery LA has comparable rate of abscesses, lower rates of wound infections and less bowel obstruction. Intra-abdominal abscess is the most common complication with a reported incidence of 5,7-20% in perforated appendix; obstruction recurs in 0,2-1,2% and wound infection in 2-5,7% of cases. In our series we had 1,3% of abscesses and 1% of obstructions but the need of redo surgery was only 0,3%. Wound infection was observed in 0,9% and usually required conservative management. Complications after LA are relatively uncommon in junior practice applying a standard technical protocol.

SESSION I, APPENDICITIS
LOW-COST APPENDECTOMY: A FASTER AND CHEAPER TECHNIQUE FOR UNCOMPLICATED APPENDICITIS

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OBJECTIVE

To present our variant of transumbilical laparoscopic-assisted appendectomy and to compare it with three-port conventional laparoscopic appendectomy (CLA) in terms of surgical time, postoperative complications and economic cost.

METHODS

This technique provides access to the abdominal cavity through an umbilical incision without the use of trocars (insertion of a probe for pneumoperitoneum and a laparoscopic camera and forceps through a single 8-mm incision), followed by an extracorporeal appendectomy.

We performed a retrospective review of patients with diagnosis of phlegmonous appendicitis who underwent surgery at our center (public tertiary referral hospital) over the last year, comparing the results of our trocar-free transumbilical appendectomy (TFTA) and CLA.

RESULTS

148 patients were analyzed. In 30(42.9%) of them TFTA was practiced and in the remaining 118(57.1%) CLA was performed. Both groups were comparable in their demographic and clinical features. In 4 of the TFTA cases (13.3%), introduction of 2 trocars for appendicular adhesiolysis was required. Operative time for TFTA (47 minutes, 31.6-63.6) was significantly lower than for CLA (70.4 minutes, 44.9-95.9) ($p = 0.01$). There were no differences in postoperative complications (abscess, wound infection, intestinal occlusion) between both groups (0 events in the ALST group and 3 in the ALC group, $p = 0.82$). Each TFTA represented an average saving of 270.73(213.31-328.15) euros in surgical material when compared to CLA.

CONCLUSIONS

For selected cases of uncomplicated appendicitis, TFTA represents a safe option when compared to conventional laparoscopic appendectomy, associating a shorter operative time and a lower economic cost.

SESSION I, APPENDICITIS
HEM-O-LOK CLIP VERSUS HAND-MADE LOOP IN BASE CLOSURE DURING
LAPAROSCOPIC APPENDECTOMY IN CHILDREN

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AIMS:

To evaluate the efficacy and safety of hem-o-lok clip in base closure during laparoscopic appendectomy (LA) in children and compare its outcomes with hand-made loop.

METHODS:

Prospective study that included all patients who underwent LA at our hospital from January 2017 to March 2018. The cases were randomly divided into 2 groups according to the method used for base closure; in the first group double hem-o-lok clips were used, while double hand-made loops were adopted in the second group. Data were collected and compared between groups by t and chi-square tests including clinical data, operative time, complications, hospital stay and cost of supplies.

RESULTS:

The study included 44 patients, hem-o-lok clip group and hand-made loop group consisted of 21 and 23 patients respectively. There were no significant differences between both groups concerning patients' demographics, complications or hospital stay. Mean operative time was 29.95 ± 8.33 min in hem-o-lok clip group (range 18-47), whereas it was 38.78 ± 4.91 min in hand-made loop group (range 31-52) reaching statistical significance ($p=0.001$). In terms of costs, a cartridge of hem-o-lok clips to be used per each case costs approximately 14 USD in our country, while a single package of Vicryl ligature 2/0 for forming hand-made loops costs 4 USD.

CONCLUSIONS:

Hem-o-lok clip is effective and safe to secure appendicular base during LA in children. Although it is slightly more expensive than hand-made loop but it offers significant shorter operative time which is the principal advantage when compared to hand-made loop.

SESSION I, APPENDICITIS
WORSE COSMETIC OUTCOMES FOLLOWING MULTIPORT LAPAROSCOPIC
APPENDECTOMY *VERSUS* OPEN AND 2-TROCAR TRANSUMBILICAL
APPENDECTOMY

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BACKGROUND:

Although laparoscopic appendectomy is traditionally associated with cosmetic advantages, comparative studies regarding scar assessment in the pediatric population are limited. We aim to evaluate patient and parental satisfaction with cosmesis following multiport laparoscopic appendectomy (LA), 2-trocar transumbilical Appendectomy (TA) and open appendectomy (OA).

METHODS:

A retrospective analysis of all patients submitted to open and laparoscopic 2-trocar and multiport appendectomy between January 2016 and March 2018 in a single institution was performed. Patients over 14 years old and parents of younger patients were surveyed via telephone in order to complete the Patient and Observer Scar Assessment Scale (POSAS) questionnaire and rate overall satisfaction regarding scar cosmesis.

RESULTS:

A total 172 families were surveyed, of which 79 completed the questionnaire (45,9% response rate). 29,1% patients were submitted to OA, while 38% and 32.9% were submitted to LA and TA, respectively. Comparative analysis demonstrated significantly worse POSAS scores in the LA group ($p=0,035$) when compared to either TA or OA. Differences between groups are largest regarding scar thickness ($p=0,045$) and irregularity ($p=0,017$), with worse results for both laparoscopic approaches versus open surgery. Conversely, no significant differences were found between groups regarding overall satisfaction ($p>0.05$).

CONCLUSIONS:

Patients and parents submitted to conventional laparoscopic appendectomy report significantly inferior scar cosmesis when compared to either 2-trocar appendectomy or open surgery.

SESSION II, UROLOGY
LAPAROSCOPIC ADRENAL-SPARING RESECTION OF BILATERAL METACHRONOUS PHEOCHROMOCYTOMA IN A PATIENT WITH VON HIPPEL LINDAU DISEASE

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INTRODUCTION:

Pheochromocytoma may occur in about 20% of patients with von Hippel-Lindau disease (VHL). As they can present bilaterally and metachronous, adrenal-sparing surgery is mandatory to prevent patients from Addison's disease. To our knowledge, successful laparoscopic adrenal-sparing resection of bilateral metachronous pheochromocytoma as well as of a recurrent tumor on one side in a child has not been described so far.

METHODS:

We report the case of a 11 year old boy with VHL. During routine check-up, urine catecholamine levels were elevated and MRI revealed an adrenal tumor on the left side. The patient underwent laparoscopic adrenal-sparing surgery with complete enucleation of a pheochromocytoma. 4 months later recurrence of the tumour was suspected when serum levels of catecholamine increased. MRI-evaluation revealed a contralateral tumor and the patient underwent subsequent surgery again achieving complete tumor-resection. 5 months postop, routine follow up MRI showed a recurrent tumor on the left side, however, urine and serum catecholamine levels remained within normal range. 10 months after, a F18-DOPA-PET/CT revealed the tumor now to be metabolically active, suggesting a recurrence of the pheochromocytoma. Again, laparoscopic adrenal-sparing surgery was performed with complete margins. Serum-levels of cortisol recovered spontaneously to normal after a few days.

CONCLUSION:

Laparoscopic adrenal-sparing surgery, though technically challenging, is mandatory in patients with VHL but provides curative therapy. It allows to maintain endogen steroid production. However, with remaining adrenal gland tissue there is a risk of developing a recurring tumour even following complete removal due to the genetic predisposition.

SESSION II, UROLOGY
**LAPAROSCOPIC NEPHRECTOMY WITH DISTAL URETER PRESERVATION FOR
CLEAN INTERMITTENT CATHETERISATION**

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AIM:

The Mitrofanoff principle of bladder intermittent catheterization improved renal outcome and quality of life. We present our experience with continent catheterisable conduit created from distal ureter after nephrectomy.

CASE 1:

Boy, 2 years of age, born with posterior urethral valves and bilateral reflux presented several episodes of UTI and urine retention. Unfortunately, CIC by urethra failed due to absent child compliance. Laparoscopic right nephrectomy was performed for a non-functioning kidney and the distal ureter preserved. The distal ureter was exteriorized by the port orifice in the right iliac fossa and a modelage according to the Kalicinski technique performed. It was reimplanted laparoscopically according to Lich-Gregoire and externalized through the umbilicus as a continent easy stoma. Two years follow up: no leakage, no stenosis and a very good cosmetic result. Left reflux nearly disappeared.

CASE 2:

Girl, 4 years of age, with a neurogenic bladder secondary to a myelomeningocele was referred to our department. Right uretero-vesical reflux was operated on previously. For persistent UTIs despite CIC, a non-functioning right kidney and progressive renal function deterioration a laparoscopic right nephrectomy was performed with distal ureter conservation. It was brought out to the right iliac fossa trocar site and obtained a continent catheterisable conduit. One year follow-up shows no complication.

CONCLUSIONS:

The distal ureter presents an ideal anatomical structure for catheterisable channels. Uretero-vesical junction preservation offers continence (with or without reimplantation) with a minimal conduit blood supply risk. The ureter offers a predictable behavior in terms of long term contact with urine.

SESSION II, UROLOGY

COULD THE VASCULAR HITCH BE CONSIDERED THE FIRST SURGICAL OPTION IN CHILDREN WITH HYDRONEPHROSIS DUE TO A CROSSING VESSEL?

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Hydronephrosis can be caused either by an intrinsic ureteropelvic junction obstruction (UPJO) due to abnormal smooth muscle development and fibrosis, and/or by extrinsic obstruction, secondary to vessels compression, kinks or adhesions over the ureteropelvic junction (UPJ) area. The aim of this study is to evaluate the success rate of laparoscopic the vascular hitch (VH) in a third level Italian pediatric hospital.

From October 2011 to December 2017, 37 children with extrinsic UPJO due to CVs underwent a laparoscopic VH. The indications for surgery were based on at least two of the following criteria: symptomatology (colic lumbar pain), increasing renal pelvis dilatation (superior to 20 mm), worsening of split renal function evaluated with static scintigraphy and obstruction with dynamic scintigraphy, presence or suspicion of CV over the PUJ detected with Color-Doppler Ultrasound or Magnetic Resonance Urography.

In the considered period, 37 children (19 boys, 18 girls) were subjected to a laparoscopic VH. The average dilatation of the pelvis was 30 mm (range 9 – 70 mm). The average age was 7,4 years (range 0,5 - 22,7 years). At follow-up, 27 patients had resolution of symptoms and reduction of hydronephrosis, 6 patients did not perform expected follow up and 4 patients had persistence of symptoms and increasing of hydronephrosis. In patients with hydronephrosis due to a crossing vessel, the laparoscopic VH is less invasive than pyeloplasty, and the risk of complications is reduced. Considering the results we obtained, VH could be considered the first surgical option for the treatment of extrinsic UPJO by CV.

SESSION II, UROLOGY
**LAPAROSCOPY/RETROPERITONEOSCOPY: A GOOD ALTERNATIVE TREATMENT
FOR RENAL PELVIC CALCULI IN CHILDREN**

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INTRODUCTION

Nephrolithiasis, once considered an adult disease, has become increasingly prevalent in children, with an increase from 6% to 10 % annually in past 25 years. Kidney stones in pediatric population can result from metabolic diseases in up to 50% of cases. Other factors associated are: infection, dietary factors, anatomic malformations of urinary tract. Standard treatment procedures for pediatric population are similar to adult population. Extracorporeal shock wave lithotripsy (ESWL), ureterorenoscopy (URS), percutaneous nephrolithotomy (PCNL), as well as laparoscopic and retroperitoneoscopic approaches (MIS) can be indicated in selected cases. The advantages of MIS approaches are shorter mean operation time, no trauma of renal parenchyma, lower bleeding risk, and higher stone-free rates, especially in pelvic calculi with extrarenal pelvis, where the stone is removed intact.

PATIENT AND METHODS:

Eight children (one less than 2 years old) with large kidney stones (>1,5cm) underwent minimally invasive pyelolithotomy. One patient presented multiple caliceal and ureteric stones. 3 patients presented stones in proximal ureter, 2 in inferior calix, 2 in the pelvis. After exposition of renal pelvis and ureteropelvic junction, a longitudinal or circular incision was made on the renal pelvis, and on the ureter, depending on the location and shape of the stone.

For ureteric stones a previous ureterorenoscopy was tried with no success. A double JJ-stent and a bladder catheter were placed.

RESULTS:

The procedure occurred with no complications, and the calculi were completely removed. JJ-stent was removed after 4 weeks.

CONCLUSIONS:

MIS-pielolithotomy is a feasible and safe procedure in children, with same outcomes of adult population.

SESSION II, UROLOGY
URETEROSCOPIC LITHOTRIPSY FOR URETERAL STONES IN CHILDREN USING
HOLMIUM:YAG LASER ENERGY: RESULTS OF A MULTICENTRIC
SURVEY

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Aim:

This paper aimed to assess the outcome of Holmium:YAG (Ho:YAG) laser lithotripsy during retrograde ureteroscopic management of ureteral stones in different locations in pediatric population .

Methods:

The medical records of 149 patients (average age 9.5 years) treated with Ho:YAG laser ureteroscopic lithotripsy in 5 international pediatric urology units over the last 5 years were retrospectively reviewed. Ureteral JJ stent was placed and removed mean 3 weeks after surgery.

Results:

Average stone size was 10 mm [range 5-17 mm]. Stones were located in the distal ureter in 77 cases (51.7%), in the middle ureter in 23 (15.4%) and in the proximal ureter in 49 (32.9%). Average operative time was 31.6 minutes [range 20-95]. Intraoperative complications included 5 bleedings (3.3%) and 7 stone migrations (4.7%). Overall stone free rate was 97.3%. Overall postoperative complications rate was 4.0% and included 2 cases of stent migration (1.3%) (II Clavien) and 4 stone recurrences (2.7%) that were successfully treated using the same technique (IIIb Clavien). Overall complications and re-operation rates were significantly dependent only on the proximal stone location (p=0.001).

Conclusions: The use of the Ho:YAG laser ureteroscopic lithotripsy seems to be an excellent first line treatment for children with ureteral stones, independently from primary location and size. However, patients with proximal ureteral stones reported a higher risk to require a secondary procedure to become stone-free. Combination of the semirigid and flexible ureteroscopes as well as the appropriate endourologic tools are fundamental for the success of the procedure regardless of stones' size and location.

SESSION II, UROLOGY
TIPS AND TRICKS TO MAKE EASIER RETROGRADE ENDOSCOPIC LASER LITHOTRIPSY WITH RIGID AND FLEXIBLE URETERORENOSCOPY

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Abstract

Laser lithotripsy with rigid or flexible ureterorenoscopy (URS) is one of the treatment modalities for ureter and renal stones. The aim of this study is to delineate an easier way and algorithm in retrograde endoscopic laser lithotripsy (RELL) in those stones.

Material and Methods:

Patients having ureteral stones and renal stones to which ESWL could not be applied were included into the study. RELL was performed in 124 children. Data and some tips and tricks to make the procedure easier were defined.

Results:

The age range of the patients was between 10 months to 17 years. Female/Male ratio was 1/2. Urinalysis, serum biochemistry, ultrasound and direct urinary system graphy were asked prior to the procedure. RELL was applied in all patients with ureteral stones (n=86). Rigid URS was used for renal stones in pelvis, upper calyx, and ureteropelvic junction, while flexible URS was used for lower pole stones (n=38). Passive dilatation with JJ stent was preferred before RELL in infants and small children. Stone location, size and types; patient and surgeon positions, size of the instruments, how to introduce URS, flow rate of the fluid, maneuver of URS and laser probe, when to go on and stop were organized before and during the procedure.

Conclusion:

To be able to apply RELL as a minimally invasive procedure in a dexterity; surgeon should have an algorithm including criteria such as age of the patient, stone type and location, instrument size and types. Some tricks developed by experience also simplify the procedure.

SESSION II, UROLOGY
FLEXIBLE URETERORENOSCOPY AS A NEW POSSIBILITY OF TREATING
NEPHROLITHIASIS IN CHILDREN – PROSPECTIVE STUDY

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Flexible ureterorenoscopy is a surgical technique used for the treatment of the upper urinary tract. It is often used in adult patients, however, due to the advancing miniaturization of the equipment as well as its precision, this technique has also become possible in the treatment process in children.

We would like to present 95 cases of flexibleURS carried out in children with nephrolithiasis of the upper urinary tract aged 3,5 to 18 years. The average age was 10.4 years and the children were treated in our department from June 2013 to April 2018. The first surgery in Poland took place in our Department of Paediatric Surgery and Urology, University Hospital in Zielona Góra on the 6th of June 2013. All the children had been subjected earlier to unsuccessful ESWL treatment.

60 children had stone in the lower calyx, 24 children had stone in the middle and lower calyces and in 11 child a stone was located in the initial part of the ureter. A surgical efficiency of 89,5 % was achieved.

FlexibleURS is an effective and minimally invasive tool both for the diagnosis and treatment of upper urinary tract. For stones located in initial part of the ureter flexible URS can be effective alternative for ESWL or semirigid URS with higher efficacy. It is also alternative for PCNL, but it carries a risk for repeat procedure. We believe that the advances in miniaturization of the equipment and growing experience enable carrying out of this procedure in smaller children with high efficiency.

SESSION II, UROLOGY
**HIGH PRESSURE BALLOON DILATATION OF URETEROVESICAL JUNCTION FOR
PRIMARY OBSTRUCTIVE MEGAURETER: A MULTICENTER
STUDY**

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AIM OF THE STUDY:

To describe the initial experience of 3 referral centers in the treatment of primary obstructive megaureter (POM) in children, by high pressure balloon dilatation (HPBD) of the ureterovesical junction with double JJ stenting, to assess its effectiveness in the medium-term, and to review the literature concerning this approach.

METHODS:

We reviewed the medical records of all children who underwent HPBD for POM that require surgical treatment from May 2012 to December 2017 in 3 different institutions. Primary outcome measured was postoperative improvement in degree of ureterohydronephrosis (UHN). Secondary outcomes were postoperative complications and resolution of preoperative symptomatology.

MAIN RESULTS:

A total of 40 ureters underwent HPBD to treat POM in 31 children, with a median age of 15 months (3 months - 15 years). UHN disappeared in 15 ureters (38%), improved in 19 ureters (49%) and remained stable in 1 ureter. Four cases required a second HPBD. Four patients required surgical treatment for worsening of UHN. The complications rate was 32 % (13 ureters). All were related to double J stent. The median follow-up was 24 months (2 months - 5 years) and all patients were symptom-free.

CONCLUSION :

We reported the first multicenter study and the largest series of children treated with HPBD, with an overall success rate of 85%. Endoscopic treatment can be a definitive treatment of POM since it avoided reimplantation in 90% of cases. Complications are mainly due to double J stent.

SESSION II, UROLOGY
REVIEW OF SCOTTISH PAEDIATRIC UROLITHIASIS CLEARANCE RATE .
4 YEARS REPORT

Wisam Abbas, Jimmy Lam
Royal Hospital For Sick Children, Edinburgh, United Kingdom

AIM:

Review of 4 years of paediatric urolithiasis treatment to analyse rate of stone clearance, identify patient and procedural factors associated with reduced clearance and identify factors associated with recurrence.

MATERIAL AND METHODS:

Retrospective report (2012-2016). Records of patient diagnosed with urolithiasis reviewed and required data collected including: age , gender, pre and post operative KUB xray and ultrasound, underlying medical conditions, stone screen results, procedure performed, post operative course and complications.

RESULTS:

Total of 78 procedures performed in 45 patients (23 males, 22 females). Median age was 7years. Median Follow up was 15 months. Underlying medical /surgical condition found in 29 patients. Treatment modalities: ESWL: 35 procedures in 17 patients. PCNL: 21 procedures in 18 patients (5 combined with other procedures). URS : 22 procedures in 8 patients (18 laserlithotripsy, 4 combined with PCNL). One Transurethral Cystolitholapaxy. One Cystoscopy & pneumatic lithotripsy + cystoscopic removal of stones. 11 (14%) procedures changed to different modality based on pre op KUB xray. Overall stone clearance rate was 75.6%. Recurrent urolithiasis rate was noted in 12.8% of the procedures. Conclusion: Management of urinary tract stones in Scotland has been centralized to Edinburgh for a number of years. Acceptable overall radiological clearance rate 75.6% utilising different modalities. Availability of treatment modalities allows optimal treatment to be chosen and modified until day of surgery. Risk factors associated with incomplete clearance and recurrence include: Stone size/ location. Underlying metabolic condition (cystinuria, cystic fibrosis). Recurrent UTIs. Immobility. Anatomical predisposition.

SESSION II, UROLOGY
LASER ENDOSCOPIC TREATMENT OF URETEROCELE IN YOUNG CHILDREN

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Ureterocele, often associated with renal duplex system, may represent an uncommon cause of pyeloureteral obstruction with possible severe consequences on kidneys and urinary tract in young children. Early decompressive treatment is advocated to reduce the risk of febrile urinary infection and renal damage. Endoscopic techniques have been proposed using diathermic electrode. We adopted laser energy to release the obstructed ureterocele.

From January 2012 to December 2017, we performed endoscopic multiple punctures at the ureterocele basis in infants. Holmium YAG laser 0.5 Joule energy was utilized by 272 micron fiber, through 8-9.8 ch paediatric cystoscope under short general anesthesia. Foley catheter was removed after 18-24 hours. Renal ultrasound was performed at 1,3,6 and 12 months after surgery. Voiding cystourethrogram and DMSA Scan were done at 6 months.

A total of 64 endoscopic procedures were performed in a 6 years period: 41 were classified as ectopic and 23 orthotopic ureteroceles. Mean age at surgery was 19.7 months (1-168). Immediate decompression of the ureterocele was obtained. No bleeding or other complications occurred. Twelve patients (18%) required further surgery at 1-5 years follow up: 7 ureteral reimplantation for reflux, 5 laparoscopic heminephroureterectomy for dysplastic hydronephrotic upper renal moiety.

Endoscopic decompression of ureterocele should be considered as first line treatment in young infants and children. In our experience, resection of the ureterocele sac or wide section of its wall should be avoided. Multiple punctures by laser energy is a really minimally invasive treatment that allows immediate decompression and reduce the risk of further aggressive surgery.

SESSION II, UROLOGY
POST-OPERATIVE USE OF HUMAN CHORIONIC GONADOTROPHIN (U-HCG)
IN PATIENTS TREATED FOR INTRABDOMINAL
UNILATERAL UNDESCENDED TESTES

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OBJECTIVE

To report our experience with post-operative use of human chorionic gonadotrophin to achieve higher testicular volume and function, respect to untreated patients

MATERIALS AND METHODS

A prospective study was done using subjects who underwent orchidopexy between September 2010 and June 2017 for unilateral intrabdominal undescended testes. All patients were treated by the same surgeon with laparoscopic one-stage Fowler-Stephens technique. After surgery (2 weeks) those patient parents who accepted to use hormonal therapy, had to follow a 6 weeks scheme. Patients received subcutaneous 500UI (Gonasi-HP) weekly. A follow-up was performed at the end of therapy and 6 months later. Testicular volume was measured at each visit by ultrasound and by sonoelastography and compared with the untreated ones.

RESULTS

52 patients were enrolled and treated with a mean age of 18.0 ± 9.7 months. 39 patients received post-operative hormonal therapy. There were no cases of adverse effects nor dropout. All patients completed follow-up. There were no cases of testicular atrophy in both groups. At 6 months among treated patients 80% of subjects achieved normal testicular size while the others had still smaller volume. Among untreated patients, 46% subject achieved normal testicular size. ($p < 0.05$)

CONCLUSION

Despite the role of hormonal therapy is still under discussion, especially for post-operative treatment, our results suggest that it is safe and useful to improve testicular volume and morphology; treated testes have also a good stiffness respect to untreated testes

SESSION II, UROLOGY
LAPAROSCOPIC MANAGEMENT OF SEMINAL VESICLE CYST

Aurelien Scalabre, Sophie Vermersch, Francois Varlet
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OBJECTIVE:

Cysts of the seminal vesicle are very rare in children with a prevalence of 0.005%. We report 3 cases treated by laparoscopy.

PATIENTS AND METHODS:

We treated 3 patients: 2 adolescents with pelvic pains and a 2-years-old boy with urinary tract infection. All had Zinner syndrome, associating obstruction of the ejaculatory duct, ipsilateral renal agenesis or severe dysplasia, and ectopic ureter connected to the seminal vesicle, giving a "cyst". Ultrasonography and MRI revealed renal agenesis associated with a cyst, posterior to the bladder beside the midline. The seminal vesicle cysts were removed by laparoscopy.

RESULTS:

The dissection between the vesicle and the bladder was difficult in every case. A bladder wound occurred in the 2 years old boy, requiring a running suture and bladder stent for a week. A small kidney and a wide ureter were found in every boy and removed during the same procedure. In all cases, pain resolved postoperatively and patients are now asymptomatic. Fifty-six cases of seminal vesicle cysts are reported in literature, with a mean age of 4.96 years. Prenatal diagnosis was only reported in 2 cases. Forty-one (73%) were associated with a renal agenesis or dysplasia. Twenty-nine (52%) had no surgical treatment. Twenty-one (38%) underwent surgical excision, by laparoscopy in 6 cases. Six (11%) patients underwent nephrectomy alone.

CONCLUSION:

Seminal vesicle cysts are commonly associated with renal dysplasia or agenesis, evocating a Zinner syndrome. Symptomatic patients can be treated safely by laparoscopy, although separation from the bladder can be challenging.

SESSION II, UROLOGY
**LAPAROSCOPIC VARICOCECTOMY USING POLYMERIC LIGATING CLIPS AND ITS
EFFECT ON SEMEN PARAMETERS IN PEDIATRIC POPULATION WITH
SYMPTOMATIC VARICOCELE**

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BACKGROUND:

The aim of this study was to evaluate demographic and clinical characteristics of the children undergoing laparoscopic varicocelectomy by using polymeric ligating clips and to evaluate postoperative outcomes and analyze semen according to the grade of varicocele after surgery.

METHODS:

The case records of 120 pediatric patients who underwent laparoscopic varicocelectomy were reviewed. The following parameters were examined: age, grade of varicocele, lateralization, diameter of spermatic veins, indications for surgery, duration and outcomes of surgery, complications, and recurrence rate. For patients older than 16 years of age, semen analyses were obtained before and after the surgery and were compared according to the clinical grade of varicocele.

RESULTS:

The median age of the patients was 15 years. Left-sided varicocele was found in 119 patients and bilateral varicocele was found in 1 patient. Of the 120 varicoceles, 8 (6.7%) were grade I, 58 (48.3%) were grade II, and 54 (45%) were grade III. There were no major intraoperative complications. Hydrocele was found in 2 (1.6%) patients. There were no cases of recurrence recorded. Sperm concentration ($P<0.01$), morphology ($P<0.01$), and motility ($P<0.01$; $P=0.02$) improved 6 months after surgery in patients with varicocele grades of I and II, respectively. In grade III varicocele, only sperm concentration ($P<0.01$) and morphology ($P=0.03$) improved whereas motility ($P=0.150$) did not change significantly.

Conclusion: Laparoscopic varicocelectomy using polymeric ligating clips is a safe, feasible, and cost-effective technique, with a low rate of postoperative complications and recurrence and it significantly improves sperm parameters in adolescents.

SESSION II, UROLOGY
**PERSISTENT MÜLLERIAN DUCT SYNDROME: LAPAROSCOPIC APPROACH AND
REVIEW OF THE LITERATURE**

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Persistent müllerian duct syndrome (PMDS) is extremely rare. We report 2 cases of laparoscopic management.

PATIENTS AND METHODS:

We treated two consecutive cases of PMDS diagnosed during a laparoscopy for inguinal hernia repair in one case and for undescended testis for the other. We reviewed literature about clinical presentation and treatment.

RESULTS:

The first case was a 1-month-old neonate operated on by laparoscopy to treat a right inguinal hernia. The left testis was not palpable. An abnormal structure was seen behind the bladder by preoperative ultrasonography. The diagnosis of PMDS was confirmed during surgery, with both testes connected to a persistent Mullerian structure. The right testis was herniated through the processus vaginalis. Biopsies confirmed that gonads were testes. Excision of the Mullerian structure with bilateral orchiopexy was performed a few months later. The second patient was operated on at the age of 18 months for a left impalpable testis. PMDS was diagnosed during laparoscopy. The Mullerian remnant was splitted sagittally, which allowed pulling down the left testis into the scrotum. Both patients had uneventful follow-up. The literature review showed no consensus regarding management of this malformation. The trend is to encourage a single-stage bilateral orchiopexy with division and splitting of the Mullerian remnant to spare the vas deferens. Fertility is often compromised.

CONCLUSION:

PMDS is a rare entity and controversy remains regarding the ideal surgical management. Laparoscopy allows to confirm the diagnosis and to perform single-stage bilateral orchiopexy with sparing of the vas deferens.

**SESSION III, UPPER GASTRO-INTESTINAL
OPTIMISATION OF NUTRITIONAL STATUS IN CHILDREN WITH ACHALASIA
PRIOR TO LAPAROSCOPIC HELLER MYOTOMY USING PLANNED NASOGASTRIC
FEEDING**

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INTRODUCTION:

The benefit of good nutritional status for any major surgical intervention is well established. Children with Achalasia are frequently unable to sustain adequate enteral intake and commonly report weight loss. 19 patients have undergone Heller Myotomy at our center since 2005. Of these, 8 required emergency admission prior to surgery for weight loss and dehydration. We hypothesised that planned nasogastric (NG) feeding for children prior to Laparoscopic Heller Myotomy (LHM) would result in improved perioperative nutritional status. We report on our initial experience with this intervention.

METHODS:

Short-term NG feeding was offered to patients with a confirmed diagnosis of Achalasia for whom LHM was planned during 2017. Patients were admitted 2 weeks prior to surgery for dietician assessment, NG tube insertion and parental education. Once feeding was tolerated patients were discharged home. On readmission for surgery patients underwent repeat dietician assessment and tolerance of the intervention was ascertained.

RESULTS:

3 patients (2 female, age range 9–15 years) underwent planned NG feeding for 2 weeks immediately preceding LHM. 1 patient required an inpatient stay for expectant management of re-feeding syndrome. All patients completed the entire NG feeding period and demonstrated weight gain (range 0.2-2.5 kg). There were no tube displacements. Parents and patients reported improved energy levels during the intervention.

CONCLUSION:

Outcomes of short-term NG feeding prior to LHM are promising. This intervention was well tolerated, safe and resulted in improved nutritional status. We propose that planned NG feeding has utility in preoperative care of children with Achalasia.

**SESSION III, UPPER GASTRO-INTESTINAL
LAPAROSCOPIC TRANS HIATAL POSTERIOR MEDIASTINAL ESOPHAGEAL
DISSECTION, ESOPHAGEAL ADVANCEMENT AND HERNIA REPAIR
IN TYPE 4 HIATUS HERNIA**

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Hiatus hernia (HH) is a rare and usually congenital entity in children however frequent in adults. It is generally diagnosed incidentally while evaluating the underlying reason of failure to thrive, coughing, recurrent airway infection and vomiting. Type 4 is the rarest type of HH and following repair recurrence is an important issue.

We believe that adequate esophagus dissection and advancement through the abdomen could better circumvent the postoperative complications and recurrence especially. Therefore, here we present a type 4 HH case that was underwent laparoscopic trans-hiatal posterior mediastinal esophageal dissection, esophageal advancement, hiatus repair and nissen fundoplication.

CASE:

An 18 months old girl, has referred to our emergency department, owing to detection of suspicious mediastinal mass during investigating the underlying reason of coughing. Her weight was lower than 1 percentile and breath sounds were lessened in the right side of the chest. Her complaints were epigastric tenderness, vomiting and also, increased bowel movement that could be heard from outside. Her chest x-ray has a great suspicion of mediastinal mass and thoracic contrast-enhanced computed tomography confirmed that it was a Type 4 HH. She was underwent laparoscopic trans-hiatal posterior mediastinal esophageal dissection, esophageal advancement, hiatus repair and nissen fundoplication. Time to start clear diet on postoperative 3rd day and with time to full feed on postoperative 4th day patient was discharged. She continued to make good progress with resolution of all symptoms during follow up of 18th month and also demonstrated to gain weight.

**SESSION III, UPPER GASTRO-INTESTINAL
LAPAROSCOPIC TOUPET FUNDOPPLICATION FOR HIATAL HERNIA REPAIR
IN CHILDREN**

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INTRODUCTION :

Laparoscopic procedures for hiatal hernia disease appear to be as effective as those performed by open laparotomy. The Nissen fundoplication is the most used technique, but expose to functional problems namely bloating and dysphagia. The Toupet fundoplication has the reputation to be as effective with less complications.

MATERIAL AND METHODS:

This is a retrospective study of 32 cases of hiatal hernia operated according to the Toupet technique, in The Department of General Pediatric Surgery of the University Hospital Mohamed VI of Marrakesh, Morocco, over a period of 5 years from 2011 to 2016.

The aim of our study is to evaluate the efficiency and safety of this technique in the treatment of hiatal hernia complicated with gastroesophageal reflux disease, and to analyze the short and medium-term outcomes.

RESULTS:

From 2011 to 2016, 32 patients underwent laparoscopic Toupet fundoplication for esophageal hiatal hernia. The incidence was 6.5 cases / year, with a mean age of 42 months, and male's dominance. All patients had anti-reflux medication before surgery. Twelve patients required dilation for esophageal stenosis. Laparoscopic Toupet fundoplication was converted to open surgery in 3 patients. The mean postoperative hospital stay was 3 days (2-5 days). During a follow-up period of 1-24 months (mean of 14 months), no recurrence of the hernia nor functional complications were observed in our series.

CONCLUSION:

Toupet fundoplication is a safe and effective procedure for surgical repair of hiatal hernia in children. It allows a good control of reflux and decreases the incidence of postoperative dysphagia.

SESSION III, UPPER GASTRO-INTESTINAL
A SIMPLE TRICK TO STABILISE ANTERIOR STOMACH WALL FOR LAPAROSCOPIC
ASSISTED ENDOSCOPIC GASTROSTOMY

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INTRODUCTION

There's been a growing interest among paediatric surgeons in exploring refinements in laparoscopically-assisted gastrostomy tube insertion techniques. The main advantage of a laparoscopic technique that it allows direct visualization of the stomach, eliminating potential risk of colon interposition and perforation.

We present our experience in Laparoscopic Assisted Percutaneous Endoscopic Gastrostomy (LAPEG) applying a simple trick; that makes it more efficient to perform.

METHODS

The patient-cohort was identified using the surgeon's database of LAPEG between 2013-2018. The primary outcome measured was occurrence of major complications.

TECHNIQUE

Laparoscopy is performed. The site of gastrostomy is marked on the skin of left upper quadrant. The stomach is insufflated with air via a nasogastric tube, until the anterior surface becomes accessible.

A stab wound is created at the skin mark. A 3mm laparoscopic Johan-grasper is inserted through the wound to "pinch-steady" the gastric wall at the site of the proposed gastrostomy. A Venflon™-needle, followed by guidewire, are passed alongside the grasper. The gastroscope's inserted, followed by the standard-steps of PEG.

Results

LAPEG was achieved in 16 patients with no major complications. The gastrostomy was routinely used 3hours post-operatively.

Conclusion

Grasping the stomach provides several advantages. In addition to being under vision, there is minimal use of air insufflation reducing the bloating of the small bowel. The counter-traction provided by the grasper makes the penetration of the needle into the stomach easier. Another advantage; especially for high-lying stomach, is that the tension of intended gastric-puncture site can be assessed to reduce complications.

**SESSION III, UPPER GASTRO-INTESTINAL
PERCUTANEOUS ENDOSCOPIC GASTROSTOMY IN INFANTS WEIGHING
LESS THAN 5 KILOGRAMS**

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AIM:

Assessing the safety and long-term results of PEG in infants weighing < 5 kg.

METHODS:

Retrospective evaluation for the years 2005-2017

RESULTS:

Among 232 children, 37 (16%) were <5 kg. The mean age was 5±3 (19 days-16 months) months and the mean weight was 4.4±0.6 (2.7-4.9) kg. The primary diagnosis was neurological disorders in 22, metabolic disorder in eight, cleft palate in three, muscular disorder in two and cardiac disorder in one. A 14F catheter was used in 30 patients and a 16F in 7. No perioperative complications occurred and all were completed successfully. Because of uncontrolled traction on the catheter, a tear in the tract was encountered in 3 (8%) patients postoperatively. All were surgically repaired. The catheter was removed in two (5%) patients with achievement of oral feeds on the long-term. Seventeen (46%) died of primary diseases. Their mean catheter days was 12±17 (17 days-72 months) months. The mean catheter days of 16 (46%) patients who are currently being followed up is 34±26 (4 month-7 years) months.

CONCLUSION:

PEG can be safely applied in low-weight infants with complex diseases. The mortality is high because of underlying diseases. However, PEG catheters were in-place enabling feeding for a sufficient length of time to create a difference in their lives. Their thin subcutaneous tissue cannot support enough the PEG catheter head within the stomach causing involuntary detachment of the catheter which is a special consideration in this patient group.

SESSION III, UPPER GASTRO-INTESTINAL
LAPAROSCOPIC REPAIR OF GASTROCOLOCUTANEOUS FISTULA AS A
COMPLICATION OF PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG)
PLACEMENT IN A 4-YEAR-OLD CHILD

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A 4-year-old female patient with neurological impairment, was hospitalized in a pediatric inpatient unit of our hospital for pneumonia.

The patient had a gastrostomy placed endoscopically with a pull-technique 6 months before in another Centre.

She was evaluated by the surgeon for persistent diarrhoea and yellow secretions from the stoma.

The child underwent a contrast radiographic study in which a contrast medium was injected through the gastric tube, showing a direct passage in the colon and in minimal part in the stomach.

The radiography study resulted in a gastrocolic fistula.

An explorative laparoscopy was then performed showing the gastrostomy bumper in the transverse colon and a thin gastrocolic fistula in the posterior wall of the colon.

The colon was divided from the abdominal wall and was sutured with separated stitches, while the gastrocolic fistula was separated with an endoGIA.

A new LAPEG (Laparoscopic Assisted Percutaneous Endoscopic Gastrostomy) was performed.

The postoperative course was characterized by subocclusion due to intestinal adhesions, resolved with conservative approach.

Percutaneous Endoscopic Gastrostomy is a widespread, well standardized, safe technique but with potential complications, most of them minor.

Gastrocolocutaneous fistula is a rare but severe complication due to some risk factors such as previous abdominal surgery or deformities of the spine or thorax.

In our case, laparoscopic gastrocolocutaneous fistula repair was a safe and effective way to manage this uncommon problem.

SESSION III, UPPER GASTRO-INTESTINAL
TWO-YEAR OUTCOME AFTER LAPAROSCOPIC FUNDOPLICATION IN PAEDIATRIC
PATIENTS WITH GASTROESOPHAGEAL REFLUX DISEASE

Rebecca K. Stellato, Femke V.M. Mulder, Stefaan H.A. Tytgat, Tycho S. Oudman, David C. Van Der Zee, Femke A. Mauritz, Maud Y.A. van Herwaarden-Lindeboom
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BACKGROUND:

Many studies on short-term efficacy of laparoscopic antireflux surgery (LARS) have shown good to excellent results on reflux symptom control and health related quality of life (HRQoL). Intermediate-term follow-up studies, however, are scarce and have shown that the efficacy of symptom control may decline over time. The aim of this study is to assess the two-year outcome on reflux symptoms and HRQoL after LARS.

METHODS:

Between 2011 and 2013, 25 children [12 males, median age 6 (2–18) years] with PPI-resistant GERD were included in a prospective longitudinal cohort study. To assess reflux symptoms and HRQoL, patients and/or their parents were asked to fill out the validated age-adjusted gastroesophageal reflux symptom questionnaire (GSQ) and Pediatric Quality of Life Inventory (PedsQL™) before, three-to-four months, one year and two years after LARS.

RESULTS:

Two years after LARS, 29% of patients (7/24) had moderate to severe reflux symptoms compared to 92% (23/25; $p < 0.001$) before operation and 12% (3/25; $p = 0.219$) after short-term follow-up. The significant increase in HRQoL shortly after fundoplication (80.0 compared to 69.5 ($p < 0.004$)) is not reflected in the two-year outcome (72.0 compared to 69.5, $p = 0.312$). No correlation between the impaired HRQoL scores and the recurrence of symptoms could be verified.

CONCLUSION:

Although the efficacy of LARS tends to deteriorate after two years, LARS is still effective in controlling reflux symptoms for the majority of patients. The short-term impact of LARS on HRQoL appears to be transient.

**SESSION III, UPPER GASTRO-INTESTINAL
TRENDS IN PEER REVIEWED REPORTING ON LAPAROSCOPIC
DUODENAL ATRESIA**

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AIM:

Duodenal atresia treatment using laparoscopic techniques was introduced over a decade ago. This epidemiological study analyzed peer-reviewed reporting on laparoscopic duodenal atresia repair over the past decade.

METHODS:

The terms "laparoscopy", "duodenal" and "atresia" were used to compile a Pubmed search. Data fields specified included number of publications per year, peer-reviewed journal preference, origin of publication, and main conclusive points. Review articles were excluded. Articles were selected by 2 reviewers to minimize bias.

RESULTS:

The search identified 26 articles published between 2005-2015 in 13 Journals. The Journal of Laparoendoscopic & Advanced Surgical Techniques contributed the highest number publications(n=7). There was an exponential rise in the number of publications from 2005(n=1) to 2008(n=5), followed by a decline with 7 publications between 2009-2012. A second peak was observed in 2014(n=5). USA was predominant with 9 publications(35%); followed by China and France (n=3). Nearly 1/3rd articles highlighted the safety and feasibility of laparoscopy. Some studies found laparoscopy reduced length of hospital stay(n=5) compared to open surgery; whereas others did not. 4 articles mentioned the technical difficulty of the laparoscopic approach to duodenal atresia and the need for experienced surgeons.

CONCLUSION:

Reporting trends in laparoscopic surgery for duodenal atresia identified 26 articles from 2005-2015. The USA led the list in peer-reviewed publications accounting for 1/3rd articles. The two peaks in number of publications is evident for the years 2008 and 2014. The laparoscopic approach may provide benefits of safety, reduced length of stay but further studies are needed.

SESSION III, UPPER GASTRO-INTESTINAL
SUPERIOR MESENTERIC ARTERY SYNDROME IN MONOZYGOTIC TWINS TREATED
BY 3D LAPAROSCOPIC DUODENOJEJUNOSTOMY

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Introduction:

Superior mesenteric artery syndrome is a rare cause of proximal duodenum obstruction in children. Comorbid conditions have been described in up to 88% of patients. Treatment of SMA initially involves conservative measures like gastric and duodenal decompression, correction of electrolyte imbalances and intravenous rehydration. However, when medical treatment is ineffective, surgery is indicated. We describe the first pediatric case of SMA in monozygotic twin brothers.

MATERIAL AND METHODS:

Our patients described several days' history of vomiting and abdominal pain. Their previous medical records were no relevant. Two days after the first twin was hospitalized, the second twin was admitted. They had high bilious nasogastric tube output (2.5 L/h). Radiological imaging (ultrasound and CT) showed severely distended stomach and proximal duodenum with an acute caliber change at the third part of the duodenum.

RESULTS:

Due to the absence of a predisposing factor of SMA and the massive gastric and proximal duodenum dilatation, both patients underwent 3D laparoscopic duodenojejunostomy on their fifth day of hospitalization. At 12-months follow-up, they are asymptomatic.

CONCLUSIONS:

SMA syndrome should be treated initially with medical therapy. However, each case should be assessed individually, taking into account the benefits and risks of available alternative techniques. Laparoscopic duodenojejunostomy is safe and effective for the management of SMA syndrome. Genetic factors could be involved in the development of visceral and vessel relations, especially in monozygotic twins.

**SESSION III, UPPER GASTRO-INTESTINAL
OUTCOMES OF LAPAROSCOPIC AND OPEN SURGICAL TREATMENT OF
INTESTINAL MALROTATION IN CHILDREN**

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This study aims to compare the outcomes of laparoscopic and open surgical treatment of intestinal malrotation in children.

METHODS:

This multicentric retrospective study included all consecutive cases of intestinal malrotation operated on between 2005 and 2016 in 7 centers. The outcomes of laparoscopic and open surgery were compared.

RESULTS:

237 children (93 females and 144 males) with a median age of 17 days (0-17.2 years) were included. 175(73.8%) were emergency procedures for intestinal malrotation with volvulus and 62(26.2%) were elective Ladd's procedure.

45(18.9%) procedures were performed by laparoscopy, with a conversion rate of 37.8%. The choice of a laparoscopic approach was more frequent for elective surgery than for emergency procedures (38.7% vs 12.0%, $p=0.0001$).

The mean age was significantly higher in the laparoscopy group (59.7 months \pm 67.1 vs 15.59 months \pm 38.6, $p=0.002$), while the mean operative time (110 min \pm 41 by laparoscopy and 88 min \pm 44 by laparotomy, $p=0.2$) and hospital stay (7.4 days \pm 6.4 by laparoscopy and 9.7 days \pm 8.0 by laparotomy, $p=0.3$) were comparable. The youngest child treated by laparoscopy was 3 days old. After a mean follow-up of 22.7 months \pm 30.3, no significant differences were found considering the rates of postoperative volvulus (10.7%(3/28) vs 5.3% (11/209)) and postoperative bowel obstructions (7.1%(2/28) vs 10.0%(21/209)).

CONCLUSION:

The laparoscopic approach is safe and effective for the management of intestinal malrotation in children. Experienced surgeons can choose this approach for the treatment of volvulus in infants.

SESSION III, UPPER GASTRO-INTESTINAL
LAPARO-ASSISTED VERSUS OPEN TREATMENT OF INTESTINAL ATRESIA:
A SINGLE CENTER EXPERIENCE

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INTRODUCTION:

Nowadays the surgical management of intestinal atresia is shifting to laparoscopy to improve operative and clinical outcome. The aim was to evaluate the safety and the feasibility of laparo-assisted treatment of intestinal atresia by comparing outcome with a group of open surgery (OS).

METHODS:

Retrospective chart review of cases of intestinal atresia undergoing laparoscopic surgery (LS) and comparison with a control of OS, performed at our institution between 2000 and 2017. Data were compared using Fisher's exact test for qualitative values and Mann-Whitney test for quantitative values.

RESULTS:

Out of 92 cases of intestinal atresia 34 (37%, duodenal n=12, jejuno-ileal n=22) were approached by LS, and 58 (63%, duodenal n=29, jejuno-ileal n=29) by OS. No differences were observed between the two groups in terms of: gestational age (LS 35.8 ± 0.3 ; OS 36.2 ± 0.3 weeks, p=ns), and weight at birth (LS 2474 ± 117 ; OS 2342 ± 80 grams, p=ns). Seven cases (26%) were converted due to multiple atresia (n=3) or neonatal instability (n=4). No difference in post-operative morbidity was observed between the two groups (LS 15%; OS 22%, p=ns). Median time to initiation (LS 5.4 ± 0.2 ; OS 7.5 ± 0.3 days, p<0.05) and to full oral feeding (LS 14.7 ± 0.9 ; OS 24.0 ± 2.3 days, p<0.05) were shorter in LS.

CONCLUSIONS:

Despite the risk of conversion, LS for intestinal atresia could be considered safe and feasible. LS has the same post-operative complications rate, and decreased time to start and to full oral feeding compared to OS group.

SESSION IV, LOWER GASTRO-INTESTINAL
ROLE OF SINGLE-INCISION LAPAROSCOPIC SURGERY (SILS) IN THE
MANAGEMENT OF LATE- DIAGNOSED HIRSCHSPRUNG DISEASE (HD)

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BACKGROUND:

We describe our protocol which combines the laparoscopic Georgeson pull-through and SILS for late-diagnosed HD.

METHODS:

Retrospective chart review of cases with late-diagnosed HD operated on between 2/2016-4/2018. Intraumbilical placement of an Alexis wound retractor (AWR) (size XS; Applied Medical) connected to a homemade glove port. Colonic sections were grabbed laparoscopically and exteriorized through the AWR for full-thickness biopsies including non-absorbable stiches. In cases of massive megacolon a diverting ileostomy was placed in the same session for a two-stage procedure after colonic shrinking. If additional colonic mobilization was needed the descending colon was exteriorized through the AWR and vessels like the inferior mesenteric artery (IMA) were divided with preservation of the colonic arcade extracorporeally.

RESULTS:

2 of 4 patients received a diverting ileostomy using SILS-technique. Mean age at surgery was 6.5 ± 4.3 years. Full-thickness biopsies were of high quality and definitive in all patients. The non-absorbable sutures for biopsy closure helped to distinguish ganglionic from aganglionic bowel in the second procedure (pull-through). In one child the mesentery of the descending colon was exteriorized through the AWR for division of the IMA to gain additional length. There were no intraoperative complications.

CONCLUSION:

SILS in managing HD can be used to 1) obtain full-thickness biopsies therefore lowering the risk of insufficient biopsy results 2) classic laparoscopic dissection of the rectosigmoid 3) exteriorize the descending colon facilitating easy dissection of the mesentery without overstretching the anus.

**SESSION IV, LOWER GASTRO-INTESTINAL
LAPAROSCOPIC ENDORECTAL PULL-THROUGH FOR THE TREATMENT OF
HIRSCHSPRUNG DISEASE: LESSONS LEARNED
FROM A SERIES 140 CONSECUTIVE PATIENTS**

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INTRODUCTION

Laparoscopic assisted endorectal pull-through (LAERPT) is widely employed for Hirschsprung (HSCR). Continence in the long term is not always as good as expected. Our study describes the results of a large series of patients and some technical key-points to improve the results.

METHOD

Study period ranges from January 2003 to December 2017. Demographics, surgical details, complications and functional outcome were recorded. Only patients with classic HSCR (no cerebral palsy, no syndromes, no redo, older than 4) were assessed for continence and divided into three Groups based on different technical aspects regarding endorectal dissection and cuff length. Group A - 2003 to 2008, Group B - 2009 to 2011, and Group C - 2012 to 2017.

RESULTS

Overall 140 patients underwent LAERPT. M:F ratio was 3.89:1. Median age at surgery was 8 months (1 month to 13 years). Twelve patients (8.6%) experienced anastomotic stricture, 8 (5.6%) cuff stricture, 2 (1.5%) residual disease, 1 (0.7%) rectovaginal fistula, no leakage and 14 (10%) postoperative enterocolitis. One patient (0.7%) required a redo. Continence was considered good to excellent in overall 70% of patients. When addressing different Groups, good to excellent continence was reported by 52% of patients in Group A, 69% in Group B and 93% in Group C.

DISCUSSION

LAERPT confirmed to be safe and effective in HSCR. Improving technical details is of utmost importance. Although short muscle cuff have been reported to work well, in our experience a longer cuff with blunt endorectal dissection seem to provide the best results.

**SESSION IV, LOWER GASTRO-INTESTINAL
POUCHITIS OCCURRENCE AFTER ILEAL POUCH-ANAL ANASTOMOSIS IN A
PEDIATRIC COHORT OF PATIENTS WITH ULCERATIVE COLITIS**

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INTRODUCTION:

Laparoscopic colectomy followed by ileal pouch-anal anastomosis (IPAA) is the standard procedure for the surgical management of UC.

MATERIALS AND METHODS:

children with UC who underwent colectomy and subsequent Knight Griffen IPAA between 2005 and 2016 in a third level paediatric surgery and gastroenterology Unit were included. Data about features of UC at time of surgery, time of first pouchitis, pouchitis occurrence and therapy for pouchitis were recorded. Follow up was at least 6 months.

RESULTS:

40 patients (21 boys, 19 girls) were included. All patients underwent colectomy for moderate-severe UC refractory to medical therapy. During the follow-up, in 23 patients at least one episode of pouchitis demonstrated by endoscopy was recorded. The median time of the first pouchitis was 14.5 months after the closure of protective ileostomy. Within this group, 9 patients had the first episode in the first year, 6 within two years, 4 within three years, 1 within 4 years, 2 within 5 years, 1 after 5 years from the operation. Pouchitis was recurrent in 8 patients and chronic in two. Antibiotics (metronidazole and ciprofloxacin) were the main therapy for acute and recurrent pouchitis. In the two cases with chronic pouchitis the use of anti-TNF alfa was necessary after antibiotic and steroid failure. No pouch failure was observed.

CONCLUSION:

pouchitis is a frequent complication after IPAA in children. In our experience we observed at least one episode of pouchitis in 60% of patients. In the most of them antibiotics represented an effective treatment.

**SESSION IV, LOWER GASTRO-INTESTINAL
BENEFITS OF LAPAROSCOPIC-ASSISTED ANORECTAL PULLTHROUGH FOR HIGH
ANORECTAL MALFORMATION**

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Posterior sagittal anorectoplasty (PSARP) represents from 1982 the gold- standard procedure for high-type anorectal malformation (ARM) However, the postoperative fecal continence is not satisfactory. The laparoscopic assisted anorectal pull through (LAARP) introduced by Georgeson in 2000, permits to obtain a better fecal continence because the damage to the neuromuscular system is minimized.

In the last 5 years we treated N. 14 male ARM patients with recto-urethral fistula. Preoperative spine and abdominal sonograms and voiding cystourethrograms were routinely performed to determine associated anomalies. Every patients underwent a loop colostomy and. LAARP was performed at 3 months of life according to the conventional technique described by Georgeson. Surgical colostomy closure was performed at 6 months of life.

The procedure was successfully completed in all cases. Mean operation time was 150 minutes. Both external anal and internal laparoscopic electrostimulation have allowed clearly to identify the correct anal site and puborectalis sling. Median length of postoperative hospitalization was 12 days. We had no immediate postoperative complications. At follow-up all patients presented a satisfactory bowel activity with no evidence of soiling. Rectal prolapse developed in 1 patient after 3 months and it required the surgical prolapse excision with anus remodeling.

Our experience shows that LAARP technique is safe, feasible and simple. LAARP concept of “no cutting the sphincteric muscle complex” is ideal and allows to obtain a satisfactory quality of life in the aspect of defecation control. Shorter laparoscopic dissection of rectum may be helpful in preventing rectal mucosal prolapse.

SESSION IV, LOWER GASTRO-INTESTINAL
UNUSUAL PRESENTATION OF RESIDUAL FISTULA AFTER LAPAROSCOPIC
TREATMENT OF ANO-RECTAL MALFORMATION

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AIM:

The laparoscopic treatment of ano-rectal malformations (ARM) gained more and more popularity during the last years. Progressively, the long term post-operative complications started to appear. We diagnosed through an unusual presentation a complication: residual fistula and cyst formation.

CASE REPORT:

Our patient is a former premature diagnosed with ARM and urethral fistula in the frame of a Vacterl syndrome. At birth, a left colostomy was performed followed by a laparoscopic assisted ano-rectoplasty six months later. The follow-up noticed only occasional constipation. Seven years later the patient presented abdominal pain, fever and dysuria. Ultrasound and CT showed a 5cm diameter collection in the Douglas pushing the bladder and the recto-sigmoid to the left. At exploratory laparoscopy, the appendix was normal and no collection was found. Intraoperative rectal examination resulted in massive pus exteriorization through the bladder catheter. Antibiotherapy was continued for 10 days. Three months later MRI found a 35x30x40mm collection communicating with posterior urethra. The residual cavity was resected by a transtrigonal approach. Post operative course was uneventful. The bladder catheter was removed 10 days later. The pathology confirmed the digestive structure. The 6 months follow-up is normal.

CONCLUSIONS:

Laparoscopic ARM surgery may result in uncommon complications. Long-term follow-up in patients operated by this innovative technique is mandatory. The transtrigonal approach offers an elegant access to this difficult anatomical region.

**SESSION IV, LOWER GASTRO-INTESTINAL
OPEN VERSUS LAPAROSCOPIC SURGERY TO MANAGE INTUSSUSCEPTION
IN CHILDREN: OUR EXPERIENCE**

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AIM OF THE STUDY:

Intussusception is an urgent condition managed with radiological or surgical procedure: when enema is not resolute, surgery is mandatory. However not all surgeons prefer miniminvasive surgery (MIS) in treating this condition. We describe our experience in the last 8 years.

METHODS:

We surgically treated 22 patients (15 male, median age 4 years): 12 underwent traditional surgery (7 reduction and 5 resection) and 10 MIS (5 laparoscopic reductions, 3 laparoscopic assisted reductions and 1 laparoscopic assisted resection, and 1 conversion with resection). Main results: The association of the two classical symptoms (abdominal pain and blood in stools) was present in 50% of children in both groups. Median laparoscopic operative time was 101 minutes versus 111 minutes of open surgery. Intestinal resection was necessary in 7 cases (5 in open and 2 in MIS). Etiology was unknown in 10 patients, while 7 mesenteric adenitis, 4 Meckel's diverticula and 1 appendicitis were recognized in the remaining. Two patients were reoperated for intussusception recurrence.

CONCLUSIONS:

Despite urgent condition MIS can be considered a safe and valid procedure in intussusception management in children as first approach. In our experience laparoscopic assisted resection is a valid alternative to classical open surgery.

**SESSION IV, LOWER GASTRO-INTESTINAL
REMOVAL OF INGESTED MAGNETIC BODIES VIA LAPAROSCOPIC
APPENDECTOMY**

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BACKGROUND:

Ingestion of magnetic foreign bodies poses a particular risk for pressure necrosis with subsequent small bowel obstruction, volvulus, fistula formation, or perforation due to proximate attraction through the intestinal wall.

CASE REPORT:

Two cases of ingestion of small magnetic bodies are reported.

Case 1: A 13-year old boy presented with abdominal pain after ingestion of two small magnets. The magnetic bodies on abdominal X-ray seemed to be in the colon. Therefore a colonoscopy was performed, but the procedure disproved this location.

Case 2: A 9-year old boy was observed in the hospital after ingestion of two magnetic bodies. He had no pain, tolerated a diet and had regular stool. After a week he was discharged home with instructions to follow-up in the surgery clinic for repeat imaging and to return for abdominal pain or symptoms suggestive of perforation or obstruction. The magnetic balls were not passed in the stool and their migration from the right hypogastrium was not noted on abdominal radiography even after four weeks.

A laparoscopy was performed in both cases. The magnetic bodies were relocated in the appendix and removed via laparoscopic appendectomy. Both patients had uneventful postoperative courses.

CONCLUSIONS:

We suggest a laparoscopic approach in cases when ingested small magnetic bodies are located in the jejunum or ileum without migration on repeated abdominal radiography. Once relocated in the appendix, the magnetic bodies can be removed via laparoscopic appendectomy without performing extra enterotomy.

KEYWORDS: magnetic body ingestion, laparoscopic appendectomy

**SESSION IV, LOWER GASTRO-INTESTINAL
LAPAROSCOPIC SIGMOID VAGINOPLASTY FOR MAYER-ROKITANSKY
SYNDROME**

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INTRODUCTION:

Surgical and non-surgical methods have been described to create a functional neovagina in patients with Mayer-Rokitansky-Küster-Hauser syndrome (MRKH), but the ideal treatment remains controversial. In 2016, after a learning session with an expert, we implemented the laparoscopic sigmoid vaginoplasty at our department. Our aim was to describe the technique and report our results.

METHODS:

In the past two years we operated on 3 patients with the diagnosis of MRKH. The surgical technique included: i) introduction of 4 abdominal working ports; ii) selection of a 15cm sigmoid segment and dissection of the mesocolon preserving the vascular pedicle; iii) incision of the retrohymenal fovea and dissection of the vesico-rectal space through the *Cancan* maneuver; iv) introduction of a 12mm trocar through the created space to enable passage of the stapling device and isolation of the sigmoid segment; v) colo-colonic anastomosis; vi) neovagina pull-through and anastomosis to the fovea. Clinical data were collected regarding pre-, intra- and post-operative information.

RESULTS:

All patients (16-20 yo) presented with primary amenorrhea. Diagnosis was established after abdomino-pelvic ultrasound and MRI reporting absence of the vagina. Investigation revealed no associated malformations, 46XX karyotype and normal hormone study among all patients. Average procedure duration was 172' and no intraoperative complications were reported. Patients were discharged after 2-4 days. No excessive mucus production was reported. After one year follow-up the patient who did not start sexual intercourse needs regular vaginal dilations.

CONCLUSION:

Laparoscopic sigmoid vaginoplasty should be considered on the creation of a functional vagina as it is a safe and reliable procedure.

**SESSION IV, LOWER GASTRO-INTESTINAL
LAPAROSCOPIC TREATMENT OF NEONATAL OVARIAN CYSTS**

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INTRODUCTION

To report our experience with minimally invasive surgery for ovarian cysts in the neonate and small infant.

MATERIAL AND METHODS

We reviewed clinical charts of neonates undergoing laparoscopy for ovarian cysts starting from November 1997 to December 2017. All the procedures were performed by a 5 mm camera port and two 3 mm trocars. All cysts were percutaneously aspirated under direct vision; then a laparoscopic-assisted cystectomy/oophorectomy was performed.

RESULTS

47 neonates were treated within the study period; among them we identified 6 late preterms, born between the 36th and the 37th weeks. All the patients underwent surgery for large or complex cysts, with 27 reported torsions. The mean age was 20.5 days (range 3-90) and the mean body weight was 3.546 Kg (range 2.568 – 5.720). 7 laparo-assisted cystectomies and 40 laparo-assisted oophorectomies were performed. The mean operative time was about 66 minutes (\pm 22.8 minutes) and the mean length of hospital stay was about 4 days (\pm 1.78 days). No short-term complications were observed, but a mild infection of the umbilical wound treated by means of local antibiotic.

DISCUSSION

Torsion of the cyst is the most common, but not the only, reported complication, as confirmed by our series. Minimally-invasive surgery offers the advantage of excellent visualization of the operating field and of the contralateral ovary, providing correct diagnosis and allowing simultaneous management. Our experience confirms that it is a safe approach in a healthy neonate. We're going to prospectively assess the long-term outcome of these newborn ovarian pathologies.

POSTER SESSION I – THORAX
ESOPHAGEAL REPLACEMENT IN A CHILD WITH HEREDITARY BULLOUS
EPIDERMOLYSIS

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INTRODUCTION

Hereditary bullous epidermolysis is a noninflammatory skin disease characterized by the tendency of the skin and mucous membranes to develop bullous formations mainly at the places of mechanical trauma. Patients with this pathology often have stenosis of the esophagus. Surgical interventions are rarely performed.

MATERIAL AND METHODS

A 6-year-old girl entered the clinic with esophageal stenosis as a result of bullous epidermolysis. Symptoms of dysphagia appeared at the age of 4 years, which tended to increase, up to the total refusal to take solid food. With endoscopic and radiologic examination of the esophagus, stenosis was detected at the border of the middle and lower third, with a length of up to 4 cm.

The operation of a coloesophagoplasty was performed with the transplant behind the sternum with the application of the antireflux mechanism with the stomach.

RESULTS

The postoperative period proceeded without complications. She was discharged home in a satisfactory condition on the 15th day after the operation, there is no dysphagia.

With a follow-up examination after 3 years, there is no dysphagia. Ccontrasts radiographing of the esophagus - the possibility of the entire esophagus is satisfactory.

CONCLUSIONS

1. It should be considered erroneous, the tactics of treatment consisting only of conservative measures.
2. Esophageal replacement of the esophagus stenosis is more physiological and allows to take food through the mouth, which undoubtedly improves the child's quality of life.

POSTER SESSION I – THORAX
LAPAROSCOPIC REPAIR OF MORGAGNI HERNIA

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AIM OF THE STUDY:

Morgagni hernia (MH) is rare anomaly comprising about 3% of all types of congenital diaphragmatic hernia. We reviewed our experience with MH to assess the utility of laparoscopy in these patients.

METHODS:

A retrospective review was conducted of four cases who underwent a laparoscopic surgical procedure for MH. The study was approved by Ethical committee of author's affiliation.

RESULTS:

There were 3 boys and one girl (age range 1 - 47 months). Presenting symptoms were respiratory distress (2pts) and respiratory infection (2pts). The diagnoses were established on chest X-ray and ultrasound. Herniated organ were colon in two patients, small bowel and left liver lobe in one. The same surgical technique was used in all: patient was positioned supine, and three 5-mm trocars were placed: the camera port through the umbilicus, 2 others in the left and right mesogastrium. After reduction of the herniated contents, the falciform ligament was separated from the anterior abdominal wall. The sac of the hernia was resected using harmonic scalpel. Full thickness trans-parietal stitches were positioned to fix the diaphragm to the anterior abdominal wall. These non-resorbable interrupted stitches were tied in the subcutaneous tissue by minor skin incision. The postoperative course was uneventful in all except one who required treatment for wound infection. The follow up period ranged from 2 to 5 years and no recurrence was observed.

CONCLUSIONS:

Laparoscopic repair of Morgagni hernia with full-thickness trans-parietal stitches repair is simple and effective minimally invasive procedure with excellent results.

POSTER SESSION I – THORAX
THORACOSCOPY IN PEDIATRIC SURGERY

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INTRODUCTION

Thoracoscopy is one of the surgical techniques used for both diagnostic and therapeutic purposes.

AIM

The aim of the study is to analyze purposes, complications and outcomes of thoracoscopic procedures in pediatric patients.

METHODS

The retrospective analysis was based on clinical documentation of 180 patients treated in the Department of Pediatric Surgery, Traumatology and Urology in Poznan, who underwent thoracoscopic surgery. The following parameters were analyzed: the aim of the thoracoscopy, age of patient during surgery, time of hospitalization, time of treatment, frequency and time of maintenance of pre-and postoperative drainage, preoperative and postoperative diagnostics, postoperative complications, antibiotic therapy and laboratory and bacteriological test results.

RESULTS

The average age of patients who underwent thoracoscopy was 9 years. The most common indications for surgery were: mediastinal tumor removal (25 patients), mediastinal tumor biopsy (48), metastasis in lungs removal (10), emphysema (30), inflammation of the lungs (38) and lymph nodes biopsy (29 patients). The average hospitalization time was 6 days, the longest in the group of patients treated for mediastinal tumors. The most commonly performed diagnostic imaging was chest radiograph. Complications occurred in 4 patients. Observed complication was pneumothorax. Drains were inserted into the pleural cavity during 60% of surgeries.

CONCLUSIONS

The analysis demonstrated the common use of thoracoscopy. It is an effective and safe method used both in diagnosis and therapy. Radiograph is the main diagnostic imaging used. The decision to use a catheter drain is related to the patient's clinical condition and depends on many factors.

POSTER SESSION I – THORAX
DO ANAESTHESIA AND SURGICAL VARIABLES PLAY A ROLE
IN COURSE OF NUSS PROCEDURE?

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AIM OF THE STUDY

Numerous modifications of original Nuss procedure include different types of anaesthesia and surgical techniques with mutual goal - minimization of operative complications. The aim of presented study is to identify impact of anaesthesia and surgical approach on Nuss procedure.

METHODS

A retrospective analysis of patients who underwent MIRPE procedure at a single tertiary hospital in period 2014-2017 was performed. Three groups of patient were established, according to mode of anaesthesia (oro-tracheal intubation versus single-lung ventilation) and type of thoracoscopic visualization during surgery (unilateral versus bilateral VATS). Data collected included demographics, anaesthesia and surgical management characteristics, operative and postoperative complications and length of hospital stay.

RESULTS

36 patients underwent MIRPE procedure in 3.5-year period. Three groups were analyzed: i., 12 patients operated upon oro-tracheal intubation by means of unilateral VATS assisted surgery, ii., 9 patients operated with single-lung ventilation and unilateral VATS assistance, iii., 15 patients operated with single-lung ventilation and bilateral VATS approach. Statistical analysis did not confirm significant differences in total length of anaesthesia, operating time, anaesthetic or surgical complications, length of postoperative hospital stay. The only statistical differences were higher incidence of postoperative pleural effusions in the first group and prolonged anaesthetic setup in the third group.

CONCLUSIONS

Based on authors experiences they endorse single-lung ventilation together with bilateral VATS MIRPE as safe and feasible method without increased anaesthetic and surgical burden for patient. Eventually authors advocate this combination in all patients indicated for minimally invasive repair of pectus excavatum.

POSTER SESSION I – THORAX
APPLICABILITY OF THORACOSCOPY IN TREATMENT OF PLEURAL EMPYEMA IN CHILDREN: SINGLE CENTER EXPERIENCE

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INTRODUCTION

The management of parapneumonic effusion and pleural empyema in children is still controversial. The aim of this study is to investigate the value of thoracoscopy in treatment of refractory pleural diseases in children.

METHODS

We evaluated the medical records of patients with pleural empyema who underwent thoracoscopy in our institution from 2000 to 2016. Data collected included: gender, age at the time of surgery, duration of symptoms, laterality of the affected lung, and surgical, and postoperative data. Quantitative data were expressed as percentage and qualitative data were expressed as median \pm standard deviation.

RESULTS

During the study period we have identified 76 cases (M/F; 1/1) of pleural empyema who required thoracoscopic debridement and drainage. Median age at time of surgery was 5.2 ± 3.4 years. Median duration of symptoms before surgery was 11.8 ± 6.8 days, mainly represented by chronic pneumonia associated at recurrent fever and cough. Most common affected side was the left (60%). Median duration of antibiotic therapy before surgery was 15.3 ± 9.7 days. Conversion to thoracotomy was required only in 2 cases (2%). Postoperative complication rate was 6.5% (n=5), and only one case required a reintervention. Median length of hospitalization was 25 ± 10 days.

CONCLUSION

Thoracoscopy can be recommended for diagnosis and treatment of refractory pleural empyema in children, with minimal trauma, complications and low rate of conversion to open surgery.

POSTER SESSION I – THORAX
**CDH - THORACOSCOPIC TENSION-FREE GRAFT REPAIR TO MINIMIZE
RECURRENCE RATE**

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Although thoracoscopic patch repair is an accepted method in the treatment of congenital diaphragmatic hernias the recurrence rate is higher compared to laparotomy.

One of the possible reasons of recurrence is tension in the suture line especially when the defect is large. We present our single-institution experience with tension-free patch repair of CDH.

Between January 2014 and March 2018, 12 newborns with posterolateral CDH were operated thoracoscopically, in 4 cases with primary closure, in 8 patients a patch was used. The grade of the defect was A (<25%) in two of the no-patch cases, B (25-50%) in 8 patients and C (50-75%) in 2 patients. We applied a prosthetic PTFE patch whenever there was notable tension in the muscular suture line and used percutaneously inserted non-absorbable sutures to fix the patch to the ribs where no muscular rim was present.

After an average follow-up of 26.8 months two (50%) of the no-patch patients (defect size:B) developed recurrence (3 weeks and 3 months after surgery) which was closed with patch interposition thoracoscopically. We had no recurrence (0%) in the patch group. The only complication we encountered was bleeding from a small splenic rupture stopped spontaneously in one of the large defect patients. All patients survived and successfully weaned off mechanical ventilation.

We encourage the use of patches in CDH repair whenever the lateral muscular part of the diaphragm is missing (size B-D) to achieve tension-free suture lines and to minimize the recurrence rate.

POSTER SESSION I – THORAX
POST-SURGICAL OUTCOMES IN INFANTS TREATED FOR CONGENITAL AIRWAY MALFORMATIONS: THORACOSCOPIC VS. THORACOTOMIC APPROACH

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AIM

Thoracoscopic approach for congenital airway malformations has been reported to be safe, and effective. Less explored was the post-operative need for analgesic therapy. Aim of the present study was to compare post-operative outcomes (including pain-relieving therapies) in newborns and young infants treated for congenital airway malformations by thoracoscopy or thoracotomy.

METHODS

Retrospective review (2013-2017) of all newborn-infants treated for congenital airway malformations was performed. Patients were divided based on surgical approaches (Group A: thoracoscopy; Group B: thoracotomy). Fisher's exact and Mann-Whitney tests were used as appropriate, $p < 0.05$ was considered significant.

RESULTS

During the study period, 48 newborn-infants were treated (Group A: 12 patients, Group B 36 patients). Groups presented different histology [pulmonary sequestration prevalent in group A (10/12 vs. 6/36, $p = 0.0001$) while CPAM in group B (0/12 vs. 20/36, $p = 0.005$)]. Patients in Group A presented quicker surgical procedures [115 min (80-150) vs. 150 min (132.5-180) $p = 0.004$], required less post-operative analgesia [1 day (0-1.75) vs. 3 days (3-3), $p = 0.0001$], and experienced shorter hospital stay [4 days (2.25-4.75) vs. 6 days (4-7) $p = 0.0025$].

CONCLUSION

Thoracoscopy was safely performed in 25% of all patients. Although the important limitation due to the retrospective nature of the study, thoracoscopy likely shows some advantages over thoracotomy such as reduction of post-operative pain, and shorter hospital stay.

POSTER SESSION I – THORAX
THORACOSCOPIC TRACTION TECHNIQUES IN LONG GAP OESOPHAGEAL
ATRESIA REPAIR: 2 CASE REPORTS

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Controversy exists within the paediatric literature regarding optimal techniques for traction on the oesophagus when a long gap exists. The majority of reports are following gastrostomy feeds and a delayed approach.

There are several reports of internal and external traction using the thoracoscopic techniques in the early neonatal period. We present two cases with very different outcomes and examine the potential factors involved.

Patient one underwent a gastrostomy shortly after birth and at 2 months of age had a gap assessment of 4 vertebral bodies . Using the thoracoscopic external traction technique (Van Der Zee) an approximation of 2 vertebral bodies was achieved. 4 days later there was obvious disruption and a repeat thoracoscopy showed a hole in the upper pouch and sutures had released from the lower.

The patient had an esophagostomy and eventual gastric pull up.

Patient 2 underwent a thoracoscopic examination on day 4 of life and had an estimated 5 vertebral body gap . Both pouches were mobilised and brought to an estimated 2 vertebral body gap with internal traction (*Patowski*)

10 days later a successful thoracoscopic oesophageal atresia repair was achieved and was discharged at 6 weeks of age.

Factors relating to the post-operative management as well as the late diagnosis of an oesophageal lung likely played a part in the outcome of case 1. A longer term prospective study is required to examine the differences between internal and external traction thoroscopically applied traction.

POSTER SESSION I – THORAX
**THORACOSCOPIC RESECTION OF BENING MEDIASTINAL MASSES: OUR
EXPERIENCE**

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BACKGROUNDS:

Compared to open surgery, thoracoscopy offers proven advantages for resection of mediastinal lesions. Despite this, mediastinum still represent a difficult field for the surgeon because of the major anatomical structures that lies within. We present our recent experience.

METHODS:

From January 2015, we treated four patients affected by mediastinal masses. Three came to our attention during prenatal period; one referred to our institution at the age of 4y after the incomplete resection of an esophageal duplication.

RESULTS:

The 3 patients with prenatal diagnosis underwent after birth an ultrasound follow up, MRI +/- TC study within the 6th month of life, surgery within 18th month. All presented a right posterior mediastinal localization of the mass, so we performed a right thoracoscopy. Considering the forth patient, MRI showed a residual lesion that extended in the left posterior mediastinum, so we chose a left approach. Complete excision was performed in all patients, even in two of them in which the mass extended to the contralateral side. We had no intra or postoperative complication. Instruments were: 5mm optic and 2/3 3mm operative trocars. All patients spent 24h in ICU. Postoperative hospital stay ranged from 3 to 7 days. Diagnosis were: bronchogenic cyst, lymphangioma, two esophageal duplications.

CONCLUSIONS

Thoracoscopy is a safe and effective technique for complete resection of mediastinal masses in infants and small children, among the well known advantages of this technique we want to highlight the possibility to extend resection to the contralateral side to perform a radical surgery.

POSTER SESSION I – THORAX
THORACOSCOPIC APPROACH OF PULMONARY HYDATID DISEASE

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THE AIM:

Surgery is the mainstay of the treatment of pulmonary hydatid disease.
The aim of this study is to discuss Thoracoscopic approach of pulmonary hydatid disease

PATIENTS AND METHODS:

Retrospective study: 60 cases of pulmonary hydatid cyst treated using the thoracoscopic approach among 252 subject to surgical treatment. 12 years [January 2004 - February 2016].
Pediatric Surgery Department

MAIN RESULTS:

The mean age is 9 years [4 years-15 years]. The Sex-ratio is 0.8. Symptoms were dominated by coughing. The X-ray chest is done in all the cases with signs of rupture in 18% .CT has completed the assesment in 10 cases where the diagnosis were uncertain. Conversion to thoracotomy in 6 cases (uncontrollable air leakage).Mean duration of the intervention : 80 minutes.The mean duration of the drainage is 24h (cysts less than 5cm)and 4 days if more than 5 cm.The mean hospital stay is 3 days (2 – 8 days).In the post-operative course 7 patients presented lung infection. 2 required a prolonged drainage.In all the other cases, the follow-up was uneventful. At mean follow-up of 38 months, all patients were asymptomatic without recurrence.

Conclusion

All stages of the surgical treatment of hydatid cyst of the lung can be easily accomplished by thoracoscopy, with less morbidity and early recovery in cysts less than 5 cm.

POSTER SESSION II – GI
AN UNCOMMON LEADING POINT FOR ILEOCOLIC INTUSSUSCEPTION: INVERTED MECKEL'S DIVERTICULUM

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AIM:

We present a child with an inverted Meckel's diverticulum (MD) which is an uncommon cause of ileocolic intussusception.

CASE REPORT:

A 7-year-old girl presented with abdominal pain, bilious vomiting and blood per rectum. An abdominal USG showed an ileocolic intussusception and it was reduced by saline enema. A repeat USG within 24-hours showed a recurrent intussusception with a second successful saline enema reduction. A CT scan was performed because of an intraluminal mass-like image seen on USG. It revealed a 14X16 mm thick-walled cystic mass at level of ileum with intraluminal extension. A laparoscopic exploration revealed edematous and hyperemic ileal loops as well as a pit-like opening on ileum. A grasper was inserted into the pit and a MD was desinvaginated towards the abdominal cavity. The MD was removed by using a stapler. The postoperative course was uneventful. The pathological examination confirmed the diagnosis.

CONCLUSION:

Although MD is among the most commonly encountered abdominal surgical emergencies in children, an inverted Meckel's diverticulum is very rare. Preoperative diagnosis is usually not straightforward. Inverted MD may cause intussusception just like the regular counterpart and the treatment is surgical.

POSTER SESSION II – GI
PEER REVIEWED ANALYSIS OF COMPLICATIONS IN LAPAROSCOPIC SURGERY
FOR HIRSCHSPRUNG'S DISEASE

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AIM:

This study investigated complications associated with laparoscopic management of Hirschsprung's disease (HD).

METHODS:

Literature search was performed on Pubmed on terms "Hirschsprung's disease" "laparoscopic" and "complication". Data was collected for: surgical approach, type of repair - primary or secondary, level of aganglionosis, intraoperative- and postoperative- complications.

RESULTS:

The search (1994-2018) yielded 68 publications with cumulative 2004 patients for this systematic analysis. Of these, 96.0% (n=1923) underwent a primary repair (single stage operation) without colostomy and 4.0 % (n=81) a secondary repair. The level of aganglionosis was restricted to the rectum in 0.7% (n=14), rectosigmoid colon in 61.5% (n=1232), descending colon 5.1% (n=102), transverse colon in 3.5% (n=70), ascending colon 0.5% (n=10) and ileum 0.7% (n=14). Most used techniques included Laparoscopic Swenson (LS) 8.2% (n=165), Laparoscopic Duhamel (LD) 12.6% (n=252), Laparoscopic Soave (LSO) 19.5% (n=390) and Laparoscopic Georgeson Pull-through (LGP) 52.2% (n=1046). Intraoperative complications included: conversions to open 1.6% (n=32), bleeding 0.3% (n=6) and bowel twisting 0.2% (n=4). Morbidity included: enterocolitis 6.2% (n=125), soiling 6.6% (n=133), perianal excoriation 4.3% (n=87), constipation 4.4% (n=89), anastomotic stricture 1.4% (n=29), wall abscess 0.05% (n=1), adhesive bowel obstruction 0.9% (n=18), anastomotic leaks 0.7% (n=14) and perforation requiring reoperation 0.5% (n=10).

CONCLUSIONS:

LGP is the most common MAS procedure for HD. Intraoperative complications for MAS in HD are low (2.1%). Morbidity is high (27.3%) in the cumulative series, but may not be specific to laparoscopy. Specific morbidity was correlated with perianal excoriation in LS, anastomotic strictures in LSO and adhesive bowel obstruction, anastomotic leaks and perforations in LD.

POSTER SESSION II – GI
SURGICAL TREATMENT FOR HYPERTROPHIC PYLORIC STENOSIS:
OUR CENTRE EXPERIENCE

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Hypertrophic pyloric stenosis is the most common cause of gastric outlet obstruction. The classic presentation is postprandial nonbilious forceful vomit, patients are emaciated and dehydrated for hypochloremic metabolic alkalosis.

The classical operation for HPS is Ramstedt pyloromyotomy.
Laparoscopic pyloromyotomy is the minimally invasive version.

Aim of the study is to compare our results of laparoscopic vs open pyloromyotomy.
From 2014 to 2018 9 pyloromyotomy vs 18 laparoscopic pyloromyotomy were performed in our centre.

Laparoscopy was performed by the same surgeon to evaluate the learning curve.
Classic pyloromyotomy medium operating time was 27 minutes.

Laparoscopy had a medium operating time of 39 minutes.
After several laparoscopic approaches the surgeon reduced his operating time.
A single intra-operative complication (punctiform perforation) occurred during laparoscopy.
During the re-fed period 7 patients (3 classic vs 4 laparoscopy) presented a single episode of post-prandial vomiting.

None of the patients presented with incomplete myotomy or required a re-intervention.
Length of stay was comparable in the two groups, with a medium stay of 3,2 days laparoscopy group and 3,5 days for the classic pyloromyotomy group.

According to the literature, our initial experience has confirmed that both the surgical approaches are admitted for the treatment of HPS without remarkable differences regarding intra/post-operative complications, operating time, time to full feeding and length of stay.

We demonstrate that during the surgeon's learning curve it was observed a progressive decrease of complications, operating time and length of stay.
Laparoscopy is a good alternative to classic pyloromyotomy with increased cosmetics.

POSTER SESSION II – GI
UMBILICAL INCISION SURGERY IN NEONATES AND INFANTS

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BACKGROUND

It's accepted that minimal invasive surgery is considered superior to open surgery due to decreased post-operative pain, shorter hospital stay and better cosmetic outcome. In neonates and infants, a peri-umbilical incision seems to offer similar benefits without the added costs of laparoscopic surgery.

Periumbilical incisions were first described in 1986.¹ Improved cosmesis and short learning curve are some of the benefits described.² This approach been used for a variety of surgical problems.³

METHOD

A retrospective review of the period 2011 -2017 was undertaken. Infants and neonates who had surgery through a periumbilical incision or had and ileostomy sited periumbilical were included. Age at time of surgery, sex, diagnosis and complications were recorded.

RESULTS

77 Patients, 48 males and 21 females were included. The median age at surgery was 34 days (0 – 89 days). Conditions approached through a periumbilical incision included idiopathic hypertrophic pyloric stenosis, small bowel atresia, ovarian disease, Hirschprungs disease and patent vitello-intestinal tract. 5 Neonates had ileostomies for NEC brought out periumbilical. Trainees and qualified paediatric surgeons performed the surgery with similar outcomes. Our complication rate was 6.5% without any mortality. The hospital stay was short (mean 6 days), with minimal post-operative pain and superior cosmetic results.

CONCLUSIONS

Periumbilical incisions allow easy access to intra-abdominal surgical pathology, with short hospital stay, decreased pain and good cosmesis (scar less surgery). It's an efficient and safe technique that is easily acquired and an excellent alternative for surgery particularly in a resource restricted environment.

POSTER SESSION II – GI
**LAPAROSCOPIC APPENDECTOMY IN CHILDREN: EXPERIENCE OF THE FIRST
2 YEARS IN A CENTRAL EUROPEAN NATIONAL INSTITUTE**

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AIM

Nowadays, the gold standard to treat appendicitis in childhood is laparoscopic appendectomy (LA). LA was introduced in our institute in 2016. Aim of the study was to verify, whether the LA is safe and successful procedure after a learning curve in our department.

METHODS

Between the 1st of Jan 2016 and 31st of Dec 2017, 317 appendectomies were performed. Eight patients were excluded because of other co-morbidity. Length of the hospital stay, duration of surgery, postoperative complications were retrospectively analysed. The cases of “learning curve”, year of introduction of LA (2016) and cases of the second year (2017) were compared. Mann-Whitney, Chi²- and Chi² for trend tests were used for statistical analysis.

RESULTS

Altogether 309 appendectomies were studied: 149 LA, 148 open appendectomies (OA) and 12 conversions from LA (CA). The median age of the patients was 11.38 (2-18) years, representing 182 boys and 127 girls. In 2017 LA was significantly faster than OA ($p=0.0004$). The acceleration of LA (2016 to 2017) was significant ($p=0.0077$). The median hospital stay after LA were 2 (2-3) days, after conversion (OA-CA) were 4 (3-5) days. The hospitalisation was shorter after LA than OA ($p<0.0001$). The complications like surgical site infections after LA were 4%, after OA 5,4%. One bowel obstruction was found after LA and 1 after OA.

CONCLUSIONS

According to our study, LA is a safe, and following a relatively short learning curve more successful procedure than the conventional (open) appendectomy in childhood.

POSTER SESSION II – GI
AN UNUSUAL ABDOMINAL ABSCESS

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Interval laparoscopic appendectomy (ILA) is a widely accepted treatment for appendicular abscesses in pediatric patients. We report a case of abdominal tuberculosis diagnosed during ILA.

A 4 y-o healthy north-African girl was admitted for recurrent fever after a course of symptoms of gastroenteritis. The patient was in good general condition, with a distended and mildly tender abdomen. Abdominal-US showed a dense collection in mid abdomen and a thickened omentum.

The suspected diagnosis was complicated appendicitis with abscess. Both blood and stool cultures were negative. Broad spectrum antibiotic therapy was commenced, and patient scheduled for ILA. Medical treatment longer than usual was needed to obtain apyrexia. The abdominal-US performed before discharge showed a reduced collection. The Laparoscopy performed one month after discharge found a thickened omentum and granular lesions on the whole peritoneum; intestinal loops appeared thickened and hyperemic. The US-described collection was a colliquated lymph-node mass of the mesentery.

An abdominal toilette, lymph-node biopsy and appendectomy were performed. Microbiological and pathology analysis were positive for tuberculosis. Patient is currently well under antiTBC treatment.

Abdominal TBC remains a rare cause of abdominal pain and raised temperature, this diagnosis should be kept in mind in patients who could have been exposed to TBC, presenting with intra-abdominal infection. Laparoscopy can help the diagnostic workout.

POSTER SESSION II – GI
PROPOSITION OF A NEW SCORE SYSTEM FOR THE MANAGEMENT
OF PEDIATRIC PATIENTS WITH SUSPECTED ACUTE APPENDICITIS

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INTRODUCTION

Acute Appendicitis (AA) is the most common cause of abdominal pain resulting in surgery. A correct diagnosis can also be a challenge; we propose a new diagnostic tool that could guide the clinician in the management of patients with abdominal pain.

METHODS

The study was conducted retrospectively in our Unit from 2003 to 2016. All patients undergoing appendectomy were examined. Histological reports established two groups: patients with acute AA and patients without appendicular inflammation (NA). For each patient were analyzed: age, sex, duration of pain, vomiting, body temperature, right iliac fossa tenderness, sign of blumberg, leukocytosis, neutrophilia and blood level of the C reactive protein.

RESULTS

1025 patients: 829 with AA and 196 with NA. For each variable was assigned a score for a maximum of 21 resulting from their addition. Three diagnostic groups were defined through recognition of two cut-offs. Patients with a score ≤ 8 were classified at low risk (sensitivity 94.3%) for whom we recommend hospital discharge. Patients with a score ≥ 15 were high-risk patients (specificity 92.9%). Patients with a score between the two cut-offs were defined at intermediate risk; clinical observation and radiological studies are indicated for them. Negative appendectomies, after application of the score, were 3.9% whereas patients discharged with appendicular inflammation were 5.6%. All patients with peritonitis were identified by the score.

CONCLUSION

The score presented is a new diagnostic tool built on the basis of a statistical model that has identified individual predictors and their diagnostic impact.

POSTER SESSION II – GI

LAPAROSCOPIC CHOLECYSTECTOMY IN A RARE CASE OF MULTISEPTATE GALLBLADDER: CASE REPORT AND REVIEW OF THE PEDIATRIC LITERATURE

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INTRODUCTION:

Multiseptate gallbladder (MSG), characterized by the presence of multiple septa dividing the gallbladder lumen, is a very extremely rare congenital anomaly of the gallbladder. MSG may be asymptomatic but most of patient present with biliary pain or colicky abdominal pain. We report a symptomatic case of MSG treated with laparoscopic colecystectomy and we reviewed the literature for this rare anomaly.

CASE REPORT:

A 7-year-old girl with recurrent abdominal pain of about 2 years duration was admitted to our hospital. Infectious disease and blood disorders was excluded. Abdominal ultrasonography demonstred a MSG without gallstones or dilatation of the bile ducts. A pharmacological approach with ursodeoxycholic acid was tried for 3 months without benefits. For this reason we decided for a laparoscopic colecystectomy. After this treatment she completely recovered.

DISCUSSION:

MSG is a rare congenital anomaly. Our review of the literature reported 15 cases of MSG including our case. M:F ratio was 3:2. Median age at diagnosis was 10 years. Ultrasonography was the first choice examination to perform the diagnosis in all cases. Asymptomatic cases were only two (13%) and were treated conservatively. Conservative approach has been effective in other two cases of symptomatic MSG but it is not sure if symptoms were related to this anomaly. In conclusion, although in some cases conservative therapy appeared effective, in our opinion the treatment of choice for a symptomatic MSG is with cholecystectomy. In these cases laparoscopic cholecystectomy appears to be effective with good cosmetic results.

POSTER SESSION II – GI
EXPERIENCE OF TREATMENT OF CALCULOUS CHOLECYSTITIS IN CHILDREN

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In the recent years was increased frequency of calculous cholecystitis in children. In the majority of cases was used laparoscopic method of cholecystectomy in children.

Since 2003, in the clinic was operated 94 patients with calculous cholecystitis. The age of patients was ranged from 3 to 17 years. There were 70 girls, 24 boys. In all cases, laparoscopic cholecystectomy was performed. Choledocholithiasis was detected in 5 patients. We used MRT-cholangiography in 24 children with choledocholithiasis or malformations of the biliary system

In 5 cases choledocholithiasis was caused by cholangitis. At the children with choledocholithiasis, 7 operations of choledochotomy were performed, removal of stones from a common hepatic duct, suture of a common bile duct on the T-shaped drainage.

In 3 patients with choledocholithiasis was developed biliary pancreatitis. It was conducted cholecystectomy, choledochotomy and external drainage of a common bile duct. In 8 patients with severe symptoms of cholangitis, was performed drainage of a common bile duct through the cystic duct with using drainage by the type of Halsted-Pikovsky.

Without exacerbation were operated 76 (80%) children. In 3 children were detected gangrene of a gallbladder, in 1 child was observed perforation of the rear wall and forming of the limited bile peritonitis. In 7 patients was underwent surgery on a background of complicated course of choledocholithiasis.

We have been noted 3 complications in a stage of development technology, in a form of bile flow with formation of biliary fistula. Hospital period lasted an average 7 days.

POSTER SESSION II – GI
SURGICAL MANAGEMENT OF ACHALASIA IN A 14 YEARS OLD PATIENT –
PRINCIPLES OF LAPAROSCOPIC TECHNIQUE IN HELLER’S CARDIOMYOTOMY

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PURPOSE:

The paper aims to prove that laparoscopic treatment in achalasia is a good choice for this pathology rarely seen in children.

METHODS:

This paper presents the clinical case of a 14 years old adolescent male diagnosed with pectus carinatum that developed typical symptoms of achalasia over the course of 8 months, associating important weight loss. The patient was admitted for treatment to the Surgical Department of ‘M.S.Curie’ Clinical Emergency Hospital for Children, Bucharest, Romania. Preoperative studies consisting of radiographic studies, endoscopy and manometry were performed and they helped determine the utility of surgical treatment.

RESULTS:

A laparoscopic Heller’s cardiomyotomy and Toupet fundoplication was performed. The stenotic area at the oesophago-gastric junction was of approximatively 8 cm in length. The integrity of the submucosal layer was tested by transillumination and submerging technique. Postoperatively the NG tube was kept in place for 48 hours. Intraoperatively there were no incidents, perforative or haemorrhagic. Postoperative evolution was favorable, without complications. Dysphagia relief was noted immediately postoperatively and a barium study confirmed the disappearance of stenosis 48 hours postoperatively .

DISCUSSIONS:

In the laparoscopic extramucosal approach of the oesophago-gastric junction we observed the technical use, limits and artifices of electric instruments, also important was the delimitation of loco-regional anatomy and manipulation of tissue. A thorough knowledge of incidents, accidents and complications that can occur assured the premises of a responsible laparoscopic approach.

Conclusions: Although this pathology is rarely seen in children, the laparoscopic approach in the treatment of achalasia is the gold standard method.

POSTER SESSION II – GI
THE BENEFITS OF SEMI-LATERAL APPROACH IN
LAPAROSCOPIC SPLENECTOMY FOR MASSIVE SPLENOMEGALY

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Hereditary spherocytosis (hs) is the most common cause of congenital hemolysis. Total splenectomy has been shown to reduce hemolysis. Actually the laparoscopic splenectomy (ls) has become a valid alternative to the open approach also for the massive splenomegaly. We performed ls using a semi-lateral approach in 12 cases of hs with massive hypersplenism.

Preoperative diagnosis and indications for splenectomy were established in pediatric hematology departments. Indications for surgery were hypersplenism, symptomatic splenomegaly and recurrent thrombocytopenia. Pre-operative exams (us - tc) showed a massive splenomegaly with a length ≥ 17 cm. We realized the ls using a semi-lateral approach placing the child in a supine decubitus with left side elevated 30 degrees and the operative table rotated to right. We performed a proximal ligation of the splenic vessels on the superior pancreatic limit that permits to conclude the procedure with a safer vascular control and no risk of bleeding.

All the procedures were successfully completed. Mean operating time was 180 minutes. We had no intra or post-operative complications or conversion. A drainage was left in the splenic bed for 48 hours in postoperative period. The oral feeding started after 48 hours. The median length of hospital stay was 5 days.

Our short experience showed that ls is a feasible and effective procedure in pediatric age also for massive splenomegaly. ls showed equally hematologic results compared to open splenectomy but associated with less operative pain, shorter length of hospital stay, earlier return to full function, decrease in hospital costs and a cosmetically superior aspect.

POSTER SESSION II – GI

**YOUTUBE AS A TOOL FOR LAPAROSCOPIC INGUINAL HERNIA REPAIR:
COMPARISON OF SEARCH RESULTS IN ENGLISH, FRENCH AND JAPANESE**

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AIM:

This study compared information on YouTube for parents on laparoscopic inguinal hernia repair in 3 different languages; English, French and Japanese.

MATERIAL AND METHODS:

YouTube (2013-2018) was searched for “Laparoscopic paediatric inguinal hernia repair” in English, French (“*cure hernie inguinale enfant laparoscopie*”) and Japanese and evaluated by 2 clinicians.

RESULTS:

There were 1230 videos in French of which 231 were analysed but 230 were excluded. On the other hand there were 61 videos in Japanese and 59 were excluded. English search had 2340 videos of which 637 were analysed but 589 excluded. The 1 French video had a 3:35 min duration, HD quality with narration with 4920 hits and 13 likes. The 3 Japanese videos had a mean 5:57 min duration, 2 HD quality with narration with 30150 hits and 19 likes. The 48 English videos had a mean 5:03 min duration, 21/48 HD quality with narration with 71947 hits and 122 likes.

Regarding country of origin of English videos only: 25 not known, 7 USA, 4 Pakistan, 3 India, 1 Austria, 1 Bangladesh, 1 Chile, 1 Croatia, 1 Egypt, 1 Italy, 1 Saudi Arabia and 1 Turkey.

CONCLUSION:

There is a big discrepancy of information available in the 3 languages and there is practically no valuable information on YouTube for the Japanese or French-speaking parents. English-speaking parents, they have mostly access to operative content videos with narration.

KEYWORDS:

Youtube, laparoscopic inguinal hernia repair, pediatric, French, Japanese, English

POSTER SESSION II – GI
THE USE OF A LIVE-TISSUE WELDING DEVICE FOR LAPAROSCOPIC
APPENDECTOMY IN CHILDREN.

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BACKGROUND:

In the past decade new devices have been introduced in pediatric surgery. We present our experience with a live-tissue welding device for performing a laparoscopic appendectomy.

MATERIALS AND METHODS:

From September 2017 until April 2018 in our clinic there were 14 cases with acute appendicitis where we used a live-tissue welding device for laparoscopic appendectomy. The average age of patients was 9 ± 3 years. There were 8 (57.1%) boys and 6 (42.9%) girls. Appendectomy was performed as a standard procedure with a 10mm camera transumbilically and two 5mm trocars. Dissection was performed in a classic fashion with coagulation. For ligation of the appendix and its mesentery we used a live-tissue welding device. The appendix was cut off in the place of the welding, and no additional endo-loops were placed on the stump of the appendix. No drainage tubes were used.

RESULTS:

There were no complications at operations or in the post-operative period. The mean time of operation was 25 ± 7 minutes. Children started feeding mesh food the same day as operation. The average hospital stay was 4 ± 1 days.

CONCLUSION:

Live-tissue welding devices are safe and feasible to use for a laparoscopic appendectomy in the pediatric age.

POSTER SESSION III: UROLOGY

**OLBERT'S BALLOON AS A POSSIBILITY OF TREATING URETERAL STRICTURE
AFTER COMPLICATED URS-L IN CHILDREN – PRELIMINARY REPORT**

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Olbert's balloon dilatation is a surgery technique used for the treatment of the ureteral stricture.

It is very often used in adult patients, however, due to the advancing miniaturization of the equipment as well as its precision, this technique has also become possible in the treatment process in children. We would like to present 3 cases of Olbert's balloon dilatation carried out in children with ureteral stricture after complicated URS-L, aged 12 to 17 years.

The average age was 14.3 years. All ureteral stricture was noticed after complicated URS-L procedure. All of the children had hydronephrosis of the 3rd grade. The lack of function of the kidney in DMSA was observed with average on about 20%.

During the URS-L procedure in all children the ingrown to the ureteral wall stone was noticed. Stone free rate was 100% and the DJ stent was inserted.

After removing DJ stent hydronephrosis was observed in US. Retrograde pyelogram revealed ureteral stricture in the place where stone was ingrown. DJ stent was placed and Olbert's Balloon dilatation under fluoroscopy was performed.

We achieved efficiency of 100%. In DMSA function of the kidney after 3 months increased to the average 36%. In US two children had no hydronephrosis and one child had 1st grade. The longest follow up is now 1.5 year.

Olbert's balloon dilatation is an effective, safe and minimally invasive tool for the ureteral stricture, but only in the hands of endourological experienced paediatric urologist. More prospective, randomized, multicenters trials are needed.

POSTER SESSION III: UROLOGY
NEPHROPEXY: MAY BE THE SOLUTION IN PERSISTENT OBSTRUCTION
AFTER PYELOPLASTY IN MALROTATED KIDNEY

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AIM:

Laparoscopic pyeloplasty in children has been proven to be safe and effective. Pelvi-ureteric junction obstruction (PUJO) associated with malrotated kidney is rare. We present a patient with initial amelioration after laparoscopic pyeloplasty in malrotated kidney and recurrence of symptoms 1 year later.

CASE-REPORT:

Two year old boy, with prenatal diagnosis of right pelvic dilatation, presented in the first month mild hypertension with progressive increase of right pelvis dilatation and cortical atrophy. MAG3 scan confirmed the suspected PUJO. At 2 months of age laparoscopic Anderson-Hynes pyeloplasty was performed on a Pippi-Salle transanastomotic stent. Posterior rotation of the right kidney was noticed. The post-operative evolution was uneventful. The follow-up was favorable with kidney output normalization on the 6-months postoperative MAG 3 scan. One year later, a right pelvis dilatation with hypertension recurrence were detected. The MAG3 scan showed a marked emptying delay of the right pelvis and a slight renal function decrease. At laparoscopically exploration, the right kidney was compressing the uretero-pelvic junction. After kidney mobilization, lasix injection suggested satisfactory urine drainage. Nephropexie was performed by pelvis attachment to the lateral abdominal wall by three interrupted stitches of Ticron 2/0. The postoperative course was simple with blood pressure normalization. US and MAG3 exams were normal at 6 months follow-up.

CONCLUSIONS:

Laparoscopy in malrotated kidneys offers the advantage of a general view with evaluation of the anatomy and may avoid unnecessary redo pyeloplasty. Unusual anatomical presentations require tailored technical solutions in each case. Close follow-up for long term evolution should be performed.

POSTER SESSION III: UROLOGY
RETROCAVAL URETER: LAPAROSCOPIC EXPERIENCE IN TWO CASES

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Retrocaval ureter (RCU) is an uncommon cause of hydronephrosis. The gold standard treatment has been classically the ureteral transposition with uretero-ureteric anastomosis by open surgery. We standardized the laparoscopic ureteroureterostomy with a minimally invasive approach.

Two female patients, 22 and 18 years old, presented symptomatic retrocaval ureter with several episodes of flank pain. The abdominal MRI showed a typical S-shape deformity of the right lumbar ureter. Patients underwent laparoscopic dismembered ureteroureterostomy by transperitoneal approach with three 5-mm trocars. The proximal ureter was lifted on a vessel loop and distal segment was poorly mobilized in the interaortocaval region. The stenotic tract of ureter was excised. The anastomosis was fashioned by two running sutures (PGLA 5/0). A double-J 4.7 Fr stent was inserted laparoscopically. A 10Fr continuous suction drain was placed. Renal ultrasonography and renal dynamic scan were performed after 1 month since double-J stent removal.

All procedures were completed laparoscopically without intra- and post-operative complications. The entire procedures lasted 195 and 172 minutes and the intracorporeal suture lasted 79 and 73 minutes. Suction drain was removed after 48 and 60 hours and the patients were discharged on the 4rd and 5rd day. Double-J stent was removed after 4 weeks. Follow-up exams showed resolution of hydronephrosis with significant improvement in function of the affected kidney.

Our procedure for RCU utilizes only three 5-mm trocars, without preoperative cystoscopy or positioning of an indwelling ureteral catheter. The simplicity and reproducibility of our approach are the main advantages.

POSTER SESSION III: UROLOGY
TRANSMESOCOLIC LAPAROSCOPIC DIAGNOSIS AND TREATMENT OF
SYMPTOMATIC EXTRINSIC PUJ OBSTRUCTION
IN CHILDREN AND ADOLESCENTS : REVIEW OF 6 CASES

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Unilateral flank pain in children and adolescents is not frequent and mainly due to infections or stones in the urinary tract.

In few cases colic flank pain is suspected to be due to vascular anomalies of the kidney or other extrinsic PUJ obstructions.

Diagnosis in this challenging cases is often difficult and sensitivity of ultrasounds, MRI or TC is not sufficient.

We discuss the utility of laparoscopic transmesocolic exploration as diagnostic tool in case of failure of traditional radiologic examinations and eventually, to treat vascular anomalies or other extrinsic malformations undercovered.

We retrospectively analyzed 6 cases who had laparoscopic transperitoneal exploration of PUJ during the last three years.

The files of 4 males and 2 girls were reviewed .All patients had monolateral flank pain and had a non obstructed scintigraphic pattern on DMSA scan.

Five patients presented renal vascular anomalies detected with MRI or TC scan .

Five patients were treated with laparoscopic transmesocolic vascular hitch procedure and one patient was treated with pelvic suspension to renal body.

Extrinsic block of the urinary tract may be the cause of monolateral flank pain in children and adolescents but often traditional diagnostic tools are not sufficient to reach a proper diagnosis. Renal vascular anomalies and in particular lower pole anomalies are the principal causes.

In our experience, transperitoneal laparoscopic approach was the best approach to lead to diagnosis and to treat the extrinsic UPJ obstruction.

POSTER SESSION III: UROLOGY
MINIMALLY INVASIVE SURGERY (MIS) EVOLUTION
IN A SINGLE PEDIATRIC UROLOGIC CENTER. TIMES, TECHNIQUES AND TRENDS

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AIM OF STUDY:

to assess and evaluate the evolution of surgical MIS approaches in pediatric urology in our Centre focusing on techniques and trends of various urological procedures comparing operative time(OT), postoperative complication-rates, outcome between MIS and Open procedures.

METHODS:

we analyzed surgical urological procedures in our department (2002-2017) identifying children undergoing Open and MIS procedures recording any intra-operative/post-operative complications. 312pts(181M,131F) were studied for congenital anomalies/urologic diseases: intrinsic/extrinsic UPJO(hydronephrosis), dysplastic kidney, vesico-ureteral-reflux nephropathy, cystic disease, dysgenetic-kidney.

Main results: 312pz; 182-UPJO: 141-intrinsic obstruction underwent to Anderson-Hynes-pyeloplasty; 70-Open(OP), 14-laparoscopic(LP), 57-retroperitoneoscopic(RP). Placed JJ-stent removed after 30-40days and a perirenal drainage removed after 2days. Equivalent intra/postoperative complication rate. 1 re-obstruction;2 IVU;1leakage. OT: 3½h. 41 extrinsic-UPJO: 36 underwent to Laparoscopic Vascular Hitch(LVH). OT: 95'; average hospital stay 4 days; 1 re-do LP-pieloplasty after 2aa.

61: nephroureterectomy, 20-OP with average age of 6aa, OT 90'; 41-RP: average age 4.5aa, OT 140'.69 heminephrectomy: 30-OP, 39-RP with same OT (120'). Complications: 1-urinoma, 2-ureteral symptomatic stumps.

CONCLUSIONS:

Higher-volume MIS centers have lower complication-rate than lower-volume centers. Our study shows as transition from open-surgery to MIS requires great experience, experienced team, an adequate learning curve. MIS is associated with lower postoperative complication rate than open procedures. According us, RP is preferable and suitable in patients younger 2-years in experts' hands in performing hemi/nephrectomy or AHDP contrasting with literature where LP prevails.

POSTER SESSION III: UROLOGY
**APPLICABILITY OF ONE TROCAR ASSISTED NEPHRECTOMY IN THE
TREATMENT OF MULTICYSTIC DYSPLASTIC KIDNEY**

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INTRODUCTION:

The most severe form of cystic renal dysplasia is the multicystic dysplastic kidney (MCDK). Proper management is still controversial, and nephrectomy continues to be considered a suitable treatment option for MCDKs that do not involute or are unlikely to involute. The aim of our study is to evaluate the applicability of one trocar assisted nephrectomy (OTAN) in the treatment of MCDK.

METHODS:

We evaluated the medical records of children with MCDK who underwent OTAN in our institution. Data collected included gender, age at the time of surgery, laterality of the affected kidney, the largest diameter of the multicystic kidney, indication to surgery, and, surgical, and postoperative data.

RESULTS:

OTAN was performed in 29 cases (M/F=1,5) of MCKD, at a median age of 32 ± 24 months. Left kidney was affected in 60% of the cases, and the median diameter of the MCDK was 4.7 ± 2.4 cms. The most common indication to surgery was non-functioning kidney in 75%. Median operative time was 48 ± 27 minutes. There were no operative complications and 2 cases of conversion to open surgery. Oral intake was started within 36 ± 3 hours after procedure in all cases, median length of stay was 72 ± 24 hours.

CONCLUSIONS:

Although the indications for a nephrectomy in case of MCDK remain limited, OTAN could be considered as a safe and feasibility technique with a very low impact on children health in terms of surgical outcome and hospitalization.

POSTER SESSION III: UROLOGY

**CONGENITAL URETHRAL STRICTURE LEADING TO PERIODIC ABLATION AND
LAPAROSCOPIC EXTRAVESICAL MITROFANOFF PROCEDURE IN AN INFANT**

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Clean intermittent Catheterization (CIC) might be needed in patients with congenital urethral stricture (CUS) also called as Cobb's collar. This video shows cystoscopy, stricture ablation and laparoscopic extravesical Mitrofanoff procedure (LEMP) in a patient who had consecutive stricture ablations in infant age.

VIDEO PRESENTATION:

The patient with prenatally diagnosed posterior urethral obstruction had a complete urological evaluation including urinalysis, serum biochemistry, urinary ultrasound, voiding cystourethrography and cystoscopy following the birth. Bilateral hydroureteronephrosis, vesicoureteral reflux, and CUS were determined. He had first cystoscopy and CUS ablation in newborn age. Since he needed consecutive stricture ablations with around two month intervals and difficulty of CIC, a continent catheterizable appendicovesicostomy was planned. LEMP was performed when he was 10 months of age. The video shows cystoscopic findings, ablation and tips and tricks of LEMP on creation of working space, preparation of bladder wall and appendix, appendicovesical anastomosis and stoma formation in an infant age. The patient was discharged in the 3rd. postoperative day and late postoperatively CIC was done at Mitrofanoff and urethra was catheterized with the purpose of dilatation.

CONCLUSION:

In case of difficult transurethral catheter insertion for CIC, incontinent stoma or continent catheterizable stomas could be considered in patients with posterior urethral obstruction. If surgeon has an experience of laparoscopic reconstructive procedures in infants, LEMP is an appropriate minimally invasive approach to make a continent catheterizable stoma.

POSTER SESSION III: UROLOGY
LAPAROSCOPIC PYELOPLASTY IN CHILDREN UNDER ONE YEAR – A SINGLE-CENTER EXPERIENCE

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INTRODUCTION:

Minimal invasive pyeloplasty is becoming the gold standard on the ureteropelvic junction obstruction management in children. The laparoscopic approach demands a complex technical expertise and in children under one year old is not always favoured.

METHODS:

The records of infants under one year old that underwent laparoscopic pyeloplasty, from March 2016 to March 2018, were reviewed. We analyse age, gender, weight, pre-operative imaging studies, operative details (operative time, abdominal access, urinary diversion), length of hospital stay and complications.

RESULTS:

During the study period we performed 7 laparoscopic pyeloplasties in children under one year old. The study group includes 6 children with a median age of 5 months (3 - 7), 1 boy and 5 girls, with a median weigh of 7 kilograms (4,6 - 9,4). In 3 children at least one urinary tract infection occurred before surgery. The procedure was performed using one umbilical trocar of 5mm (5mm, 30 degrees scope) and with two working-ports of 3mm. A trans-anastomotic stent was applied in every patient and in any case an abdominal drain was placed. The mean operative time was 173±48 minutes (110-240). The longest procedure was the only case of conversion. The post-operative length of hospital stay was 2.5 days (median) with none complications and in the cases with follow up superior to 6 months (5 patients) we verified reduction of hydronephrosis.

Conclusion: Laparoscopy is a safe and effective approach for pyeloplasty in children under one year old with ureteropelvic junction obstruction, including those with previous infections.

POSTER SESSION III: UROLOGY
**INITIAL EXPERIENCE OF LAPAROSCOPIC APPENDECTOMY IN PEDIATRIC
POPULATION IN A DEVELOPING COUNTRY**

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BACKGROUND:

Laparoscopic appendectomy, is neither unusual nor uncommon, in the pediatric population, yet is still not a widely accepted option in developing countries. We thus aimed, with this study, to assess the recent surge of laparoscopic appendectomies performed and their outcomes.

MATERIALS AND METHODS:

All children aged (4-16yrs) who underwent laparoscopic appendectomy performed by two surgeons, in pediatric surgery units of two different tertiary care hospitals from January 2012 to December 2017, were included. Patient demographics, operative details, length of hospital stay, duration of surgery, histopathology and complications were recorded.

RESULTS:

A total of 218 patients were included in the study. There is no linear trend of laparoscopic appendectomy is seen over time period from 2012-2017. 69% of patients were male and 31%, female, with the overall mean age being 12.6 years. The mean length of hospital stay was 2.48 days. Mean duration of surgery is 64.5±27.3 is minutes which have improved over time. Five of the total cases were converted to open and the negative appendectomy rate was 6.9%. The complication rate was 8.2%, the commonest being port site infection (6), followed by pelvic abscesses (5).

CONCLUSION:

Our study showed Trend of laparoscopic appendectomy is not increasing in our institution. It remained static over time period from 2012-2017. Results of our study are comparable to adults as well as with international data, thus establishing that this is probably one of the procedures of choice where establishing the laparoscopic practice is required in developing country.

POSTER SESSION III: UROLOGY
PREVALENCE OF ADHESIVE BOWEL OBSTRUCTION POST LAPAROSCOPIC
SURGERY IN PEDIATRIC POPULATION

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Norfolk and Norwich University Hospital, UK ⁽¹⁾ and St George's Medical School, Grenada, West Indies ⁽²⁾

AIM

Formation of abnormal fibrous band post peritoneal injury can cause kinking of the bowel leading to obstruction. Risk of developing adhesive bowel obstruction (ABO) has been quoted at 2.4% in all cause laparotomy in the adult population and 5% in children undergoing major abdominal surgery. We reviewed the risk of ABO in children undergoing laparoscopy.

METHODS

Retrospective review of a single surgeon's series of children undergoing laparoscopic surgery 1995-2016.

RESULTS

1235 children underwent laparoscopy over the 21 year period. 192 (16%) for diagnostic procedure; 318 (26%) as an emergency and the remaining were elective or planned urgent cases. Emergency procedures were mainly appendicectomy and pyloromyotomy. Elective and planned urgent cases included 18 procedures ranging from day case surgery such as herniotomy; to pelvic procedures such as orchidopexy, ovarian procedures and rectopexy; to major operations such as fundoplication, splenectomy and bowel resection for inflammatory bowel disease. 5 (0.4%) children presented with ABO, all required operative management. Their original operations were gastrostomy, fundoplication, colectomy for Crohn's disease, appendicectomy and appendicostomy. 4/5 treated with an open procedure and 2 required formation of stoma.

CONCLUSION

Risk of ABO is significantly lower in laparoscopy compared to open procedure.

POSTER SESSION III: UROLOGY
PYLOROMYOTOMY FOR HYPERTROPHIC PYLORIC STENOSIS – LAPAROSCOPIC
VERSUS OPEN APPROACH

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INTRODUCTION:

Laparoscopic pyloromyotomy is nowadays the favored approach for the surgical treatment of hypertrophic pyloric stenosis (SHP). However, there is no strong evidence of the advantages of laparoscopic over the opened technique. Laparoscopy was associated with a shorter time to full feeds, shorter hospital stay and better cosmetic outcomes.

OBJECTIVE:

The purpose of this study is to assess the outcomes of laparoscopic pyloromyotomy for SHP with regards to our experience with open pyloromyotomy.

MATERIAL AND METHODS:

In the last 5 years we have treated 28 patients for SHP. In 12 cases laparoscopy was the preferred approach. Our assessment was carried on with regards to length of hospital stay, duration of surgery/ anesthesia, complications, postoperative pain and time to full feeding, vomiting and weight gain/ loss.

RESULTS:

There was one intraoperative complication: mucosa perforation during an open pyloromyotomy which led to chemical peritonitis. Postoperative we have had 3 case of acute pulmonary infections. Conversion was necessary in one case due to technical reasons. Mean operative time was slightly longer for laparoscopic pyloromyotomy. Medium hospital stay was 7 days for laparoscopic vs. 7.68 for open. Full oral feeding was achieved after a medium of 3 days for laparoscopic vs. 3.6 days for open. Conclusion: Our initial experience of 12 cases indicate that laparoscopic pyloromyotomy for SHP is a safe procedure with outcomes at least as good as classic pyloromyotomy.

SESSION V, RESEARCH & THORAX I
VATS APPROACH FOR THORACIC BRONCHOGENIC CYST IN CHILDREN:
A GOLD STANDARD

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BACKGROUND:

Bronchogenic cyst (BC) represents a rare type of bronchial tree malformation sometimes detected by prenatal ultrasounds. There is no general consensus on the approach and timing of intervention for BC. However, it's advocated by many other pediatric surgeons to resect it early in life. Aim of this study is evaluating video assisted thoracic surgery (VATS) as first line approach for BC management in the largest pediatric published series, in our knowledge.

MATERIAL AND METHODS:

We have performed a retrospective (2007-2017) multi-center study from three French referral centers. We included all pediatric patients (< 18 years) operated by VATS and thoracotomy from well documented (histopathology examination) thoracic BC.

RESULTS:

Twenty four patients had been operated for BC. The median age for the patients that was operated was 45 months (2 months -16 years). The median size of the cyst that was resected was 27mm in its greatest diameter (range 15mm-55mm). Four conversions to open thoracotomy occurred because of bad exposure. One patient operated directly by thoracotomy because of hemodynamic instability. The median hospital stay was 3. Days (range 1-7 days). There was no mortality or major morbidity post operatively. During follow up, there was no long term recurrence or major complication.

CONCLUSION:

VATS is considered feasible and safe for BC in experienced hands in children. The size and location of the BC does not affect the decision to select this approach. For many advantages, VATS can be considered as an effective first line management for BC.

SESSION V, RESEARCH & THORAX I
ADAPTED THORACOSCOPIC LUNG RESECTION STRATEGIES FOR CONGENITAL PULMONARY MALFORMATIONS, INCLUDING ANATOMIC SEGMENTECTOMIES: A BICENTRIC REPORT

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AIM OF THE STUDY

Lobar (LR), anatomic infra lobar (real segmentectomies) (ILS) and non anatomic infra lobar (ILR) resections are the main strategies for thoracoscopic congenital pulmonary malformations (CPM) resections. We report our results for each strategy and discuss preoperative factors that led to choose the modality (type) of resection.

METHODS

We retrospectively reviewed all CPM resections performed between 2009 and 2017 in two expert centers. We excluded cases of extralobar sequestrations. Difficulties to realize the planned strategies led to conversion.

RESULTS

Fifty eight procedures consisted of 20 LR, 21 ILR and 17 ILS with respectively 7, 7 and 1 conversions. An immediate post-operative bleeding and 3 prolonged pleural drainages occurred. Median age at procedure was 8 months (13 days – 14 years). Mean operative time was 147 min in the LR and ILS groups, and 92 min in the ILR group. Hospital stay was the same in all groups (4 days).

LR were done mainly for pure CPAM type 1 (30%) or 2 (45%), ILS mainly for bronchial atresia sequences, congenital lobar emphysema and type 2 CPAM, ILR for intralobar sequestrations and type 2 CPAM in lower lobes. One third of ILR specimens had mixed histology.

CONCLUSIONS

High-quality preoperative assessment (CT) is needed to allow precise location and extension of CPM (bronchial segmental topography). Volume is not the only determining factor; nature and localization are also important elements. These criteria may lead to a preoperative classification to evaluate and improve operative strategy.

SESSION V, RESEARCH & THORAX I
**WHICH IS THE BEST APPROACH TO PRIMARY SPONTANEOUS PNEUMOTHORAX
IN ADOLESCENTS?**

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BACKGROUNDS:

Primary spontaneous pneumothorax (PSP) in 85% occurs in healthy adolescents and young adults. Adolescents are usually associated to adult patients, the best management strategy for first episode PSP in pediatric population is still controversial.

METHODS:

In the last 6 years 30 patients referred to our center for 49 PSP (36 first episodes, 13 recurrences). 6 patients (20%) presented metachronous bilateral PSP. First line management of each episode was decided on clinical signs, radiological presentation (apex to cupola distance \leq or $>$ 4cm) and medical history: conservative management (n=18); chest drain (n=26); surgery (n=5).

RESULTS:

14 first episodes PSP were conservatively managed: success rate 42.8%. 20 first episodes PSP had a chest drain: success rate 60%. We performed 16 thoracoscopic procedures (a pleurectomy, a chemical pleurodesis, 14 apicectomy with mechanical pleurodesis): as first line treatment (n=2), for a persistent air leak (n=5) or a recurrence (n=9). At a follow up to 6 years apicectomy associated to mechanical pleurodesis has a success rate of 86%.

CONCLUSIONS:

Recurrent PSP is a psychologically stressful disease for teenagers and worsens the perceived quality of life. Thoracoscopic apicectomy with mechanical pleurodesis is safe and effective. Recurrence is not absolutely avoided, nevertheless this procedure consent adhesion of lung apex to thoracic cupola ensuring the patient that he can still experience chest pain but not an important respiratory distress. A risk stratification system could identify patients who will benefit from intervention to prevent recurrence at the first presentation, rather than simply waiting for a recurrence to occur.

SESSION V, RESEARCH & THORAX I
THORACOSCOPIC REMOVAL OF AN UNKNOWN TWISTED EXTRALOBAR SEQUESTRATION

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A 13 –year-old-girl presented to the emergency department with sharp left upper quadrant abdominal pain, irradiating to the back and worsening with deep breathing or reclining.

The pain had suddenly arisen 2 days before while swimming and was accompanied by lower grade temperature (37.5°) and mild cough. Laboratory tests showed elevated white blood cells and c-reactive protein.

Serologic test for atypical viruses or bacterial and quantiferon were negative.

Chest radiography showed a subtle left sided effusion and chest ultrasound showed left pleuric effusion and an hyperechogenic mass with a well defined wall.

Considering the impossibility of precisely defining the nature of the mass revealed by the US examination, an exploratory thoracoscopy was performed.

At thoracoscopy a haemorrhagic pleural effusion was found in the costophrenic left space surrounding a brown black mass twisted on its vascular stalk.

The macroscopic appearance of the mass was that of an extralobar sequestration and the pathological examination confirmed the diagnosis.

Extralobar pulmonary sequestrations are generally diagnosed prenatally or incidentally on X-Ray but only few acute cases of infarction caused by torsion are reported in literature. Torsion of an extralobar sequestration should be suspected in case of sudden thoracic or abdominal pain associated with radiological evidence of pleural effusion or chest mass.

Thoracoscopy in these cases is both diagnostic and therapeutic.

SESSION V, RESEARCH & THORAX I
**CT-GUIDED HOOK WIRE LOCALIZATION OF MEDIASTINAL FOREIGN BODY FOR
THORACOSCOPIC REMOVAL**

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BACKGROUND:

Notably, 80%–90% of foreign bodies (FB) in the gastrointestinal tract are passed spontaneously without complications, 10%–20% are removed endoscopically, and 1% require open surgery secondary to complications. We present computed tomography (CT) guided thoracoscopic removal of mediastinal FB which initially caused perforation of the esophagus and retropharyngeal abscess.

CASE REPORT:

A 5-year-old girl felt the sore throat during swallowing a piece of tortilla with chicken meat. She was admitted to regional hospital with rigid neck position, swelling, fever and pain 12 hours after the accident. The CT scan showed a retropharyngeal abscess with the shadow of a foreign body (chicken bone was suspected). Rigid esophagoscopy showed purulent secretion under the level of cricopharyngeus muscle. Debridement and drainage of abscess cavity was performed via open neck approach, but the FB was not found. The abscess was healed after 2 weeks course of antibiotics and the girl was doing well. Despite no pathological finding on repeated esophagoscopy the control CT scan confirmed the persistent FB in the mediastinum at the level of 2nd thoracic vertebra. The FB body was localized with preoperative CT –guided hook wire prior to successful thoracoscopic removal 42 days after FB swallowing. The FB body was recognized as 12x3mm glass shard. The next course was uneventful and the girl was discharged 8 days after the thoracoscopic removal.

CONCLUSION:

CT-guided hook wire fixation is useful, helps in precise localization of mediastinal foreign body and can allow FB removal by minimally invasive thoracoscopic technique.

SESSION V, RESEARCH & THORAX I
ANTIREFLUX PROTECTION OF THE TRANSPLANT FOR COLOESOPHAGOPLASTY
IN CHILDREN. EXPERIMENTAL-CLINICAL STUDY

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INTRODUCTION:

In the case of coloeshophagoplasty, complications associated with reflux of gastric contents into the transplant are noted up to 30% of cases. The purpose of this experimental-clinical work was the creation of reliable antireflux anastomosis in the coloeshophagoplastics.

MATERIAL AND METHODS:

The results of 230 coloeshophagoplastics performed in our clinic for 22 years were analyzed. Depending on the type of anastomosis of the graft with the stomach, patients are divided into two groups.

Group 1 - 96 operations - anastomosis of the graft with the stomach was performed without antireflux protection, the end in the side by a 2-row suture.

In the second group - 134 operations - a submucous tunnel was created on the anterior wall of the stomach, long equal to the width of the transplant.

The technique of antireflux surgery in the second group was developed by us in the course of experimental work and was performed on 18 mongrel dogs of both sexes weighing from 6 to 14 kg. To evaluate the results of the operation, clinical data, daily pH-metry and graft manometry and endoscopy were used.

RESULTS:

In the 1st group - complications such as peptic colitis of the transplant, violation of evacuation of food in the stomach and stenosis of cologastroanastomosis were detected in 30% of children.

In Group 2 complications associated with reflux of gastric contents into the graft were noted in 4.8% of cases.

CONCLUSIONS:

The antireflux anastomosis proposed by us showed its high efficiency in clinical practice.

SESSION V, RESEARCH & THORAX I
**FIBRIN GLUE FOR RECURRENT TRACHEOESOPHAGEAL FISTULA: SHOULD
BRONCHOSCOPIC TREATMENT BE CONSIDERED AS THE FIRST CHOICE?**

Ignacio Miró, María Antonia Mínguez, Carlos Gutiérrez, Elena Carazo, María Pilar Del Peral, David Crehuet, Adrià Costa, Paula Ortolá, Lucia Rodríguez, Patricia Rodríguez, Rosa Fonseca, José Enrique Barrios, Miguel Couselo, Vicente Ibáñez, Juan José Vila
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BACKGROUND:

Recurrent Tracheoesophageal Fistula (RTEF) represents a frequent complication from surgical repair of esophageal atresia. Its treatment remains controversial. Endoscopic approach for fistula closure appears as a promising alternative for the management of these patients. We present the results of a repair technique using fibrin glue in a bronchoscopic approach, which was first described in 1994 by our team.

MATERIAL AND METHODS:

A retrospective review was conducted from 1993 to 2015, including all patients diagnosed of RTEF following esophageal atresia repair and treated with fibrin glue using a rigid neonatal bronchoscope. In most of the cases diathermy was applied previously to the sealing with fibrin glue. The maximum number of endoscopic sessions per patient was set to five; if the technique was not successful, open surgery was performed.

RESULTS:

Fourteen patients were treated with fibrin glue; in the latter eleven of them (78.6%) previous diathermy was applicated. The day of first treatment ranged from 14 to 770 (the average was 84.5). The patients received an average of 2.1 endoscopic sessions. The mean follow up was 12.1 years. The overall success rate was 71.7%, being higher in those patients in which previous diathermy was applied (72.7% versus 66.6%).

CONCLUSIONS:

Application of fibrin glue represents an excellent option for the treatment of patients with RTEF following esophageal atresia repair. Previous application of diathermy seems to enhance the clinical outcomes when compared to fibrin glue application alone. Endoscopic approach should be considered as first choice treatment for RTEF.

SESSION V, RESEARCH & THORAX I
THORACOSCOPIC REOPERATION FOR ESOPHAGEAL ATRESIA SURGERY
COMPLICATIONS

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INTRODUCTION:

Esophageal atresia repair may have early complications that may have great relevance in short and long term patients outcome. Anastomosis leak, esophageal stenosis or recurrent fistula are the main postoperative complications of these patients. Although thoracoscopy is a well known approach for primary repair of this malformation, only few articles refer its use in the treatment of complications derived from anastomotic failure.

MATERIAL AND METHODS:

We present our initial experience in the thoracoscopic treatment of esophageal dehiscence, esophageal stenosis and recurrent fistulas.

RESULTS:

Two patients who underwent thoracoscopic atresia repair presented a large dehiscence of esophageal anastomosis at the third and the fifth postoperative days. An early thoracoscopic reanastomosis was performed without complications. One patient who underwent thoracoscopic atresia repair presented a esophageal stricture refractory to regular endoscopic dilatation. A thoracoscopic esophagoesophagostomy was performed at 2 years of age. One patient who underwent esophageal atresia repair by thoracotomy presented a recurrent tracheoesophageal fistula at 1 year of age. A thoracoscopic closure of the fistula with a 5 mm endostapler was performed. After the reoperations, all of them are asymptomatic.

CONCLUSIONS:

Thoracoscopy can be an useful approach in all kind of esophageal atresia repair complications. In some instances can even change the prognosis of these patients. Early reoperation for leaks can preclude stenosis, whereas the use of staples in the treatment of recurrent fistulas can decrease the use of thoracic drainages and hospital stay.

SESSION V, RESEARCH & THORAX I
THORACOSCOPY CAN BE ACCOMPLISHED EVEN AFTER PREVIOUS
THORACOTOMIES TO RESECT ESOPHAGEAL STRICTURE

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Esophageal atresia is a common congenital malformation. Current survival rate exceeds 95 percent, but to treat late complications still remains a challenge. One of the most common complication after esophageal atresia repair is esophageal stricture. It is traditionally treated by endoscopic dilatation. If multiple dilatations are still ineffective, surgical resection of the oesophageal stricture may be necessary.

We report the case of a 3-year-old girl who was referred to our institution with a Gross Type-C esophageal atresia. At the age of 1 day we have performed thoracotomy which ended as a ligation of the TOF and gastrostomy formation because there was a distance of more than five vertebral bodies between the two ends of the esophagus and they could not be reapproximated.

After the first operation chylothorax developed which was treated surgically. Following a Foker-procedure she underwent a succesful delayed primary anastomosis performed by an open thoracotomy approach. Unfortunately an anastomotic stricture developed which was resistant to dilatations even after a Toupet-fundoplication. To treat the stricture we indicated surgery: a succesful thoracoscopic resection was completed with an end-to-end esophago-esophagostomy at the age of 2,5-year.

The postoperative course was uneventful, after 7 months of follow-up she is on total oral nutrition.

Previous thoracotomies mean severe pleural adhesions and to gain sufficient pleural space for thoracoscopy is a challenge. With meticulous preparation however pneumolysis is possible and the advantages of thoracoscopy (better magnification and more detailed operative field) may help the surgeon to reach optimal results even in difficult cases.

SESSION V, RESEARCH & THORAX I
ANATOMIC THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA – REVIEW OF THE RESULTS

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INTRODUCTION:

In 2017 we described the Anatomic Thoracoscopic Repair of Esophageal Atresia (ATREA), which involves an esophageal anastomosis performed medially to the azygos veins, preserving normal anatomy. We aimed to review the results and match them to the consensus references published by ESPGHAN (Krishna *et al.* J Pediatr Gastroenterol Nutr 2016).

METHODS: We performed ATREA in 9 newborns with the diagnosis of esophageal atresia with distal tracheoesophageal fistula. We retrospectively collected data regarding the early post-operative period and the gastroenterological follow-up (fistula recurrence, anastomotic stricture, gastroesophageal reflux, respiratory symptoms and failure to thrive).

Table 1

	ATREA (n=9) (%)	ESPGHAN REFERENCES (%)
Early postoperative complications¹	0	
Gastroenterological Follow-up		
Fistula recurrence	0	5–14%
Anastomotic stricture ²	4(44%)	18–60%
Surgical GER	0	0–45%
Respiratory symptoms ³	1(11%)	14–40%
Failure to thrive ⁴	0	7–9%

¹Early postoperative complication was defined by any condition that prolonged the mechanical ventilation over more than 3 days; ²Anastomotic stricture when ≥ 1 dilation was required; ³Respiratory symptoms included persistent cough, wheezing, dyspnea, bronchitis, recurrent infections, obstructive or restrictive lung disease, tracheomalacia and pneumonia; ⁴Failure to thrive if weight or height $< P3\%$; GER – Gastroesophageal Reflux.

RESULTS:

Results are presented in the table.

¹Early postoperative complication was defined by any condition that prolonged the mechanical ventilation over more than 3 days; ²Anastomotic stricture when ≥ 1 dilation was required; ³Respiratory symptoms included persistent cough, wheezing, dyspnea, bronchitis, recurrent infections, obstructive or restrictive lung disease, tracheomalacia and pneumonia; ⁴Failure to thrive if weight or height $< P3\%$; GER – Gastroesophageal Reflux.

CONCLUSION:

We conclude that the results of ATREA fit or even transcend the references reported by ESPGHAN.

SESSION V, RESEARCH & THORAX I
THORACOSCOPIC ESOPHAGEAL ATRESIA REPAIR:
ANALYSIS OF PEER-REVIEWED REPORTS

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AIM:

Thoracoscopic esophageal atresia repair is an advanced pediatric surgical procedure. This study investigated peer-reviewed reporting on thoracoscopic esophageal atresia; to predict possible trends spanning over the past decade.

METHODS:

The search terms “thoracoscopy”, “esophageal” and “atresia” were inputted into the Pubmed Database. The number of publications per year, peer-reviewed journal, origin of publication and recurring conclusive themes were recorded. Article selection was performed by 2 reviewers to minimize bias with review articles excluded.

RESULTS:

The literature search identified 71 articles published between 2005-2015 in 28 Journals. The Journal of Laparoendoscopic & Advanced Surgical Techniques had the highest number of publications (n=19). There has been a gradual rise in publication numbers from 2005 (n=6) to 2015 (12). 64% articles published in the period 2005-2007 were case reports compared to 17% between 2013-2015. Looking at the countries, USA led with 23 publications, followed by Japan-10; Netherlands-9 and UK-5. 7 articles focused on simulation models alone for surgical training of this procedure. Potential complications of thoracoscopy were highlighted such as post-operative anastomotic leak (n=22 articles) and reflux (n=12).

CONCLUSION:

Analysis of epidemiological reporting trends in thoracoscopic esophageal atresia surgery listed 71 articles in 2005-2015 published in 28 Journals. The USA predominated, accounting for 1/3rd articles. There has been a steady rise in publications evident since 2005 until 2015. Case reports accounted for majority of publications in early years but have then declined in numbers. Associated complications of anastomotic leak and reflux were important considerations that were highlighted in these reports.

SESSION V, RESEARCH & THORAX I
**CASE REPORT OF A SUCCESSFUL PRIMARY THORACOSCOPIC REPAIR OF
CONGENITAL DIAPHRAGMATIC HERNIA REPAIR IN PREMATURE 1KG BABY**

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CASE REPORT:

We report the first successful primary thoracoscopic repair of congenital diaphragmatic hernia (CDH) in premature low birthweight baby.

Baby girl was born at 28+6 weeks of gestation with birth weight of 1043 grams.

There was no antenatal diagnosis of CDH but there was a suspicion of some abnormality in the left foetal chest on a 28 week scan. Left CDH was confirmed on a postnatal chest x-ray. She underwent thoracoscopic repair on day 8 of life at 1150 grams.

One 5mm camera port and two 3mm instrument ports were used. Hernia contents (most of small and large bowel, stomach, spleen and part of liver) were reduced. Posterolateral defect using 4/0 polypropylene with interrupted sutures was closed primarily. Lateral two stiches using 2/0 Ethibond were applied around rib. Carbon dioxide insufflation pressure was 4 mmHg, average tidal carbon dioxide (CO₂) was 4.2 kPa (3.7 – 5.1 kPa) and average oxygen saturation was 99% during the procedure.

The procedure was completed in 110 minutes.

There was no operative or postoperative complication. She was weaned off ventilation at one week and fully enterally fed at two weeks' post-surgical repair and was discharged home at 36 week corrected gestational age.

Baby had a normal neurodevelopment review and no recurrence at one year follow up.

CONCLUSION:

Primary thoracoscopic repair of congenital diaphragmatic hernia in a low birth weight premature baby is achievable with a normal outcome.

SESSION V, RESEARCH & THORAX I
**MINIMALLY INVASIVE REPAIR OF CONGENITAL DIAPHRAGMATIC HERNIA:
SURGICAL TECHNIQUE NOTES. A COMPARISON OF THE ITALIAN AND EGYPTIAN
EXPERIENCE: THE SAME TECHNIQUE, BUT A DIFFERENT APPROACH**

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During the first Egyptian Laparoscopic Neonatal Course (Il Cairo, March 2018) comparing the minimally invasive Egyptian and Italian (Vicenza) surgical experience in the correction of congenital diaphragmatic hernia (CDH), emerged identical surgical techniques tip and trick with different approach: Thoracoscopic, (Egyptian) and Laparoscopic (Italian).

The conception of the diaphragmatic size alone as the sole factor for the feasibility of primary closure of the diaphragmatic defect is somewhat misleading. In the pre-endoscopic era repair surgeons used to identify three states of the diaphragm defect edges: a developed anterior, posterior or both edges.

Thoracoscopy and laparoscopy offered a better view of the defect and its edges. It made possible to appreciate another parameter important as the defect size: the length of the muscle edges. It is usually (if not always) long offering abundance of muscle to aid in the repair.

Usually the surgeon tries to align the muscle edges equally resulting in a dog-ear at the medial defect end and a triangular defect at the lateral defect one. Appreciating this, one can utilize the extra length of muscle and redistribute the muscle.

Instead of closure of the defect in a linear fashion, one must try to reorient the defect into two limbs turning the "V" shaped diaphragmatic defect into a "C" or "reversed C" shaped line instead of the accustomed "T" shaped one.

We analyzed the series of both centers, recording excellent and overlapping results for both with cohorts of patients treated with the same technique but different minimally invasive approach.

SESSION V, RESEARCH & THORAX I
LITERATURE REVIEW ON MINIMAL ACCESS REPAIRS OF PEDIATRIC MORGAGNI
HERNIAS

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AIM:

This study aimed to review the literature with regards to the management and outcomes of minimal access surgery (MAS) in children with Morgagni hernias (MH).

METHODS:

The literature was reviewed for articles online on Pubmed with search terms "laparoscopy", "Morgagni hernia" and "children". The inclusion criteria were set only in the pediatric age group of 0-16.

RESULTS:

The literature search from 1997-2018 revealed 44 articles of which 31 articles met the inclusion criteria. A total of 164 children were analyzed for MH with MAS. 122 procedures were reported to be managed by primary closure. However, in 15 patients due to large size defects the hernia repairs were done using a patch. Robotic repairs were performed in 3 cases. There were 2 conversions. Postoperative complications included 9 recurrent hernias, 2 residual sacs, 1 port site hernia and 1 small pleural opening that required no drain. With regards to associated conditions, 13 children were found to have Down's syndrome, one had palate cleft and one had an associated Larrey hernia. There were no mortalities reported.

CONCLUSION:

Repair of MH is preferred only through the laparoscopic approach. Safe repairs have been reported in pediatrics from the age of 2 months with the youngest child operated on using the Robot being 1.5 years. Repairs are associated with patches in 9.1% cases. Conversion in repairs is extremely low and is 1.2%. Recurrence after laparoscopic approach is 5.5%. There are few associated anomalies and no mortalities in pediatric patients undergoing MAS MH repair.

SESSION V, RESEARCH & THORAX I
PAEDIATRIC THORACOSCOPIC REPAIR OF DIAPHRAGMATIC HERNIATION
FOLLOWING LIVER TRANSPLANTATION

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Diaphragmatic Hernia (DH) after Liver Transplantation (LT) in children is a rare complication with an unclear pathophysiology.

We performed 252 paediatric LT procedures from May 1994 to January 2018, where we recognized 6 cases of DH (incidence of 2.38%). In this population, the mean age at LT was 10 months and the time until DH presentation was, on average, 4 months.

All patients had received a left lateral segment (LLS) reduced graft. The mean graft weight was 340g with a mean graft-to-recipient body weight ratio (GBWR) of 4.20%. All hernias were at right with small bowel herniated.

LLS grafts, a GBWR > 4%, previous abdominal surgery and direct trauma during surgery can be enumerated as potential risk factors for DH post-LT in our serie.

These children underwent prompt surgical intervention without complications. Three patients were treated via laparotomy and three by thoracoscopy (one was converted to laparotomy). No clinical recurrences have been detected at a mean follow up of 5 years.

Historically, the treatment has always been surgical repair via laparotomy but the use of minimally invasive techniques in paediatric surgery has been increasing and the thoracoscopic approach for DH can bring advantages. The patients where the thoracoscopic approach was used had shorter operative times, a faster recovery with less pain and better cosmetic results.

As previous surgical manipulation has been done to the abdominal cavity and most of DH are small defects, thoracoscopy seems to be a safe approach in DH in paediatric LT.

SESSION VI, RESEARCH & THORAX II
A STUDY ON THE EFFECTS OF INSUFFLATION GASES EMPLOYED IN
LAPAROSCOPY ON VARIOUS ORGANS: A RAT MODEL

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Pneumoperitoneum in laparoscopic surgery, carries a risk to affect certain organ systems adversely. In this study we investigated the effects of pneumoperitoneum induced with carbon dioxide (CO₂), ambient air (AA), and helium (HE) in rat model.

Three groups of 7 rats were insufflated intraperitoneally with CO₂, AA, and He, respectively. A fourth group of 4 rats were chosen as controls and did not undergo any manipulation. The pneumoperitoneum was evacuated after two-hours. Blood tests including hemogram, BUN, creatinin, ALT, AST, amylase and lipase were conducted on all rats in all four groups at 2 and 24 hours. 24-hours after completion of pneumoperitoneum tissue samples from the lungs, intestines, pancreas and liver were procured from the rats for histopathological investigation.

Leucocyte counts were found to be significantly higher in the CO₂ group (p=0,008), and lower in the group receiving HE (p=0,014) as compared to the controls. AST at 24-hours and lipase levels at 2 and- 24-hours levels in the CO₂ group were significantly higher than compared to the control group (p=0,008, p=0,029, p=0,014 respectively). Histopathological investigation revealed a higher score of injury in the lungs of rats insufflated with CO₂ (p=0,014).

Our study indicates that CO₂ may have relatively more adverse effects on the lung, liver and pancreas tissue, in comparison to ambient air and helium. It may be advisable to insufflate the peritoneum with AA or He instead of CO₂ in the course of laparoscopic surgery. There is a need for further studies in this regard.

SESSION VI, RESEARCH & THORAX II
LEARNING CURVE ANALYSIS IN A RABBIT TRAINING MODEL SIMULATING SPINA BIFIDA FETOSCOPIC REPAIR BY SINGLE ACCESS

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AIM

As interest for spina bifida (SB) fetoscopic repair is growing, multidisciplinary teams training should shift from the operating room to a more controlled setting with high-fidelity animal models. We aimed to develop a simple simulation training model for SB single-port fetoscopy and determine the number of attempts needed for a surgeon to achieve competency.

METHODS

We simulated a standardized 2layer SB single-port fetoscopic repair in rabbits. The CO₂-insufflated abdominal cavity mimicks the confined space of the insufflated amniotic cavity and the dilated stomach the back of a 22-week fetus. The simulated repair was divided in 10 complex steps including fundoplication and patch suturing over the stomach). Competency-based outcome measures were watertightness of patch repair, operation times, total insufflating volume, OSATS score and instrument motion tracking. We measured the learning curve (LC) and the competency (C) using cumulative sum analysis (CUSUM) based on a composite binary outcome, i.e. a clinically-acceptable watertight repair in ≤150min with an OSATS≤19. Two groups (LC-CUSUM and C-CUSUM) were compared using all outcomes measures.

RESULTS

Following an intensive training program, surgeon1 first performed 34 procedures and then surgeon2 18 procedures assisted by surgeon1. Surgeons 1 and 2 reached competency after 17 and 13 cases (LC-CUSUM) respectively and maintained competency (C-CUSUM) afterwards (Figures1A-B). For surgeon1, both groups were significantly different for surgical and motion tracking variables confirming the LC threshold of 17 cases (Figures1C-D, Table1).

CONCLUSIONS

We developed a simple and high-fidelity SB simulation training model to assess new fetoscopic techniques and train fetal surgeons.

SESSION VI, RESEARCH & THORAX II
FEASIBILITY AND SAFETY OF SINGLE-PORT FETOSCOPY FOR SPINA BIFIDA
REPAIR IN THE FETAL LAMB MODEL

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AIM

Before clinical implementation, new techniques for spina bifida (SB) fetal repair should be preclinically validated against the standard 2layer repair in the fetal lamb model (FLM). We aimed to assess the feasibility and safety of single-port fetoscopic 2-layer SB repair.

METHODS

We used a standardized skin-defect FLM. We introduced through a 7.5cm-hysterotomy a microcatheter in the carotid artery and one under a 4x2cm marked lumbar defect and closed the uterus. Then we performed a 10step single-port fetoscopic repair mimicking a 2layer (subcutaneous patch and skin) SB repair. Through a 1.5cm-port, we insufflated the uterus with humidified-warmed CO₂, resected the defect and closed it in 2 layers. Primary outcomes were persistence of normal pH (pH=7.25±0.04) (safety) and skin closure watertightness (feasibility). Secondary outcomes were fetal and maternal acid-base status, hemodynamics, survival, and operation times.

RESULTS

Five fetuses were operated on (pneumamnion 7±1mmHg; total volume, 194±94L). The procedure induced acidosis from 30 min onwards and hypercarbia from 60 min, compared to base line (p<0.05;Fig.1). Conversely, fetal pO₂, base excess, lactate and heart rate (HR) as well as maternal hemodynamics (systolic and diastolic blood pressures, HR) and acid-base status remained normal (Fig.1). Only 2/5 closures were watertight and required long operation times (fetoscopy, 217±25min; insufflation, 177±20min, fetal closure, 137±17min). All fetuses died within 3 postoperative days.

CONCLUSIONS

Single-port fetoscopic SB closure under humidified-warmed CO₂ pneumamnion is associated with fetal acidosis. Also closure does not seem watertight.

SESSION VI, RESEARCH & THORAX II
FIRST “EXPERTS & FAMILIES DAY” ON CONGENITAL PULMONARY
MALFORMATIONS: MULTIDISCIPLINARY CONSENSUS CONFERENCE ON
DIAGNOSIS, TREATMENT AND FOLLOW-UP

Sara Costanzo¹, Francesca Destro¹, Tiziana Russo¹, Federico Rebosio¹, Claudio Vella¹, Giovanna Riccipetitoni¹, The Italian CPM Consensus Conference Group* * Riccipetitoni G, Alberti D, Bagolan P, Cheli M, Chiarenza F, Costanzo S, Esposito C, Gamba P, Leva E, Lima M, Martino A, Mattioli G, Midrio P, Pelizzo G, Romeo C (Paediatric Surgeons) Cetin I, Rustico M (Obstetricians and Fetal Medicine Experts) Zirpoli S (Paediatric Radiologist) Zoia E, Wolfler AM (Anesthesiologists) Lista G, Farolfi A, Zuccotti GV, Penagini F, Picca M (Paediatricians) Manzotti A, Banfi A (Physiotherapists) Boni E (Psychologist) Nassano M (President of the Italian Society of CCAM Babies) -²

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PURPOSE

To set a nationally-approved evidence-based standard on the diagnosis, treatment and follow-up of Congenital Pulmonary Malformations (CPM).

METHODS

A multidisciplinary panel of 28 CPM experts were gathered for a Consensus Conference on the 2nd of February 2018 in Milan, Italy, under the auspices of the Italian Society of Paediatric Surgery (SICP), the Italian Society of Perinatal Medicine (SIMP), the Association of Italian Hospital Obstetrics and Gynaecologists (AOGOI) and the University of Milan, in the presence and with the approval of the *Italian Society of CCAM Babies*.

RESULTS

After a preliminary review of the relevant scientific literature, the experts were asked to answer 32 main questions regarding: prenatal diagnosis and counselling, fetal therapy, neonatal management, surgical indications and timing, surgical technique with a special attention to the pros and cons and technical details of thoracoscopy, and considerations on the extension of pulmonary resection, anaesthesiology management, immediate postoperative management, complications, long-term follow-up and characteristics of a multidisciplinary approach. The discussion led to the development of recommendations for each specific question, based on the Experts' practice and accompanied by relevant supporting evidence.

CONCLUSIONS

Although the management of CPM remains controversial for many topics in both the prenatal and postnatal period, a multidisciplinary approach and discussion, always integrated with the relevant literature, allow professionals to choose among the different therapeutic options available and to approach the creation of best practice guidelines. We firmly believe that a constant communication with family Associations is essential to take the best care of our young patients.

SESSION VI, RESEARCH & THORAX II
MANAGEMENT OF PAEDIATRIC PRIMARY SPONTANEOUS PNEUMOTHORAX:
A RETROSPECTIVE MULTICENTER STUDY

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INTRODUCTION:

Management of primary spontaneous pneumothorax (PSP) in children remains controversial for lack of paediatric evidence. The purpose of our multicenter study is to share and compare management strategies and outcomes about pediatric PSP

MATERIAL AND METHODS:

We performed a retrospective study of patients admitted for PSP in five Paediatric Surgery Unit between 2008 and 2017.

RESULTS:

A total of 159 patients (135 males and 24 female) were included. Initial management was conservative (oxygen-therapy) in 62 cases (39%) with recurrence rate of 58%, placement of chest tube in 95 (60%) with recurrence of 51%, while thoracoscopic procedure was performed in 2 (1%) bilateral PSP. Chest X-ray showed 112 large PSP, while thoracic computed tomography scan (CT) was employed in 132 children of which 76 % within second episode. In 37 cases were visible apical emphysematous-like changes (ELC). During subsequent admissions 75 patients underwent thoracoscopic surgery, indication was persistent air leakage (15%), recurrent ipsilateral pneumothorax (57%), contralateral pneumothorax (19%) and prophylactic surgery on asymptomatic contralateral lung (9%). Post-operative complications were air leak (15%) and Bernard-Horner syndrome (4%). After surgery, there were 8 (11%) recurrences treated by chest tube insertion (37%), aspiration (13%) or conservatively (50%). In all cases histological results was of ELC except for one.

CONCLUSIONS:

We suggest that early surgical intervention is a safe management option for reducing high risk of recurrence. In absence of paediatric guidelines we claim the need of a multicenter prospective approach for future researches in order to generate the evidence for a correct and standardized management.

SESSION VI, RESEARCH & THORAX II
RADIATION-FREE IMAGING OF PECTUS EXCAVATUM

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OBJECTIVE

The severity of Pectus Excavatum PE is usually evaluated by computed tomography imaging (CT). This evaluation should not be repeated to avoid excessive irradiation. The OrtenBodyOne scanner is a noninvasive 3-dimensional imaging system recently developed for evaluation of PE severity. It uses depth sensors to scan the entire 3D external body surface of a patient. This study aims to evaluate the utility of this new imaging system for the evaluation of PE severity.

METHODS

Patients treated for a PE from April 2015 to January 2017 with available CT and OrtenBodyOne data were included. PE depth, thoracic width and length, Haller Index, Anthropometric index and Asymmetric index were calculated from CT and OrtenBodyOne images. Correlations between PE indexes calculated from CT and from OrtenBodyOne were calculated applying the non-parametric Spearman correlation procedure with Bonferroni correction adjusting for multiple comparisons. This study was approved by the local ethics committee.

RESULTS

Forty males (90,9%) and 4 females (9,1%), 18 with symmetric (40,9%) and 25 with asymmetric PE (56.8%) were Included. The mean age was 16.2 years (4.3–63.5). The following measures and indexes acquired by OrtenBodyOne and by CT were significantly correlated: PE depth ($r=0.84$, $p=0.002$), Anthropometric index ($r=0.81$, $p=0.002$) and Asymmetric index ($r=0.67$, $p=0.002$). The correlation between CT Haller Index and External Haller index was not significant ($r=0.44$, $p=0.05$).

CONCLUSION

OrtenBodyOne imaging system can be used to evaluate the severity of PE. Measures can be repeated throughout treatment while avoiding unnecessary irradiation.

SESSION VI, RESEARCH & THORAX II
THORACOSCOPIC AORTOPEXY IN CHILDREN

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Aortopexy is a generally accepted mode of treatment for some of cases of tracheomalacia caused by tracheal compression (anomalies of great vessels, esophageal anomalies, etc.). Most of the surgeons prefer thoracotomy to perform this procedure. With the advent of minimal invasive surgery the impact of such a thoracotomy may be greatly reduced.

METHODS

Since 2013 15 patients have undergone thoracoscopic aortopexy in our hospital. Eleven of them (73%) had a history of esophageal atresia with TEF. In 4 cases (27%) anomalous origin of innominate artery was the cause of tracheomalacia. The indications for the surgery were severe respiratory insufficiency and recurrent upper respiratory tract infections. No surgery was performed in case of absence of clinical symptoms. We use three-trocar approach on the left side to perform this procedure.

RESULTS

Mean operating time has made 48+/- 5,6 min. There were no intra- and postoperative complications. Hospital stay did not exceed 5 days. One of the children suffered of recurrence of symptoms after 4 weeks due to that a re-thoracoscopic aortopexy was carried out successfully. According to the 5 years follow-up, all patients are thriving and no other recurrence has occurred.

CONCLUSION

The thoracoscopic approach for aortopexy is feasible and safe even in redo-procedures. In an era of minimal invasive surgery it could be recommended as a procedure of choice in treatment of tracheomalacia with sever clinical manifestations.

SESSION VI, RESEARCH & THORAX II
VIDEOENDOSCOPIC OPERATIONS ON THE ANTERIOR MEDIASTINUM
IN CHILDREN WITH THYMUS TUMORS

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BACKGROUND:

Today, videoendoscopic surgery is the method of the choice in the treatment of surgical pathology in children. Most of the surgical interventions are performed by laparoscopic and thoracoscopic access.

MATERIALS AND METHODS:

Since January 2017 in children 11 thoracoscopic operations with thymus tumors were performed. Thoracoscopic incision of solid tumors was carried out with teratoma (2), cysts (4), thymus hyperplasia (2). In 4 more cases there were excision of tumors, they then turned out to manifestation of Hodgkin's lymphoma. 1 patient was with idiopathic thrombocytopenic purpura, initially splenectomy was performed.

Minimal age was 8 month, maximal – 16 years, 7 of them were girls, 5 – boys.

RESULTS:

In four cases the release of phrenic nerve, vena cava superior were performed. Also 2 cases the operation was complicated by a marked adhesive process with lung, which required precision technic of tissue separation.

The maximum duration of the operation was 2,5 hours, and it was due to phrenic nerv or blood vessels involving. There were not any intraoperative or postoperative complications. Maximum blood loss was 30 ml. In any case no conversion was needed. Pleural drainages were removed on the day after surgery.

Children with Hodgkin's lymphoma started to be treated in 1 or 2 days in postoperative period.

CONCLUSIONS:

Minimally invasive surgery in children with pathology of thymus is justified due to its low trauma. Patients recover earlier in the postoperative period and the earlier starts of conservative treatment of the underlying disease.

SESSION VI, RESEARCH & THORAX II
THORACOSCOPIC VERSUS OPEN REPAIR FOR ESOPHAGEAL ATRESIA:
10 YEAR EXPERIENCE FROM A REFERRAL CENTRE

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INTRODUCTION

The incidence of congenital esophageal atresia and trachea-esophageal fistula is around 1:2500 life-births. Most neonates have a type C, or distal trachea-esophageal fistula. 5 types are commonly described, from a complete atresia without fistula till H-fistula and 3 variations in between. Our centre is a referral centre for congenital esophageal anomalies. The last 10 years we made the transition from an open approach to the VATS procedure. In this study we want to evaluate the outcome of both procedures, learning curve, comparing VATS to the open procedure, perioperative conversion and perioperative morbidity/mortality.

MATERIAL AND METHODS

We retrospectively reviewed all patient case files operated from 2006 till 2016 in the Sophia Children's Hospital (ErasmusMC) for esophageal atresia. We looked for the following parameters: patient characteristics = gender, gestational age, weight, surgeon, cardiac anomalies, type of fistula; perioperative = procedural pCO₂, VATS/Open, reason for conversion, closure of the fistula, transection of the azygos vein, type anastomosis, stomach tube, long gap, gastrostomy and chest tube; postoperative: extubation time, start feeding, PPI (proton pump inhibition), LOS (length of stay); complications: leakage, stricture, recurrent fistula and tracheomalacia. We gathered all this data in an SPSS sheet and performed adequate statistics.

RESULTS

In total 103 patients were operated, 69 had a thoracoscopic and 36 an open repair. 94 type C (91.2%), 2 type A (2%), 1 type B (1%) and 5 type E (4.8%). 10 out of 103 patients developed postoperative leakage. Multivariate analysis of leakage in relation to thoracoscopic repair or surgeon showed no significant difference ($p=0.320$ and $p=0.098$). Although patients with leakage had more strictures in our follow-up period ($p=0.006$) and perioperative pCO₂ was significantly higher ($p=0.006$) in the leakage group. 7/10 leaks were managed with thoracic drainage. 51 out of 103 patients developed a stricture which was managed with repetitive pneumodilatation. The VATS approach was, on the other hand, surgeon-dependent ($p=0.004$, high volume group/experience), pCO₂ levels were significantly higher ($p=0.039$), feeding ($p=0.021$) and extubation ($p=0.001$) were accomplished faster. 10 patients had conversion from VATS to open repair (6/10 bad visualization, 1/10 right sided aorta, 2/10 hemodynamic instability and 1/10 long gap). We found a surgeon dependent difference for transection of the azygos vein ($P=0.019$) and stricture ($p=0.041$). 34 neonates were dysmature ($<2500\text{kg}$), and there was positive correlation for thoracoscopic repair ($p=0.013$) but no more leakage or stricture due to dysmaturity. 36 neonates were moderate preterm ($<37\text{w}$) and had more perioperative pCO₂ retentions ($p=0.049$) and transection of the azygos vein ($p=0.031$). 5 neonates were very premature ($<32\text{w}$); 3/5 VATS with one conversion due to bad visualisation and 2/5 open approach. 75 of the 103 procedures were performed by a dedicated thoracic team (W,V, VDV, B,S), they carried out more VATS procedures (60/69). All the leakages were in the dedicated team group due to a higher volume. Mean LOS for VATS was 26 days

SESSION VII, MISCELLANEOUS & HERNIA
ENDOSURGICAL TREATMENT OF ADOLESCENT GYNECOMASTIA

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OBJECTIVE:

We describe our experience with endosurgical treatment of adolescent gynecomastia.

MATERIAL AND METHODS:

We treated 11 adolescents by endoscopic subcutaneous mastectomy for a gynecomastia between December 2014 and June 2017. The first 10mm-incision was done at the nipple level on the mid-axillary line. The workspace was created with scissors before placing the lens. Two 5mm-trocars were placed in the axillary area after an 8 mmHg insufflation. The dissection was performed with a monopolar hook or an ultrasonic scalpel close to the mammary gland. The nipple-areola complex was maintained at 1cm thickness. Patients were reviewed 2 months and 1 year after surgery.

RESULTS:

The median age was 15.4 years (range 13 to 17 years). The internal portion of the gland was difficult to release in 5 cases. One conversion was required because of poor vision and too long procedure. The median operative time was 90 min (range 90 to 220 min) for unilateral cases and 170 min (range 100 to 210 min) for bilateral cases. Complications were 2 small burns on the skin or nipple and 1 retractile nipple, with good evolution for these 3 patients. All patients and parents expressed their satisfaction, although the aesthetic result was considered insufficient by the surgeon in 3 cases.

CONCLUSION:

Endoscopic subcutaneous mastectomy is feasible and safe for the treatment of gynecomastia in adolescent. This technique is challenging, but permits to reach good aesthetic results and avoids scars on the anterior wall of the thorax.

**SESSION VII, MISCELLANEOUS & HERNIA
PEDIATRIC ENDOSCOPIC PILONIDAL SINUS TREATMENT (PEPSiT)
FOR SUCCESSFUL MANAGEMENT OF PILONIDAL SINUS DISEASE RECURRENCE
AFTER OPEN REPAIR**

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AIM:

We report application of pediatric endoscopic pilonidal sinus treatment (PEPSiT) for an effective treatment of pilonidal sinus disease (PSD) recurrence after open repair.

METHODS:

Ten patients (average age 16.8 years) with recurrent PSD after open excision were operated in our unit using PEPSiT over the last 2 years. We adopted fistuloscope, monopolar electrode, endoscopic brush and endoscopic grasping forceps. Patients received subarachnoid spinal anesthesia and were placed in prone position. We introduced the fistuloscope through fistula hole and a clear view was possible, thanks to a continuous infusion of saline solution. Endoscopic forceps was inserted through the operative channel of the fistuloscope to remove all the hairs under vision. The cavity was abraded with the endoscopic brush. After this step, the monopolar electrode was adopted to perform cautery ablation of the sinus granulation tissue. External openings were not closed.

RESULTS:

The average operative time was 27.7 minutes. We didn't report intraoperative neither postoperative complications. The average analgesic requirement was 20 hours (range 16-26) and the average hospital stay length was 22.4 hours (range 18-36). The average time to return to full daily activities was 2.3 days (range 1-4) and all patients were highly satisfied of the postoperative outcome. At 1 month postoperatively, the external openings were closed in all patients. No cases of recurrence was recorded at a mean follow-up of 18 months.

CONCLUSIONS:

Our preliminary results demonstrated that PEPSiT is effective for treatment of PSD recurrence after open repair.

**SESSION VII, MISCELLANEOUS & HERNIA
LAPAROSCOPIC SURGERY OF URACHAL ANOMALIES:
A SINGLE-CENTER EXPERIENCE**

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INTRODUCTION:

Disruption of the process of urachal involution can lead to different urachal anomalies. Resection is indicated due to the risk of infection and future malignancy. The aim of the study is to evaluate the safety and the feasibility of laparoscopic management of urachal anomalies.

METHODS:

Retrospective chart review of all cases of urachal anomalies treated by laparoscopic surgery (LS) at our institution were compared with a group control of open surgery (OS). 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:

Out of 36 cases of urachal anomalies, 8 (22%) were managed by LS. No difference between the two groups were recorded in terms of median age at surgery (LS 3.4 ± 3.4 vs OS 3.3 ± 3.0 years, $p=ns$), prevalence of clinical symptoms (LS 50% vs OS 21% $p=ns$), and associated anomalies (LS 25% vs OS 14%, $p=ns$). In LS group, there were no conversion to open surgery and no intraoperative complications. Post-operative morbidity was higher in OS group (7%) compared to LS group (0%, $p=ns$). Histology metaplasia was observed in 2 cases, one per group, with intestinal epithelium. Length of hospital stay was shorter in LS (3.0 ± 0.3) compared to OS (5.2 ± 0.2 days, $p < 0.05$).

CONCLUSIONS:

Laparoscopy is a useful tool for the management of urachal anomalies. LS is associated with lower rate of post-operative morbidity and shorter length of hospital stay compared to OS.

**SESSION VII, MISCELLANEOUS & HERNIA
PERIOPERATIVE HEMORRHAGIC COMPLICATIONS IN PEDIATRIC LAPAROSCOPIC
SURGERY - CRITICAL EVALUATION AFTER 1532 CASES**

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BACKGROUND/AIMS:

One of the feared complications in laparoscopy is hemorrhage. We evaluated retrospectively our rate of perioperative bleeding correlated to the type of surgery, surgeon's experience, conversion rate and hemostatic method chosen once hemorrhage occurred.

MATERIALS AND METHODS:

We studied a cohort of 1,532 pediatric patients operated in our department by 3 pediatric surgeons. We used analysis of video data and written recorded data. To quantify the severity, we used the classification of hemorrhagic shock in children.

RESULTS: We had the following complications:

Class III (1 case)- heminephrectomy (abscess of the upper pole of kidney - converted) Class II (3 cases), two converted, one postoperative laparoscopic reintervention:

- dissection of an ureteral TB mass
- splenectomy for spherocytosis
- postoperative hemorrhage from mesoappendix

Class I (52 cases), 3 converted:

- dissection of retroperitoneum (traumatic rupture of an adrenal tumor)
- pseudocystic tumor of pancreatic tail
- laparoscopic biopsy (megacolon).

DISCUSSIONS AND CONCLUSIONS:

Our data follows the pattern of biphasic relationship between complications and the surgeon's position on the learning curve. In our experience, the hemorrhagic complications were initially related to limited experience, different pathology identified at laparoscopy and equipment related issues. In the later phase the hemorrhages were due to the increased complexity of cases. One can lower the rate of surgical hemorrhagic complications by using HD video equipment, modern vessel sealing devices, continuously training of the surgeons in hemostatic techniques together with careful selection for laparoscopic approach in complex cases. Monitoring of complication rate and benchmarking are important in quality assurance of the service.

SESSION VII, MISCELLANEOUS & HERNIA
SURGICAL MORBIDITY IN NEUROLOGICALLY IMPAIRED CHILDREN

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OBJECTIVE:

We investigated nutritional, metabolic and cardiovascular status and allostatic condition in neurologically impaired (NI) children who underwent to laparoscopic surgery for Nissen procedure. The contributors correlated to increased morbidity and mortality during stressful situations were identified.

METHODS:

clinical data, body composition estimation, biochemical profile and ultrasound-measured epicardial fat thickness (EFT) were performed in disabled patients. Markers of inflammation and allostatic load (AL) were also detected. Post-surgical complications were recorded

RESULTS:

Undernutrition was noted in 40% of patients and influenced post-surgical complications. Fifty percent of the patients presented with insulin resistance, which was not related to BMI, body composition or other MS components. Body composition showed low values of phase angles and percentage of fat free mass. EFT values in NI children were higher compared with control group values ($p=0.02$) and EFT correlated with gender ($p<0.001$), age ($p=0.02$), pubertal stage ($p=0.04$), waist to height ratio ($p=0.03$) as well as pathological metabolic parameters (triglycerides $p=0.01$ and insulin resistance $p=0.04$). High AL was noted in 41% of the subjects, significantly correlated with malnutrition and body composition.

CONCLUSIONS:

Undernutrition and unfavorable cardiometabolic risk profile are commonly observed in NI children. A high cumulative physiological wear and tear was also detected. All these parameters should be considered as a measure of post-surgical complications in NI children.

SESSION VII, MISCELLANEOUS & HERNIA
LOST AND FOUND: COMPLICATIONS FOR DISLOCATED THERAPEUTIC DEVICES

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AIM OF THE STUDY:

although stent-placement is a common procedure also in children, it can be fraught with frustration in case of displacement. We describe techniques used to recovery 6 stents lost in thorax, peritoneal cavity, esophagus and ureters.

METHODS:

in the last 5 years we observed 6 cases of misplaced stents: 1 in thorax in a 5-month-old child with previous fetal thoraco-amniotic shunt for hydrothorax; 1 into the abdomen for disconnected tube of a ventriculo- peritoneal shunt for hydrocephalus; 3 endoureteral double-j stents (2 displaced inside ureter after hydronephrosis correction and 1 intraperitoneal for ureteral rupture after erroneous endoscopic maneuver), 1 dislodged jejunal j-peg into esophagus in neurologically impaired patient.

MAIN RESULTS:

thorax displaced stent at the apex of left pulmonary lobe was thoracoscopically removed (operative time 65 minutes). The peritoneal lost tube was removed with only one 10-mm operative trocar at umbilical level (operative time 40 minutes). 1 of the ureteral stents was removed endoscopically with a forceps advanced into the ureter under fluoroscopic control, while, the other one, through ureteroscopic procedure. Ureteral lesion with double-j dislocated in peritoneal cavity was treated with laparoscopic suture of the ureter and repositioning of a double-j (operative time 240 minutes). Dislocated jejunal j-peg was manually removed once identified migration in the esophagus.

CONCLUSION:

Despite significant progress in technique and quality of materials, stent procedures are not completely free of complications; resolution of problems due to misplaced devices sometime can be very challenging.

SESSION VII, MISCELLANEOUS & HERNIA
ENDOSCOPIC CAUTERIZATION WITH PNEUMATIC DISTENSION FOR PIRIFORM
FOSSA SINUS TRACTS

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INTRODUCTION:

Piriform fossa sinus tracts (PFSTs) are a cause of recurrent neck infections in the pediatric population. Conventional management required open resection, but over the last years minimally invasive approaches have been reported in an attempt to endoscopically obliterate the PFS, using different methods such as electrocautery, laser, trichloroacetic acid, or silver nitrate.

METHODS:

We undertook a retrospective review of the medical records of 12 children (aged 4 months to 14 years) with PFSTs treated with endoscopic sclerosis with diathermy (ESD) between 2010 and 2016 at a tertiary care children's hospital. We also present a technical modification of ESD, using continuous infusion of airflow through the gastroscopy, to distend the piriform sinus and facilitate its recognition. PFST obliteration was performed using diathermy through a guide wire.

RESULTS:

Clinical presentation of the 12 affected children included neck tumor (7 [58%]), neck abscesses (4 [33%]), and thyroiditis (5 [41%]). All lesions occurred on the left side. All patients underwent both ultrasonography and barium esophagography (the latter being positive only in 50%). Two patients were treated with ESD after the open approach had failed. There was no procedure-related morbidity. One patient had a recurrence (positive barium swallow without symptoms). The success rate of this procedure in our series was 91% with one attempt and 100% with two attempts.

In our experience, treatment of PFST with ESD is a reproducible, noninvasive, and an effective option. ESD could be considered a primary approach and also for revision after open surgery has failed in these patients.

SESSION VII, MISCELLANEOUS & HERNIA
**LAPAROSCOPIC PARTIAL PARENCHYMAL RESECTION: A NEW HEMOSTASIS
METHOD IN THE CONCEPT OF SPARING SURGERY IN PEDIATRIC POPULATION**

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AIM:

Sparing surgery for kidney or spleen pathologies are actually performed more frequently than in the past in pediatric populations.

Using laparoscopy partial parenchymal resection PPR, inefficient haemostasis could represent a severe and often uncontrolled complication.

We report a technique for haemostasis after laparoscopic PPR, that can help to avoid haemostasis problems and shortening the surgical time.

MATERIALS AND METHODS:

Between 2016 and 2018, 10 patients underwent laparoscopic PPR performed by a same equipe in a single institution.

After resection, made with haemostatic devices, to control bleeding of the resection plane we used sutures with 2/0 Vicryl fixed by sliding Hem-o-lok clip, achieving perfect haemostasis in all cases.

RESULTS:

In all cases the haemostasis was controlled without complication, the procedure was simple and fast. Post-operative period was uneventful in all patients.

When we performed a partial nephrectomy if the collecting system was opened, it was closed using 3/0 Vicryl and parenchymal suturing was carried out at intervals of 1 cm to avoid urinoma.

CONCLUSION:

Laparoscopic PPR used as standard surgical procedure, can be an effective haemostasis method in the new wider concept of sparing surgery in pediatric populations that can be carried out speedily and safely.

We believe that this kind of suture could represent a valid alternative to use fibrin glue or other haemostatic products, associated to new haemostatic device.

SESSION VII, MISCELLANEOUS & HERNIA
DUNBAR SYNDROME IN CHILDREN: LAPAROSCOPIC DECOMPRESSION
OF CELIAC ARTERY

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The celiac artery (CA) compression syndrome (CACS) or Dunbar's syndrome is a rarely diagnosed disorder, which is characterized by chronic abdominal pain and vegetative symptoms. The role and indications for surgical CA decompression are still controversial.

PATIENTS AND METHODS:

Ten children with CACS were treated in our hospital. Mean age – 15,3 years. All patients had a history of chronic abdominal pain, vegetative symptoms and reduced quality of life. Doppler sonography showed an increased blood flow velocity of the CA (mean 205 cm/s). CT angiography verified CACS by demonstration of a characteristic hook-shaped appearance of the CA with severe localized compression. All children underwent laparoscopic decompression of CA. The procedure consisted of division of the median arcuate ligament and complete mobilization of the CA from its origin on the aorta to its trifurcation.

RESULTS:

Average operating time was 67+/-4,5 minutes. We did not observe any intra- and postoperative complications. After the operation all children immediately recovered from abdominal pain. Doppler sonography showed a marked reduction in CA blood flow velocity. Postoperative CT angiography clearly shows an increase of vessel diameters to normal dimensions.

CONCLUSIONS:

Laparoscopic decompression of CA is a safe, minimally invasive, effective treatment of CACS. The surgical treatment is indicated in children with characteristic symptoms and typical findings at Doppler sonography and CT after exclusion of other abdominal pathologies.

**SESSION VII, MISCELLANEOUS & HERNIA
IRIS (INTERNAL RING SUTURE) A NOVEL LAPAROSCOPIC TECHNIQUE FOR
INGUINAL HERNIA REPAIR IN CHILDREN**

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BACKGROUND/AIMS:

One of the criticisms of the laparoscopic technique is that it focuses on the dissection and suture of the peritoneal sac without involving the abdominal wall, as in the open technique. Our aim is to present a new laparoscopic technique, named Internal Ring Suture (IRiS) for the treatment of indirect inguinal hernia in children, which in the author's opinion, could significantly lower the recurrence rate.

MATERIALS AND METHODS:

Between 2013-2018, we treated laparoscopically for inguinal hernia repair 173 male patients (3 months-17 years old). The overall recurrence rate was 3,46% (6 patients). In order to avoid recurrences, we describe a novel technique - an improvement to the original technique. After complete dissection of the peritoneum, we put one or two non-resorbable sutures at the upper hemi-circumference of the deep inguinal ring (DIR) thus narrowing the diameter of the ring and allowing for a tension-free suturing of the peritoneum.

RESULTS:

We used this technique in 5 selected cases, 6-20 months old, diameter of DIR over 1 cm. The operative time was 45 minutes (between 25-75 minutes) with no intra-operative complications. The mean hospital stay was 1,34 days. No recurrences occurred up to present (followed-up for 2-10 months).

DISCUSSION AND CONCLUSIONS:

We propose a modification of the technique published by Esposito and Montupet in 1998 and, instead of suturing the conjoined tendon to the crural arch, we place sutures in the upper hemicircumference of DIR, thus avoiding the risk of femoral vessels damage whilst achieving a lower recurrence rate.

**SESSION VII, MISCELLANEOUS & HERNIA
LAPAROSCOPIC TREATMENT OF INGUINAL OVARIAN HERNIA
IN FEMALE INFANTS**

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AIM:

We report our experience with laparoscopic treatment of inguinal ovarian hernias in female infants.

METHODS:

A total of 271 girls with an average age of 3.8 years [range 0-11.5] underwent laparoscopic repair of inguinal hernia in our unit over the last 5 years. Of these 271 girls, 32 had an ovary in the hernia sac. We adopted a 5-mm umbilical trocar for the 0° optic and two 3-mm trocars for the instruments. After reduction of the hernia content, ovary and fallopian tube were visually checked for any vascular damage. The abnormal attachment of the ovarian suspensory ligament over the internal inguinal ring (IIR), was divided with monopolar hook. The hernia orifice was closed with either a purse-string suture (Montupet's technique) or a N-shaped suture (Schier's technique).

RESULTS:

Average operative time was 23.7 minutes (range 18-43). No intraoperative necrotic ovary was found and all procedures were accomplished laparoscopically. No intraoperative neither postoperative complications were reported. No hernia recurrence or ovarian atrophy was recorded at a mean follow-up of 36 months (range 1-48).

CONCLUSIONS:

we believe that ovarian hernias should be treated as soon as possible after their detection and laparoscopy should be considered the gold standard approach. It allows a clear view of the hernia defect and identification of the abnormal attachment of the ovarian suspensory ligament that attracts adnexa in the hernia sac. The laparoscopic approach allows to perform an easy and safe reduction of the herniated adnexa, to visually evaluate them for any vascular damage.

SESSION VII, MISCELLANEOUS & HERNIA
**LAPAROSCOPIC INGUINAL HERNIA REPAIR SAVES FUTURE VISITS TO THE OR :
OUR 22 YEARS' EXPERIENCE**

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INTRODUCTION

Laparoscopic congenital inguinal hernia repair has been placing itself as a strong opponent to traditional open herniotomy in the past decade. One of the major advantages is the ability to assess the patency of the contralateral deep inguinal ring. This *resulted in a lower rate of* secondary operations for metachronous inguinal hernias (MIH). In the current study, we present our 22-year experience following both open and laparoscopic unilateral hernia repair with secondary operations being the primary outcome.

METHODS

Operations performed under the supervision of the same Consultant between 1995 and 2016 were reviewed. Total number of patients who underwent unilateral hernia repair was 538 (open herniotomy: 202 and laparoscopic hernia repair: 336). The outcomes presented are: MIH, contralateral hydrocele, recurrence and other complications needing secondary operation.

RESULTS

In the patients who underwent open herniotomy (202), 33 required secondary operations (24 required repairs of MIH/hydrocele and 6 required redo-operation for recurrence). The laparoscopic group comprised 336 patients. Contralateral simultaneous inguinal hernias were repaired in 120 patients. Only 6 required a secondary operation (4 recurrences, 1 excision of hydrocele and 1 scrotal-orchidopexy).

DISCUSSION

Employing laparoscopic unilateral hernia repair provides us with an ability to visualise and assess the contralateral deep inguinal ring, and perform hernia repair if necessary. It saves the patients future visits to the OR for metachronous inguinal hernia repair.

We believe it is a safe, practical and cost-effective way of unilateral hernia repair, decreasing the incidence of secondary operations.

KEY WORDS

Metachronous contralateral inguinal *hernias*, *laparoscopic*

SESSION VII, MISCELLANEOUS & HERNIA
LONG TERM RESULTS AFTER LESS INGUINAL HERNIA REPAIR IN GIRLS

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Laparoscopic inguinal hernioplasty in children is gaining popularity, however, controversy still exist regarding its benefits and the rate of recurrence. In this study we report our long term results of our technique of Laparo-endoscopic single-site inguinal hernioplasty in girls.

The files of all girls operated by LESS inguinal hernioplasty in our institution were reviewed. Follow-up was achieved in three phases. first: clinical control after one-week postoperative, second: between 1-2 months postoperative and third: all patients with more than 3 months post-op were called by telephone to answer a questionnaire.

From 2010 to 2017, we have operated 97 PPV in 66 girls. Median age of 9,7 years (range 11 months-12 years). There were 43 patients with right inguinal hernia, 17 left inguinal hernia and 6 bilateral. 24 girls with a pre-operative unilateral hernia had associated a contralateral PPV. Duration of surgery was 20 minutes. All patients were treated in the out-patient unit. No per-operative complications were recorded. Return to normal activity around the 2nd- 4th post-operative day. There were 2 cases of recurrence that were re-operated using the same technique with an excellent outcome. Follow-up goes up to 7 years. Patients and parents were highly satisfied with post-operative esthetics and all patients have had an excellent clinical outcome.

Our long term results show that LESS inguinal herniotomy in girls is feasible and safe with an excellent post-operative outcome and esthetics. Moreover, it allows to diagnose and to treat an asymptomatic contralateral PPV (36% in this study) through an umbilical small single-incision.

SESSION VII, MISCELLANEOUS & HERNIA
LAPAROSCOPIC PIRS VERSUS OPEN INGUINAL HERNIA REPAIR: COMPARING
COSMESIS USING PARENT REPORTED OUTCOME MEASURES

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PURPOSE:

Better cosmesis has been pointed out as a major advantage of laparoscopic repair over open repair. Even though, there are few studies comparing both techniques using parent or patient reported outcomes measures (PROM). The aim of this study is to compare parents' satisfaction concerning scar appearance after open inguinal herniotomy versus laparoscopic percutaneous inguinal ring suturing (PIRS) using PROM.

METHODS:

Parents of all patients submitted to inguinal hernia repair between January 2016-December 2017 in our department were interviewed by telephone and the Patient and Observer Scar Assessment Questionnaire (POSAS) was applied. Demographic and main surgical outcomes were collected reviewing patients' medical records. We added a final question to ask the parents about their global satisfaction concerning scar cosmesis (1very satisfied-10unsatisfied). Patients were divided in two groups (open versus PIRS) and results were compared using SPSS.

RESULTS:

A total of 150 patients were included. Ninety-four had a successful phone call and answered the POSAS questionnaire (62,6% response rate). Fifty-six percent were male and the mean age at the time of surgery was 3.9 years [min 0.1; max 16,4]. Fifty-five percent underwent to an open repair. Both group had similar demographic characteristics. According to POSAS results, scars from laparoscopic approach were more like the normal skin [mean 1,57] than scars from open surgery [mean 3.25] ($p<0.05$). Parents' global satisfaction concerning their children scars was better in those in PIRS group [1,50 vs 2.83; $p>0.05$].

CONCLUSIONS:

According to parents, PIRS has better cosmetic outcome when compared to open repair for inguinal hernia in children.

SESSION VII, MISCELLANEOUS & HERNIA
PERCUTANEOUS INTERNAL RING SUTURING (PIRS) METHOD FOR INGUINAL
HERNIA MULTICENTER RETROSPECTIVE STUDY

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METHODS

This multicenter, retrospective study included patients, who underwent the PIRS procedure for inguinal hernia, from three different Pediatric Surgery Centers in Poland. The study was conducted between January 2015 and December 2017. There were 145 girls and 255 boys. The age range was variable from 3 weeks to 16 years (average: 4,3 years). Most of those procedures were performed by specialists of pediatric surgery (66%). Recorded incarcerated hernias occurred in 30 children (7,3%).

MAIN RESULTS

The average operation time for unilateral hernia was 27 minutes, for contralateral hernias 35 min. It was taking in average 18 minutes to verify if the child had hernia or other defects. Asymptomatic contralateral hernias were detected in 71 patients (17,7%). In 5 cases no hernia where found and in 7 others, different preoperative side of hernia was suspected. In 65 children coexisting umbilical hernias were also repaired. Minor early complications like haemorrhage or subcutaneous haematoma happened in 14 cases (3,5%). Late complications occurred in two children who had bowel obstruction due to persistent Meckel's diverticulitis and adhesions. Recurrence was seen in 2,25% of children (9/400).

CONCLUSIONS

The percutaneous internal ring suturing method presents benefits of visualisation of the peritoneal cavity. It allows to detect asymptomatic contralateral hernias and other abnormalities. This procedure is rather quick to perform and allows to repair contralateral and umbilical hernia during the same operation. We believe that this technique is especially recommended in children with uncertain diagnosis of inguinal hernia.

SESSION VIII, ONCOLOGY
LAPAROSCOPY-ASSISTED RESECTION OF ALTMAN TYPE IV NEONATAL
SACCROCOCCYGEAL TERATOMA

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CASE REPORT:

We present a case of laparoscopic assisted excision of an intra-pelvic/abdominal sacrococcygeal Teratoma (SCT) in a female neonate. The mass was detected antenatally at 21 weeks of gestation. Baby was born at 39 weeks gestation with a birth weight of 3.5kg.

Clinical examination demonstrated a small slightly elevated irregular mass in the sacral area, with a normal overlying skin. Postnatal Magnetic Resonance Imaging showed a large multi-septated, predominantly cystic dumbbell shaped sacral mass measuring 7.3x5.4x3.2cm. The mass originated from the sacrum/coccyx and extended into the pelvis inferiorly and the aortic bifurcation superiorly, consistent with an Altman type IV SCT. She underwent excision on day2 of life. Initial procedure was carried out in a supine position with a supraumbilical 5mm camera port and two 5mm lateral ports. Bladder and uterus were hitched anteriorly. Median sacral artery and joining veins were clipped and divided. The abdominal and pelvic extension was completely dissected from abdominal and pelvic structures laparoscopically using sharp and blunt dissection.

Baby was then placed in the prone/jack-knife position, and tumour was resected en-bloc with the coccyx via a modified chevron incision. Superficial wound dehiscence that was noted at day 5 following surgery and managed conservatively.

Child was discharged home without any significant concerns. Histological analysis confirmed the diagnosis of mature teratoma. The child is currently well, with good cosmesis and no evidence of recurrence.

CONCLUSION:

Laparoscopy could be utilised as an adjunct for the safe and effective resection of predominantly intra-pelvic/abdominal neonatal SCT.

SESSION VIII, ONCOLOGY
MINIMALLY INVASIVE SURGERY IN NEUROBLASTOMA

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The aim of the paper is to describe the experience of our centre with minimally invasive surgery (MIS) in neuroblastoma.

It is a descriptive retrospective study of patients diagnosed with neural neoplasia (neuroblastoma and neuroganglioma) on whom MIS technique surgery has been performed between October 2012 and December 2017.

The selection criteria was established for patients without imaging-defined risk factors (IDRFs) and with a non-disseminated tumor.

Patients with a different diagnosis than neuroblastoma/ganglioneuroma and with IDRFs were excluded from the study.

The study comprises 19 cases (6 female and 13 male) with a median age of 30 months: 9 cases in L1 stage, 6 in L2, 2 in M and 2 in MS according to INRGSS classification. Laparoscopy was used in 14 patients (12 adrenal and 2 abdominal tumors) and thoracoscopy was used in 5 cases.

In 4 of the 19 patients conversion to open surgery was needed (3 in laparoscopy and 1 in thoracoscopy due to fibrosis in 2 cases, and vascular structures entrapment in the other 2).

There were no surgical complications, achieving full exeresis in all cases. Three cases showed post surgical adverse effects grade I and II according to Clavien-Dindo classification.

After a median of 27 months of follow up, two patients showed disease progression without local recurrence.

In conclusion, MIS is a useful technique for the surgical exeresis of non-disseminated neural tumors without IDRFs

SESSION VIII, ONCOLOGY
LAPAROSCOPIC RESECTION OF A RETROPERITONEAL PARAGANGLIOMA
(Video)

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BACKGROUND:

Paraganglioma is a rare neuroendocrine tumor that arises from extra-adrenal chromaffin cells of sympathetic and parasympathetic paraganglia.

Surgical resection is considered as the treatment of choice.

Laparoscopic surgery for paraganglioma is challenging because of the difficult access to the tumor and the proximity of major structures. Furthermore, potential release of catecholamine leading to intraoperative instability requires preoperative pharmacological blockade, minimal handling of the tumor and intensive anesthetic management.

METHODS:

We report the case of a 14 year-old patient with a retroperitoneal tumor.

He presented with an interaortocaval mass that was incidentally discovered by abdominal ultrasonography in the frame of an abdominal pain workup.

Clinical examination and blood pressure monitoring were normal..

Urinary normetanephrine and norepinephrine were 10 times higher than the normal range.

MRI confirmed the presence of a retroperitoneal solid mass of 3,6 x 2,9 x 4 cm and MIBG scan showed uptake in the mass confirming the suspicion of a paraganglioma.

The patient was placed in left lateral position (60°). 4 trocars were inserted in the abdomen.

The tumor was meticulously dissected and completely resected and retrieved in a laparoscopic retrieval bag.

RESULTS:

The operative time was 300 min, and the total blood loss was 200 ml.

Despite an extensive preoperative workup and minimal tumor handling, blood pressure was intermittently very unstable . Pathological examination confirmed a Paraganglioma.

CONCLUSION:

The laparoscopic approach is safe, feasible and effective method for excising retroperitoneal paraganglioma even though intra operative hemodynamic variations can be challenging.

SESSION VIII, ONCOLOGY
MINIMALLY INVASIVE SURGERY IN NEUROBLASTIC TUMORS

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AIM:

To report in a retrospective review a single Centre experience in the application of minimally invasive surgery(MIS) in neuroblastic tumors(NT).

METHODS:

From January 2008 to April 2018 all patients with NT underwent to CT/MRI evaluation to determine Image Defined Risk Factors(IDRFs) and select therapeutic approach(diagnostic biopsy, primary or secondary surgery, indication to MIS). Neonatal cases were treated according to the LINES protocol.

Results: We collected 57 patients with NT(1 cervical, 1 cervico-thoracic, 8 thoracic and 47 abdominal, of whom 11/47 neonatal); aged 1day-16years. We performed:

- * 17biopsies: 9 MIS; 8 tru-cut. The outcome was 3/17 healings after chemotherapy and 14/17 open resections
- * 27primary surgery: 19 MIS (6 thoracic and 13 abdominal) and 8 open (2 thoracic and 6 abdominal);
- * 2MIS secondary surgery after chemotherapy (Adrenal NT, stage IV; diagnosis achieved by bone marrow biopsy)
- * 11neonatal cases: 4MIS (adrenalectomies), 6spontaneous healings; 1 still in follow-up

We did not observe intraoperative complication such bleeding or conversion to open surgery. One patient with thoracic NT developed a pleural effusion conservatively treated, no local tumor recurrence appeared in the cohort of patients submitted to MIS. The mean hospital stay 3 days. MIS was applied in 34/57 (59 %) of NT cases.

CONCLUSIONS:

The IDRF was a reliable surgical indicator for selecting NBL patients for MIS. In our series patients were successful treated with primary surgery in the full respect of oncological criteria. Secondary surgery after chemotherapy has still to be safely performed by an open approach except particular selected cases.

SESSION VIII, ONCOLOGY
**MINIMALLY INVASIVE SURGICAL TREATMENT FOR ISOLATED LYMPHANGIOMAS
OF THE MESENTERY IN CHILDREN**

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BACKGROUND:

Isolated lymphangiomas of the mesentery (ILM) make up 31.3% out of all abdominal lymphatic malformations (LM). 68.8% of LM require surgical treatment.

MATERIALS AND METHODS:

In the past 4 years we had 10 patients with ILM admitted to our clinic. Median age of patients was 6 ± 2 years. MRI confirmed the diagnosis in all children. We performed a minimally invasive approach for all cases. We used a 5mm or 10mm camera positioned transumbilically, and 2 working trocars 5mm or 3mm. In 6 cases where the gut was not engaged into the ILM, we performed a dissection of the malformation without gut resection, and then extracted the ILM from the abdomen transumbilically. In the other 4 patients where the ILM invaded the gut wall, we performed an extracorporeal dissection of the ILM with gut resection following an anastomosis using 4/0 or 5/0 PDS running suture.

RESULTS:

Average time of operation was 55 ± 18 minutes. There were no complications at operations or post- op. All patients started feeding mesh food on the 2nd-3rd post-op day. Average hospital stay was 6 days. The follow-up was 6- 48 months, with no recurrences.

CONCLUSION:

Minimally invasive approach for the surgical treatment of ILM is a feasible and effective surgical method of treatment with good cosmetic results. Extracorporeal dissection and anastomosis if required shortens the time of operation.

SESSION VIII, ONCOLOGY
VARIANTS OF MINIMALLY INVASIVE METHODS FOR THE SURGICAL TREATMENT
OF GISTs IN CHILDREN

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BACKGROUND:

The overall annual incidence of gastrointestinal stromal tumors (GISTs) in the European population is 2.1-14.5 cases per million persons.

MATERIALS AND METHODS:

Our experience with GISTs is 3 cases in the last 3 years. The median age of children was 7 ± 6 years. Localizations of GISTs were: lower esophagus, cardial region and front wall of the stomach. For lower esophagus localization, an upper endoscopic submucosal tunnel dissection was performed with no complications.

With other two localizations we performed laparoscopy with 5mm camera and 5mm working trocars. At operation before and after dissection of the GIST upper endoscopy was done for visual control. Gastrotomy was performed near the lesions. Tumor removal was with blunt dissection and coagulation, following closure of the gastric incision by a double layer running suture with absorbable material. In the case with cardial localization of the GIST a fundoplication was performed. In these two cases a drainage tube was placed.

RESULTS:

Average time of operation was 95 ± 28 minutes. In the case where the resection of the GIST was done with upper endoscopy the child started feeding on the 1st post-op day and was discharged the same day. In the other two cases patients started feeding on 2nd postop day, with removal of the drainage tube on the 5th post-op day and they were both discharged on the 7th.

Conclusion: Endoscopic intraluminal surgery and laparoscopy are both suitable for the treatment of GISTs, and both of these methods can be used in the same case.

SESSION VIII, ONCOLOGY
VARIANTS OF THE LAPAROSCOPIC APPROACH FOR THE SURGICAL TREATMENT
OF GRUBER-FRANTZ TUMORS IN CHILDREN

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BACKGROUND:

Gruber-Frantz tumor is a rare pathology in the pediatric age, with malignant potential, and thus requires surgical treatment.

METHODS:

From year 2015 until 2018 we had two cases of a Gruber-Frantz tumor in females age 9 (patient A) and 12 years (patient B). In both cases the pathology was an accidental finding at an US conducted due to complaints of episodic stomach pain. Diagnoses were confirmed by an MRI study. In patient A the tumor was in the body of the pancreas without invasion into the splenic vessels. Patient B had the tumor in the pancreas tail with invasion into the splenic vein and the bowel mesentery. At operation both patients were in the French position. We used a 10mm camera transumbilically, and 2 ports 5mm placed at the flanks. Dissection was performed with US scalpel (case A) and ligasure (case B). The pancreatic duct was visualized and clipped. In patient A we resected the tumor with preservation of the spleen. Patient B had a distal pancreatectomy with a splenectomy. Specimens were removed through an enlarged subumbilical incision intact inside a specimen bag. Drainage tubes were placed through the left mesogastric port.

RESULTS:

Average time of operation was 174±25 minutes. Patients started feeding on 2nd post-op day. Drainage tubes were removed on the 3rd post-op day. Histology showed a pseudopapillary tumor of the pancreas for both patients. Follow-up was 8-36 months with no pathological findings.

CONCLUSION:

Different laparoscopic approaches are effective and feasible for tumors of the pancreas.

SESSION VIII, ONCOLOGY
MINIMALLY INVASIVE SURGERY IN THE MANAGEMENT OF
PEDIATRIC MALIGNANT SOLID TUMORS

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INTRODUCTION:

During recent years, minimally invasive surgery (MIS) has become the standard approach for several procedures in children. However, its use for the management of pediatric malignancies is still limited and controversial.

MATERIAL AND METHODS:

This is a retrospective study of 27 cases who underwent MIS for diagnosis or curative resection malignant solid tumors from January 2000 to December 2017, in The Department of Pediatric Surgery of the University Children's Hospital of Brussels.

The aim of our study was to evaluate the 17-year experience at a single institution with MIS in children with malignant solid tumor.

RESULTS:

38 MIS were carried out in 27 patients. The mean age at surgery was 6 years and 8 months. There were 10 neuroblastomas, 5 nephroblastomas, 5 rhabdomyosarcomas, 3 pheocromocytomas, 1 osteosarcoma, 1 gonadoblastoma, 1 granulosa tumor and 1 corticoadrenaloma. Eighteen MIS were carried out for diagnosis and twenty for tumor resection. MIS resection was successful in thirteen primary tumors. Five patients required a conversion to open surgery. The mean operation time was 130 minutes for diagnosis MIS and 183 minutes for therapeutic MIS. There were no postoperative complications. After a mean follow-up of 3 years, only 2 of patients operated for primary resection recurred. No mortality related to the surgical procedures neither trocar site recurrences were observed in our series.

CONCLUSION:

Based on our study, MIS in children malignancies appears to be safe and effective, but randomized studies with larger series are needed to propose guidelines for MIS application in pediatric malignancies.

SESSION VIII, ONCOLOGY
ROBOTIC SURGERY FOR PEDIATRIC TUMORS: PRELIMINARY RESULTS

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AIM

In adult oncology, the use of robotics has become commonplace; in pediatric surgery, it is rare. We present preliminary results of robotic surgery for pediatric tumors of the first multidisciplinary robotic experience with the Da Vinci Xi surgical system dedicated to a tertiary paediatric surgical centre.

METHODS

Five attending surgeons performed the oncology procedures between October 2016 and May 2018. Gender, age, diagnosis, surgical indication, operative time, conversion, bleeding, post-operative complications, hospital stay and short-term outcome were assessed prospectively. Patients with Wilms were treated according to SIOP-2001. Gasless transaxillary robotic approach was used for thyroid surgery.

RESULTS

During 18 months, 140 procedures were completed using the robot, including 28 procedures for pediatric tumors at a mean age of 10.1 years (1.1-17.5). The most common procedure was nephrectomy (n=9) either total nephrectomy for Wilms tumor (n=5) and renal sarcoma (n=1), or retroperitoneal partial nephrectomy for Wilms tumor (n=2) and tubulopapillary carcinoma (n=1) in a child with a medical history of liver transplantation for hepatoblastoma. Two patients were operated for neuroblastoma (adrenal and chest), one for lumbar paraganglioma and one pelvic ganglioneuroblastoma. Three patients had a bilateral adrenalectomy for Cushing syndrome in Carney complex (n=2) and in McCune-Albright Syndrome (n=1). Robotic trans-axillary thyroid surgery was used in four patients for follicular adenoma, nodula goiter, multifocal papillary carcinoma (n=2) and parathyroid adenoma. Other procedures included gastrectomy for inflammatory myofibroblastic tumor in the gastric cardia (n=1), presacral neurofibroma in neurofibromatosis type 1 (n=1), pheochromocytoma (n=1) and thymoma (n=1). Three patients required an additional procedure for totalisation of thymectomy, thyroidectomy and gastrectomy. Two cases were converted for renal vein injury (n=1, Wilms) and major infiltration of the renal hilum after LOXO-1 chemotherapy (n=1, sarcoma). Tumour was completely removed in all cases (R0). Neither ruptures, nor adjacent organ injury, nor emergency undocking occurred. No recurrence occurred (1-18 months follow-up). The patient with gastrectomy was reoperated twice for small-bowel obstruction and anastomotic stenosis requiring endoscopic balloon dilatation.

CONCLUSIONS

Robotic surgery for tumors in children is feasible and safe in highly selected children. As with any new emerging technique, careful patient selection is crucial, and further evidence must be sought to confirm its limits and indications.

SESSION VIII, ONCOLOGY

LAPAROSCOPIC RESECTION OF A RIGHT SYNDROMIC
ADRENAL PHEOCHROMOCYTOMA (VON HIPPEL-LINDAU) IN A 12 YEAR OLD BOY:
PLACE OF SCREENING AND LITERATURE REVIEW

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Some pheochromocytomas (PCC) are related to a mutation in the VHL gene (Von Hippel Lindau). In case of family index case, the PCC may be screened (genetic, biology) to allow early diagnosis.

We report the observation of a 12-year-old boy with a mutation of VHL (father = index case) with typical clinical symptoms of PCC, even though urinary biological screening was negative 5 months earlier.

Imaging confirmed the existence of a right adrenal tumor of 3 cm of large axis. A laparoscopic right adrenalectomy allowed to confirm the diagnosis and treat the child.

Follow-up was uneventful. The discussion focuses on the scarcity of PCC related to a mutation of VHL, on the peculiarity of screening (place of ultrasound imaging or MRI), on the feasibility of a laparoscopic procedure. A literature review is proposed.

POSTER SESSION IV – MISCELLANEOUS
PERCUTANEOUS INTERNAL RING SUTURING (PIRS) METHOD
FOR INGUINAL HERNIA IN FEMALES- NATIONWIDE MULTICENTER,
RETROSPECTIVE STUDY

Przemysław Wolak^{1,2}, Dariusz Patkowski³, Michał Szostawicki⁴, Aneta Piotrowska², Sylwester Gerus³, Tomasz Hilger⁵, Witold Miałkiewicz⁶, Tomasz Grzechnik⁷, Jacek Ciekalski^{8,9}, Jakub Matuszczyk^{1,2,4}, Piotr Sokół⁶, Michał Puchalski⁶, Radosław Kaja⁶, Marta Dymny⁷, Lucyna Wysocka^{8,10}, Anna Sosinko⁵, Grzegorz Ledkiewicz⁵, Wojciech Darmofalski⁵, Jan Zagierski⁵, Agata Biedulska⁸

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METHODS

This multicenter, retrospective study included patients, who underwent the PIRS procedure for inguinal hernia, from three different Pediatric Surgery Centers in Poland. The study was conducted between January 2015 and December 2017. There were 145 girls and 255 boys. The age range was variable from 3 weeks to 16 years (average: 4,3 years). Most of those procedures were performed by specialists of pediatric surgery (66%). Recorded incarcerated hernias occurred in 30 children (7,3%).

MAIN RESULTS

The average operation time for unilateral hernia was 27 minutes, for contralateral hernias 35 min. It was taking in average 18 minutes to verify if the child had hernia or other defects. Asymptomatic contralateral hernias were detected in 71 patients (17,7%). In 5 cases no hernia were found and in 7 others, different preoperative side of hernia was suspected. In 65 children coexisting umbilical hernias were also repaired. Minor early complications like haemorrhage or subcutaneous haematoma happened in 14 cases (3,5%). Late complications occurred in two children who had bowel obstruction due to persistent Meckel's diverticulitis and adhesions. Recurrence was seen in 2,25% of children (9/400).

CONCLUSIONS

The percutaneous internal ring suturing method presents benefits of visualisation of the peritoneal cavity. It allows to detect asymptomatic contralateral hernias and other abnormalities. This procedure is rather quick to perform and allows to repair contralateral and umbilical hernia during the same operation. We believe that this technique is especially recommended in children with uncertain diagnosis of inguinal hernia.

POSTER SESSION IV – MISCELLANEOUS
INITIAL EXPERIENCE IN THE TREATMENT OF INGUINAL HERNIAS IN GIRLS
UNDERWENT BURNIA TECHNIQUE

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Introduction:

Minimally invasive surgical techniques are increasingly applicable in pediatric patients. We present our initial experience in the use of BURNIA technique (cauterization of the deep inguinal ring) in girls.

METHODS:

Retrospective review of girls with diagnosis of inguinal hernia, operated according to BURNIA technique between January 2017 and January 2018. The technique was performed under direct vision with 5mm-30 degrees optic i with 3 mm working channel was introduced by umbilical port. A 3mm dissector was used in all cases. In the case of contralateral patent peritoneovaginal duct, it was repaired by BURNIA technique in the same surgical act, even in the absence of symptoms.

RESULTS:

14 BURNIA were performed in 12 girls on an outpatient basis. Mean age was 7.6 years (1-13 years). Nine cases were unilateral and three bilateral cases. Mean operative time was 15 minutes (8-25 minutes) and 22 minutes (15-40 minutes) in unilateral and bilateral cases respectively. At the beginning of our learning curve we had 1 conversion to open herniorrhaphy. Mean follow-up was 6 months (1 - 12 months).

Conclusion: BURNIA technique allows intraoperative diagnosis and repair of contralateral defects, and the concomitant treatment of others laparoscopic procedures in the same procedure. Under our initial experience, the learning curve is fast and has good functional and aesthetic results, without visible scars.

POSTER SESSION IV – MISCELLANEOUS
PREOPERATIVE RISK STRATIFICATION IN THE TREATMENT OF OVARIAN
MASSSESIN PEDIATRIC AGE: A SINGLE INSTITUTE LONGITUDINAL
RETROSPECTIVE STUDY

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The purpose of our study is to review all cases of adnexal masses in order to identify the features that are associated with the risk of malignancy and could be considered in preoperative surgical stratification of risk.

We considered patients treated for adnexal mass between January 2004 and June 2017. Risk factors considered were mass diameter (> 10 cm), US morphology and tumor markers. Chi square test was performed to validate our results and P values < 0.05 were considered significant. Mass diameter was > 10 cm in 7 cases, US showed significative solid components in only 1 case, in only one patient AFP was positive. 39 patients underwent 43 surgical procedures either laparoscopically (n = 41) or open (n = 2).

We identified 18 cases with ovarian torsion. Surgery was conservative in 30 patients while oophorectomy was performed in 13 patients. In 9 of 18 cases of torsion an ovarian mass was identified intraoperatively.

Laparoscopic adnexectomy was performed in 8 cases of simple ovarian torsion and in 3 cases of secondary ovarian torsion (P= 0.048). Mature teratoma was the most frequent benign lesion. There was only one malignant neoplasm (immature teratoma).

We suggest that the combination of three main predictor factors (mass diameter, solid component, tumor markers) can help to stratify oncological risk. Surgery should be conservative in all cases with low risk ovarian mass in order to preserve fertility.

In cases of ovarian torsion we suggest maximum conservation and salvage of ovarian tissue when possible.

POSTER SESSION IV – MISCELLANEOUS
THE VALUE OF TAPP IN ADOLESCENT INGUINAL HERNIA TREATMENT

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The optimal technique for inguinal hernia repair in adolescents is under debate. The most commonly used operations are high ligation of the hernia sac (HL) and reconstruction of the floor of the inguinal canal (IFR). TAPP is well-accepted in adults but not routinely used by pediatric surgeons.

From 2015 we operated 12 children with TAPP: the aim the study was to evaluate safety, efficiency and postoperative quality-of-life of this procedure.

We retrospectively collected data of all children between the age of 14-18 who underwent inguinal hernia repair between 2001-2017. We analyzed the average operative time, perioperative complications, number of recurrences. We sent two questionnaires (RAND 36-Item Health Survey and Carolinas Comfort Scale) via email to our former patients to evaluate QOL.

Of the 82 patients 37 underwent HL only, 33 had IFR and in 12 patients TAPP was performed. There were no intraoperative complications and after an average of 6.77 years follow-up we had no recurrences. The operational time was significantly longer in the TAPP group (66 min). Only 32% of the patients responded adequately to the questionnaires. The better scores in Carolinas Comfort Scale achieved by the TAPP group were not significant. HL group scored significantly better in the RAND survey.

Based on our results, all the 3 methods are safe and well-tolerated in children. TAPP provides a good hernia specific QOL but has its disadvantage of longer operational time and being technically more complicated. We suggest to apply this procedure for adolescents with strong physical activity.

POSTER SESSION IV – MISCELLANEOUS
PLACE OF LAPAROSCOPIC SURGERY IN THE TREATMENT OF THE HYDATIC CYST
OF THE LIVER IN CHILDREN

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CHU AEK Hassani, Sidi Bel Abbes, Algeria

INTRODUCTION:

Liver hydatid cyst is considered a public health problem in endemic countries. Its exclusively surgical treatment has changed in recent years by the contribution of the technique of puncture per skin alcohol injection followed by re aspiration (PAIR), medical treatment by the Albendazole, as well as the laparoscopy in surgical treatment. The objective is to report an early experience of children undergoing surgery for a laparoscopic hydatid cyst of the liver, and show the feasibility.

MATERIAL AND METHOD:

from 2015 to 2017, 12 children were operated for a KHF laparoscopically. The average age was 8, 5 years, a sex ratio of 2.75, the location of the cyst in the right liver was in 80% of cases. All of our patients showed a unilocular simple Cyst (type I and II), we excluded the deep and posterior location, they had the same operating procedure: sterilisation and aspiration of the cyst, and the protruding dome resection followed by a drainage, all by laparoscopy, 02 patients have received treatment medical adjuvant.

RESULTS:

The suites post-operative favourable overall, hospital stays on average was 4 days, morbidity of 6,6% and 13,3%(n=2) conversion. The long term results were satisfactory without any recurrence after 36 months.

CONCLUSION:

Despite some surgeons are still reluctant toward this technique because of the risk of rupture of the material hydatid cysts in intra peritoneal, the use of the surgery coelio finds his interest because of its invasive mini nature and seems to be an effective alternative to laparotomy.

POSTER SESSION IV – MISCELLANEOUS
ISOLATED FALLOPIAN TUBE TORSION IN CHILDREN: A MULTICENTRIC STUDY

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PURPOSE:

To quantify the experience of five Italian centers on diagnosis and management of isolated fallopian tube torsion (IFTT) in children.

Materials and methods: From 1991 to 2017, IFTT cases were collected from 5 Italian centers in young girls aged 1 - 16 years. Clinical and surgical informations were analyzed trying to have a clearer picture of this rare event.

RESULT:

18 cases of IFTT were collected. Median age was 13 years. Menarche was present in 11 cases. A clinical history of abdominal pain was present in 12 patients, in the other 6 patient the clinical picture was an acute abdomen. In 13 cases the first diagnostic examination was ultrasonography but in none of these cases an IFTT was suspected.

The surgical approach was by laparoscopy in 14 cases while in 4 cases open. Nine IFTT was right and 9 left. In 6 cases the IFTT was associated to hydrosalpinx, in 4 cases to a paratubal cyst and in one case to a ovarian cyst. In 5 cases of the remaining 8 IFTT without pathologic association, the girls practiced acrobatic sports. Salpingectomy was performed in 11 patients and de-torsion in 7.

CONCLUSION:

We could suggest that in pediatric patients, in the case of acute abdominal pain associated with pelvic or ovarian cystic image, a laparoscopy should be performed as soon as possible. In the case of IFTT when possible a conservative management should be preferred in order to provide the best option for future fertility of these girls

POSTER SESSION IV – MISCELLANEOUS
LAPAROSCOPIC VERSUS OPEN POSITIONING OF PERITONEAL CATHETER:
THE EXPERIENCE OF A TERTIARY REFERRAL CENTRE

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BACKGROUND

Peritoneal dialysis is the modality of choice for most children with end-stage renal disease. Although the complications related to the positioning of the peritoneal catheter (PC) are well known there are few data in the literature on the outcomes between laparoscopic and open technique in the paediatric population.

AIM

To analyse and compare the outcomes between the laparoscopic and the open positioning of PC.

METHODS

Preoperative, perioperative and postoperative data of all patients who underwent PC positioning from January 2011 to December 2017 were retrospectively reviewed. Data were quoted as median. Non-parametric statistical comparisons were made as appropriate. $P < 0.05$ was considered significant.

RESULTS

58 patients (35 male, 23 female; aged 0-185 months, median 2,7 years) underwent PC positioning for kidney failure. 49/58 underwent open approach and 9/58 underwent laparoscopic approach.

The total amount of the procedures was 89 (72 open, 17 laparoscopy). There were no significant differences between the two groups in terms of operative time ($p=0.689$), hospital stay ($p=0.120$) and complications ($p=0.778$). In particular, in the open group, 26/72 (36.1%) needed re-positioning for dislocations (14), occlusions (4), peritonitis (8). In the laparoscopic group 5/17 (29.4%) needed the re-positioning for dislocations (2), occlusion (2) and peritonitis (1).

CONCLUSIONS

There are few large series in literature on the technical positioning of the PC in children. Although our series has some bias, our data suggest both techniques present complications. Of course the laparoscopic approach is less invasive but the choice of the approach should be indicated on the patient condition.

POSTER SESSION IV – MISCELLANEOUS
OVARIAN PATHOLOGY IN CHILDHOOD: THE ROLE OF MINI INVASIVE SURGERY

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Introduction.

Children's ovarian pathology is rare and includes a broad spectrum of lesions. Mini-invasive surgery (MIS) is used nowadays as treatment of choice, even if some controversies still exist in suspected tumors. The aim of our study was to analyze clinical findings, diagnosis, surgical management and outcome of patients with ovarian lesions, who underwent MIS, in our Institution.

MATERIALS:

All patients with ovarian tumors, ovarian/paratubaric cysts and ovarian torsion, observed from 1997 to 2018 in the Pediatric Surgery Department of the University of Padua, were analyzed.

RESULTS:

Seventy-four MIS were performed in 72 patients (median age: 11.6 years). Acute abdominal pain was the clinical presentation in 29 (39.2%). Definitive diagnosis included: 13 pure ovarian torsions, 30 tumors, 19 ovarian and 8 paratubaric cysts (6 with torsion, 1 bilateral), 2 torsions of ovarian appendix, 1 polycystic ovary. Surgery included: 27 ovariectomies (1 bilateral), 12 salpingo-ovariectomies (1 bilateral), 19 cystectomies, 3 paratubaric cystectomies (1 bilateral), 4 cyst marsupialization, 5 detorsion, 1 ovarian appendix resection, 3 explorations. Surgery mean time was 105 min. In 4 patients, Alexis® device was used to remove the mass. In ten cases conversion to open surgery was necessary due to mass size and difficult mass isolation. All patients are well, in complete remission. Seventeen OT resolved with full organ recovery.

CONCLUSIONS:

MIS is a safe surgical approach for ovarian lesions in children. Major indication is represented by non-neoplastic pathologies. However, it can be used also for ovarian tumors, using adequate maneuvers and devices, respecting oncology principles.

POSTER SESSION IV – MISCELLANEOUS
2 YEARS AFTER PIRS TECHNIQUE IMPLEMENTATION IN OUR CENTER: WHAT WE HAVE LEARNT

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AIM OF THE STUDY

To describe our results for inguinal hernia repair using Percutaneous Internal Ring Suture (PIRS) and to analyze the learning curve in our center.

METHODS

Retrospective review of patients who underwent PIRS at our center, and division of the sample into two subgroups of equal size based on the date of surgery. Analysis of adverse events (intraoperative complications, reconversion to open surgery and recurrence) in the total sample and in the 2 subgroups.

MAIN RESULTS

74 PIRS were performed in 58 patients. Average age at surgery was 5.6 years (2.9-9.3). 11 patients (18.9%) associated umbilical hernia at diagnosis. There were 6 intraoperative complications (8.1%, all of them hematomas because of epigastric puncture), 2 conversions to open surgery (2.7%, both due to epigastric hematoma) and 5 recurrences (6.8%). When comparing both subgroups, the incidence of hematomas in the first group was 5 times higher, remaining close to statistical significance (5 vs 1, $p = 0.08$). There were 2 conversions to open repair in the first group, and none in the second. Surgical time was significantly shorter in the second group (42.5 minutes, 27.8-57.2) than in the first (53.0 minutes, 30.0-69.0) ($p = 0.04$).

CONCLUSIONS

PIRS technique is an effective and safe alternative to conventional herniorrhaphy, especially for bilateral cases or associating umbilical hernia. Training is essential in order to reduce adverse effects rate and operative time.

POSTER SESSION IV – MISCELLANEOUS
LAPAROSCOPIC REMOVAL OF A PERINEAL LIPOBLASTOMA MISDIAGNOSED
AS OVARIAN TERATOMA IN A 4-YEAR-OLD CHILD

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Lipoblastoma is a rare mesenchymal tumor arising from embryonal fat cells. It is generally discovered in infants and children younger than 3 years and can occur mostly in the trunk.

We describe the case of a 4-year-old female patient, hospitalized in our Service for the suspect of an ovarian mass.

The child was suffering from one month of recurrent abdominal pain; an abdominal ultrasound was performed, visualizing a left ovarian mass, with the characteristics of a teratoma.

A three-trocar laparoscopy was performed to remove the left-sided ovarian lesion. Exploring the abdominal cavity, no ovarian mass was found, but a mass of 5 cm in diameter was discovered, in the left perineum adjacent to the bladder. The tumor was completely resected with no residual lesions. The post-operative course was uneventful.

Pathological examination described a solid mass composed of small lobules of mature and immature fat cells, separated by fibrous septa containing small, dilated blood vessels. Lipoblastoma is an uncommon soft tissue tumor sometimes arising from the retroperitoneum. Surgical radical excision is the gold standard treatment and the prognosis is good with only possible local recurrence but no metastasization.

Long ultrasonographic follow-up is required.

Laparoscopic removal is the treatment of choice allowing complete surgical resection.

POSTER SESSION IV – MISCELLANEOUS
COMBINED STAGED APPROACH IN A CLOACA PERSISTENCE PATIENT.
A CASE PRESENTATION

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Persistence of cloaca, though not very frequent (1 in 20000 live newborn girls), ranges among the most technically challenging anomalies treated by pediatric surgeons. Since 1982, the introduction of PSARP approach has been a game changing landmark in its surgery.

Our patient had been diagnosed at birth with persistence of cloaca and septated uterus. At that moment, a genitourinary endoscopy had been performed, identifying a 25 mm long common channel. It had been followed by an exploratory laparoscopy that had identified a rectovaginal fistula. A divided colostomy on the descending colon had then been performed, by laparoscopic assisted method. The patient required antibiotherapy for urinary tract infection. At 1 month of age, a contrast medium colostogram had been performed. The major surgical approach consisted in a PSARVUP procedure with laparoscopic dissection and mobilization of the rectum. This had been performed at the age of 3 months, maintaining the colostomy in place for another 3 more months before suppressing it. The patient, currently aged 9 months, is still in our monitoring.

The rarity of this anomaly comes with the presence of particularities for each individual case, that require tailored approaches from a multidisciplinary team of specialists and a great amount of compliance from the patient's family.

POSTER SESSION IV – MISCELLANEOUS
IN VIVO ANIMAL MODELS FOR TRAINING NEONATAL AND INFANTILE ENDOSCOPIC SURGERY: A SYSTEMATIC REVIEW

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INTRODUCTION

Since endoscopic surgery started its development, a growing necessity of training methods exists. *In-vivo* training models have advantages over plastic and *ex-vivo* models because they model better real circumstances.

OBJECTIVE

Our aim was to compare different *in-vivo* models regarding anatomy, advantages and survival rate.

MATERIALS AND METHODS

A Pubmed© systematic search was performed for key-words „paediatric minimally invasive surgery training”. Only pediatric surgery-based minimally-invasive models were included, whereas robotic studies were excluded. End points of our study were type of animals, advantages –disadvantages of models, mortality.

RESULTS

Of the 479 findings, 18 articles with laparoscopic and thoracoscopic animal studies were involved with altogether 274 experiments in: rabbits (n=115), pigs (n=97), dogs (n=54), and rats (n=13). Nine studies preferred rabbits due to anatomical similarity to humans, while 2 preferred pigs, 1 both models. Advantages of rabbit models were: anatomical habits and similarity to human, cheapness, reproducibility, whereas for the porcine model: better survival rate, larger intercostal space, suitability for STING approach. Disadvantages of rabbits were: higher mortality, pneumoperitoneum disturbances, and porcine: higher cost, too big stomach.

CONCLUSION

Both the rabbit and porcine model are useful to train, the rabbit is more frequently used, its anatomical habit is better to model paediatric minimally invasive procedures, although it has higher mortality rate.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
DEVELOPING SYNTHETIC ORGAN MODELS FOR TRAINING OF INTRALUMINAL
AND LAPAROSCOPIC PROCEDURES**

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Practicing on simulators and training models that imitate well the organs and pathologies reinforce the learning process and improve the surgical skill. The aim of this study is to define the methodology of “How to develop a synthetic polymer pathological organ model for training of intraluminal and laparoscopic procedures” and produce prototypes for organ models.

MATERIALS AND METHODS:

We collaborated with Anadolu University Faculty of Fine Arts to develop a methodology to design and produce prototypes. The first aim was to obtain a material that is imitating the real organ look and touch. Then computer modeling and molding with 3D printing were planned for lumen formation and organ models.

RESULT:

A soft elastic flat plaque was produced from a polymer which was also used for lumen and organ model formation. The plaque was tested and found suitable for cutting and suturing. Computer modeling and 3D molding were done for lumen formation that would be used in intestine, ureter and ureteropelvic junction (UPJ) models. Two organ models, one for intestine, the second one for kidney, UPJ and ureters for intraluminal and laparoscopic procedures were designed and constructed as prototypes. Procedures such as intraluminal endoscopy, intestinal resection and anastomosis and laparoscopic pyeloplasty and ureteroureterostomy were performed on the prototypes in training box with success.

CONCLUSION:

Training on models simulating the real organs may provide better hands-eye coordination and three-dimensional adaptations to the intraluminal and laparoscopic procedures. Well - constructed and chip training models are also needed in pediatric surgery.

POSTER SESSION V – INNOVATION AND MISCELLANEOUS
THE LEARNING CURVE OF ROBOT ASSISTED LAPAROSCOPIC PYELOPLASTY
IN CHILDREN: A MULTIOUTCOME APPROACH

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AIM OF THE STUDY:

To analyse the learning curve (LC) for robotic assisted laparoscopic pyeloplasty (RALP) for ureteropelvic junction obstruction in children, using a multioutcome approach and accounting for patient complexity.

METHODS:

Data on the first serie of children undergoing RALP between November 2007 and Necember 2017 at our institution were prospectively collected. We retrospectively analysed patient complexity factors and peri-operative data including operative time (OT). The learning curve was analysed using cumulative sum (CUSUM) methodology for OT and a composite parameter (combination of 3 parameter: OT adjusted for patient complexity factors, complications and surgical success).

MAIN RESULTS:

Two surgeons without any experience in robotic surgery performed 42 consecutive RALP in 41 patients. Median age at surgery was 5 years (6 months-15 years) and mean OT was $200 \pm 72,8$ min. CUSUM chart demonstrated biphasic LC for OT and multiphasic LC for composite factor. Based on the CUSUM analysis for composite outcome, the learning curve for RALP could be divided into 3 different phases: phase 1, the learning period (1-11 cases); phase 2, the consolidation period (12-25 cases); and phase 3, increased competence (26-41th case).

CONCLUSION

We demonstrate numerous distinctly shaped learning curves depending of the outcome measures and well-defined learning phase transition points. We account for patient complexity factors, which can influence surgical outcomes. Since there is no perfect indicator of proficiency, a multioutcome approach was adopted to provide a comprehensive view of the learning process for RALP. More than 41 cases are needed to achieve mastery.

POSTER SESSION V – INNOVATION AND MISCELLANEOUS
ROBOTIC SOAVE ENDORECTAL PULL-THROUGH FOR OLDER PATIENTS WITH
HIRSCHSPRUNG'S DISEASE: RESULTS AFTER THE FIRST 5 PATIENTS

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INTRODUCTION

This study reports the results of the first series of patients older than one who underwent Robotic Soave Endorectal Pull-Through (RSERPT) to deal with some technical issues observed in older patients with HSCR.

METHODS

RSERPT consists in reproducing the exact technical details of the classic “open” Soave procedure with extramucosal dissection started above the peritoneal reflection and extended down to the pectinate line. Such a delicate reconstructive surgery is performed thanks to the the DaVinci Robotic Surgical System. Only patients older than one were included.

Demographics, surgical details, complications and functional outcome were prospectively collected.

RESULTS

Five patients underwent RSERPT in a 30-month period. Median age at surgery was 30 months (ranging between 15 months to 15 years). Patients weight ranged between 9 to 70 kgs. Surgery lasted a median of 360 minutes (ranging between 230 to 525 minutes). Four patients suffered from classic HSCR, one suffered from total colonic aganglioneosis. No major complications occurred. We experienced anastomotic stricture in 1 and cuff stricture in 1, the latter requiring laparoscopic cuff release. Median length of follow up was 24 months, ranging between 1 to 30 months. Good to excellent continence was reported by all 3 patients who could be assessed on this regard.

DISCUSSION

RSERPT proved to be feasible and safe in children, even in case of ultralong HSCR. Robotic surgery confirmed its versatility both in adolescents and toddlers. Functional results are promising and this approach could dramatically improve the outcome of older patients with HSCR.

POSTER SESSION V – INNOVATION AND MISCELLANEOUS
THE ROLE OF LAPAROSCOPY IN PEDIATRIC ONCOLOGY

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INTRODUCTION:

Laparoscopic techniques have been increasingly used surgical procedures to treat oncological disorders in children.

AIM:

The aim of the study was to assess the course of treatment, its effectiveness and the final effects in children with oncological disorders treated with laparoscopy in the Department of Surgery, Traumatology and Urology in Poznan.

MATERIALS AND METHODS:

Analysis of hospitalizations included diagnosis, surgical treatment and postoperative period in 150 patients treated for oncological disorders using classical laparoscopy. The age of patients undergoing surgery, stage of tumor, histopathological diagnosis, length and course of operation, abdominal tumor removal, perioperative and postoperative complications, hospitalization, chemotherapy, necessity of analgesia and cosmetic effect of surgery were analyzed.

RESULTS:

There were operated 150 patients for oncological disorders using classical laparoscopy in the Department of Pediatric Surgery, Traumatology and Urology in Poznan. In none of the analyzed cases were there perioperative or postoperative complications. Analyzed surgical techniques included: radical resection of the tumors, primary biopsy of lesions or residual masses after chemotherapy treatment. Often laparoscopy is used for better identification of the precise place of incision during laparotomy (laparoscopic assist). The average hospital stay after surgery was 6 days. The obtained cosmetic effect has been evaluated by the parents as very good and good.

CONCLUSIONS:

Laparoscopy provides a good insight into the operating field.

Minimal invasive surgery allows for shorter hospitalization time, possibility of earlier chemotherapy and leads to better cosmetic effects than classical surgery.

Using this method does not release the surgeon from preserving the basic principles of oncological cleanliness.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
MINIMALLY-INVASIVE PAEDIATRIC SURGERY IN THE ROBOTIC ERA**

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INTRODUCTION

To present our preliminary experience in robotics and a comparative analysis with conventional minimally-invasive surgery.

MATERIAL AND METHODS

Consecutive cases operated by da Vinci Xi® System in the period February 2016 - October 2017 are reviewed retrospectively through demographics, diagnosis-procedure and surgical short-term outcome parameters. A comparison with a matching conventional minimally-invasive population was also conducted. Mean and median values of parameters have been compared with the Student's T-Test and Mann-Whitney test to assess any statistical difference.

RESULTS

40 robotic procedures were carried out and 112 (out of 3705) non-robotic procedures met inclusion criteria for comparison. Among robotic patients we observed: an average age of 143.5 months, weight of 42.9 Kg, operative and anaesthesia induction time respectively of 116.8 and 34.8 minutes. Furthermore, we observed a 6.1-day length of stay, 2.5% conversion rate and no complications. Within the matching non-robotic population, we recorded: an average age of 89.4 months, weight of 29.3 Kg, operative and anaesthesia induction time respectively of 80.1 and 45.9. We observed a 5.3-day length of stay, 1.8% conversion rate and one complication. From the comparison between the groups, no statistical difference emerged in the length of stay, in conversion rates or in complications. A statistical significance was observed in terms of operative time in favour of non-RS.

DISCUSSION

Our experience has meant to introduce the robotic system in our surgical environment, comparing to the parallel conventional minimally-invasive surgery (an established approach routinely performed at our center). Results have shown comparable safety and feasibility.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
THREE-DIMENSIONAL (3D) LAPAROSCOPY IN PEDIATRIC SURGERY:
OUR EXPERIENCE**

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AIM:

Three-dimensional (3D) vision equipment is currently being implemented in clinical practice for adult surgery. Only limited experiences exist for laparoscopic three-dimensional (3D) procedures in children. We studied the indications, applicability, and effectiveness of 3D endosurgery in children.

MATERIALS AND METHODS:

From January 2018 in our institution we started to use the 3D camera to perform laparoscopic surgery. The equipment used was laparoscopic 3D imaging a Camera Control Unit (CCU), 3D monitor and 3D-TIPCAM®. Patient data, operative procedures and image quality of the 3D system were assessed.

RESULTS:

14 children's age range (9m – 15 ys) m5 f 10 were treated using 3D camera for different pathologies. We performed 4 cholecistectomies, 4 splenectomies, 2 appendectomies and 2 Fowler's procedures for undescended testis. No relevant complications as nausea, vertigo, eye blurring occurred to surgeons; inconvenience of visual adaptation of 3D to 2D. Difficulties were mainly addressed to the small distance of the video endoscope and the organ tissue in small children and affected mainly image definition, resolution and eye focusing. All procedures have been conducted with success. No conversion to 2D or open surgery. Better quality of image and 3D helped the surgeon for vessels dissection and choledochal identification. The time of surgery was always been shorter for each procedure.

CONCLUSIONS:

3D laparoscopy has some advantages even in pediatric age as depth perception, better visualization of anatomical structures and understanding of the anatomy, as well as for complex maneuvers such as suturing. Several studies show that 3D laparoscopy appears to improve speed and reduce the number of performance errors when compared to 2D laparoscopy. We could consider 3D laparoscopy an hybrid passage from 2D to robotic surgery.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
INITIAL EXPERIENCE IN THE USE OF PIRS TECHNIQUE FOR THE TREATMENT OF
INGUINAL HERNIAS AND HYDROCELES**

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ABSTRACT

Introduction:

Minimally invasive surgical techniques are increasingly applicable in the pediatric patients. We present our initial experience in the use of PIRS (percutaneous inguinal repair suture) technique for the treatment of inguinal hernias and hydroceles.

MATERIAL AND METHODS:

Retrospective review of patients with diagnosis of inguinal hernia or communicating hydrocele, operated according to the PIRS technique between January 2017 and January 2018 in our center. The PIRS technique was performed under direct vision with 5mm-30 degrees. 20 G Epidural needle, monofilament polypropylene suture and braided polyester suture were used. In the case of contralateral patent peritoneovaginal duct, it was repaired by PIRS in the same surgical act, even in the absence of symptomatology.

RESULTS:

33 PIRS were performed in 23 children and in 3 girls on outpatient basis. Mean age was 63.92 months (3-156). Nineteen cases were unilateral and seven bilateral. Mean operative time was 22 (6-90 minutes) and 33 minutes (15-60 minutes) respectively. At the beginning of our learning curve, we had 1 early recidive in the premature infant that was reoperated through PIRS successfully, 2 cases of vascular injury, resolved with compression measures. Liver biopsy was performed simultaneously in 1 patient. The follow-up was 1-12 months.

CONCLUSION:

The PIRS technique avoids the manipulation of the spermatic cord elements, allows intraoperative diagnosis and repair of contralateral defects and concomitant treatment of the other laparoscopic procedures. Under our initial experience, PIRS technique has a fast learning curve and good functional and aesthetic results, without visible scars.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
TWO CASES OF WATER-ABSORBAL FOREIGN BODIES
OF THE DIGESTIVE TRACT IN CHILDREN**

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Foreign bodies of gastro-intestinal tract is an actual problem of the contemporary pediatric medicine. The new type of threat was introduced a some year ago - the hydrogel toys.

After ingestion by children, they remain unrecognized for several day till development of intestinal obstruction.

Within 1 year, we treated 2 children (1 year and 1.5 years old) with small bowel obstruction caused by swallowed small hydrogel balls. After ingestion, 3.5 and 4 days passed before the clinical picture of small bowel obstruction had been developed.

In one case, preoperative diagnostics (radiography and ultrasound examination) did not identify the cause of the obstruction. In both cases laparoscopy was performed, then a laparotomy with enterotomy and removal of foreign bodies. There were no postoperative complications.

CONCLUSION:

We have serious difficulties in the early diagnosis for water-absorbal foreign bodies of digestive tract in children. In such cases an unified approach to the choice of surgical tactics is required.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
LAPAROSCOPIC APPROACH OF ADNEXAL PEDIATRIC PATHOLOGY,
BENEFITS AND DISADVANTAGES**

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INTRODUCTION

The diagnosis and treatment of the adnexal pathology is often delayed or absent in the pediatric population because of the nonspecific abdominal symptoms that can mimic other acute abdominal disorders. The ultrasound is the most important imagistic procedure that is performed as a routine in case of inferior abdominal pain in a patient of feminine sex.

MATERIAL AND METHODS

The paper presents the experience of the pediatric surgery Clinic of M.S. Curie Hospital, Bucharest concerning the ovarian cysts, adnexal masses, torsion or infection, for a period of 2 years, from January 2016 to December 2017. A number of 264 patients were diagnosed with adnexal pathology.

RESULTS

201 cases have been diagnosed with ovarian cysts, 43% of them were surgically treated and out of these only 24% were performed laparoscopically. A number of 31 ovarian torsions were found, 11 treated laparoscopically. The reasons for such a low number of laparoscopic procedures are the lack of laparoscopic experience of the surgical team, the dimensions of the adnexal pathology or the absence of a preoperative diagnosis.

CONCLUSIONS

The laparoscopic approach is very important for the diagnosis and management of the adnexal area pathology. The benefits of a laparoscopic procedure always surpass the disadvantages, such as the necessity of conversion in some cases or the longer period of a procedure in cases of not such experienced laparoscopic surgeons. It is very important for the next generations of pediatric surgeons to learn laparoscopy and use it as a diagnosis reason and treatment option.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
THE LIMITS OF THE LAPAROSCOPIC APPROACH
IN GIANT OVARIAN CYST – A CASE REPORT**

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The aim of the paper is to present the case of a young girl (sixteen years old), which presented to the emergency room at "M S Curie" Hospital for abdominal pain in the lower quadrant and important increase in volume of the abdomen.

The symptoms started 6 months ago and were interpreted as advanced pregnancy when patient was examined in another hospital. On admission to our hospital an ultrasound examination was performed, which revealed a voluminous abdominal cystic tumor (33/25/20 cm diameter), well delimited, avascular, without being able to determine its origin. The tumor markers (CEA, CA 125, α fetoprotein) were negative.

We decided to perform a diagnostic laparoscopy, first step being the puncture and aspiration of the cyst (7 liters of cloudy fluid) through the umbilical trocar incision. When performing inspection of the abdominal cavity we found a giant cystic tumor of the left ovary and left adnexal torsion of 180 degrees. Considering the size of the ovary and Fallopian tube we considered a conversion as appropriate and we performed a left salpingo-oophorectomy.

Postoperative evolution was uneventful.

CONCLUSION: Although the laparoscopic approach is the first choice in adnexal pathology, we should take into consideration, in selected cases, the conversion, in order to reduce the eventual risks to the patient.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
ACUTE ADNEXAL TORSION IN AN ADOLESCENT GIRL – A CASE REPORT**

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The paper aims to present the case of an adolescent girl (16 years old) that was admitted to the Surgical Department of 'Marie Curie' Hospital for surgical treatment of an ovarian cyst of approximately 6cm discovered during an abdominal US done as an outpatient.

Surgery was scheduled.

During the course of the preoperative hospitalization she developed severe abdominal pain with acute onset, accompanied by vomiting. Clinical examination showed muscular guarding in the lower abdominal quadrant.

Emergency US examination revealed a cystic mass on the projection area of the ovary, with no vascular signal. An emergency laparoscopy was performed and revealed adnexal torsion of approximately 540 degrees (one and a half complete circles) with an ovarian cyst of approximately 7 cm. The adnex was detorsioned and the aspect observed was of a viable gonad; cystectomy was performed, without oophoropexy.

Postoperative evolution was simple.

CONCLUSION: Immediate evaluation and intervention is needed in suspected ovarian torsion. Laparoscopy for adnexal masses is an effective approach even in acute situations, providing good visualization and treatment. Advantages of laparoscopic approach are multiple, from faster recovery time to conserving the fertility through fewer adhesions.

**POSTER SESSION V – INNOVATION AND MISCELLANEOUS
PREDICTING THE OUTCOME OF PEDIATRIC ACUTE PANCREATITIS**

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Our knowledge on risk stratifying pediatric acute pancreatitis is poorly understood and extrapolated from adult literature, predicting severe outcomes, based on measures like pediatric acute pancreatitis score (DeBanto et al), computed tomography severity index (CTSI or Balthazar) or even serum lipase levels.

Records of children admitted with acute pancreatitis from January 2005 to December 2013 were reviewed. Contrast-enhanced computed tomography (CT) was done at presentation and assessed for peripancreatic fluid and the extent of necrosis. Serum lipase levels were sent within first 24 hours of presentation.

A total of 105 children admitted with acute pancreatitis were included in the study. The majority were more than 10 years of age. Etiology of pancreatitis was idiopathic in 52.4%, followed by traumatic (16.2%), medication-induced (11.4%), gallstone (6.7%), choledochal cyst (3.8%), and others (9.6%). The sensitivity, specificity, positive predictive value, and negative predictive value of the CTSI were 45.6%, 95.8%, 92.9%, and 59.7%, respectively, which compared favorably to the results of the serum lipase levels (84.2%, 25%, 57.1% and 57.1%) with a cutoff of more than 500U/L and both combined (40.35%, 95.83%, 92%, 57.5%).

Our review demonstrates that the CTSI is a clinically useful tool for predicting patients that will develop major complications, against those who will not. The serum lipase at presentation, alone, may have a better sensitivity for diagnosis, than CTSI, but does not translate into a better positive predictive value, or a good risk stratification tool. Combining the two improved neither the sensitivity nor the specificity of CTSI alone.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
ULTRASOUND ASSISTED CANNULATION OF THE INTERNAL JUGULAR VEIN.
A PROSPECTIVE COMPARISON TO THE OPEN CUT-DOWN TECHNIQUE**

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In critically ill children central venous cannulation might represent the decisive factor for survival.

The cannulation of internal jugular vein (IJV) has been traditionally performed by the open cut-down technique. The importance of US-guided venous access has increased in recent years. The objective of this study was to compare number of puncture attempts, time to achievement of venous access and complication rate with US-guided venous access to the IJV versus the traditional open technique.

We compared two groups: US-guided IJV cannulation, including 321 patients, and IJV, including 341 patients. We used 3 types of catheter: Hickman, Broviac e Port-cath. The prevailing US-guided approach was the anterior respect to the lateral. We use the US-guided technique after the 6 months of life.

There were no between-group differences in sex, weight, hospital setting where the procedure was performed or puncture site. The time to IJV localization, time to achievement of venous access and time to cannulation were all shorter in the US-guided group. The cannulation failure rate was also remarkably lower in the US-guided group. Fifteen complications were noted, one in the US-guided group and fourteen in the control group.

The findings of this study demonstrate that US guidance is a useful adjunct for central venous access in children. US allows direct visualization of anatomical structures, increases the efficacy of the procedure and improves its safety significantly. From our perspective, US-guided cannulation should be recommended as the method of choice for safe achievement of central venous access in children.

SESSION IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
FIRST EXPERIENCE OF PAEDIATRIC LAPAROSCOPIC FUNDOPLICATION WITH A
MOTORIZED AND ARTICULATED NEEDLE-HOLDER

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AIM OF THE STUDY:

To describe the first cases of fundoplication performed with the use of a robotized needle-holder and its potential advantages in children.

METHODS:

Retrospective case control analysis (CNIL n° 2016-MR03-01) of paediatric patients having a laparoscopic fundoplication from January 2014 to January 2017, with either a standard or the motorized needle-holder JAIMY™ (Endocontrol, France).

MAIN RESULTS:

Forty-one patients had a fundoplication, 17 with (group J) and 24 without (group C) the use of the JAIMY™. Median weight was the same between groups (59 (J) versus (vs) 71 kg (C), ns), as well as the respective rates of Nissen vs Toupet interventions (7(41%) vs 7(29%) Nissen, ns). An umbilical single-site approach was used in 10(59%) vs 2(8.3%) (p=0.001). Median operative time was higher in group J (106 vs 75 mn, p=0.005). Use of analgesics and hospital length of stay (3 vs 4 days, ns) were similar in both groups. With a median follow-up of 16 months, the efficiency of the intervention remained comparable (1(5,9%) vs 3(12,5%) of recurrent oesophageal reflux, ns), as well as the overall complication rate (5(29%) vs 3(12.5%), ns).

CONCLUSIONS:

The use of the JAIMY™ needle-holder does not impact the course of fundoplication, but eases sutures in small working spaces and reduces the number of parietal incisions allowing single port approach, for a better cosmetic result.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
LAPAROSCOPIC REPAIR OF DUODENAL ATRESIA USING A 5.8 MM ARTICULATING
ENDOSTAPLER: FIRST SERIES OF 10 PATIENTS**

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Peter Zimmermann²

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BACKGROUND:

We present the first case series of laparoscopic repair for DA using a 5.8 mm endostapler.

METHODS:

Retrospective comparative study between cases of DA undergoing laparoscopic side-to-side stapled duodenoduodenostomy / duodenojejunostomy (DD/DJ) and a control group of children with laparoscopic hand-sewn anastomosis between 06/2016-02/2018. Three trocars (3 to 5mm) were placed in the navel, the left upper and right lower quadrants. The distal duodenum (proximal jejunum) was approximated to the dilated portion using stay sutures and enterotomies were established at the left lateral aspect of the two bowl loops. A 5.8 mm diameter articulating endostapler (MicroCutter 5/80, Dexter Surgical Inc., Redwood City, CA) was introduced through an additional skin incision in the left upper abdomen and a side-to-side DD/DJ was created. The combined enterotomy was closed using 4-0 Glycolactate sutures.

RESULTS:

Ten cases of each group are compared. There was no anastomotic leakage in laparoscopic stapling group and one leakage in laparoscopic hand-sewn group without need for reoperation. The mean time to initiation of oral feeds was lower in the laparoscopic stapling group but mean time to full oral feeding was similar comparing both techniques. A video of the technique and the details of the two groups will be presented on the ESPES meeting.

CONCLUSION:

Laparoscopic side-to-side repair of DA using an endostapler is safe with outcomes similar to laparoscopic hand-sewn anastomosis. After completing the learning curve it may be carried out by surgical trainees and lead to faster operating times in the future

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
THE ROBOTIC SURGERY SKILLS TO INCREASE SURGICAL PERFORMANCE:
BRAIN F-MRI STUDY**

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OBJECTIVE

The aim of this study was to investigate by functional MRI (fMRI) the pattern of activation of the cortical areas during a robotic surgical training compared to laparoscopy and open surgery training, in order to define the implication of the different sensorimotor tasks activation in the learning curve of the miniminvasive surgical approaches.

METHODS

Medical students without previous surgical training experience were enrolled and randomly assigned to the 4 groups: robotic (ROB)-, laparoscopic (LAP)-, open surgery-groups who underwent a training in robotic, laparoscopic and open surgery, respectively and control-group. All groups underwent a 60 minutes of intensive surgical exercise session per day for one week. All subjects underwent fMRI before (T0), and at the end of the training (T1).

RESULTS

The ROB group reached the best performance in a more rapid time compared to LAP and open group. fMRI intra-group analysis showed a significant voxel increased between T0 and T1 in observation and in surgical exercise session (T1>T0, $p<0.001$). fMRI inter-group analysis showed no significant different in voxel comparison between groups for observation and surgical exercise session at T0 but at T1 we found a significant difference in surgical exercise session.

CONCLUSIONS

In all groups an increased sensorimotor tasks activation was noted after surgical training compared to T0, supporting the role of training on the reinforcement of single abilities. The different activation of the neural network areas between three groups may be a crucial factor in the learning curve of the miniminvasive surgical approaches.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
MULTIDISCIPLINARY ROBOTIC SURGERY PROGRAM IN A UNIVERSITY CHILDREN
HOSPITAL: PRELIMINARY RESULTS AFTER THE FIRST TWENTY MONTHS**

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N.Khen, E.Druot, S.Querciagrossa, Y.Aigrain, H. Lottmann, S.Sarnacki
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AIM OF THE STUDY

To report the preliminary results of the first multidisciplinary robotic experience with the Da Vinci Xi surgical system dedicated to a tertiary paediatric surgical centre.

METHODS

Six attending surgeons and three fellows performed the procedures between October 2016 and June 2018. Gender, age, diagnosis, surgical indication, operative time, conversion, bleeding, post-operative complications, hospital stay and short-term outcome were assessed prospectively.

MAIN RESULTS

During 20 months, 140 procedures covering thirty-four different indications were completed using the robot. The most common procedure (42%) was urology (n=60) with 33 retroperitoneal pyeloplasties, gastrointestinal (GI) surgery (n=24), surgical oncology (n=22), hepatobiliary (n=21), thoracic (n=5), ENT (n=6) and trans oral robotic surgery (TORS) (n=2). Age ranged from 2 days to 18 years, with an average age of 9 years. Eleven types of procedure had never been performed minimally invasively before by the authors. Four cases were converted to open surgery (Wilms with renal vein injury, renal cell carcinoma, horseshoe kidney with PUJ obstruction, oesophageal atresia) and one case to laparoscopy (partial splenectomy). No conversions or complications occurred as a result of injuries from the robotic instruments. Interestingly, a robotic equipment failure occurred twice with no need for conversion.

CONCLUSIONS

This preliminary experience showed encouraging results and demonstrated that adequate set-up of robotic surgical team (surgeon, anaesthesiologist and nurse) allowed a safe launching of a paediatric robotic program. We aim at spreading the use of the Da Vinci Xi in other paediatric specialties such as cardiac surgery and microsurgery.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
A SYSTEMATIC REVIEW OF THE LEARNING CURVE IN ROBOTIC SURGERY:
RANGE AND HETEROGENEITY**

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AIM OF THE STUDY:

To determine the range and heterogeneity of parameters reported in studies assessing the LC in robotic surgery.

METHODS:

A systematic search was performed of Pubmed search and was conducted in July 2017. All studies reporting a learning curve in robotic surgery were included. 268 (25 %) of the identified studies met the inclusion criteria.

MAIN RESULTS:

102 (38%) studies did not define nor explicitly state the LC with appropriate evidence; 166 studies were considered for quantitative analysis. 46 different parameters of 6 different outcome domains were reported with a median of 2 parameters (1-8) and 1 domain (1-5) per study. Overall, 3 domains were only technical and 3 domains were both technical and clinical/patient-centered outcomes. The 2 most commonly reported domains were operative time (146 studies [88%]) and intra-operative outcomes (31 studies [19%]). Postoperative outcomes (16 studies [9%]) and surgical success (11 studies [7%]) were reported infrequently. Purely technical outcomes were the most frequently used to assess LC (131 studies [79%]).

CONCLUSIONS:

The outcomes reported in studies assessing LC in robotic surgery are extremely heterogeneous and are most often technical indicators of surgical performance rather than clinical and patient-centered outcomes. There is no single outcome that best represents the surgical success. A standardized multioutcome approach to assessing LC is recommended. Efforts to ensure consistent reporting of the LC and the parameters measuring surgical proficiency will improve the value of LC studies to guide the surgeon's decision-making process, so that they can investigate their own performance.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
OCTOPORT (SINGLE MULTIPOINT DEVICE) USE IN PEDIATRIC AGE: FIRST
EXPERIENCE IN ITALY**

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AIM OF THE STUDY

To report our experience with OCTOPORT in pediatric patients

METHODS

Between September 2017 and March 2018, 24 consecutive were treated using a new single multiport (OCTOPORT) surgical support; this (4 ports) support is usually used in adulthood. All clinical and technical data were reported. Data were compared with previous results using standard laparoscopy (40 cases) or Trans umbilical laparoscopic assisted appendectomy (TULAA- 20 cases) in the previous years.

MAIN RESULTS

All patients were treated for acute appendicitis. Comparing data with other procedures there were no differences between standard laparoscopy or T.U.L.A.A techniques in term of complications but there was a difference in term of surgical skills especially for trainers between T.U.L.A.A. and OCTOPORT. The advantage to use this support was to have the advantage to work with many instruments with the mini-invasivity of single port. The advantage to have an extended umbilical port till 3,5 cm, is useful also for complicated appendicitis that usually need more ports or conversion to open surgery. Regarding post operative umbilical infection there were no cases into the OCTOPORT group while 4 cases in the laparoscopic group and 3 cases in the TULAA group. OCTOPORT group had better cosmetic results comparing all groups, especially for peritonitis subgroups.

CONCLUSION

this is the first series in pediatric age with OCTOPORT, a new miniinvasive multiport device; our experience demonstrated that single-multiport surgery is useful to achieve the mini-invasivity of single ports with the manageability of standard laparoscopy.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
FIRST EXPERIENCE WITH FLUORESCEIN IN PEDIATRIC LAPAROSCOPY**

Beatriz Fernández Bautista, David Peláez, Javier Ordoñez, Manuel De la Torre, Ana Trapero, Alberto Parente, María Fanjul, Juan Carlos De Agustín
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AIM OF THE STUDY:

The use of intraoperative fluorescence images with indocyanine green (ICG) has recently been described as an aid in decision making during surgical procedures in adults. We present our first experiences in different laparoscopic procedures performed in children using ICG fluorescence images.

PATIENTS AND METHODS:

We have used this image resource in varicocele ligation, nephrectomy, cholecystectomy and in a case of aorto-cava fistula, all of them performed laparoscopically. The vascular anatomy and the bile duct were identified provided by a high definition camera equipped with a visible and infrared light source.

RESULTS:

After injection of ICG before or during laparoscopic procedures, blood flow in the spermatic vessels, renal vascularization and excretion through the bile duct were observed respectively. The precise location of the aorto-cava fistula was observed by thoracoscopy in the last case described.

The fluorescein-assisted images provided allowed the exhaustive ligation of the spermatic vessels and the safe cholecystectomy without lesions of the bile duct. During nephrectomy, fluorescence facilitated dissection without vascular leakage. The location of the aortocaval fistula permitted its ligation without complications.

There were no adverse effects related to ICG injection.

CONCLUSION:

The ICG imaging system seems to be simple and safe. The ability to visualize vascular structures or the bile duct allows to approach laparoscopic techniques of different complexity with greater safety for the patient. We have verified its use in children. Larger and more specific studies are needed to confirm their role, broaden their indications and address their advantages and disadvantages.

**SESSIONI IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
ROBOT-ASSISTED EXTRAVESICAL URETERAL REIMPLANTATION (REVUR)
FOR UNILATERAL VESICO-URETERAL REFLUX IN CHILDREN: RESULTS OF A
MULTICENTRIC INTERNATIONAL SURVEY**

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BACKGROUND:

Robot-assisted extravesical ureteral reimplantation (REVUR) is becoming more adopted as an alternative to open reimplantation. We report the results of a multicentric international experience with REVUR in patients with unilateral vesico-ureteral reflux (VUR) in order to evaluate the long-term outcomes and the pitfalls of this innovative technique.

METHODS:

We retrospectively reviewed the records of 55 patients who underwent REVUR in 4 international centers of Pediatric Robotic Surgery for treatment of primary and previously untreated unilateral VUR. There were 35 girls, 20 boys. The preoperative grade of reflux was grade III in 7 patients, grade IV in 26 patients and grade V in 22 patients. Twenty-six patients presented a loss of renal function preoperatively and 10 of them presented a duplex system.

RESULTS:

Average robot docking time was 16.2 minutes. Average operative time was 92.2 minutes. We reported no conversions neither intra-operative complications. We recorded 3 postoperative complications: 1 small urinoma detected with US and resolved spontaneously and 2 persistent reflux, only one requiring redo-surgery using endoscopic injection

CONCLUSION:

REVUR is a safe and effective option for patients with primary VUR requiring surgery. Using 3D robotic technology, the technique is easy and fast to perform thanks to the 6° of freedom of robotic arms. The learning curve is short. It is mandatory at the beginning of the experience to have a surgeon expert in robotic surgery as proctor on the 2nd console. The high cost and the diameter of instruments remain the main problems of robotic surgery in pediatric urology.

SESSION IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
UROLOGY ROBOTIC JOURNEY: PRELIMINARY RESULTS FROM ROBOTIC
PYELOPLASTIES

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Background:

Robotic pyeloplasty is gaining popularity for its advantages of shorter learning curve, optimized 3D view and instruments movements in comparison to the laparoscopic technique.

Aim:

To evaluate the learning curve and outcome of initial robotic pyeloplasties performed at Chelsea and Westminster Children's Hospital, London.

MATERIALS AND METHODS:

Prospective study (2014-2017) including demographics, preoperative imaging, operative times (total operative, docking, total robotic, dissection and pyeloplasty times), length of stay and surgical success (defined as anteroposterior pelvic diameter reduction and MAG3 renal function stability or improvement).

RESULTS:

Seventeen children (mean age 9.2 years) with pelvico-ureteric obstruction (11 antenatally diagnosed; 6 with late presentation) managed with robotic pyeloplasty were included. Mean hospital stay was 2.7 days and mean postoperative follow-up 27.6 months. There were no major complications, while surgical success was 100%.

Total operative time significantly reduced over time ($p=0.03$); the first six cases had significantly longer operative times than the following 10 cases ($p<0.001$). Although docking time did not change significantly ($p=0.37$), robotic time significantly reduced ($p=0.003$).

Improvement in robotic time resulted from significant reduction in pyeloplasty time ($p=0.03$) rather than initial dissection time, which remained relatively unchanged ($p=0.16$). It is estimated that total operative time will reach that of open pyeloplasty at 19 cases ($R^2=0.46$, $p=0.008$), and robotic time will reach that of an expert at 24 cases ($R^2=0.43$, $p<0.0001$).

CONCLUSIONS:

Robotic pyeloplasty is feasible, efficient and safe. It is associated with a short learning curve. Data from randomized controlled studies are required to decide which approach should be preferred.

SESSION IX, INNOVATION / NEW TECHNOLOGIES AND ROBOTICS
THE ROLE OF SELECTIVE CHOLEDOCHOSCOPY USING A URETEROSCOPE DURING
ROBOTIC SURGERY FOR CHOLEDOCHAL MALFORMATION

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INTRODUCTION:

Choledochal malformations may represent a challenge due to the variable anatomy. They can be associated with the presence of intra-ductal calculi which should be cleared to avoid post-operative complications.

TECHNIQUE:

This technique consists in using a ureteroscope to perform intra-operative therapeutic choledochoscopy during robotic assisted surgery. Once the excision of choledochal cyst is completed, a fine ureteroscope is advanced into the peritoneal cavity using one of the previously inserted robotic ports. The endoscope is then introduced into the common channel under direct vision in order to clear any intra-ductal calculi or debris which could cause post-operative biliary obstruction and therefore cholangitis. Intra-ductal clearance is achieved by performing saline irrigation. Following choledochal cyst exaction and intra-ductal irrigation, the hepaticojejunostomy is performed.

RESULTS:

This technique has been used in two patients to date at our institution. They were both 2 years of age: one boy who presented with jaundice and a girl who had jaundice associated with fever. Both had abnormal liver function tests and abdominal USS/MRCP that demonstrated a choledochal malformation with intra-ductal calculi (boy – Komi IB and girl – Komi IIIC3). They underwent robotic assisted excision of the choledochal malformation, choledochoscopy with irrigation of the common channel and hepaticojejunostomy. They both had an uneventful post-operative period and were discharged home. At first post-operative follow-up, they both had completely cleared their jaundice were symptom free.

CONCLUSION:

Robotic assisted surgery is a feasible approach to complex choledochal malformations and the use of intra-operative choledochoscopy is advantageous in those cases with intra-ductal calculi.

SESSION X, LIVER – PANCREAS - SPLEEN
PANCREATIC PSEUDOCYST AFTER GALLSTONE PANCREATITIS: LAPAROSCOPIC
TRANSGASTRIC CYSTOGASTROSTOMY AND CHOLECYSTECTOMY

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Introduction:

Pancreatic pseudocysts after gallstone pancreatitis are rarely reported in children. The initial treatment is conservative but they may require drainage or surgery if cyst or symptoms or persist after several weeks. In the last years, minimal invasive techniques are developed as a safe and effective solution.

MATERIAL AND METHODS:

We present a 12-year-old girl with a history of relapsing-remitting multiple sclerosis and repeated abdominal pain. She consulted the emergency department due to one week of abdominal pain and vomiting. Elevated levels of amylase and lipase were found in laboratory tests. Abdominal ultrasound and magnetic resonance showed multiple gallbladder stones and a 6.6 x 5.8 x 7.1 cm pseudocyst in the body and tail of pancreas. The same radiological findings were observed after 4 weeks, then laparoscopic surgery was indicated.

RESULTS:

The patient underwent 3D laparoscopic transgastric cystogastrostomy and cholecystectomy. The anterior gastric wall was opened with staplers. A percutaneous transgastric needle was used to localize the pseudocyst. Then, posterior gastric and cyst walls were opened and the contents were suctioned. Cystogastrostomy and anterior gastrostomy closure were performed using linear endostaplers. The patient started feeding without complications after one week of surgery.

CONCLUSIONS:

Laparoscopic transgastric cystogastrostomy with endostaplers for pancreatic pseudocysts is safe and effective. This option should be considered when pancreatic pseudocyst is associated with gallstone pancreatitis.

SESSION X, LIVER – PANCREAS - SPLEEN
“RENDEZ-VOUS” PROCEDURE (LAPAROSCOPIC CHOLECYSTECTOMY AND
INTRAOPERATIVE ENDOSCOPIC SPHINCTEROTOMY) IN CHILDREN WITH
CHOLECYSTO-CHOLEDOCHOLITHIASIS

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BACKGROUND

The “rendez-vous procedure” (RV) (laparoscopic cholecystectomy + simultaneous endoscopic retrograde cholangiopancreatography (ERCP) and sphincterotomy) for the management of symptomatic choledocholithiasis is well described in adults but there are few data about its indication in the paediatric population.

AIM

To report our experience with RV in two children with symptomatic cholecysto-choledocholithiasis.

METHODS

Preoperative, perioperative and postoperative data of two children who underwent RV were retrospectively reviewed. Two females (10 and 11 years old respectively) had an acute onset with vomit, abdominal pain, increased cholestasis markers and pancreatitis in one of them. US and MRCP showed dilated gallbladder and biliary tree, containing gallstones, without Wirsung dilation.

RESULTS

During laparoscopy, a 5Fr catheter was inserted through the cystic duct and a guide-wire advanced into the duodenum and pulled out from patient's mouth through the endoscope. Sphincterotome was introduced along the guide-wire allowing direct cannulation of the papilla and sphincterotomy. Endoscopic cholangiography confirmed bile duct's clearance and laparoscopic cholecystectomy was completed. There were no intra- or post-operative complications. Mean surgery time was 147.5 minutes, fasting was maintained for 24 hours, the painkillers for 6.5 days (average) and the length of stay was 5.5 days (average). One patient underwent 14 days antimicrobial therapy for previous pancreatitis, the other only 5 days.

CONCLUSION

Although there are no clear data in the literature, in selected children with symptomatic choledocholithiasis RV is a safe procedure in expert hands. RV has a short hospital stay with a low incidence of post-ERCP pancreatitis.

SESSION X, LIVER – PANCREAS - SPLEEN
GALLBLADDER AGENESIS AND CHOLEDOCHAL CYST IN CHILDREN:
A RARE ASSOCIATION

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INTRODUCTION:

Gallbladder agenesis is an uncommon congenital anomaly associated with other conditions by up to 30 percent of cases. Choledochal cysts are rare dilatations of the biliary system that can compromise extrahepatic bile ducts, intrahepatic ducts or both. Co-existence of gallbladder agenesis and choledochal cyst in adults has been described in less than 10 cases in the literature. To our knowledge, we present the first pediatric patient with both conditions.

MATERIAL AND METHODS:

We presented a 9-year-old girl with repeated abdominal pain. Neither distention nor tenderness was seen on examination and results from laboratory tests were normal. Abdominal ultrasonography and magnetic cholangioresonance showed absence of the gallbladder and cystic duct and dilatation of the left hepatic duct and the extrahepatic bile duct. These findings were suggestive of choledochal cyst type IVa.

RESULTS:

The patient underwent 3D laparoscopic cyst resection and hepaticoduodenostomy. Oral intake was initiated after 4 days of surgery and the patient was discharged after 8 days of surgery. At 6-months follow-up, she is asymptomatic.

CONCLUSIONS:

Co-existence of gallbladder agenesis and choledochal cyst in children is extremely rare. Laparoscopic cyst resection and hepaticoduodenostomy is safe and effective for the treatment of these cysts.

**SESSION X, LIVER – PANCREAS - SPLEEN
ULTRASOUND GUIDED PARTIAL SPLENECTOMY**

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AIM:

To describe our experience in the use of the laparoscopic ultrasound with specialized transducers to define the focal tumor limits and to preserve splenic parenchyma during the minimally invasive splenectomy.

MATERIAL AND METHODS:

Retrospective review of the patients that were diagnosed with splenic tumors in which the laparoscopic ultrasound was used during the minimally invasive partial splenectomy.

The laparoscopy was performed with 4 trocars. A specialized ultrasound transducer was introduced by the 10-mm trocar located on the mid-clavicular left line. The limits of the lesion were delimited by electrocautery.

RESULTS:

From February 2016 to December 2017, 4 procedures were performed on 4 children (3 girls, 1 boy) aged 10 years to 15 (mean 12.7 years). The mean follow up was 14 months (range 6–23 months). The medium size of the lesions was 7.8 cm in transversal diameter. In all 4 patients, the lesion was located intraoperatively. In 3 patients, partial splenectomy was performed with remnant volumes of 24cc, 36cc, 102 cc. In one case, after intraoperative ultrasound evaluation, total splenectomy was performed due to the impossibility of conserving remnant parenchyma. In 2 cases a collection was described in the initial postoperative period that did not need treatment. The diagnoses were 2 epithelial cysts and 2 hamartomas. No long-term complications occurred, and the scintigraphy performed demonstrates functioning parenchyma.

CONCLUSION:

The laparoscopic ultrasound is a useful tool for the delimitation of tumor limits, allowing the conservation of splenic parenchyma in case of benignity.