ABSTRACT e-BOOK

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The **10TH ESPES e-CONGRESS, Strasbourg, France, 18/09/2020** has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) with **6** European CME credits (ECMEC®s). Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.

PRESIDENT LETTER

Dear Friends and Colleagues,
Dear Members of ESPES,
Dear Attendees from over Europe and farther,

It is a particular and great honor for me to serve as the President of the 2020 ESPES annual meeting and on behalf of the Coordinating Committee, led by Philippe Montupet, and myself I would like to thank all of you for attending this very special Edition of our yearly congress.
Indeed it's the 10Th ESPES e-congress and the first digital!

This year we had normally to meet in Vienna for an incredible event: a joint IPEG/ESPES meeting combined with the EUPSA annual congress. Don't worry, the important part of the work is done and we will find the opportunity to meet all together in the near future.

ESPES being actually one of the leading Societies in the field of Minimal Invasive Surgery (MIS) for Children and, providing Education in that field at controlled cost being in our DNA, we had to find something out.
What could we imagine better than the organization of a technically UP TO DATE MIS congress for free!

All this could not be possible without the help of the **IRCAD** that gave us the opportunity to use their web platform and technical skills.
Many thanks to them.

But I would also thank the **ESPES Executive Board Members and the ESPES Committees members** for their commitment during the year in order to give life to all our projects. It's a hard job and nothing can happen in societies like ours without them. (And it's also for free!!)

Many thanks to Isabela Draghici who served so well our Society as Honorary Secretary and , of course, to our Executive Assistant, Gaïa Tamaro, for her constant and always smiling support. Isabela Draghici will give her load to Maud Lindeboom from the Netherlands. Happy to have her on board from September!

At the end of this congress I will pass the keys of the Society to our New President. I'm sure he will keep the roots of the ESPES and steer the Society towards the future.

Welcome in Strasbourg, one of the hearts of Europe
Stay safely home but participate fully

Henri Steyaert
ESPES President

E-CONGRESS COORDINATOR LETTER

Year after year, since 2010, the European Society of Paediatric Surgeons registered more and more skill surgeons to reach the venue of its annual congress. This 2020 meeting is very exceptionnal, not only because it had to concentrate our usual three days in only one, that is to say a best off of accepted presentations, but also because it must replace for us the joint IPEG-ESPES congress. The latter needed three years of preparation, and hard work. The ESPES was initially very sad because we also had initiate this project, since its beginning. Therefore, we are so proud actually to propose to you an exciting program, which contains all chapters of a classic congress, moreover open to all pediatric surgeons over the world. My personal thanks go to the IRCAD educational team and to Jacques Marescaux. As for last years, this educational program is accredited by the UEMS. It gives 8 points of EACCME to any attendees. Nothing could have happened without the precious help of Annie-Claude Plisson, my assistant, who went throughout a lot of detailed requests.

Constant innovation is a main feature of the ESPES indeed. Since four years, we organized yearly in March an online masterclass from Strasbourg, IRCAD. Except this year, because of the pandemic. In spite of it, we have converted the broken congress of June in a new and unic event, totally free of charge, open worldwide, with live discussions by chat. We have selected 20 presentations, among the best accepted for Vienna, however excluding the authors who were active members of IPEG, by courtesy for the education committee of our IPEG friends. In addition to, a general assembly will be held online at the end of the day. The latter will mainly consist in announces and will draw the way for the future of our society for 2021. Henri Steyaert, Isabela Draghici and Mario Mendoza will be seating in Strasbourg IRCAD, the rest of the EB connected.

Do stay focus on our young and energic society, either as an active member or going to become so. As being myself the coordinator of this event, my main goal has been to maintain a high quality and easy accessibility as well. Costs for the ESPES were restricted but the working team, particularly Naziha Khen Dunlop and Alessio Pini Prato were happy to provide the best of their devotion. Lastly, I'd like to tell you all my best acknowledgements for your kind participation.

Philippe Montupet
ESPES e-congress coordinator,
French Academy of Surgery member.

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Abstract E-Book Designed and edited by

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CONGRESS PROGRAMME

08.30 – 09.00 Opening Ceremony
H. Steyaert – I. Draghici – P. Montupet

09.00 – 10.00 **Session 1**
Gastrointestinal, Colorectal, Hepatobiliary
Chairman: ***A. Pini Prato***

10.00 – 11.00 **Session 2**
Thorax
Chairman: ***N. Khen Dunlop***

11.00 – 11.30 **EUPSA Guest Lecture**

Chairman: ***C. Esposito***

Speaker: ***M. Metzelder***

Management of Pediatric CPAM - Current Aspects !

11.30 – 12.00 **Presidential Address**

H. Steyaert

"Artificial Intelligence vs Human Intelligence"

13.00 – 14.00 **ROUND TABLE**

Prevention of contaminated aerosols from CO2 leakage in MIS

Chairman: ***H. Steyaert***

Speakers

J. De Agustin (Prevention of aerosols formation in minimal invasive surgery)

F. Chiarenza (Filters and other adaptations on standard insufflation systems in case of COVID patients)

L. Joyeux (Safety of humidified and heated CO2 insufflation in the Covid era)

T. Blanc (Interest of a new insufflation device (Airseal*) in Pediatric laparoscopy and its eventual weakness of strength for Covid Patients)

14.00 – 15.00 **Session 3**

Urology

Chairman: ***M.G. Scuderi***

15.00 – 16.00 **SESSION 4**

Research – Miscellaneous

Chairman: ***C. Giné***

16.00 – 16.30 **IPEG Guest Lecture**

Chairman: ***M. Mendoza - Sagaon***

Speaker: ***M. Oomen***

Hypertrophic Pyloric Stenosis:
Slicing the Olive - Stay Focused

16.30 – 17.30 **ESPES GENERAL ASSEMBLY**

SESSION 1
GASTROINTESTINAL, COLORECTAL, HEPATOBILIARY

LAPAROSCOPIC PYLOROMYOTOMY AS AN INTRODUCTION TO MINIMALLY INVASIVE SURGERY OF THE NEONATE/INFANT

Catarina Barroso[1,2,3], Inês Braga[1,2,3], Ana Raquel Silva[1], Ruben Lamas-Pinheiro[1,2,3], Andreia Felizes[1], Mónica Recamán[1], José Luís Carvalho[1], Jorge Correia-Pinto[1,2,3]
[1] Department of Pediatric Surgery, Hospital de Braga, Braga, Portugal; [2] Life and Health Sciences Research Institute (ICVS), School of Medicine, University of Minho, Braga, Portugal; [3] ICVS/3B's – PT; Government Associate Laboratory, Braga/Guimarães, Portugal.

INTRODUCTION
Since it was described in 1991 by Alain et. al, laparoscopic pyloromyotomy is considered a safe straightforward minimally invasive procedure. Often it is the resident's first challenge when introduced to laparoscopy of the neonate/infant. Our aim was to access our surgical results and evaluate the safety of the procedure when performed by residents.

METHODS
From June 2011 to July 2020, 45 infants with the diagnosis of hypertrophic pyloric stenosis were operated by laparoscopy. We retrospectively collected data including age at diagnosis, gender, surgeon category (assistant vs. resident), duration of the procedure, per- and post-operative complications, time to full feeding and length of stay. We compared the surgical results of two groups according to surgeon category.

RESULTS
Forty-five neonates/infants (8 female|37 male; mean age 34 days) were submitted to laparoscopic pyloromyotomy. Median duration of the procedure was 40 min. There was 1 (2.2%) per-operative complication: mucosal perforation, managed by widening the umbilical incision, repair of the defect and a new myotomy. Postoperative complications occurred in 4 (8.9%) infants: 2 (4.4%) incisional hernias, 2 (4.4%) umbilical incision infections and no cases of incomplete pyloromyotomy. Median time to full feeding was 22h and median length of stay was 42h. 33 (73%) procedures were performed by pediatric surgery assistants while 12 (27%) were performed by residents. At the present 60% of all procedures are performed by residents. There were no significant differences between both groups regarding duration of surgery (p=0.2), per- (p=1.0) and post-operative complications (p=0.6), time to full feeding (p=0.4) and length of stay (p=0.5).

CONCLUSION
Laparoscopic pyloromyotomy can be safely performed by the resident under surveillance and support of an assistant and should be part of basic skills training in minimally invasive pediatric surgery.

SESSION 1
GASTROINTESTINAL, COLORECTAL, HEPATOBILIARY

FIRST LAPAROSCOPIC PEDIATRIC NISSEN FUNDOPLICATION USING THE HUMAN XTENSION™ HANDHELD SOFTWARE-DRIVEN PLATFORM

Thomas M. Benkoe[a], MD, Martin L. Metzelder[a], MD, FEAPU
[a]Department of Paediatric Surgery, Medical University of Vienna, Austria

Aim of the study

To present the safety and feasibility of the laparoscopic Human Xtension™ hand held software-driven platform in pediatric surgery.

Video presentation

The Human extension HandX™ System is a new fully articulating 5mm software driven laparoscopic platform. The video shows a pediatric laparoscopic Nissen fundoplication performed in a 12 year old male patient suffering from gastroesophageal reflux disease for three years presenting with histologically confirmed esophagitis with confluent ulcers in the distal esophagus. The most demanding steps concern the creation of the retroesophageal space and the hiatoplasty. The presented device offers the technical benefits of robotic surgery via a handheld platform to overcome the limitations of non-articulating instruments. The key steps are performed using the new platform including controlled stitching of the hiatus and intracorporal slip knot formation.

Conclusion

The presented video highlights the first pediatric laparoscopic fundoplication using the HandX™ System.

SESSION 1
GASTROINTESTINAL, COLORECTAL, HEPATOBILIARY

ROBOTIC ILEOCECAL RESECTION FOR CROHN DISEASE IN A PEDIATRIC SETTING

Luca Pio, MD; Liza Ali, MD; Lucas Carvalho, MD; Chrystelle Madre, MD; Christine Martinez Vinson, MD; Anne-Emmanuelle Colas, MD; Arnaud Bonnard, MD, PhD.
Hôpital Robert-Debré,Paris, France

A robotic ileocecal resection is presented for a 17 years old patient with a Crohn disease with König's syndrome and ileocecal stenosis.

Four trocars were placed on the Pfannenstiel line. Ileocecal junction was dissected along mesenteric axis until duodenal exposure using monopolar scissor and robotic vessel fusion device.

The ileocecal artery was controlled, then a mechanical ileal resection was performed at 10cm of distance from the caecal valve.

Hemi-right colonic dissection was performed along the Toldt fascia and right mesocolic plane was controlled with robotic vessel fusion device.

Right mechanical hemicolectomy was then performed. A side-to-side isoperistaltic anastomosis was performed using mechanical device for the posterior suture and continuous suture for the anterior plane.

The resected bowel was removed using a plastic bag through the midline trocar on the Pfannenstiel line. Console time was 125 minutes. No intraoperative or postoperative complications were observed.

SESSION 1
GASTROINTESTINAL, COLORECTAL, HEPATOBILIARY

LAPAROSCOPIC GASTRIC TRANSPOSITION IN A PATIENT WITH TOTAL SITUS INVERSUS WITH CORROSIVE BURNS (VIDEO PRESENTATION)

Hikmet Zeytun* , Ibrahim Uygun** , Serdest Tegin*** , Suat Cal*** , Selcuk Otcu***
*Gaziantep University, Medical Faculty, Department of Pediatric Surgery, Gaziantep, TURKEY
**Kutahya Health Sciences University, Medical Faculty, Department of Pediatric Surgery, Kutahya, TURKEY
***Dicle University, Medical Faculty, Department of Pediatric Surgery, Diyarbakir, TURKEY

A nine-years-old male patient was brought to our hospital because of corrosive esophageal stricture.

The patient had persistent and long segment esophageal stricture and balloon dilatation was performed 18 times. He had with total situs inversus. His family accepted esophageal replacement.

Laparoscopic gastric transposition (gastric pull-up) was performed successfully.

The patient has no problem during follow-up and can swallow all food and resume normal life.

The aim of this video presentation is to demonstrate the applicability of gastric transposition with laparoscopic minimally invasive surgical technique in total situs inversus cases by showing the surgical technique details in this case.

SESSION 1
GASTROINTESTINAL, COLORECTAL, HEPATOBILIARY

LAPAROSCOPIC RESECTION OF CHOLEDOCHAL MALFORMATION: TECHNICAL DETAILS, CONTROVERSIES AND LONG TERM OUTCOME

JF Kuebler, M Uecker, N Schukfeh, O Madadi-Sanjani, C Petersen, BM Ure
Department of pediatric surgery, Hannover Medical School, Hannover, Germany

BACKGROUND

In Europe the incidence of choledochal malformation (CM) is low and there is sparse data available. The role minimally invasive techniques, the optimal time of operation and the risk of delayed carcinogenesis are current controversies in the treatment of this disease.

METHODS

We retrospectively analyzed our cohort of more than one hundred patients undergoing resection of CM for operative details, short and long term outcome and histological exams.

RESULTS

Our cohort included over one hundred patients undergoing hepaticojejunostomy, most of them in early childhood, over a period of more than 30 years. Over time, open surgery was more and more replaced by laparoscopy. There were few complications but long term complications included cholangitis, stones and obstruction with one case ultimately leading to liver failure. Complication rates were initially similar between open and laparoscopic surgery, but there was a learning curve with a decrease in complications and operative time in laparoscopy. Histology showed various degrees of inflammation, but no early marker of dysplasia and in the long term follow-up no patient developed cholangiocarcinoma.

DISCUSSION

Surgery is usually curative for patients witch choledochal malformations, but complicated cases can cause long term morbidity. Laparoscopy appears to be an optimal tool in treatment of this disease,but is more effective after achieving the learning curve. Our experience supports the notion, that early operation is important to avoid delayed malignancies.

SESSION 2
THORAX

SAME-DAY DISCHARGE AFTER THORACOSCOPY IN CHILDREN

Louise Montalva
Robert Debré University Hospital, Paris, France

Aim of the study:
By implementing enhanced recovery after surgery strategies to pediatric thoracoscopy, we have progressively transitioned towards day-case surgery. The aim of this study was to report the outcomes of children undergoing thoracoscopy as outpatients.

Methods:
We retrospectively reviewed medical charts of all children that underwent thoracoscopy as an outpatients between October 2015 and December 2019 in our center. Presurgical criteria for outpatient surgery included: post-conceptional age >60 weeks; absence of active infection; French-speaking parents extensively informed about the surgery, post-operative management, and follow-up. Children were admitted in the outpatient surgery department on the day of the surgery. Surgery was performed in a lateral position, with insertion of 3 or 4 instruments (a 5mm camera and 2 or 3 3-5mm operative trocars). At the end of the surgery, no drainage was used, and post-operative analgesia was managed with a multimodal analgesia protocol, including a single injection of local anesthestic associated to dexamethasone or clonidine with a paravertebral catheter. Criteria for same-day hospital discharge were a stable hemodynamic state, pain control acquired with oral drugs (Paracetamol and ibuprofen), and the absence of pneumothorax or effusion on post-operative chest x-ray. Parents received a call from the outpatient surgery department nurse the day after surgery. Primary outcomes included same-day discharge, peroperative and postoperative complications, readmission within 30 days. Statistical analysis was descriptive, with median and interquartile ranges.

Main results:
Overall, 21 children were eligible for thoracoscopy as outpatients, at a median age of 6.3 months (4.6-8.6 months). Indications for thoracoscopy were extra-lobar sequestrations (n=11, 52%), intra-lobar sequestrations (n=5, 24%), bronchogenic cysts (n=4, 19%), and bronchogenic cyst associated with an intra-lobar sequestration (n=1, 5%). All lesions were diagnosed prenatally. One child had previously undergone thoracoscopy for bronchogenic cyst resection. Thoracoscopy was performed on the left side in 67% of the cases. No peroperative complications occurred. Same-day discharge was performed in 95% of the cases (n=20). One child who underwent an intra-lobar sequestration resection was not discharged on the same day and required 5 days of hospitalization for pain management. This lesion was inflammatory and required a complementary resection by thoracoscopic lobectomy 2 months later. No post-

operative complications occurred in our cohort and none of the children were readmitted within 30 days.

Conclusions:
Same-day discharge after thoracoscopy for congenital pulmonary airway malformation resection is feasible and safe for selected patients.

SESSION 2
THORAX

THORACOSCOPIC PULMONARY LOBECTOMY IN CHILDREN WITH CONGENITAL CYSTIC LUNG MALFORMATIONS: RESULTS OF A EUROPEAN MULTICENTRIC STUDY

Ciro Esposito[1], Naziha Khen-Dunlop[2], Holger Till[3], Ernesto Leva[4], Andrea Zanini[4], Arnaud Bonnard[5], Louise Montalva[5], Fulvia Del Conte[1], Mariapina Cerulo[1], Maria Escolino[1]

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[5] Pediatric Surgery Unit, Robert Debrè Hospital, Paris, France

Purpose: The aim of this study was to report a European multicentric experience with thoracoscopic management of children with congenital cystic lung malformations.
Methods: The medical records of 102 patients (49 girls and 53 boys) with an average age at surgery of 1 year (range 0.5-1.3), who underwent thoracoscopic lobectomy in 5 European Pediatric Surgery units, were retrospectively collected. Indications for surgery included congenital cystic adenomatoid malformation (CCAM) (n=47), intra- and extra-lobar pulmonary sequestration (n=34), hybrid lesion (CCAM/intra-lobar sequestration) (n=2), severe bronchiectasis (n=9), congenital lobar emphysema (n=8), and others (n=2). The prenatal diagnosis was obtained in 79 patients (77.4%). The condition was asymptomatic in 77 cases (75.5%) whereas symptoms such as recurrent pneumonia and/or respiratory distress were present in 25 patients (24.5%). Pathology was right-sided in 59 cases and left-sided in 43 cases.

Results: All procedures were completed successfully using 3 ports (3mm and 5mm) and included 18 upper lobe resections, 20 middle lobe resections and 64 lower lobe resections. An incomplete fissure was found in 35 cases (34.3%). Pulmonary vessels and parenchyma division and bronchial sealing were performed using 3-mm sealing device and 5-mm stapler in the last 48 patients. The average operative time was 92.2 minutes (range 74-141). The average hospital stay was 3.7 days (range 2-6.2). The average follow-up length was 21.6 months (range 15-24). There were 3 postoperative complications (2.9%) including air leakage requiring pleural drainage (n=1) [Clavien IIIb] and respiratory infection (n=2) [Clavien II]. A re-operation was required to perform complementary resection in 1 patient with pleuro-pulmonary blastoma (0.9%). After surgery, all symptomatic patients reported complete resolution of their symptoms.

Conclusions: Our results confirmed that thoracoscopic lobectomy is a safe and effective procedure with excellent cosmetic outcome if performed by expert hands. Considering the technical challenge of this procedure related to anatomical anomalies such as incomplete fissure and low number case, we believe that these patients should be treated in referral

centers in each country in order to reduce the incidence of complications. The use of miniaturized instruments as 3-mm vessel sealer and 5-mm stapler allowed to perform a faster and a safer procedure. Based upon our experience, we strongly recommend surgery in patients with lung malformations in the first year of life or less, in order to reduce the risk of infection and make the procedure technically easier, despite the small patients' size. The experience of surgeons and anesthesiologists team together with the use of miniaturized instruments remain key-factors for the success of the procedure.

SESSION 2
THORAX

NON-IRRADIANT FULL ASSESSMENT AND FOLLOW-UP FOR CHEST MALFORMATIONS IN CHILDREN: A PILOT STUDY

Marc Samir Guillot, Aymeric Rouchaud, Mathilde Casson Masselin, Didier Moriau Jérémy Tricard, François Bertin, Charbel Mounayer, Laurent Fourcade, Quentin Ballouhey
Hopital Dupuytren, Limoges, France

Introduction

Pectus excavatum and pectus carinatum are the most frequent congenital chest wall malformations worldwide. Physical examination is still the first step to detect severe pectus completed by computed tomography (CT) leading to the establishment of the Haller Index and other morphologic parameters. The pediatric surgeon has several therapeutic options and needs the most accurate evaluation possible to define a close and active survey, before orthopedic or surgical treatment is advised. The purpose of this pilot study was to compare standard protocol using chest CT for severity assessment to a modern non-irradiant protocol with three-dimensional optical scanning combined with cardio-thoracic fast MRI.

Materials and Methods

From January 2018 to December 2019, all children treated for pectus excavatum or carinatum were evaluated according to the standard protocol in our institution. Evaluation before and after therapeutic management included chest CT, echocardiogram, echocardiography, spirometry, adding optical scanning (I-pad ® with Structure Sensor®) and MRI. The study was approved by the ethics committee (Reference number 303-2019-69).

Primary outcome was to compare Haller-index between chest CT and MRI. Secondary outcome was evaluation of MRI and optical scanning to assess other parameters like cardiac function, derived Haller Index, correction index, asymmetric index and sternal angle in comparison to CT.

Results

Seven patients were evaluated with a minimal follow-up duration of 12 months. Haller-index and other parameters by chest CT and MRI were similar (2,97 vs 3,08 ; R^2=0.97). We found a good correlation between standard Haller Index and derived Haller Index for optical scanning (R^2=0.88) and between cardio-thoracic MRI and echocardiography concerning cardiac function. Reproducibility was observed for the different measures using optical scanning.

Conclusions

Non-irradiant pectus excavatum and carinatum assessment is now possible in clinical practice and provide relevant morphologic information. Those results sustained changes in our standard pretherapeutic protocol replacing chest CT by fast MRI and adding a systematic optical scanning as a complementary tool to physical examination for each medical counseling. It provided

accurate monitoring during follow-up for guiding the pediatric surgeon to deliver the optimal management.

SESSION 2
THORAX

THORACOSCOPY VS THORACOTOMY IN THE REPAIR OF ESOPHAGEAL ATRESIA WITH DISTAL TRACHEO-ESOPHAGEAL FISTULA

Ahmad Elhattab[a,C], Liza Ali[b], Veronique Rousseau[a], Pauline Clermidi[a], Daphné Michelet[b], Caroline Farnoux[b], Alexandre Lapillonne[d], Kamal ABDEL-ELAH ALY[C], Sabine Sarnacki[a], Arnaud Bonnard[b] And Naziha KHEN-Dunlop[a]
[a]Department of Pediatric Surgery, AP-HP, Hopital Necker-Enfants malades, Paris, France
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[c]Department of Pediatric Surgery, Mansoura University Children's Hospital, Mansoura, Egypt
[d] Neonatal Care Unit, AP-HP, Hopital Necker-Enfants malades, Paris, France

AIM OF THE STUDY

Thoracoscopic repair of esophageal atresia is gaining popularity among pediatric surgeons all over the world but it is a technically demanding procedure. The aim of our study is to evaluate our outcomes in the management of type C esophageal atresia comparing the thoracoscopic and the open (thoracotomy) approaches.

METHODS

This is a retrospective bi-centric study, reviewing patients operated for esophageal atresia with distal tracheo-esophageal fistula (EA/TEF). Only patients who underwent primary anastomosis were included. From 2008 to 2018, 187 patients were included. Comparison was made between the open and the thoracoscopic approaches regarding the patients' demographic data, operative time, postoperative ventilation time, length of hospital stay, postoperative complications, and further follow up.

RESULTS

Among the 187 patients, 47 patients were operated thoracoscopically (TS group) and 140 by the open approach (TT group). Mortality rates during the neonatal period were 4.26% and 4.29% in TS group and TT group respectively (p=0.99).
Mean gestational age was 38±2.4 weeks in TS group and 36.4±3.3 weeks in TT group (p=0.005) with a mean birth weight of 2785±654 grams and 2404.9±651 grams, in TS and TT groups respectively (p=0.003). The rate of associated congenital anomalies was comparable (p=0.99) and also the rate of associated cardiac anomalies (p= 0.85).
The mean operative time was 127.6±35 minutes in TS group and 105.7±23 minutes in TT group (p=0.0005). No peri-operative surgical complications occurred in both groups. The mean post-operative ventilation time and the mean length of hospital stay were significantly shorter in the thoracoscopic group (p=0.004 and p<0.0001 respectively).

The rates of post-operative complications were comparable in both groups. The incidence of anastomotic leak was 8.9% in TS group vs 16.4% in TT group (p=0.33). Anastomotic Stenosis occurred in 33.3% of TS group and in 22.4% of TT group (p=0.17). A median of two sessions of endoscopic dilatation was needed for patients in both groups (p= 0.42). During the follow up period, 13.3% of patients in TS group and 7.5% of patients in TT group required antireflux surgery for significant reflux (p=0.24).

CONCLUSION

Surgical outcome of thoracoscopic approach of EA/TEF is comparable to the open one with no higher complication rate and with the expected benefits of avoiding skeletal deformities and better cosmesis. The additional probable advantages of thoracoscopy are shorter time of postoperative ventilation and shorter hospital stay, however, Randomized Control Trial on large number of cases is needed to support these results, controlling the possible bias regarding prematurity, weight at surgery and associated anomalies.

SESSION 2
THORAX

THYMIC HYPERPLASIA OR THYMOMA: A DOUBT SOLVED AFTER SURGICAL REMOVAL

Sara Fernandes
Centro Hospitalar Universitario So Joao, Porto, Portugal

Thymus experiences multiple physiologic, morphologic and topographic changes with time that interfere with the interpretation of imaging findings and with the diagnosis of pathologic alterations.

An asymptomatic 6-year old girl was referred with the evidence of a paracardiac mass. Computed tomographic scanning revealed a thymic hyperplasia and an expectant attitude was initially adopted. The persistent finding of mediastinal enlargement on ensuing observations lead to further investigation.

A magnetic resonance imaging has shown a paracardiac mass, raising the possibility of a massive thymic hyperplasia, although not excluding the diagnosis of a thymoma. Surgical removal was decided and performed by thoracoscopy. The patient was discharged in the second postoperative day. The histological analysis has revealed a complete exeresis of a B2a thymoma.

Although rare, thymomas may present an uncertain biological behavior and a complementary treatment may be necessary if the surgical removal is incomplete.

SESSION 2
THORAX

THORACOSCOPIC TOTAL EXCISION OF A HIGH RISK STAGE IV THORACOABDOMINAL (T10-L3) NEUROBLASTOMA

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Aim

Total surgical excision of the primary tumor is critical for outcome in the treatment of neuroblastoma. For thoracoabdominal tumors that extend from posterior mediastinum to retroperitoneum, generally wide abdominal or thoracoabdominal incisions are preffered. We aimed to present the first thoracoscopic total excision of a thoracoabdominal neuroblastoma in English literature.

Case

A five-year old boy who was investigated for abdominal pain was refferred due to a lobulated paravertebral 8x3x2cm mass located in the posterior medastinum extending to retroperitoneum (10th thoracal - 3rd lumbar vertebrae). It encased aorta 180 degrees and deplaced inferior vena cava anteriorly without intraspinal extension. The diagnosis was grade IV, high risk, poorly differentiated neuroblastoma with multiple bone and bone marrow metastases. There was minimal response to neoadjuvant chemotherapy. Total excision was achieved via right thoracoscopy. The caudal end of the dissection was confirmed by intraoperative flouroscopy. He was discharged on 4th POD. No residual mass or complications were observed whereas metastases regressed with immunotherapy during the 12 months of follow-up.

Conclusion

Total thoracoscopic excision of thoracoabdominal neurogenic tumors extending to third lumbar vertebrae is possible, safe and efficient in selected patients.

SESSION 3
UROLOGY
SPECIAL COVID-19

PEDIATRIC LAPAROSCOPY DURING THE COVID-19 PANDEMIC: A NARRATIVE REVIEW

Matta Reva, Ghabi Elie
St Joseph university hospital, Beirut, Lebanon

Background

The 2019 Coronavirus Disease (COVID-19) outbreak drastically changed the delivery of medical and surgical care. Laparoscopic surgery and aerosol-generating procedures were regarded with caution based on the theoretical risk of viral particle carriage and transmission to the operating room staff, a phenomenon demonstrated for the Hepatitis B virus, Human Papillomavirus and Human Immunodeficiency Virus. Various surgical societies published recommendations advocating open surgery while others published guidelines for the safe practice of minimally invasive surgery. Little, however, exists in the literature regarding the safe practice of laparoscopy and minimally invasive surgery in pediatric patients. The following is a narrative review of the published experiences, recommendations and guidelines of various children's hospitals and pediatric surgical societies regarding the practice of pediatric laparoscopic surgery.

Materials and Methods

A narrative review was performed according to the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines. Searches were performed using Pubmed/Medline and Google Scholar. Searches were also performed in major medical and surgical journals. Article selection was performed based on article type and relevance to the study objective, which was determined from the title and abstract.

Results

206 articles were identified from the databases, search engines and journals. After duplicates were filtered, 34 articles were identified that satisfied the inclusion criteria and were critically appraised. 14 articles were selected for this review. The overall attitude was in favor of laparoscopic surgery when clinically indicated. Modification of guidelines to reduce operative times, use of electrosurgical devices and staff presence in the operating room were reported in 13 articles. 1 article recommended open surgery due to shorter time in the operating room and simpler equipment and preparation. In the articles advocating laparoscopy, better clinical outcomes was the prime reason to advocate minimally invasive techniques, however, the importance of filtration devices, closed circuits and careful surgical technique to minimize

smoke and aerosol formation was paramount, particularly in the absence of conclusive data regarding the transmissibility of covid-19 particles in surgical smoke and aerosols.

Conclusion: the safe practice of laparoscopic surgery in pediatric patients requires the adoption of new guidelines to ensure optimal patient outcomes while reducing viral transmission risks on the operating room staff. In the absence of conclusive data regarding the risk of viral transmission in surgical aerosols and smoke, and given the existing evidence demonstrating no statistically significant difference between aerosols generated in open and laparoscopic surgery, the use of laparoscopy should be advocated when clinically indicated.

SESSION 3
UROLOGY

ROBOTIC ASSISTED TRANSPERITONEAL LAPAROSCOPIC SYNCHRONOUS BILATERAL ADRENALECTOMY FOR CUSHING SYNDROME IN CHILDREN.

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Autonomous secretion of cortisol from the adrenal glands - or ACTH-independent Cushing syndrome - is a rare but challenging condition in children.

Because of bilateral micronodular or macronodular adrenal disease, surgical strategy is the definitive treatment to correct hypercortisolism and its complications.

Robotic assisted transperitoneal laparoscopic synchronous bilateral adrenalectomy has never been reported in children.

We present our surgical technique in supine position, with four robotic ports along the midline and one assistant port.

Four children underwent robotic assisted synchronous bilateral adrenalectomy. Mean age at surgery was 5 years (7 months - 9,3 years), with a mean weight of 19,1 kg (4,9 -39). Mean operating time was 300 minutes.

No intra-operative complication and no bleeding occurred. Hospital stay was 14 (6-30) days, due to equilibration of hormonal treatment. Robotic SBA is a safe and feasible procedure, even in infants.

SESSION 3
UROLOGY

ROBOTIC SURGERY FOR IATROGENIC URETEROVESICAL STENOSIS

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Aim

The aim of this study was to share the details of robotic ureteroneocystostomy and ureteral narrowing performed for iatrogenic ureterovesical stenosis.

Case

Stage four vesicourethral reflux was detected in a three-year-old boy who was followed for antenatal hydronephrosis and had recurrent urinary tract infection. Because of episodes of urinary tract infection after subureteric injections were performed at the externa center, he was evaluated clinically. Radiological and scintigraphic examination revealed decreased right renal function (11%), severe hydroureteronephrosis and ureterovesical stenosis. The patient underwent robotic ureteroneocystostomy and ureteral narrowing. The injection material was completely cleaned and the ureter was separated. The patient was discharged on the 8th postoperative day and has been followed up for two years. The patient was followed up with no urinary tract infection and renal function was found to be 16%.

Discussion

Ureteral injection is a minimally invasive method commonly used in the treatment of vesicourethral reflux. However, it can cause serious complications. In anatomically difficult and problematic cases, robotic surgery can be performed safely and more easily compared to open surgery.

Keywords

Child, Ureter, Stenosis

SESSION 3
UROLOGY

VAS DEFERENS-SPARING LAPAROSCOPIC REMOVAL OF A LARGE PROSTATIC UTRICLE: PRESENTATION OF TECHNIQUE

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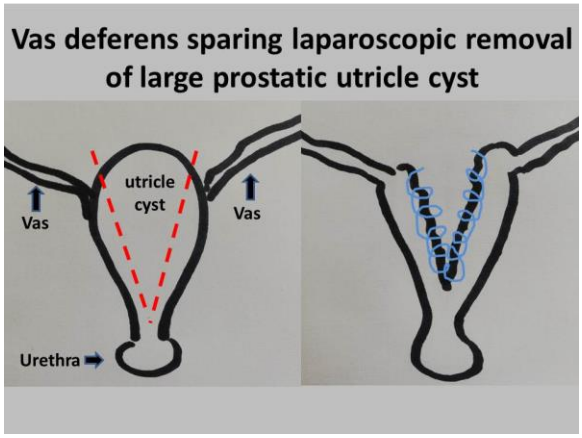
Introduction & Aim:
Removal of symptomatic large prostatic utricle (PU) is a challenge due to the close proximity and the ectopic opening of the vasa deferentia into the utricle. Vasectomy resulting in infertility is often inevitable. We present an overview of the anatomical and operative challenges in cases with this rare anomaly and a modification of technique in children.

Clinical Presentation:
We report a case of a four-year-old boy with a large PU associated with penoscrotal hypospadias who developed recurrent urinary tract infection (UTI), after staged hypospadias repair. The repair was deemed successful by cystoscopy. During laparoscopy, we found both vasa deferentia entering high into the PU fundus and running along its wall.

Operative Technique:
We demonstrate a cystoscopy-assisted laparoscopic technique where a tubular structure, as an extension of the vas deferens, was created from the wall of the utricle on each side (lateral edge), leaving the vas connected to the urethra and the ejaculatory pathway (see figure). The redundant median (central) part of the utricle was excised. Recovery was uneventful and the patient remains asymptomatic to date (one year after surgery), however, a spermatogram will be obtained in the future, as it is still not possible at this age.

Conclusion:
This technique allows for preserving the vas whilst excising the utricle cyst. This achieves the primary goal of preventing UTIs and may preserve sperm delivery.

Figure:



SESSION 3
UROLOGY

ASSESSMENT OF THE EFFECT OF SURGICAL CORRECTION OF VARICOCELE IN CHILDREN ON TESTICULAR CONDITION.

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Relevance

One of the most adverse consequences of having an uncorrected varicocele in a man is infertility. In this regard, early diagnosis and the right treatment tactics are extremely important for maintaining reproductive function.

The purpose and objectives

Determine the criteria for violation of the hematotesticular barrier (GTB) before and after surgical correction in children with varicocele. To assess the state of GTB in children with varicocele in the pre and postoperativee periods based on indicators of inhibin B and claudine 11.

Materials and Methods

The study included 76 boys aged 11 to 17 years with grade III varicocele. The control group consisted of 20 boys aged 11 to 17 years without andrological pathology. The research method was ultrasound of the scrotum organs, determination of the level of Inhibin B and the titer of claudine 11 protein in the blood serum before surgical treatment and in the postoperative period.

Results

In the preoperative period, the decrease in the volume of the left (9.76 ± 0.58 cm3) control - 13.5 ± 1.03 cm3, p <0.001) and the right testicle (10.96 ± 0.614 cm3, control - 13.3 ± 0, 73 cm3, p <0.001). 6 months after surgical correction, an increase in testicular volume was established: on the left 10.53 ± 0.55 cm3 (p <0.001), on the right 11.88 ± 0.59 cm3 (p <0.001). The resistance index (RI) in the intraparenchymal vessels of the left testicle before surgical treatment was lower (0.53 ± 0.009) in the comparison group (p <0.001). 6 months after

surgery, a significant 0.6 ± 0.006 (p <0.001) increase in RI. An increase in Inhibin B levels was observed after 6 months (to 181.19 ± 9.5 pg / ml, after 6 months 205.8 ± 10.7 pg / ml, p <0.001). A positive relationship between the level of inhibin B and the volume of testicles (rs = 0.44, p = 0.018 on the left; rs = 0.34, p-0.02 on the right) in the late postoperative period. No marked changes in the claudine level 11 before and after the operation were observed (0.632 ± 0.002 ng / ml) control (0.608 ± 0.002 ng / ml), 6 months after surgical correction (0.719 ± 0.002 ng / ml).

Conclusion

A comprehensive analysis of the markers of the state of the hematotesticular barrier, in combination with ultrasound of the scrotum organs, showed that surgical correction of varicocele does not negatively affect the testicular condition in the early (after 1 month) and long-term (after 6 months) postoperative period, and also positively affects the further the formation of the reproductive sphere in adolescents.

SESSION 3
UROLOGY

FOR AND AGAINST ROBOTIC TRANSVESICAL SURGERY IN CHILDREN

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In paediatric bladder surgery, the place of laparoscopy remains controversial, and experience in transvesical robotic approach is extremely limited.
The author changed his routine practice of transvesical laparoscopic approach to robotic in 2011 and wish to share the experience.

Methods

Consecutive children who required bladder surgery under my care over a 4-year period were studied. Patients were placed in a supine position -/+ leg support. All procedures were preceded by distension of the bladder with warm saline through a Foley's catheter. A 12 or 8mm optic port was placed as high as possible into the bladder in midline using an open technique and a purse-string suture. 2 robotic working ports 8 or 5mm were placed below and laterally. A suprapubic accessary 3mm port was used if required. The bladder was then drained and insufflated with/without humidified CO2 to 10mmHg. The procedures were performed in a fashion similar to that used for laparoscopic/open surgery. Suprapubic ureteral stents were used as necessary. The urethral catheter was exchanged for a suprapubic cystofix catheter and removed with the stents 5 -7 days postoperative. Follow up included an US at 1 and 4 months, and clinic review at 3 -12 monthly. Further investigations carried out as required. Data collected prospectively

Results

There were 26 patients (F/M 14/12, mean age 7.2y ranging1-14, pre-existing comorbidity 11, previous surgery 3). Procedures included reimplantaion of single, double, or bilateral refluxing or obstructed ureters 29; excision of diverticulum 9; excision of ureterocele or residual distal ureter 6. Nine (34.6%) patients were converted before or after ports placement for 2 or more of the following factors: inadequate muscle relaxation 7, pre-existing morbidity 7, small capacity bladder 5, fogging 4, inexperienced nurse 2, application of a new technique 1. Mean operating

time was 84.11minutes (range 25-158). There were no other intraoperative or hospital complications. Only one patient required one dose of IV morphine. The mean hospital stay was 22.6 hrs (range 18-40). To date no patient has had re-do surgery.

Conclusions

Robotic assisted technique facilitates safe laparoscopy. In my hands, procedures were easier, conversion rates higher and operating time shorter than that of laparoscopy. The success is dependent on the size of bladder and adequate muscle relaxation provided during anaesthesia. Smaller sized instruments would have helped and the importance of a dedicated team cannot be overemphasised.

SESSION 4
RESEARCH – MISCELLANEOUS

PEDIATRIC ENDOSCOPIC PILONIDAL SINUS TREATMENT (PEPSIT) IN CHILDREN WITH PILONIDAL SINUS DISEASE: TIPS AND TRICKS AND TECHNICAL CONSIDERATIONS AFTER THE FIRST 127 CASES

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Purpose

The advent of pediatric endoscopic pilonidal sinus treatment (PEPSiT) has dramatically changed the surgical management of pilonidal sinus disease (PSD) in children and adolescents. This study aimed to standardize the different steps of PEPSiT protocol adopted in our group and to assess the long-term outcome of the technique.

Methods

We retrospectively reviewed the data of 127 pediatric patients, 55 girls and 72 boys with an average age of 16.7 years (range 13-18) with PSD, who underwent PEPSiT in our institutions over a 36-month period. Fifteen out of 127 patients (11.8%) had a recurrent PSD following open repair performed in another center. Additionally, 7/127 (5.5%) presented a pilonidal cyst associated with the fistula. All patients underwent laser epilation before and after surgery. All procedures were performed using a fistuloscope, introduced through the fistula hole, an endoscopic grasping forceps, an endobrush and a monopolar electrode to remove the hairs and to heal the fistula's tract(s). Pre-operative management, surgical technique, recurrence of disease, postoperative pain, hospital stay, analgesic requirement and patient satisfaction were evaluated.

Results

The average length of surgery was 25.5 minutes (range 18-67). There were no intraoperative neither postoperative complications. The average VAS pain score during the first 24 postoperative hours was 1.8 (range 1-4) whereas the average analgesic requirement was 16 hours (range 8-22). All patients were discharged on the first or second postoperative day. They changed dressing daily, by applying a 2% eosin topical solution, a silver sulfadiazine spray, and an oxygen-enriched oil-based gel injected within the fistula's tract. The patients had no physical limitations postoperatively and were enthusiasts with this technique. The average time to return to work and/or school daily activities was 2.1 days (range 1-4). The patients required an average number of 7 laser epilation therapy sessions (range 4-10) to achieve complete hair removal. The overall success rate was 95.3%. The average healing time was 24.2 days (range 19-30). With a maximum follow-up of 36 months, we recorded only 6 recurrences (4.7%), that were successfully re-operated using PEPSiT 2-3 months following the first surgery.

Conclusions

Based upon our experience, we believe that PEPSiT represents the technique of choice for surgical treatment of PSD in pediatric patients. It is mandatory, in order to achieve a success rate > 95%, to standardize a multi-steps management protocol of these patients consisting in pre-operative laser epilation, followed by PEPSiT procedure and postoperative wound management consisting in dressings with eosine, silver sulfadiazine spray and oxygen-enriched oil-based gel and laser epilation after completion of wound healing. PEPSiT is technically easy and fast to perform, with a short learning curve for the surgeons and a short and painless postoperative course without physical limitations for the patients. The recurrence rate in our series was 4.7%, and all these patients were successfully re-treated using the same procedure.

SESSION 4
RESEARCH – MISCELLANEOUS

TRANSFERABILITY OF THE ROBOT ASSISTED AND LAPAROSCOPIC SUTURING LEARNING CURVES IN A CROSSOVER STUDY

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Aim

The high complexity of pediatric minimally invasive surgery (MIS) makes simulation training essential to master suturing skills. The intuitive setup of robot assisted surgery (RAS) could be beneficial in the acquisition of MIS suturing skills. Therefore, this study aimed to assess the learning curve influence of both surgical approaches on each other.

Method

A prospective randomized crossover study was performed by recruiting medical students with basic surgical knowledge (group 1 and 2). Three suturing tasks (intracorporal suturing, tilted plane needle transfer and anastomosis needle transfer) were repeatedly performed on the EoSim MIS augmented reality simulator (Group 1) or the RobotiX RAS virtual reality simulator (Group 2) for up to twenty repetitions. Subsequently, participants performed the learning curve on the other modality. Outcomes were simulator parameters (time, movements and safety) and validated composite scores with cutoff values.

Results

Sixteen participants were included in Group 1 (MIS first, then RAS) and ten in Group 2 (RAS first, then MIS). Between groups the overall mean MIS suturing time (349s versus 287s) and composite scores (94/100 versus 96/100) were significantly better after the RAS tasks (p=0.005 and p=0.002). Similarly, RAS mean suturing time (163s versus 193s) and composite scores (92/100 versus 89/100) were significantly better after the MIS tasks (p=004 and p=0.040). The upside down and anastomosis needle transfer tasks did not result in significantly differences

between groups on the overall scores. Significant difference from the cutoff score for RAS suturing was reached fastest by Group 1 compared to group 2 (repetition nine and twelve). For the MIS learning curve Group 2 showed the fastest difference from the cutoff score compared to Group 1 (repetition four and six).

Conclusion

There was a transferability of skills in both groups, indicating that suturing experience on either minimal invasive surgery (MIS) or robot assisted surgery (RAS) is beneficial in learning the other approach. The most effective transferability was seen after learning the RAS approach before the MIS approach.

SESSION 4
RESEARCH – MISCELLANEOUS

ROBOTIC SURGERY FOR PEDIATRIC NEUROBLASTIC TUMORS: PRELIMINARY RESULTS

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Aim

In adult oncology, the use of robotics has become commonplace; in pediatric surgery, it remains rare. Several studies have reported that minimally invasive surgery might be considered for resecting neuroblastomas with or without image-defined risk factors (IDRFs). We present preliminary results of robotic surgery for pediatric neuroblastic tumors (NT) of the first multidisciplinary robotic experience with the Da Vinci Xi surgical system dedicated to a tertiary paediatric surgical centre.

Methods

Retrospective analysis of prospectively collected data from October 2016 to December 2019. Gender, age, diagnosis, image-defined risk factors (IDRFs), surgical indication, operative time, conversion, bleeding, post-operative complications, hospital stay, and short-term outcome were assessed prospectively.

Results

For 38 months, 274 procedures were completed using the robot, including 56 procedures for paediatric tumors. Sixteen NT were operated in 14 children by 2 attending surgeons. The median

age was 5.7 years (3.9–13.4); the youngest was 10-month-old. The median weight was 16 kg (12–54) with the smallest weighing 8 kg.
Seven were neuroblastoma, 6 ganglioneuroma, 3 ganglioneuroblastoma. Six were located in adrenal regions (38%), 3 in thoracic localization (19%), 2 presacral (12%), 1 in the inter aortico cave space, 1 around the renal pedicle (adrenal healthy), 1 prerenal, 1 arising from the zuckerkandl ganglia and one paravaginal. Six patients had 7 IDRFs at the preoperative imaging workup (43%). IDRFs were contact with the renal pedicle in 5 cases, encasement of the renal pedicle in 1 case, encasement of the vena cava in the last case (the interaortico-cava case which was converted).

No adjacent organ injury, no emergency undocking, no positioning-related injury and no injury due to robotic arms occurred. No bleeding occurred and no patient required blood transfusion. No post-operative complication occurred. None of the patient presented local recurrence or metastatic relapse (for neuroblastoma or ganglioneuroblastoma cases) at a mean follow up of 1.2 years.

Conclusions

Robotic surgery for neuroblastic tumors in children is feasible and safe in highly selected children. In some selected positive IDRFs, such as renal pedicle encasement or aorta/cava vein encasement, robotic surgery seems to be considered as an interesting option for precise dissection. As with any new emerging technique, careful patient selection is crucial, and further evidence must be sought to confirm its limits and indications.

SESSION 4
RESEARCH – MISCELLANEOUS

A NOVEL TRAINING PROGRAM FOR FETOSCOPIC SPINA BIFIDA REPAIR

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Background: Open fetal repair for spina bifida (SB) effectively reduces postnatal morbidity. Fetoscopic SB repair (fSBr) may reduce maternal risks and preterm delivery with similar neonatal neuroprotective effects. However, the technique is challenging and therefore has a longer learning curve (LC). We aimed to design and validate a multi-step training program for fSBr.

Study design: The five-step program was designed for a single fetal center with extensive experience with open SB repair considering transition to minimally invasive approach. Fetal surgeons already experienced in laparoscopic surgery trained until they reached competency, based on LC and/or competency cumulative sum (CUSUM) analyses. Step 1 consisted of the standardized LASTT (Laparoscopic Skills Training and Testing method) and E-BLUS

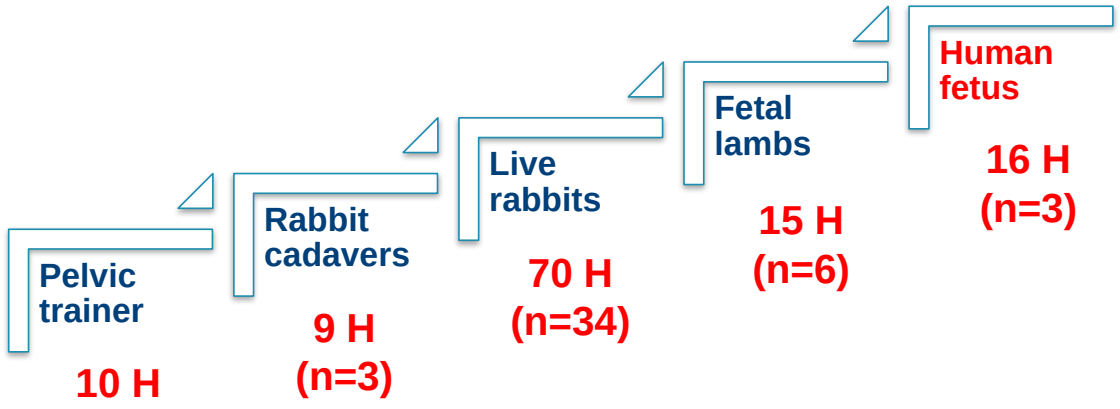
(European-Basic Laparoscopic Urological Skills) exercises on a low-fidelity pelvic endotrainer. In step 2, surgeons trained on rabbit cadavers to standardize a simulated fSBr. In step 3, in vivo standardized simulated fSBr's were performed in rabbits. In this high-fidelity model the pneumoperitoneum mimics the amniotic cavity and the repair is simulated on the stomach. In step 4, the in vivo fetal lamb model for fSBr was used till competency was reached using competency-CUSUM. In step 5 we validated the program prior to clinical implementation. It consisted of surveying fetal surgeons worldwide to assess the rabbit model's face and content validity, applying for institutional review board approval and ultimately performing the first human fSBr series under mentoring from an expert team.

Results: All three experienced laparoscopic surgeons completed the entire curriculum of fetal surgery training. One surgeon was competent after doing 6 cases on the high-fidelity rabbit model. The two other two reached competency after ≥33 procedures on that model and maintained their competency level on the fetal lamb model (n=12). Finally, survey response for the rabbit model was 53% (26/49) and experts validated it for overall realism and usefulness. With on-site mentoring, all three surgeons eventually successfully performed three human fSBr. Overall the training program took 104 hours per surgeon, i.e. 4.5 full days with 10 hours on a pelvic trainer, 9 hours on 3 rabbit cadavers, 70 hours on 34 live rabbits, 15 hours on 6 fetal lambs and 16 hours on 3 human fetuses.

Conclusion: We developed and validated a novel training program for fetoscopic SB repair, trained three surgeons and implemented it clinically. We propose to use this program to determine and shorten the learning curve of fetal surgeons, and to retain operative skills.

Multi-step training program for fetoscopic spina bifida repair

120 Hours = 5 full days



SESSION 4
RESEARCH – MISCELLANEOUS

20 YEARS OF SIPES (SINGLE-INCISION-PEDIATRIC-ENDOSCOPIC-SURGERY) A SURVEY ON OPINION AND EXPERIENCE AMONG IPEG MEMBERS

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Aim of the study
Assessment of current role and trends of SIPES in pediatric surgery among IPEG members two decades after introduction.

Introduction
After initial enthusiasm, it is unclear whether SIPES has entered routine clinical pediatric surgical practice worldwide. To analyze the current role and possible future trends of SIPES, we aimed to investigate perspective and experience of the members of the International Pediatric Endosurgery Group (IPEG) on this topic.

Methods
An online survey was conducted between December 2019 and April 2020 on behalf of the IPEG Research Committee. All IPEG members were contacted by E-mail and asked to complete an anonymous questionnaire that included 39 items on SIPES in pediatric surgery. Questions were sub-grouped into demographic information, practice patterns, indications, drawbacks, and equipment used in SIPES.

Results
184 practicing pediatric surgeons completed the questionnaire from a pool of 890 IPEG members (USA/Canada 47%, South America 18%, Europe 18%, Middle East 5%, Asia 3%, Russia 2%, Africa 1%, and Australia 1%). The majority (76%) of respondents performed SIPES for more than 6 years with the following caseload per month: 1 case (31%), 2–5 cases (30%), 6–10 cases (24%), >10 cases (17%). In contrast, 38 surgeons had never performed SIPES, mainly due to disbelief in any advantage. The four most commonly performed procedures were: appendectomy (95%), Meckel´s diverticulectomy (55%), treatment of ovarian pathologies (43%), and U-stitch gastrostomy (40%). Complex reconstructive SIPES procedures like choledochal cyst resection (4%) and pyeloplasty (2%) were performed rarely. Most surgeons (95%) stated that better cosmesis is the predominant advantage of SIPES procedures.
The majority of respondents (70%) felt that there is no convincing scientific evidence that SIPES offers benefits to multi-port minimally invasive procedures. Most surgeons operated with regular laparoscopic equipment (75%). Commercially available SIPES ports were used by 51%, alternative techniques like home-made ports (e.g. “glove-port”) were frequently applied (24%). The causes for conversion to open surgery (at least once in 22% of respondents) were difficulty of the procedure (72%), bad exposure (47%), bleeding (34%), and adhesions (34%). One third (36%) reported to have abandoned SIPES over time because of SIPES being a more difficult procedure (76%) with lack of triangulation (66%). Six surgeons had experience with robotic SIPES.

Conclusion
Twenty years after introduction of SIPES, this technique has found its place in pediatric endoscopic surgery. 80% of participating IPEG members of this survey apply this technique for

cases of lower complexity such as appendectomy. The main benefit is better cosmesis. One third of surgeons reported to have abandoned SIPES over time for the lack of triangulation making SIPES a more difficult procedure, especially for complex cases. The fact that 72% of respondents state that the scientific evidence for the benefits of SIPES is not convincing suggests that further studies of this technique are needed.