

IPEG's 23rd Annual Congress *for Endosurgery in Children*

Held in Conjunction with

BAPS 61st Annual Meeting

July 22–26, 2014

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EDINBURGH, SCOTLAND



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IPEG's 23rd Annual Congress for Endosurgery in Children

Held in Conjunction with
BAPS 61st Annual Meeting

July 22–26, 2014

EDINBURGH INTERNATIONAL CONFERENCE CENTRE (EICC)
The Exchange, Edinburgh
EH3 8EE, Scotland
T: +44 (0) 131 300 3000
www.eicc.co.uk

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Edinburgh skyline over East Princes Street Garden



DEAR COLLEAGUES,

Welcome to **IPEG's 23rd Annual Congress for Endosurgery in Children!**

IPEG is very pleased that this congress will be held in conjunction with the British Association of Paediatric Surgeons (BAPS) for the first time. Therefore, I would like to particularly welcome the President of BAPS, Rick Turnock and his team and to thank them for their efforts to ensure that this congress will be successful. The congress chairman of IPEG, Philipp Szavay and his co-chairs, Katherine Barsness, Go Miyano and Pablo Laje have set up an excellent program. Panels deal with hot topics and again, experts will teach their tips and tricks in the IPEG workshops.

IPEG is a relatively young association with a strong innovative drive. BAPS has its tradition and unique standing within our paediatric surgical community. These differing perspectives give this inaugural joint congress the opportunity to offer unique joint sessions and discussions on pros and cons of endosurgical techniques in children.

Numerous aspects of endoscopic surgery in children remain to be evaluated and a new generation of surgeons is ready to get involved. IPEG is a unique association with many opportunities for young surgeons. I am happy to invite you all to participate, to get involved with IPEG and to find new friends during this congress.



Finally, don't miss our main event which will be extraordinary fun. Enjoy the traditional Celeigh, an outrageous party and don't forget to bring your dancing shoes.

Welcome to Edinburgh!

Benno Ure, MD, PhD
2014 IPEG President

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Edinburgh Information

Scotland's Inspiring capital city – is one of the most beautiful cities in Europe, where stunning cultural heritage fuses with the best of modern, dynamic World Heritage city.

The city can be warm and pleasant during the summer although being close to the Firth of Forth means there can also be a cool coastal breeze and occasional mists (known locally as 'haar').

From April to September, temperatures are mild and compare favourably with other European cities. Annual rainfall is the same as Frankfurt, New York and less than in Rome.



Edinburgh Castle

AIRPORT/TRAVEL INFORMATION

Edinburgh Airport lies 8 miles (12 km) west of the city centre and is easy to reach thanks to reliable and frequent bus services. A range of taxi services and car hire options using major companies are also available.

By Bus: The Airlink 100 express bus service operates a 24-hour shuttle service between Edinburgh Airport and Waverley Bridge (near Princes Street and the main rail and bus stations), with designated stops en route. The service is frequent – every 10 minutes at peak times – with a journey time of about 25 minutes.

By Taxi: Official airport taxis, pre-booked private hire taxis and city black cabs are all available, each with separate ranks. Many taxis are wheelchair-accessible and the journey time is around 25 minutes (although this may be longer during rush hours).

Car hire and driving: Vehicles can be hired from all major companies at Edinburgh Airport's new car rental facility close to the main terminal building.

Train and Tram: At present, there is no direct rail access between central Edinburgh and the airport. A high-quality, modern and efficient tram network is currently being built for Edinburgh and is scheduled to be running from the airport to the city centre from 2014.

VISA Information for International Attendees

As part of the United Kingdom, Scotland has the same visa requirements. Visitors from the EU, rest of Europe and US, Canada, Australia and New Zealand can visit without a visa. Visitors from all other countries must have a valid visa to visit Scotland and details can be found at www.ukba.homeoffice.gov.uk.

General Information

Why IPEG?

Now is an excellent time to become an IPEG member. Join IPEG now and receive a substantial discount on the meeting registration by being an IPEG member! Your dues also include a subscription to the *Journal of Laparoendoscopic & Advance Surgical Techniques* (a \$900 value is yours for FREE with your paid IPEG membership.)

Who Should Attend?

The 23rd Annual Congress of the International Pediatric Endosurgery Group (IPEG) as elements that have been specifically designed to meet the needs of practicing pediatric surgeons, urologists, and other related specialties, physicians-in-training, GI assistants, and nurses who are interested in minimally invasive surgery in children and adolescents. The IPEG Program Committee recommends that participants design their own attendance schedule based on their own personal educational objectives.

2014 Meeting Objectives

The objectives of the activity are to educate pediatric surgeons and urologists about developing techniques, to discuss the evidence supporting adopting these techniques, to provide a forum for discussions at a scientific level about the management principles regarding minimally invasive surgical techniques and to reveal scientific developments that will affect their patient population.

Specific Objectives include:

1. Presentation of new and developing minimally invasive surgical techniques in a scientific environment.
2. Interaction with experts in the fields of minimally invasive pediatric surgery and urology via panel discussions and informal networking.
3. Debates about controversial issues regarding indications, techniques and outcomes of minimally invasive surgery in infants and children.
4. Encourage and establish international networking in the management and minimally invasive surgical interventions for infants and children.

At the conclusion of the activity, pediatric surgeons and urologists will be able to safely incorporate minimally invasive surgical techniques into their practice by applying the evidence-based medical knowledge and skills learned, recognizing pitfalls and monitoring patient outcomes.

General Information CONTINUED

Best Science Award

The Best Science Award will be a cash prize of US \$1,000 to be presented on Saturday during the Awards Presentation Session. The Program Committee will select the Award recipient. The IPEG Executive Committee is committed to education and feels that this is a very concrete way to express that commitment.

IRCAD Award

As a result of a generous grant provided by Karl Storz Endoscopy, the best resident abstract presenters will be selected by the IPEG Publications Committee to receive the 2014 IRCAD Award. The Award recipients will travel to Strasbourg France to participate in a course in pediatric minimally invasive surgery at the world famous European Institute of Telesurgery. This center at the University of Strasbourg is a state-of-the-art institute for instruction in all aspects of endoscopic surgery that is now providing a series of courses in pediatric surgery.

IPEG Member Benefits

IPEG exists to support excellence in Pediatric Minimal Access Surgery and Endoscopy through education and research; to provide a forum for the exchange of ideas in Pediatric Minimal Access Surgery and Endoscopy; and to encourage and support development of standards of training and practice in Pediatric Minimal Access Surgery and Endoscopy. Benefits of membership include:

- Subscription to the *Journal of Laparoendoscopic & Advance Surgical Techniques* (a \$900 value is yours for FREE with your paid IPEG membership.)
- Significant discounts on registration fees for the Annual Congress for Endosurgery in Children. (Note: registering for the IPEG Scientific Session, as a member, will save you the equivalent of one year's dues)
- Affordable dues for surgeons and surgeons-in-training in any country.
- Opportunities to meet and discuss pediatric minimally invasive surgery with leaders and innovators in the field.

For more information and applications, please go to:

www.ipeg.org/member/memberapplication.

Event Dress Code

Please note that the dress code for the entire conference is business casual. The average temperature is expected to be 19°C.

Meeting Hours

Registration Hours

Tuesday, July 22, 2014

Wednesday, July 23, 2014

Thursday, July 24, 2014

Friday, July 25, 2014

Saturday, July 26, 2014

Strathblane Hall
 12:00 pm – 5:00 pm
 6:30 am – 6:00 pm
 6:30 am – 5:30 pm
 6:30 am – 5:30 pm
 7:00 am – 12:00 pm

Exhibit Dates & Times

Wednesday, July 23, 2014

IPEG/BAPS Welcome Reception

Thursday, July 24, 2014

Top Posters 1-20: Digital Presentation **NON CME**

Friday, July 25, 2014

Top Posters 21-40: Digital Presentation **NON CME**

Cromdale Hall
 5:00 pm – 7:00 pm
 9:30 am – 4:00 pm
 12:00 pm – 1:00 pm
 9:30 am – 4:30 pm
 12:00 pm – 1:00 pm

Speaker Prep Hours

Wednesday, July 23, 2014

Thursday, July 24, 2014

Friday, July 25, 2014

Saturday, July 26, 2014

Soutra
 6:00 am – 6:00 pm
 6:00 am – 5:30 pm
 6:00 am – 5:30 pm
 6:00 am – 12:00 pm

Accreditation

The Activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) and IPEG. SAGES is accredited by the ACCME to provide medical education for Physicians.

The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) designates this live activity for a maximum of **24.25 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Date

Tuesday, July 22, 2014

Thursday, July 24, 2014

Friday, July 25, 2014

Saturday, July 26, 2014

Total Credits

3.75

8.25

9

3.25

2014 Program Chairs

PROGRAM CHAIR: Philipp O. Szavay, MD

CO-CHAIR: Katherine A. Barsness, MD

CO-CHAIR: Pablo Laje, MD

CO-CHAIR: Go Miyano, MD

Philipp O. Szavay, MD

Program Chair

Children's Hospital, Lucerne, Switzerland



Philipp Szavay is currently Professor of Pediatric Surgery and Head of the Department of Pediatric Surgery at the Children's Hospital in Lucerne, Switzerland.

He attended Medical School at the University of Tuebingen, Germany from 1988-1995 and residency and fellowship at the Department of Pediatric Surgery at the Hannover Medical School in Hannover, Germany from 1995-2002. He then became Attending Surgeon at the Department of Pediatric Surgery at the University

Children's Hospital again in Tuebingen, Germany from 2002-2006. From 2006-2013 he was assigned to the Deputy Head of the Department.

Dr. Szavay is particularly interested in minimally invasive pediatric surgery as well as in pediatric urology. He has a strong focus on surgical education especially in the field of minimally invasive techniques and directed numerous national and international courses respectively. He is a member of the Executive Board of the German Society of Pediatric Surgery as well as of several professional societies. Dr. Szavay has published more than 37 manuscripts, 3 book chapters and 2 DVD's on minimally invasive pediatric urology and on thoracoscopy and presented over 120 abstracts.

IPEG 2014 CORPORATE SUPPORTERS

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Karl Storz Endoscopy

2014 Program Chairs CONTINUED



Katherine A. Barsness, MD

Program Co-Chair

Ann & Robert H Lurie Children's Hospital, Chicago, Illinois

Dr. Katherine A. Barsness received her *cum laude* B.S. degree in Biochemistry and her *honors* M.D. degree from the University of Tennessee. Dr. Barsness then went on to complete her internship and residency in general surgery, and a two-year basic science and trauma research program, at the University of Colorado. In 2007, Dr. Barsness completed her pediatric surgery fellowship at the University of Pittsburgh, and then joined the faculty at Northwestern University Feinberg School of Medicine, where she currently holds a joint appointment as an Assistant Professor in the Departments of Surgery and Medical Education. Dr. Barsness has received numerous teaching awards throughout her career, and is well recognized for her work in pediatric surgical education, both in the US and abroad. Dr. Barsness is the Director of Surgical Simulation for Ann and Robert H. Lurie Children's Hospital of Chicago. Dr. Barsness was also recently appointed as the Director of Surgical Clinical Outcomes Research and an Associate Director of Surgical Translational Research for the Children's Research Center at Lurie Children's Hospital. She sits on the curriculum committee for simulation-based education, and serves as the Director of External Relations, for the Center for Education in Medicine in Northwestern University Feinberg School of Medicine. Dr. Barsness' research focuses on the development and validation of educational tools and simulation models for use in pediatric surgical training. Dr. Barsness is a strong advocate for the advancement of surgical skills across the continuum of medical education, and remains committed to the growth and development of IPEG into a world-class organization, advancing the science of advanced minimally invasive surgical techniques for infants and children.



Pablo Laje, MD

Program Co-Chair

Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

Dr. Pablo Laje is currently Assistant Professor of Surgery at the University of Pennsylvania and Attending Surgeon at the Children's Hospital of Philadelphia (CHOP), USA. He attended Medical School at the University of Buenos Aires and graduated in 1999. He trained in pediatric surgery at the JP Garrahan Pediatric Hospital in Buenos Aires, Argentina and obtained his Board Certification in 2005. Pursuing further training he went to CHOP in 2005 for a clinical/research fellowship in pediatric and fetal surgery. In 2011 he was appointed CHOP faculty.

2014 Program Chairs CONTINUED

Dr. Laje has a particular interest in pediatric minimally invasive surgery and has conducted numerous basic science research projects to study the physiological implications of minimally invasive surgery on healthy and diseased organs. In 2008 he won the Best Basic Science Abstract Award at IPEG and obtained IPEG's Research Grant for his work on biliary atresia.

He has more than 30 publications on PubMed and has written multiple book chapters in the pediatric surgery literature.



Go Miyano, MD

Program Co-Chair

Juntendo University School of Medicine, Tokyo, Japan

Go Miyano is currently an Associate Professor in the Department of Pediatric General and Urogenital Surgery at Juntendo University School of Medicine, and Chief Medical Officer in the Department of Pediatric Surgery at Shizuoka Children's Hospital. He attended Juntendo University School of Medicine, Tokyo, Japan from 1995–2001 and completed his residency and fellowship in the Department of Pediatric General and Urogenital Surgery at Juntendo University Hospital under the supervision of Atsuyuki Yamataka from 2001–2006. He was a visiting research fellow in the Department of Pediatric Surgery at Blank Children's Hospital under the supervision of Professor Thom E. Lobe from 2006–2007 and in the Department of Pediatric General and Thoracic Surgery at Cincinnati Children's Hospital under the supervision by Professor Thomas H. Inge from 2007–2008. He has held his current position since 2009. He has a keen interest in the education of medical students and residents, and was voted the best tutor by his peers during his first year on faculty at Juntendo University School of Medicine and awarded. He has since been actively involved as a member of the Board of Directors for Medical Student Education at Juntendo University. He has a strong focus on minimally invasive pediatric surgery, and has published over 60 manuscripts in authoritative peer-reviewed journals, over 30 as first author. He has also given over 30 presentations at various international conferences.

2014 CME Chairs



Celeste Hollands, MD

*St. John's Children's Hospital in Springfield, IL, USA
University of South Alabama in Mobile, AL, USA*

Dr. Hollands is currently a Pediatric Surgeon at St. John's Children's Hospital in Springfield, Illinois and is Adjunct Associate Professor of Surgery at the University of South Alabama in Mobile, Alabama. Dr. Hollands completed medical school at the University of South Alabama and completed her surgical

residency at The Graduate Hospital of the University of Pennsylvania. She completed a Pediatric Trauma fellowship at The Children's Hospital of Philadelphia and a Pediatric Surgery Fellowship at Miami Children's Hospital. She served on the surgical faculty as Assistant Professor of Surgery and Pediatrics at Louisiana State University Health Sciences Center in Shreveport, Louisiana where her research focused on developing pediatric robotic surgical procedures. She served on the faculty of the University at Buffalo, Women's and Children's Hospital of Buffalo as Associate Professor of Surgery and Pediatrics where she was Director of the Miniature Access Surgery Center and Director of Trauma. Dr. Hollands was Associate Professor of Surgery and Pediatrics at the University of South Alabama where she served as Chief of Pediatric Surgery and Director of Surgical Simulation. Dr. Hollands has published on topics that include: minimally invasive and robotic surgery, pediatric trauma, simulation, and faculty development. She serves on the Executive Committee of the American College of Surgeons Committee on Medical Student Education, on the American College of Surgeons and Association for Surgical Education Medical Student Core Curriculum Steering Committee, is Secretary of the Association of Women Surgeons, and is active in committee service in the International Pediatric Endosurgery Group, Society of American Gastrointestinal and Endoscopic Surgeons, and Association for Surgical Education. She serves on the editorial board of The American Journal of Surgery and The Journal of Laparoendoscopic and Advanced Surgical Techniques and is an ad hoc reviewer for several other journals. Her interests include advanced minimally invasive surgery and robotics, technical skills acquisition, surgical simulation and education



Holger Till, MD, PhD

Medical University of Graz, Graz, Austria

Professor Holger Till is currently Chair Professor and Director of the Department of Paediatric and Adolescent surgery at the Medical University of Graz. He attended Medical School at the University of Goettingen and the University of California in San Diego (UCSD). He also participated in a student exchange program with the Harvard Medical School and got fascinated by pediatric surgery while working with Professor Patricia Donahoe at the Massachusetts General Hospital in Boston.

2014 CME Chairs CONTINUED

After graduation in 1989 he completed his residency in General Surgery and his fellowship in Pediatric Surgery at the Ludwig-Maximilians University of Munich. His career as a Pediatric Surgeon started at the Dr. von Hauner Children's Hospital of the University of Munich. In 2004 he became an Assistant Professor of Pediatric Surgery at the Chinese University of Hong Kong with Professor Yeung. In 2006 he returned to Germany and accepted the Professorship for Pediatric Surgery in Leipzig until becoming the successor of Professor Michael Höllwarth in Graz in 2012.

Professor Till has a special interest in pediatric minimal invasive surgery and was the director of the Single-Portal Laparoscopic Surgery (SPLS) training course at the IRDC (International Reference and Development Center for Surgical Technology) in Leipzig. He also chaired the training academy of the German Society of Pediatric Surgery. His present research introduces modern techniques like metabolomics and proteomics to malformations of the newborn as well as morbid obesity. He has published more than 130 scientific articles in national and international indexed journals and presented over 100 abstracts. Professor Till is a member of several professional societies and serves on the Editorial Board of many prestigious journals.



Suzanne M. Yoder, MD

Pediatric Surgeon in Arizona and Kansas, USA

Dr. Yoder graduated from Jefferson Medical College in Philadelphia and completed her surgical residency at the University of California San Diego. After spending one year at the Fetal Treatment Center at the University of California San Francisco Dr. Yoder completed a surgical critical care fellowship at Children's Mercy Hospital in Kansas City and then her pediatric surgery fellowship at Yale. Dr. Yoder then joined the pediatric surgery practice at the Rocky Mountain Hospital for Children in Denver Colorado. After four years in Denver, Dr. Yoder moved back to California to pursue her interest in international surgical initiatives. Currently, Dr. Yoder works as a locum tenens pediatric surgeon in Arizona and Kansas while continue her involvement in various international surgery projects. She is an active member in the SAGES Global Affairs Committee having traveled to Mongolia four times to teach laparoscopic surgery in that country. Besides Mongolia, Dr. Yoder has participated in surgical outreach in Bolivia, Vietnam, Belize, Tanzania, and Haiti. Dr. Yoder remains active in the education committee and the CME committee of IPEG. Outside of surgery, Dr. Yoder enjoys surfing, skiing, hanging out with her dog and training for triathlons.

2014 Meeting Leaders

PROGRAM COMMITTEE

Aayed R. Al-Qahtani, MD

Maria Marcela Bailez, MD ★

Katherine A. Barsness, MD

Ciro Esposito, MD

Alan W. Flake, MD

James D. Geiger, MD

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Miguel Guelfand, MD

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Satoshi Ieiri, MD

Saleem Islam, MD

Tadashi Iwanaka, MD ★

Pablo Laje, MD

Marc A. Levitt, MD ★

Long Li, MD ★

Sean S. Marven, FRCS

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Go Miyano, MD

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Todd A. Ponsky, MD ★

Steven Rothenberg, MD

Atul J. Sabharwal, MD

Shawn D. St Peter, MD

Philipp O. Szavay, MD

Hiroo Uchida, MD

Benno Ure, MD, PhD

Jean-Stephane Valla, MD

Kenneth Wong, MD

Mark L. Wulkan, MD ★

C.K. Yeung, MD

★ *Executive Committee*

2014 Pediatric Colorectal, Motility and Pelvic Reconstruction Conference

November 12-14, 2014

Nationwide Children's Hospital
Columbus, Ohio

Led by Program Directors, Marc Levitt, MD and Karen Diefenbach, MD, and experts in GI and Urology, the conference will feature hands-on labs and case submissions from attendees. Visiting faculty will include Drs. Georgeson, Langer, De la Torre, Teitelbaum and many others.

Visit

NationwideChildrens.org/colo-conference



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2014 Meeting Leaders CONTINUED

EXECUTIVE COMMITTEE

PRESIDENT: Benno Ure, MD, PhD

PRESIDENT-ELECT: Mark L. Wulkan, MD ◆

1st VICE PRESIDENT: Maria Marcela Bailez, MD ◆

2nd VICE PRESIDENT: David C. van der Zee, MD, PhD

SECRETARY: Todd A. Ponsky, MD ◆

TREASURER: Marc A. Levitt, MD ◆

EDITOR: Daniel J. Ostlie, MD

AMERICAS REPRESENTATIVE: Timothy D. Kane, MD

EUROPE REPRESENTATIVE: Holger Till, MD, PhD

WORLD-AT-LARGE REPRESENTATIVE: Edward Esteves, MD

WORLD-AT-LARGE REPRESENTATIVE: Long Li, MD ◆

CME CHAIR: Celeste Hollands, MD ◆

PAST PRESIDENT: Tadashi Iwanaka, MD, PhD ◆

◆ *Program Committee*

PAST PRESIDENTS

Tadashi Iwanaka, MD, PhD (2013)*

Carroll M. Harmon, MD, PhD (2012)*

Gordon A. MacKinlay, OBE (2011)* – Retired

Marcelo Martinez Ferro, MD (2010)*

George W. Holcomb III, MD (2009)*

Jean-Stephane Valla, MD (2008)*

Atsuyuki Yamataka, MD (2007)*

Keith Georgeson, MD (2006)* – Retired

Klaas (N) M.A. Bax, MD (2005) – Retired

C.K. Yeung, MD (2004)*

Craig Albanese, MD (2003)*

Vincenzo Jasonni, MD (2002) – Retired

Peter Borzi, MD (2001)*

Steven Rothenberg, MD (2000)*

Juergen Waldschmidt, MD (1999) – Deceased

Hock L. Tan, MD (1998) – Retired

Takeshi Miyano, MD (1997) – Retired

Steven Rubin, MD (1996) – Retired

Gunter-Heinrich Willital, MD (1995)*

*Active Past Presidents

2014 IPEG Faculty *CONFIRMED

- Hossein Allal, MD – Montpellier, France
- Aayed R. Al-Qahtani, MD – Riyadh, Saudi Arabia ◆
- Georges Azzie, MD – Toronto, Canada
- Maria Marcela Bailez, MD – Buenos Aires, Argentina ◆
- Katherine A. Barsness, MD – Chicago, IL, USA ◆
- Simon Clarke, MD – London, United Kingdom
- Matthew S. Clifton, MD – Atlanta, GA, USA
- David C. G. Crabbe, MD – Leeds, United Kingdom ▲
- Mark Davenport, MD – London, United Kingdom ▲
- Dafydd A. Davies, MD – Halifax, Canada
- Karen A. Diefenbach, MD – Columbus, OH, USA
- Alex Dzakovic, MD – Chicago, IL, USA
- Simon Eaton, PhD – London, United Kingdom
- Peter Thomas Esslinger, MD – Lucerne, Switzerland
- Paula Flores, MD – Buenos Aires, Argentina
- Stefan Gfroerer, MD – Frankfurt, Germany
- Miguel Guelfand, MD – Santiago, Chile ◆
- Carroll M. Harmon, MD, PhD – Buffalo, NY, USA ◆
- George W. Holcomb III, MD – Kansas City, MO, USA ◆
- Celeste Hollands, MD – Mobile, AL, USA ◆
- Timothy D. Kane, MD – Washington, DC, USA
- Joachim F. Kuebler, MD – Hannover, Germany
- Martin Lacher, MD – Hannover, Germany
- Pablo Laje, MD – Philadelphia, PA, USA ◆
- Andreas Leutner, MD – Dortmund, Germany
- Marc A. Levitt – Columbus, Ohio, USA ◆
- Charles M. Leys, MD – Madison, WI, USA
- Long Li, MD – Beijing, China ◆

◆ Program Committee

▲ BAPS Faculty

2014 IPEG Faculty CONTINUED

Manuel Lopez, MD – Saint Etienne, France
 Tobias Luithle, MD – Tuebingen, Germany
 Gordon A. MacKinlay, OBE – Edinburgh, United Kingdom
 Maximillano Marcic, MD – Buenos Aires, Argentina
 Marcelo Martinez Ferro, MD – Buenos Aires, Argentina
 Sean S. Marven, FRCS – Sheffield, United Kingdom ◆
 Melissa A. McKee, MD – Branford, CT, USA
 John J. Meehan, MD – Seattle, WA, USA ◆
 Martin L. Metzelder, MD – Vienna, Austria
 Marc P. Michalsky, MD – Columbus, OH, USA
 Carolina A. Millan, MD – Buenos Aires, Argentina
 Go Miyano, MD – Tokyo, Japan ◆
 Oliver J. Muensterer, MD – New York, NY, USA ◆
 Daniel J. Ostlie, MD – Madison, WI, USA
 Agostino Pierro, MD – Toronto, Canada ▲
 Todd A. Ponsky, MD – Akron, OH, USA ◆
 Steven Rothenberg, MD – Denver, CO, USA ◆
 Juergen Schleef, MD – Torino, Italy
 Shawn D. St. Peter, MD – Kansas City, MO, USA ◆
 Philipp O. Szavay, MD – Lucerne, Switzerland ◆
 Holger Till, MD, PhD – Graz, Austria
 Rick Turnock, MD – Liverpool, United Kingdom ▲
 Benno Ure, MD, PhD – Hannover, Germany ◆
 Reza M. Vahdad, MD – Bochum, Germany
 David C. van der Zee, MD, PhD – Utrecht, The Netherlands
 Mark L. Wulkan, MD – Atlanta, GA, USA ◆
 CK Yeung, MD – Hong Kong, China ◆
 Suzanne M. Yoder, MD – Venice, CA, USA

◆ Program Committee

▲ BAPS Faculty

Schedule-at-a-Glance

PRE-MEETING COURSE

Tuesday, July 22

Lowther

4:00 pm – 8:00 pm **Postgraduate Lecture:** MIS in Infants and Neonates

IPEG'S 23rd ANNUAL CONGRESS

Wednesday, July 23

Lennox 1 & 2

8:00 am – 11:00 am **Hands On Lab: Critical Technical Skills for Neonatal and Infant Minimally Invasive Surgery** NON CME

8:00 am – 11:00 am **Simulator Hands On Lab: Advanced Neonatal High Fidelity Course for Advanced Learners** NON CME

1:00 pm – 5:00 pm **Simulator Hands On Lab: Innovations in Simulation-Based Education for Pediatric Surgeons** NON CME

5:00 pm – 7:00 pm **Joint IPEG/BAPS Opening Ceremony/Welcome Reception** in the Exhibit Hall

Thursday, July 24

Lennox 3

7:00 am – 8:00 am **Morning Scientific Video Session I:** Coolest Tricks, Extraordinary Procedures

8:00 am – 8:05 am **Welcome Address**

8:05 am – 9:00 am **Scientific Session:** Gastrointestinal

9:00 am – 9:30 am **Presidential Address & Lecture:** “Music, Endoscopic Surgery and IPEG”

9:30 am – 4:00 pm **Exhibits/Posters Open**

9:30 am – 10:00 am **Break**

10:00 am – 11:30 am **Basic Science and Misc**

11:30 am – 12:30 pm **Lunch Break**

12:00 pm – 1:00 pm **Top Posters 1-20:** Digital Presentation NON CME

1:00 pm – 5:50 pm **IPEG & BAPS JOINT PROGRAMS** *Pentland, Sidlaw & Fintry Auditorium*

1:00 pm – 3:00 pm **IPEG/BAPS Presidential Debate:** “Esophageal and Diaphragmatic Surgery – Thoracoscopic vs. Open”

3:00 pm – 3:30 pm **Break**

3:30 pm – 5:20 pm **IPEG/BAPS Best Clinical Paper Session**

5:20 pm – 5:50 pm **Karl Storz Lecture:** “Developing Neonatal MIS Surgery, Innovation, Techniques, and Helping an Industry to Change”

Schedule-at-a-Glance CONTINUED

IPEG'S 23rd ANNUAL CONGRESS

Friday, July 25

Lennox 3

- 7:00 am – 8:00 am **Morning Scientific Video Session II**
- 8:00 am – 9:30 am **Scientific Session:** Urogenital
- 9:30 am – 4:30 pm **Exhibits/Posters Open**
- 9:30 am – 10:00 am **Break**
- 10:00am – 11:00 am **Scientific Session:** Gastrointestinal & Hepatobiliary II
- 11:00 am – 12:00 pm **Scientific Session:** Panel – “Laparoscopy in the Neonate and Infant: What’s New?”
- 12:00 pm – 1:00 pm **Lunch Break**
- 12:00 pm – 1:00 pm **Top Posters 21–40:** Digital Presentation NON CME
- 1:00 pm – 1:30 pm **Keynote Lecture:** “Lean Processes in the Hospital”
- 1:30 am – 2:30 pm **Panel:** Single Site Surgery
- 2:30 pm – 3:30 pm **Scientific Session:** Thorax
- 3:30 pm – 4:00 pm **Break**
- 4:00 pm – 5:00 pm **Scientific Session:** Bariatric, Robotics & Alternative Technologies
- 5:00 pm – 6:00 pm **Panel:** Live Surgery
- 7:00 pm – 11:30 pm **Main Event** *Lennox 1 & 2*
Celeigh and IPEG Dance Off – After Hours!

Saturday, July 26

Lennox 3

- 8:00 am – 9:00 am **Miscellaneous:** Short Oral Papers
- 9:00 am – 9:30 am **General Assembly:** Presentation of the IPEG 2015 President NON CME
- 9:30 am – 9:45 am **Awards:** Coolest Tricks/Basic Science/IRCAD NON CME
- 9:45 am – 10:45 am **Scientific Session:** Single Site Surgery
- 10:45 am – 12:00 pm **Saturday Movie Matinee:** Complications – “My Worst Nightmare” – Complicated Cases, Pitfalls and Unusual Solutions
- 12:00 pm **Closing Remarks**

Innovations Corner

ESOPHAGEAL ATRESIA MODEL

A Training Model in Thoracoscopic Surgery for Esophageal Atresia

INTRODUCTION: Through time, the training and development of technical skills have been performed in the operating room. Clinical training using simulated environments may improve the efficiency and safety of laparoscopic surgery. We present a training model in laparoscopic surgery for esophageal atresia (EA).

MATERIAL & METHODS: To confine the training model, we divide it in three parts: A) Video surgery equipment. A video endoscopic unit with an image integrated module, three 3.5mm trocar, one 5.5 mm trocar, 3mm instruments. B) A doll is used, which simulated a term newborn having a longitudinal anterior and posterior opening of 10 cms long and 2cms wide, through which a separator is introduced. C). Rabbit tissue or synthetic material are used. We proceed to place the videosurgery unit just like a real procedure. Placing the optic, visualizes the first image of esophagus and trachea. Afterwards, performing a meticulous dissection the separation of the tracheoesophagean partition is done, a suture thread 5/0 is placed around the esophagus, making an intracorporeal knot. The same surgical technique, end to end anastomosis is performed.



CONCLUSION: Since the beginning of laparoscopy, the use of simulators have proven a great potential for training and acquiring skills , shortening the learning curve and the early use in real procedures. This model which perfectly simulates the environment of an EA has been used by pediatric surgeons in the unit, allowing them to acquire skills that could then be applied during surgery.

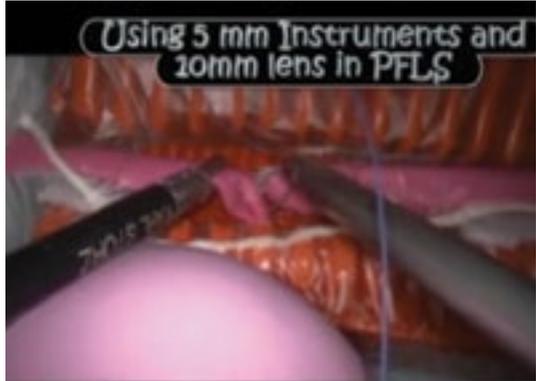
KEYWORDS: Training model, esophageal atresia.

Innovations Corner CONTINUED

ESPHAGEAL ATRESIA – COLEDOCO YEYUNO ANASTOMOSIS An Inanimate Model for Training Toracoscopic Repair of TEF/Esophageal Atresia

AIM: Present the evolution of a model developed for specific training in toracoscopic repair of TEF/ Esophageal atresia.

MATERIAL & METHODS: The video starts showing the view of a complete repair using the final version of the model done with a 4mm lens, 3 mm instruments, 6/0 sutures and an HD camera. The procedure is being done by a postresidency fellow trained in open surgery who has never participated in a MIS TEF assisted by a senior MIS surgeon after being trained in basic inanimate models (PedFLS) and practising endoscopic suturing for 144 hours. Exercises consisted in dividing and suturing the fistula and doing an esophageal anastomosis with a transtomotic tube. Extracorporeal and intracorporeal sliding knot tying were used.



Aspects of the same model using 5mm instruments, 5/0 sutures and a 10mm lens inside the pediatric FLS trainer follows. This was the previous environment that we have used. Finally the domestic materials utilized are shown. We started with tubular balloons of 2 different colours to simulate the esophageal mucosal layer and a bended piece of for the tracheal simulation, always reproducing the view in an almost prone position. A small piece of wood was used as a support and half of a larger plastic corrugated tube (PVC) as a toracic posterior wall resembling ribs and intercostal spaces. A white plastic ribbon as the vagus nerve and, a half inflated round balloon as the lung were added and everything covered with an auto adhesive film as pleura. At the beginning we used it inside the Pediatric FLS trainer which was replaced by a plastic toy pink suitcase which can be perforated in the upper surface, making it easily portable.

RESULTS: A pediatric surgeon with little experience in MIS and none in neonatal MIS was able to complete aTEF/ Esophageal atresia repair in the final version of the model in 70 minutes assisted by an experienced MIS surgeon. Cost of the materials was less than 50 US\$.

DISCUSSION: A reproducible unexpensive inanimate model has been developed as an additional tool to facilitate the learning curve for MIS TEF surgery. Future validation is needed.

Innovations Corner CONTINUED

MAGNETIC ASSIST LAP TRAINER

Simulation Model for the Training of Magnet-Assisted Laparoscopic Surgery

Magnet-Assisted laparoscopy is a novel surgical technique that requires additional training. In order to train surgeons with this technique, we have designed a model that simulates the outer and inner environment during magnet-assisted laparoscopy. With the aid of a local pediatric orthopedist, we built the core of the trainer with proplylene (45 cm long x 28 cm wide x 18 cm thick). At the outer surface, we covered the center portion of the trainer with a 4-mm thick neoprene fabric (40 cm vertical axis x 50 cm wide) attached with Velcro. This system creates a hinge mechanism that allows for practical removal of surgical tools and simulated organs. So far, we have custommade several organs with foam rubber including liver-gallbladder (cystic duct and artery), uterus and most recently colon and appendix.



During manufacture, we have taken into account several key factors:

1. To develop a trainer with optimal ergonomics.
2. To use simulated organs with similar appearance and consistency as the human tissue.
3. To use low cost of materials.
4. The model should require straightforward transportation.
5. The trainer should have smooth surfaces that enable optimal sliding of the magnetic instruments in the outer surface as well in the inside.

NEEDLESCOPIC SURGERY WITH STRYKER'S MINILAP

Stryker's needlescopic instruments have the ability to eliminate ports without compromising proven safe surgical techniques. Because there are no trocars used, these 13 gauge percutaneous instruments may reduce trauma and may offer increased cosmetic benefits for all laparoscopic procedures, including hysterectomies and sacrocolpopexies

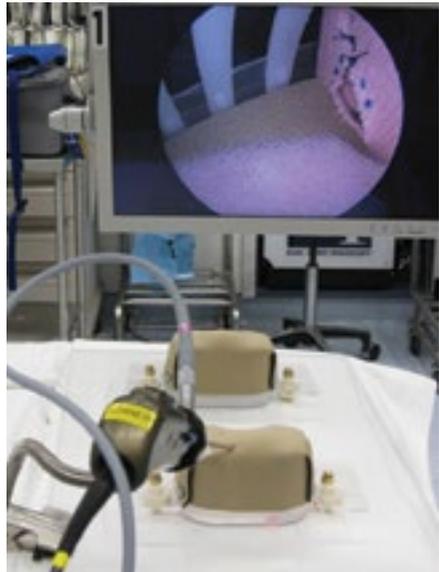


Innovations Corner CONTINUED

NEONATAL

Neonatal Minimally Invasive Surgery Trainers

Scaled-neonatal trainers were designed to develop specific minimally invasive surgery skills. Initial measurements were taken of infants in the neonatal ICU between 2.5 and 3.5 kg with an average of 2.8 kg. Scaled training models were fabricated to simulate both laparoscopic and thoracoscopic procedures. Six models were developed in 2006 including the laparoscopic dexterity skills, laparoscopic running the bowel, laparoscopic suturing under tension, laparoscopic suturing of an anastomosis, thoracoscopic diaphragmatic hernia repair, and thoracoscopic esophageal atresia repair. The initial construct validity results were presented at IPEG in Buenos Aires at the 2007 meeting followed by expert testing at IPEG 2009 with benchmark results presented at the 2010 IPEG conference.



DA VINCI SURGICAL SKILLS SIMULATOR

The **da Vinci** Skills Simulator contains a variety of exercises and scenarios specifically designed to give users the opportunity to improve their proficiency with the **da Vinci** surgeon console controls.

The case seamlessly integrates with an existing **da Vinci**® **Si**™ or **Si-e**™ surgeon console* and no additional system components are required.

Built-in metrics enable users to assess skills, receive real-time feedback and track progress.

Administrative tools let users structure their own curriculum to fit with other learning activities in their institution.



Innovations Corner CONTINUED

PEDIATRIC LAPAROSCOPIC SKILLS

Pediatric Laparoscopic Surgery (PLS) simulator

The Pediatric Laparoscopic Surgery (PLS) simulator has been developed over several years, the emphasis being on tasks proven to benefit in the performance of Minimal Access Surgery (MAS) and for which construct validity (the ability to differentiate between novices, intermediates and experts) has been established.

The model is a box trainer tailored to represent the size constraints (limited domain) faced by a pediatric surgeon. Performance with regard to time

for completion and precision on individual tasks, as well as total score, allow one to discriminate between novice, intermediate and expert. The simulator's simple design makes it very practical, whether using the validated tasks or a model of your choice.

Further development using motion tracking of instruments within the PLS simulator may allow real time analysis of movement, and further improve the educational benefit.



TEF-CDH MODELS

Accurate measurements of ribs, thoracic space and scapulae for term neonates (50th% for age) were obtained from literature review. Solidworks 3D modeling software was used to design a rib cage with scapulae, replicating the exact dimensions of the thoracic cavity of a neonate. The rib cage was printed in ABS plastic on rapid prototyping machinery. The right side of the rib cage was printed for the esophageal atresia/tracheoesophageal fistula (EA/TEF) model, while only the left side of the rib cage was printed for the diaphragmatic hernia (DH) model. Artificial tissue was modeled to recreate the anatomic abnormalities of EA/TEF and DH and secured to a base of platinum-cured silicon rubber. The entire apparatuses were then covered with synthetic silicon skin.



Innovations Corner CONTINUED

PYLORUS MODEL

History of the UK pylorus model

When I arrived at the University of Kentucky in 2003, one of my senior partners expressed a desire to learn how to do a laparoscopic pyloromyotomy. However, he had very limited laparoscopic experience. We had a “dry lab” in the department that had MIS set-ups. We wanted to design an inexpensive model that would allow him to get used to the 2



dimensional world of laparoscopy as well as practice the key sequence of steps for a pyloromyotomy. We quickly realized that we could make a glove into a “stomach” very easily. Our first model used foam rubber for the muscularis and ioban drape for serosa. The glove itself is the mucosa. This is the model which we used to teach the cadence and the “feel” for lap pylorics. He successfully transitioned to laparoscopic pyloromyotomy but pointed out that the foam rubber did not feel the same when the spread was completed. The following year, I was approached by Stryker to use the model at an APSA meeting to get pediatric surgeons to try a pyloric spreader they were hoping to market. At that meeting we took the opportunity to get feedback from surgeons on both the instrument AND the model. The same issues with the foam came up. One day, I was thinking about fixing the model and the thought of using an olive came to mind. I made some trials and found that a green olive had the right “feel” for splitting the pylorus when stretched. A pitted green “queen” size olive is consistently 5mm thick and 15–20 mm long and when wrapped in ioban, has a feel that is very close to the inflamed muscle of pyloric stenosis. The final change in the model occurred when the procedure switched in the OR from a cold knife to a bovie to cut the serosa. The ioban serosa is now pre cut and the bovie maneuver is not made with heat in the model. To date, over 300 learners have used the model and the feedback is good. A pilot study showing the results of training novices with the model showed good reliability and reproducibility was published in 2010. *J Laparoendosc Adv Surg Tech A.* 2010 Jul–Aug;20(6):569–73.

Complete Schedule

TUESDAY, JULY 22

PRE-MEETING COURSE

Tuesday, July 22

Lowther

4:00 pm – 8:00 pm **POSTGRADUATE LECTURE: MIS in Infants and Neonates**

CHAIR: Katherine A. Barsness, MD

DESCRIPTION: This course includes a series of didactic lectures that focus on the successful strategies for implementing neonatal minimally invasive surgery. Each speaker will discuss preoperative concerns, intraoperative set up and patient positioning, as well as tips and tricks for successfully overcoming any barriers to completing a neonatal MIS procedure. This course is designed for beginning and advanced MIS pediatric surgeons who are looking to expand their knowledge on the skills, techniques, and strategies for neonatal minimally invasive surgery.

OBJECTIVES

By the conclusion of the course, participants will be able to:

- Articulate proper intra-operative set-up for a variety of neonatal MIS procedures
- Describe appropriate patient positioning and port placement for a variety of neonatal MIS procedures
- Describe common barriers to success for a variety of neonatal MIS procedures, and describe strategies to overcome these barriers
- Understand how to add simulation-based educational strategies to their current practice.

TIME	TOPIC	FACULTY
4:00 pm	Duodenal Atresia	Karen A. Diefenbach, MD
4:30 pm	Tracheoesophageal Fistula	Philipp O. Szavay, MD
5:00 pm	Urology MIS	Joachim F. Kuebler, MD
5:30 pm	Break	
5:45 pm	Neonatal Robotics	John J. Meehan, MD
6:15 pm	Diaphragmatic Hernia	Matthew S. Clifton, MD
6:45 pm	Simulation-based Education	Katherine A. Barsness, MD
7:15 pm	Q&A	All

IPEG acknowledges our Diamond Level Donor for their support of the course: Stryker Endoscopy

Complete Schedule

WEDNESDAY, JULY 23

IPEG'S 23rd ANNUAL CONGRESS

Wednesday, July 23

Lennox 1 & 2

8:00 am – 11:00 am **HANDS ON LAB: Critical Technical Skills for Neonatal and Infant Minimally Invasive Surgery** NON CME

CHAIR: Karen A. Diefenbach, MD

CO-CHAIRS: Manuel Lopez, MD, Go Miyano, MD
& David C. van der Zee, MD, PhD

DESCRIPTION: Learn the critical skills necessary to safely perform operations in newborn infants, including instrument and suture selection, port placement, intracorporeal suturing, and instrument handling skills. Neonatal simulation models and 3 mm instruments will be used at all stations. Performance metrics will be assessed at the completion of the course.

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Choose appropriate instruments for neonatal and infant laparoscopy and thoracoscopy
- Demonstrate improved instrument handling within the confines of a newborn chest or abdomen
- Perform a successful intracorporeal knot.

FACULTY: Alex Djakovic, MD; Peter Thomas Esslinger, MD; Stefan Gfroerer, MD; Joachim F. Kuebler, MD; Andreas Leutner, MD; Martin L. Metzelder, MD; Manuel Lopez, MD; Reza M. Vahdad, MD; and David C. van der Zee, MD, PhD

IPEG acknowledges support for this course from: Karl Storz Endoscopy and Stryker Endoscopy

8:00 am – 11:00 am **SIMULATOR HANDS ON LAB: Advanced Neonatal High Fidelity Course for Advanced Learners** NON CME

CHAIR: Katherine A. Barsness, MD

CO-CHAIRS: Georges Azzie, MD & Pablo Laje, MD

DESCRIPTION: This course is designed for advanced MIS pediatric surgeons who are about to begin, or have already begun, to introduce laparoscopic duodenal atresia repair, thoracoscopic diaphragmatic hernia repair (with and without a patch), thoracoscopic TEF repair, and/or thoracoscopic lobectomy. All participants must provide a Departmental Chief's letter documenting expertise in basic MIS procedures, to be eligible to attend this course. Performance metrics will be assessed at the completion of the course.

Complete Schedule

WEDNESDAY, JULY 23

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Choose appropriate instruments for neonatal laparoscopy and thoracoscopy
- Demonstrate improved instrument handling and knot tying skills within the confines of a newborn chest or abdomen
- Demonstrate and describe port placement for common neonatal procedures.

FACULTY: Georges Azzie, MD; Maria Marcela Bailez, MD; Simon Clarke, MD; Matthew S. Clifton, MD; Pablo Laje, MD; Tobias Luithle, MD; and Philipp O. Szavay, MD

IPEG acknowledges support for this course from: Karl Storz Endoscopy and Stryker Endoscopy

1:00 pm – 5:00 pm **SIMULATOR HANDS ON LAB: Innovations in Simulation-Based Education for Pediatric Surgeons** NON CME

CHAIR: Katherine A. Barsness, MD

CO-CHAIRS: Karen A. Diefenbach, MD & Carolina A. Millan, MD

DESCRIPTION: Practice your MIS skills and learn some new ones at the Innovations in Simulation-based educational course. Simulation-based instruction will include advanced surgical techniques for TEF, duodenal atresia, diaphragmatic hernia, choledochojejunostomy, pyloromyotomy, single incision surgical techniques, gastrostomy, technical skills models, and many more innovative models. Participants of all levels of MIS skill are encouraged to attend the course.

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Choose appropriate instruments for neonatal and infant laparoscopy and thoracoscopy
- Demonstrate improved instrument handling and knot tying skills within the confines of a newborn chest or abdomen
- Describe port placement for TEF and duodenal atresia operations.

FACULTY: Hossein Allal, MD; Georges Azzie, MD; Maria Marcela Bailez, MD; Katherine A. Barsness, MD; Matthew S. Clifton, MD; Karen A. Diefenbach, MD; Paula Flores, MD; Pablo Laje, MD; Charles M. Leys, MD; Manuel Lopez, MD; Tobias Luithle, MD; Maximillano Marcic, MD; Marcelo Martinez Ferro, MD; Marc P. Michalsky, MD; Milissa A. McKee, MD; Carolina A. Millan, MD; Oliver J. Muensterer, MD; Shaw D. St Peter, MD; Philipp O. Szavay, MD; Holger Till, MD, PhD; and Suzanne M. Yoder, MD

Complete Schedule

WEDNESDAY, JULY 23

STATIONS/FACULTY	STATION
Hossein Allal, MD	TEF doll Model
Georges Azzie, MD & Dafydd A Davies, MD	PLS
Maria Marcela Bailez, MD, Maximillan Marcic, MD & Paula Flores, MD	TEF trainer Duodenal atresia trainer Hepaticojejunostomy model
Katherine A. Barsness, MD	DH DA TEF Gastrostomy Tube
Karen A. Diefenbach, MD	Skills Intestine CDH
Marc P. Michalsky, MD	Ethicon band Model Olympus single port Applied medical single site
Marcelo Martinez Ferro, MD, & Carolina Millan, MD	Magnet Model Hybrid for single site cholecystectomy

IPEG acknowledges support for this course from: Karl Storz Endoscopy and Stryker Endoscopy

5:00 pm – 7:00 pm **Joint IPEG/BAPS Opening Ceremony/Welcome Reception**

Complete Schedule

THURSDAY, JULY 24

IPEG'S 23rd ANNUAL CONGRESS

Thursday, July 24

Lennox 3

7:00 am – 8:00 am **MORNING SCIENTIFIC VIDEO SESSION I:
Coolest Tricks, Extraordinary Procedures**

CHAIRS: Miguel Guelfand, MD & Todd A. Ponsky, MD

- 7:00 am **V001:** LEFT UPPER LOBECTOMY FOR CPAM USING A 3MM TISSUE SEALING DEVICE; A STEP BY STEP APPROACH [Stephen Oh, MD](#), Steven S. Rothenberg, MD, The Morgan Stanley Children's Hospital, Columbia University
- 7:06 am **V002:** THORACOSCOPIC DIVISION OF H-TYPE TRACHEOESOPHAGEAL FISTULA [Matthew S. Clifton, MD](#), Paul M. Parker, MD, Emory University/Children's Healthcare of Atlanta
- 7:12 am **V003:** THORACOSCOPIC RESECTION OF A BRONCHOGENIC CYST LOCATED AT THE THORACIC INLET [Meghna V. Misra, MD](#), Tulio Valdez, MD, Anthony Tsai, MD, Brendan T. Campbell, MD, MPH, Connecticut Children's Medical Center
- 7:18 am **V004:** THORACOSCOPIC APPROACH IN RECURRENT TRACHEOESOPHAGEAL FISTULA [Ruben Lamas-Pinheiro, MD](#), Carlos Mariz, MD, Joaquim Monteiro, MD, Tiago Henriques-Coelho, MD, PhD, Pediatric Surgery Department, Faculty of Medicine, Hospital de São João, Porto, Portugal
- 7:24 am **V005:** A THORACOSCOPIC APPROACH TO AN UNUSUAL MEDIASTINAL MASS [Victoria K. Pepper, MD](#), Peter C. Minneci, MD, Karen A. Diefenbach, MD, Nationwide Children's Hospital
- 7:30 am **V006:** THORACOSCOPIC PERICARDIAL WINDOW FOR TREATMENT OF REFRACTORY PERICARDIAL EFFUSION AND TAMPONADE [Oliver J. Muensterer, MD, PhD](#), Samir Pandya, MD, Matthew E. Bronstein, MD, Gustavo Stringel, MD, Suvro S. Sett, MD, Divisions of Pediatric Surgery and Pediatric Cardiac Surgery, New York Medical College
- 7:36 am **V007:** COMBINATION OF VALUABLE TECHNICAL RESOURCES FOR THE CORRECTION OF DIAPHRAGMATIC HERNIA (VIDEO) [Carolina Millan, MD](#), Fernando Rabinovich, MD, Luzia Toselli, MD, Horacio Bignon, MD, Gaston Bellia, MD, Mariano Albartal, MD, Guillermo Dominguez, MD, Marcelo Martinez Ferro, MD, Private Children's Hospital of Buenos Aires, Fundación Hospitalaria, Buenos Aires, Argentina
- 7:42 am **V008:** THORACOSCOPIC MANAGEMENT OF AN ESOPHAGEAL LUNG, REPORT OF A CASE [Ivan Dario Molina, MD](#), [Santiago Correa, MD](#), Ana Garces, MD, Mizrahim Mendez, MD, Edgar Alzate, MD, Fundación Hospital de la Misericordia, Universidad Nacional de Colombia

Complete Schedule

THURSDAY, JULY 24

7:48 am **V009:** TRANSCONTINENTAL TELEMENTORING WITH PEDIATRIC SURGEONS- PROOF OF CONCEPT AND TECHNICAL CONSIDERATIONS
Todd A. Ponsky, MD, Marc H. Schwachter, MD, Ted Stathos, MD, Michael Rosen, MD, Robert Parry, MD, Margaret Nalugo, Steven Rothenberg, MD, Akron Children's Hospital, Rocky Mountain Hospital for Children, University Hospitals Case Medical Center

8:00 am – 8:05 am **Welcome Address**
 Benno Ure, MD, PhD, 2014 President

8:05 am – 9:00 am **SCIENTIFIC SESSION: Gastrointestinal**
 CHAIRS: Marc A. Levitt, MD & Juergen Schleeff, MD

8:05 am **S001:** MINIMALLY INVASIVE SURGERY FOR PEDIATRIC TRAUMA – A MULTI-CENTER REVIEW Hanna Alemayehu, MD, Diana Diesen, MD, Matt Santore, MD, Matthew Clifton, MD, Todd Ponsky, MD, Margaret Nalugo, MPH, Timothy Kane, MD, Mikael Petrosyan, MD, Ashanti Franklin, MD, George W Holcomb III, MD, MBA, Shawn D St. Peter, MD, The Children's Mercy Hospital, Kansas City, MO; Children's Medical Center, Dallas, TX; Children's Healthcare of Atlanta at Egleston, Atlanta, GA; Akron Children's Hospital, Akron, Ohio; Children's National Medical Center, Washington, DC

8:10 am **S002:** OPEN VS. LAPAROSCOPIC MANAGEMENT OF APPENDICITIS PERITONITIS IN CHILDREN: CLINICAL TRIAL Fernando Rey, MD, Andres Perez, MD, William Murcia, MD, Fenando Fierro, MD, Ivan Molina, MD, Juan Valero, MD, Jorge R. Beltran, MD, Fundación HOMI Hospital de la Misericordia, Pediatric Surgery Unit, Universidad Nacional de Colombia, Bogotá (COL)

8:15 am **S003:** FEASIBILITY OF SINGLE INCISION 3 STAGE TOTAL PROCTOCOLECTOMY AND ILEAL POUCH ANAL ANASTOMOSIS
Avraham Schlager, MD, Matthew T. Santore, MD, Ozlem Balci, MD, Drew A. Rideout, MD, Kurt F. Heiss, MD, Matthew S. Clifton, MD, Emory University/Children's Healthcare of Atlanta

8:20 am **S004:** EVALUATION OF LIFE QUALITY OF CHILDREN AFTER LAPAROSCOPIC-ASSISTED TRANSANAL ENDORECTAL (SOAVE) PULL-THROUGH FOR HIRSCHSPRUNG'S DISEASE Bo Xiang, MD, Yang Wu, PhD, West Chian Hospital

8:25 am **S005:** SELECTIVE TRANSPERITONEAL ASPIRATION OF A DISTENDED BOWEL WITH A SMALL-CALIBER NEEDLE DURING LAPAROSCOPIC NISSEN FUNDUPLICATION: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL Carlos Garcia-Hernandez, MD, Lourdes Carvajal-Figueroa, MD, Sergio Landa-Juarez, MD, Adriana Calderon-Urrieta, MD, Hospital Star Medica Lomas Verdes, México

Complete Schedule

THURSDAY, JULY 24

- 8:30 am **S006:** LAPAROSCOPIC REPAIR OF MALROTATION. WHAT ARE THE INDICATIONS IN NEONATES AND CHILDREN? Go Miyano, MD, Keiichi Morita, MD, Masakatsu Kaneshiro, MD, Hiromu Miyake, MD, Hiroshi Nouse, MD, Masaya Yamoto, MD, Koji Fukumoto, MD, Naoto Urushihara, MD, Department of Pediatric Surgery, Shizuoka Children's Hospital
- 8:35 am **S007:** LAPAROSCOPIC REPAIR OF CONGENITAL DUODENAL OBSTRUCTION IN NEONATE Jinshi Huang, MD, Department of surgery, Jiangxi provincial Children's Hospital
- 8:40 am **S008:** COMPLICATIONS AFTER LAPAROSCOPY FOR RECTOVESICAL FISTULA HamidReza Foroutan, Dr., Abbas Banani, Dr., Sultan Ghanem, Dr., Reza Vahdada, Dr., Laparoscopic research center, Shiraz university of Medical Sciences
- 8:45 am **S009:** LAPAROSCOPIC MESH RECTOPEXY FOR COMPLETE RECTAL PROLAPSE Cindy Gomes Ferreira, MD, Paul Philippe, MD, Isabelle Lacreuse, MD, Anne Schneider, MD, François Becmeur, PhD, MD, 1) Department of Paediatric Surgery, Clinique Pédiatrique, Centre Hospitalier Luxembourg, Luxembourg 2) Department of Paediatric Surgery, Hôpital de Hautepierre, Centre Hospitalier Universitaire de Strasbourg, France
- 8:50 am **S010:** SINGLE INCISION LAPAROSCOPIC SPLENECTOMY USING THE SUTURE SUSPENSION TECHNIQUE FOR SPLENOMEGALY IN CHILDREN WITH HEREDITARY SPHEROCYTOSIS Suolin Li, MD, Meng Li, MD, Weili Xu, MD, PhD, The Second Hospital of Hebei Medical University, Shijiazhuang, China
- 8:55 am **S011:** LAPAROSCOPIC GASTROSTOMY AND LAPAROSCOPIC NISSEN/GT IN CHILDREN WITH COMPLEX CONGENITAL HEART DEFECTS V. Mortellaro, MD, J. Alten, MD, R. Russell, MD, R. Griffin, PhD, C. Martin, MD, S. Anderson, MD, D. Rogers, MD, E. Beierle, MD, M. Chen, MD, Children's Hospital of Alabama

9:00 am – 9:30 am



PRESIDENTIAL ADDRESS & LECTURE:
“Music, Endoscopic Surgery and IPEG”
 Benno Ure, MD, PhD, 2014 President

9:30 am – 4:00 pm **Exhibits/Posters Open**

9:30 am – 10:00 am **Break**

Complete Schedule

THURSDAY, JULY 24

10:00 am – 11:30 am **Basic Science and Misc**

CHAIRS: Aayed R. Al-Qahtani, MD & Daniel J. Ostlie, MD

- 10:00 am **S012:** ENDOSCOPIC SURGICAL SKILL VALIDATION SYSTEM FOR PEDIATRIC SURGEONS USING A REPAIR MODEL OF CONGENITAL DIAPHRAGMATIC HERNIA Satoshi Obata, MD, Satoshi Ieiri, MD, PhD, Munenori Uemura, PhD, Ryota Souzaki, MD, PhD, Noriyuki Matsuoka, Tamotsu Katayama, Makoto Hashizume, MD, PhD, FACS, Tomoaki Taguchi, MD, PhD, FACS, Department of Pediatric Surgery, Faculty of Medical Science, Kyushu University, Department of Advanced Medicine and Innovative Technology, Kyushu University Hospital, Kyoto Kagaku Co., Ltd
- 10:09 am **S013:** THE DEVELOPMENT AND PRELIMINARY EVALUATION OF A SYNTHETIC NEONATAL ESOPHAGEAL ATRESIA/ TRACHEOESOPHAGEAL FISTULA REPAIR MODEL Katherine A. Barsness, MD, MS, Deborah M. Rooney, PhD, Lauren M. Davis, BA, Ellen K. Hawkinson, BS, Northwestern University Feinberg School of Medicine; University of Michigan School of Medicine
- 10:18 am **S014:** VIDEO-BASED SKILL ASSESSMENT OF ENDOSCOPIC SUTURING IN A PEDIATRIC CHEST MODEL AND A BOX TRAINER Shinya Takazawa, MD, Tetsuya Ishimaru, MD, PhD, Kanako Harada, PhD, Yusuke Tsukuda, Naohiko Sugita, PhD, Mamoru Mitsuishi, PhD, Tadashi Iwanaka, MD, PhD, The University of Tokyo Hospital
- 10:25 am **S015:** ANATOMICAL VALIDATION OF AN INANIMATE MODEL FOR TRAINING THORACOSCOPIC REPAIR OF TRACHEO ESOPHAGEAL FISTULA/ESOPHAGEAL ATRESIA – TEF/EA Maximiliano A. Maricic, MD, Maria M. Bailez, MD, National Children’s Hospital S.A.M.I.C. “Prof. Dr. Juan P. Garrahan”
- 10:32 am **S016:** THE LAPAROSCOPIC DUODENO-DUODENOSTOMY SIMULATOR: A MODEL FOR CUSTOMIZABLE MINIMALLY INVASIVE SURGERY TRAINERS Joanne Baerg, MD, Nicole Carvajal, Danielle Ornelas, Candice Sanscartier, Diana Lopez, Cristine Cervantes, William Grover, PhD, Gerald Gollin, MD, Loma Linda University Children’s Hospital and University of California Riverside Biomedical Engineering Department
- 10:39 am **S017:** OPTIMIZING WORKING SPACE IN LAPAROSCOPY – CT MEASUREMENT OF THE INFLUENCE OF SMALL BODY SIZE IN A PORCINE MODEL J. Vlot, MD, Lme Staals, MD, PhD, Prof. RMH Wijnen, MD, PhD, Prof. RJ Stolker, MD, PhD, Prof. NMA Bax, MD, PhD, Erasmus MC: University Medical Center Rotterdam

Complete Schedule

THURSDAY, JULY 24

- 10:46 am **S018:** THE EFFECTS OF CO₂-INSUFFLATION WITH 5 AND 10 MMHG DURING THORACOSCOPY ON CEREBRAL OXYGENATION AND HEMODYNAMICS IN PIGLETS Lisanne J. Stolwijk, MD, Stefaan H. Tytgat, MD, Kristin Keunen, MD, N. Suksamanapan, MD, Maud Y. van Herwaarden, MD, PhD, Petra M. Lemmers, MD, PhD, David C. van der Zee, Prof., Dr., Wilhelmina's Children Hospital University Medical Center Utrecht
- 10:53 am **S019:** MAGIC (MAGNETIC ANTI-GLYCEMIC ILEAL CONDUIT) I: JEJUNAL-ILEAL MAGNETIC COMPRESSION ANASTOMOSIS CORRECTS INSULIN RESISTANCE IN DIABETIC PIGS Hilary B. Gallogly, MD, Elisabeth J. Leeflang, MD, Dillon A. Kwiat, Corey W. Iqbal, MD, Karyn J. Catalano, PhD, Kullada O. Pichakron, MD, Michael R. Harrison, MD, Department of Surgery, University of California, Davis, Departments of Pediatric Surgery and Obstetrics, Gynecology & RS, University of California, San Francisco, Department of Surgery, David Grant Medical Center, Travis Air Force Base
- 11:00 am **S020:** AMNIOSEAL I: A BIOMIMETIC POLYMER ADHESIVE TO PRESEAL THE AMNIOTIC MEMBRANE TO PREVENT PPROM AFTER FETOSCOPY Corey W. Iqbal, MD, Dillon A. Kwiat, BS, Stephanie Kwan, BS, Hoyong Chung, PhD, Robert H. Grubbs, PhD, Michael R. Harrison, MD, University of California San Francisco Fetal Treatment Center, Children's Mercy Hospital Fetal Health Center
- 11:07 am **S021:** THE PEDIATRIC DEVICE CONSORTIUM: A MODEL FOR SURGICAL INNOVATION Elisabeth J. Leeflang, MD, Elizabeth A. Gress, Dillon A. Kwiat, Hanmin Lee, MD, Shuvo Roy, PhD, Michael R. Harrison, MD, Departments of Pediatric Surgery and Bioengineering and Therapeutic Sciences, University of California, San Francisco.
- 11:14 am **S022:** LONG TERM HEMODYNAMIC EFFECTS OF NUSS REPAIR IN PECTUS EXCAVATUM FOR VENTRICULAR FUNCTION BY "CARDIOVASCULAR MAGNETIC RESONANCE CINE-SSFP-IMAGING", RESULTS OF BERLIN-BUCH NUSS-CARDIO-MRI STUDY K. Schaarschmidt, Prof., MD, Susanne Polleichtner, MD, A. Töpper, MD, A. Zagrosek, MD, M. Lempe, MD, F. Schlesinger, MD, J. Schulz-Menger, Prof., MD, Helios Center of Pediatric and Adolescent Surgery Berlin-Buch
- 11:21 am **S023:** 3-DIMENSIONAL VISION IMPROVES LAPAROSCOPIC SURGERY IN SMALL SPACES Xiaoyan Feng, MD, Anna Morandi, MD, Martin Boehne, MD, Tawan Imvised, MD, Benno Ure, MD, PhD, Joachim F. Kuebler, MD, Martin Lacher, MD, PhD, Center of Pediatric Surgery, Department of Pediatric Cardiology and Intensive Care Medicine, Hannover Medical School, Germany

Complete Schedule

THURSDAY, JULY 24

11:30 am – 12:30 pm **Lunch Break**

12:00 pm – 1:00 pm **TOP POSTERS 1-20: Digital Presentation** NON CME

CHAIR: Oliver J. Muensterer, MD

- 12:00 pm **T001:** REDUCED PORT DISTAL PANCREATECTOMY FOR GIANT PANCREATIC NEOPLASM: BEYOND THE EVENT HORIZON AND BACK Samir Pandya, MD, Allison Sweny, MD, Oliver Muensterer, MD, New York Medical College / Maria Fareri Children’s Hospital
- 12:03 pm **T002:** LAPAROSCOPIC ADRENALECTOMY USING A SINGLE WORKING PORT: A CASE OF PRIMARY PIGMENTED NODULAR ADRENOCORTICAL DISEASE Neetu Kumar, Kathryn Evans, Imran Mushtaq, Great Ormond Street Hospital, London
- 12:06 pm **T003:** ROBOTIC-ASSISTED RESECTION OF A PYLORIC PANCREATIC REST WITH PERORAL ENDOSCOPIC REMOVAL AND RECONSTRUCTION BY PARTIAL GASTRODUODENOSTOMY Oliver J. Muensterer, MD, PhD, Samir Pandya, MD, Matthew E Bronstein, MD, Fouzia Shakil, MD, Aliza Solomon, DO, Michel Kahaleh, MD, Division of Pediatric Surgery and Pathology, New York Medical College, Division of Gastroenterology and Pediatric Gastroenterology, Weill Cornell Medical College
- 12:09 pm **T004:** LAPAROSCOPY FOR SMALL BOWEL OBSTRUCTION IN CHILDREN – AN UPDATE Hanna Alemayehu, MD, Bryan David, Amita A. Desai, MD, Corey W. Iqbal, MD, Shawn D. St. Peter, MD, The Children’s Mercy Hospital
- 12:12 pm **T005:** LAPAROSCOPIC TRANSDUODENAL DEROOFFING OF THE PERIAMPULLARY DUODENAL DUPLICATION CYST IN AN INFANT Yu Sokolov, MD, PhD, Dm Donskoy, MD, A. Vilesov, MD, M. Shuvalov, MD, M. Akopyan, MD, Dm Ionov, MD, E. Fokin, MD, St. Vladimir Children Hospital, Moscow, Russia
- 12:15 pm **T006:** LAPAROSCOPIC ENUCLEATION OF TRUE PANCREATIC CONGENITAL CYST Mariana Borges-Dias, Manuel Oliveira, José Estevão-Costa, Miguel Campos, Pediatric Surgery Department, Faculty of Medicine, Hospital São João, Porto, Portugal
- 12:18 pm **T007:** BIMANUAL SUTURING – A NOVEL TECHNIQUE IN LAPAROSCOPIC REPAIR OF MORGAGNI HERNIA Kanika A. Bowen, MD, Dean M. Anselmo, MD, Nam X. Nguyen, Children’s Hospital Los Angeles, Los Angeles, CA
- 12:21 pm **T008:** ROBOTIC CHOLEDOCHAL CYST EXCISION Adam C. Alder, MD, Stephen M. Megison, MD, Children’s Medical Center Dallas

Complete Schedule

THURSDAY, JULY 24

- 12:24 pm **T009:** THE VACUUM BELL FOR CONSERVATIVE TREATMENT OF PECTUS EXCAVATUM: ASSESSMENT OF ITS EFFICACY WITH DISTANCE AND PRESSURE SENSORS Sergio B. Sesia, MD, Stefan Weiss, MSc, David Hradetzky, D. Eng., Frank-Martin Haecker, MD, University Children's Hospital of Basel, Department of Paediatric Surgery, Basel, University of Applied Sciences and Arts Northwestern Switzerland, School of Life Sciences, Institute for Medical and Analytical Technologies, Muttenz, Switzerland
- 12:27 pm **T010:** OUTCOME OF LAPAROSCOPIC SUTURE RECTOPEXY IN PERSISTENT RECTAL PROLAPSE IN CHILDREN Karim Awad, MSc, MRCS, Amr Zaki, MSc, MD, Mohamed Eldebeiky, MSc, MD, MRCS, Ayman Alboghdady, MSc, MD, Tarak Hassan, MSc, MD, MRCS, Sameh Abdelhay, MSc, MD, ain Shams University Hospitals
- 12:30 pm **T011:** SURGICAL TECHNIQUES FOR LAPAROSCOPY-ASSISTED REPAIR OF MALE IMPERFORATE ANUS WITH RECTO-BULBAR FISTULA. COMPARISON WITH RECTO-PROSTATIC FISTULA Hiroyuki Koga, MD, Manabu Okawada, MD, Takashi Doi, MD, Go Miyano, MD, Hiroki Nakamura, MD, Takanori Ochi, MD, Shogo Seo, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD, Department of Pediatric General and Urogenital Surgery, Juntendo University School of Medicine
- 12:33 pm **T012:** DIAPHRAGMATIC EVENTRATION REPAIR: SHOULD WE USE A THORACOSCOPIC OR LAPAROSCOPIC APPROACH? Saidul Islam, Kirsty Brennan, Rajiv Lahiri, Anies Mahomed, Department of Paediatric Surgery, Royal Alexandra Children's Hospital, Brighton, U.K.
- 12:36 pm **T013:** EVOLUTION OF MINIMALLY-INVASIVE TECHNIQUES WITHIN AN ACADEMIC SURGICAL PRACTICE AT A SINGLE INSTITUTION Shannon N. Acker, MD, Susan Staulcup, David A. Partrick, MD, Stig Somme, MD, Children's Hospital Colorado
- 12:39 pm **T014:** ENDOSCOPIC CLOSURE OF PERSISTENT GASTROCUTANEOUS FISTULA IN CHILDREN Sandra M. Farach, MD, Paul D. Danielson, MD, Daniel McClenathan, MD, Nicole M. Chandler, MD, All Children's Hospital Johns Hopkins Medicine
- 12:42 pm **T015:** INPATIENT ADMISSION IS NOT NECESSARY FOLLOWING SUCCESSFUL ENEMA REDUCTION OF INTUSSUSCEPTION IN CHILDREN Mohamed I. Mohamed, MBBS, Stephanie F. Polites, MD, Abdalla E. Zarroug, MD, Michael B. Ishitani, MD, Christopher R. Moir, MD, Division of Pediatric Surgery, Mayo Clinic, Rochester, MN, USA
- 12:45 pm **T016:** EVALUATION OF ENDOSCOPIC AND TRADITIONAL OPEN APPROACHES TO LOCAL ADRENAL NEUROBLASTOMA Wei Yao, Kuiran Dong, Kai Li, Yunli Bi, Gong Chen, Xianmin Xiao, Shan Zheng, Department of Pediatric Surgery, Children's Hospital of Fudan University, Shanghai, China

Complete Schedule

THURSDAY, JULY 24

- 12:48 pm **T017:** COMPARISON OF MULTI-PORT AND SINGLE-PORT LAPAROSCOPIC INGUINAL HERNIORAPHY IN SMALL BABIES [Yury Kozlov, MD](#), Vladimir Novozhilov, MD, Department of Neonatal Surgery, Municipal Pediatric Hospital, Irkutsk, Russia, Department of Pediatric Surgery, Irkutsk State Medical Academy of Continuing Education (IGMAPO), Irkutsk, Russia
- 12:51 pm **T018:** METAL-POLYMER COMPOSITE NUSS BAR FOR “MINIMALLY” INVASIVE BAR REMOVAL AFTER PECTUS EXCAVATUM TREATMENT Leonardo Ricotti, PhD, Gastone Ciuti, PhD, Marco Ghionzoli, MD, PhD, Arianna Menciasci, PhD, [Antonio Messineo, MD](#), 1) The BioRobotics Institute, Scuola Superiore Sant’Anna, Pontedera (Pisa), Italy, 2) Department of Pediatric Surgery, Children’s Hospital A. Meyer, Florence, Italy
- 12:54 pm **T019:** SINGLE-INCISION THORACOSCOPIC RESECTION FOR PEDIATRIC MEDIASTINAL NEUROGENIC TUMOR USING CONVENTIONAL INSTRUMENTS IN CHILDREN [Jiangbin Liu, PhD](#), Professor, Department of Pediatric Surgery, Shanghai Children’s Hospital, Shanghai Jiao Tong University
- 12:57 pm **T020:** THORACOSCOPIC AORTOPEXY FOR TRACHEOMALACIA: DEMONSTRATING FEASIBILITY AND EFFICACY [Avraham Schlager, MD](#), Ozlem Balci, MD, Matthew T. Santore, MD, Mark L. Wulkan, MD, Emory University School of Medicine/Children’s Healthcare of Atlanta

1:00 pm – 5:50 pm **IPEG & BAPS JOINT PROGRAMS** *Pentland, Sidlaw & Fintry Auditorium*

1:00 pm – 3:00 pm **IPEG/BAPS PRESIDENTIAL DEBATE: “Esophageal and Diaphragmatic Surgery – Thoracoscopic vs. Open”**
CHAIRS: Benno Ure, MD, PhD (IPEG) & Rick Turnock, MD (BAPS)

DESCRIPTION: This panel will discuss the pros and cons of thoracoscopic surgery for esophageal atresia and diaphragmatic hernia in the newborn. The discussion will include technical aspects, the pathophysiological responses of newborns and data on the outcome.

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Appropriately apply thoracoscopic techniques for esophageal atresia and diaphragmatic hernia in newborns
- Apply these techniques to relevant cases
- Decide on when to convert to open surgery and how to monitor pathophysiological responses and to how to react appropriately.

Complete Schedule

THURSDAY, JULY 24

TIME	TOPIC	FACULTY
1:00 pm	Pathophysiology and Intra-Operative Physiology in OA-TOF/CDH	Agostino Pierro, MD
1:20 pm	OA-TOF: Open	Mark Davenport, MD
1:35 pm	OA-TOF: Thoracoscopic	Steven Rothenberg, MD
1:50 pm	Q&A	
2:10 pm	CDH: Open	David C G Crabbe, MD
2:25 pm	CDH: Thoracoscopic	Mark L Wulkan, MD
2:40 pm	Q&A	
	S024: MINIMALLY INVASIVE CDH REPAIR: EFFECTIVE FOR SELECT PATIENTS Tate Nice MD, Scott Anderson MD, Sebastian Pasara, Rafik M. Bous, Robert Russell MD, MPH, Carroll M. Harmon MD, PHD, Children's of Alabama, University of Alabama at Birmingham	
3:00 pm – 3:30 pm	Break	
3:30 pm – 5:20 pm	IPEG/BAPS Best Clinical Paper Session CHAIRS: Philipp O. Szavay, MD (IPEG) & Simon Eaton, MD (BAPS) INTRODUCTION: Gordon A. MacKinlay, OBE	
3:30 pm	S025: FURTHER EXPERIENCE WITH STAGED THORACOSCOPIC REPAIR OF A LONG GAP ESOPHAGEAL ATRESIA USING INTERNAL STATIC TRACTION SUTURE <u>Dariusz Patkowski, Prof., MD, PhD</u> , <u>Wojciech Górecki, MD, PhD</u> , <u>Sylwester Gerus, MD</u> , <u>Anna Piaseczna-Piotrowska, Prof, MD, PhD</u> , <u>Piotr Wojciechowski, MD, PhD</u> , <u>A.I. Prokurat, Prof., MD, PhD</u> , <u>Przemysław Galazka, MD, PhD</u> , <u>Michał Błaszczyszynski, MD, PhD</u> , <u>Maciej Baglaj Prof, MD, PhD</u> , Departments of Pediatric Surgery and Urology: Wrocław, Krakow, Lodz, Poznan, Bydgoszcz	
3:39 pm	S026: B-TYPE NATRIURETIC PEPTIDE LEVELS CORRELATE WITH PULMONARY HYPERTENSION AND REQUIREMENT FOR EXTRACORPOREAL MEMBRANE OXYGENATION IN CONGENITAL DIAPHRAGMATIC HERNIA <u>Emily A. Partridge</u> , Lisa Herkert, Brian Hanna, Natalie E. Rintoul, Alan W. Flake, N. Scott Adzick, Holly L. Hedrick, William H. Peranteau, Children's Hospital of Philadelphia Philadelphia, PA USA	
3:48 pm	S027: SINGLE INCISION LAPAROSCOPIC ILEAL POUCH-ANAL ANASTOMOSIS IN CHILDREN—HOW DOES IT COMPARE TO A TRADITIONAL LAPAROSCOPIC-ASSISTED APPROACH? <u>Stephanie F. Polites, MD</u> , Abdalla E. Zarroug, MD, Christopher R. Moir, MD, Donald D. Potter, MD, Mayo Clinic, Rochester, MN, University of Iowa, Iowa City, IA	

Complete Schedule

THURSDAY, JULY 24

- 3:57 pm **S028:** CURRENT OPERATIVE STRATEGIES AND EARLY COMPLICATIONS OF DEFINITIVE SURGERY FOR HIRSCHSPRUNG'S DISEASE IN THE UK AND IRELAND: FINDINGS FROM A PROSPECTIVE NATIONAL COHORT STUDY Tim Bradnock¹, Simon Kenny², Paul Johnson³, Marian Knight⁴, Jenny Kurinczuk⁴, Gregor Walker¹, ¹Department of Paediatric surgery, Yorkhill hospital, Glasgow, UK, ²Department of Paediatric surgery, Alder Hey Children's Hospital, Liverpool, UK, ³Department of Paediatric surgery, University of Oxford, Oxford, UK, ⁴National Perinatal Epidemiology Unit
- 4:06 pm **S029:** PRELIMINARY EVALUATION OF A NOVEL INFANT THORACOSCOPIC LOBECTOMY SIMULATOR Katherine A. Barsness, MD, MS, Deborah M. Rooney, PhD, Lauren M. Davis, BA, Ellen K. Hawkinson, BS, Northwestern University Feinberg School of Medicine, University of Michigan Medical School
- 4:15 pm **S030:** GASTROSCHISIS – THE ROLE OF BREAST MILK IN REDUCING TIME TO FULL FEEDS Deirdre Kriel¹, Anne Aspin¹, Jonathan Goring¹, Robert West², Jonathan Sutcliffe¹, ¹Leeds Teaching Hospitals NHS Trust, Leeds, UK, ²Leeds Institute of Health Sciences – University of Leeds, Leeds, UK
- 4:24 pm **S031:** ONCOLOGIC MIS SURGERY : ROLE OF IDRFS CRITERIA IN PATIENT SELECTION AND PLANNING *Claudio Vella, MD, *Camilla Viglio, MD, *Sara Costanzo, MD, **Salvatore Zirpoli, MD, **Marcello Napolitano, MD, ***Roberto Luksch, MD, *Giovanna Riccipetoni, MD, *Pediatric Surgery Department, "V.Buzzi" Children's Hospital ICP, **Pediatric Radiology and Neuroradiology Department "V.Buzzi" Children's Hospital ICP, Milan – Italy, *** Pediatric Department , Fondazione IRCCS National Cancer Institute, Milan, Italy
- 4:33 pm **S032:** GLUTAMINE SUPPLEMENTATION IMPROVES MONOCYTE FUNCTION IN SURGICAL INFANTS REQUIRING PARENTERAL NUTRITION – RESULTS OF A RANDOMISED CONTROLLED TRIAL Mark Bishay¹, Venetia Simchowit², Danielle Petersen², Marlene Ellmer², Sarah Macdonald², Jane Hawdon⁴, Elizabeth Erasmus⁴, Kate MK Cross², Joseph I Curry², ¹UCL Institute of Child Health, London, UK, ²Great Ormond Street Hospital, London, UK, ³Hospital for Sick Children, Toronto, Canada, ⁴University College Hospital, London, UK
- 4:42 pm **S033:** COMPARISON OF 30-DAY OUTCOMES BETWEEN THORACOSCOPIC AND OPEN LOBECTOMY FOR CONGENITAL PULMONARY LESIONS Justin Mahida, MD, MBA, Lindsey Asti, MPH, Victoria K. Pepper, MD, Katherine J. Deans, MD, MHSc, Peter C Minneci, MD, MHSc, Karen A. Diefenbach, MD, Nationwide Children's Hospital, Columbus Ohio
- 4:51 pm **S034:** HIGH VOLUMES IMPROVE OUTCOMES – A NATIONAL REVIEW OF HYPOSPADIAS SURGERY IN ENGLAND 1999–2009 Patrick Green^{3,1}, David Wilkinson^{2,1}, Shanthi Beglinger¹, Rachel Hudson¹, David Edgar¹, Simon Kenny^{1,2}, ¹University of Liverpool, Liverpool, UK, ²Alder Hey Children's Hospital NHS Foundation Trust, Liverpool, UK, ³Royal Liverpool and Broadgreen University Hospitals Trust, Liverpool, UK

Complete Schedule

THURSDAY, JULY 24

5:00 pm **S035:** TRANSUMBILICAL LAPAROENDOSCOPIC SINGLE SITE SURGERY WITH CONVENTIONAL INSTRUMENTS FOR CHOLEDOCHAL CYST IN CHILDREN: EARLY RESULTS OF 86 CASES Tran N. Son, MD, PhD, Nguyen T. Liem, MD, PhD, Vu X. Hoan, MD, National Hospital of Paediatrics, Hanoi, Vietnam

5:09 pm **S036:** SALINE VERSUS TISSUE PLASMINOGEN ACTIVATOR IRRIGATIONS AFTER DRAIN PLACEMENT FOR APPENDICITIS-ASSOCIATED ABSCESS: A PROSPECTIVE RANDOMIZED TRIAL Shawn St. Peter, Obinna Adibe, Sohail Shah, Susan Sharp, David Juang, Brent Reading, Brent Cully, Whit Holcomb III, Doug Rivard, Children's Mercy Hospital, Kansas City, MO, USA

5:20 pm – 5:50 pm **KARL STORZ LECTURE: “Developing Neonatal MIS Surgery, Innovation, Techniques, and Helping an Industry to Change”**

SPEAKER: Steven Rothenberg, MD



Dr. Rothenberg is the Chief of Pediatric Surgery at the Rocky Mountain Hospital for Children at PSL in Denver, Co. He is also a Clinical Professor of Surgery at Columbia University College of Physicians and Surgeons. He is a world leader in the field of endoscopic surgery in infants and children and has pioneered many of the procedures using minimally invasive techniques.

Dr. Rothenberg completed medical school and general surgery residency at the University of Colorado in Denver. He then spent a year in England doing a fellowship in General Thoracic Surgery prior to returning to the states where he completed a two year Pediatric Surgery fellowship at Texas Children's Hospital in Houston. He returned to Colorado in 1992 where he has been in practice for over the last 20 years.

Dr. Rothenberg was one of the founding members of the International Pediatric Surgical Group (IPEG) and is a past-president. He was also the Chair of the Pediatric Committee and on the Board of Directors for SAGES (The Society of American Gastr-intestinal Endoscopic Surgeons). He has authored over 180 publications on minimally invasive surgery in children and has given over 300 lectures on the subject nationally and internationally. He is also on the editorial board for the *Journal of Laparoendoscopic Surgery and Advanced Surgical Technique*, *The Journal of Pediatric Surgery*, and *Pediatric Surgery International*.

Dr. Rothenberg has been married to his wife Susan for over 30 years and has three children Jessica, Catherine, and Zachary. He is an avid outdoorsman and spends most of his free time in the mountains of Colorado skiing, hiking, biking, and fishing.

Complete Schedule

FRIDAY, JULY 25

IPEG'S 23rd ANNUAL CONGRESS

Friday, July 25

Lennox 3

7:00 am – 8:00 am **Morning Scientific Video Session II**
CHAIRS: Katherine A. Barsness, MD & Holger Till, MD, PhD

- 7:00 am **V010:** VAGINAL AGENESIS AND ATRESIA OF THE UTERINE CERVIX ASSOCIATED TO VESTIBULAR FISTULA Maria M. Bailez, MD, Lucila Alvarez, MD, Garrahan Children's Hospital, Buenos Aires, Argentina
- 7:06 am **V011:** ENDOSCOPIC GASTROGASTROENTEROLOGY FISTULA CLOSURE USING AN OVER THE SCOPE CLIP James Wall, MD, MS, Lucile Packard Children's Hospital Stanford
- 7:12 am **V012:** LAPAROSCOPIC RESECTION OF A NEUROENDOCRINE TUMOR OF THE COMMON BILE DUCT WITH HEPATICODUODENOSTOMY Steven S. Rothenberg, MD, The Rocky Mountain Hospital For Children
- 7:18 am **V013:** LAPAROSCOPIC RESECTION OF A LARGE RETROPERITONEAL GANGLIONEUROMA Bethany J. Slater, MD, Steven S. Rothenberg, MD, Rocky Mountain Hospital for Children
- 7:24 am **V014:** LAPAROSCOPIC LEFT PARTIAL ADRENALECTOMY IN A CHILD WITH VON HIPPEL-LINDAU AND RECURRENT PHEOCHROMOCYTOMA A. B. Podany, MD, A. Dash, MD, D. V. Rocourt, MD, Pennsylvania State Hershey Medical Center
- 7:30 am **V015:** LAPAROSCOPIC LATERAL PANCREATICOJEJUNOSTOMY-PEUSTOW PROCEDURE- IN A 4 YEAR OLD WITH PANCREATIC DUCTAL OBSTRUCTION Miller Hamrick, MD, Mikael Petrosyan, MD, Eric Jelin, MD, Timothy D. Kane, MD, Children's National Medical Center
- 7:36 am **V016:** LAPAROSCOPIC CORRECTION OF COLORECTAL DUPLICATION AND VAGINOPLASTY Kanika A. Bowen, MD, Kevin Platt, BS, Alli Wu, BS, Kasper Wang, MD, Children's Hospital of Los Angeles
- 7:42 am **V017:** LAPAROSCOPIC PROPHYLACTIC TOTAL GASTRECTOMY IN CHILDHOOD FOR THE PREVENTION OF HEREDITARY DIFFUSE GASTRIC CANCER Benjamin Zendejas, MD, MSc, Abdalla E. Zarroug, MD, Michael L. Kendrick, MD, Department of Surgery, Mayo Clinic, Rochester, MN, USA
- 7:48 am **V018:** LAPAROSCOPIC GASTRIC PPLICATION IN ADOLESCENTS AND YOUNG ADULTS WITH SEVERE OBESITY: DESCRIPTION OF FIRST PATIENT ENROLLED IN PILOT STUDY Shannon F. Rosati, MD, Dan Parrish, MD, Poornima Vanguri, MD, Matthew Brengman, MD, FACS, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center

Complete Schedule

FRIDAY, JULY 25

8:00 am – 9:30 am **SCIENTIFIC SESSION: Urogenital**

CHAIRS: Martin L. Metzelder, MD & CK Yeung, MD

- 8:00 am **V019:** LAPAROSCOPIC PARTIAL NEPHRECTOMY FOR THE TREATMENT OF LARGE CYSTIC NEPHROMA IN CHILDREN Yujiro Tanaka, MD, PhD, Hiroo Uchida, MD, PhD, Hiroshi Kawashima, MD, Shinya Takazawa, MD, Takayuki Masuko, MD, PhD, Kyoichi Deie, MD, Hizuru Amano, MD, Michimasa Fujjogi, MD, Tadashi Iwanaka, MD, PhD, Prof, Department of Pediatric Surgery, Saitama Children's Medical Center & The University of Tokyo
- 8:05 am **S037:** LAPAROSCOPIC FOWLER-STEVENS ORCHIOPEXY, A RANDOMIZED PILOT STUDY COMPARING THE PRIMARY AND 2-STAGE APPROACHES Daniel J. Ostlie, MD, Charles M. Leys, MD, Jason D. Fraser, MD, Charles L. Snyder, MD, Shawn D. St. Peter, MD, University of Wisconsin/American Family Children's Hospital, Children's Mercy Hospital and Clinics
- 8:11 am **S038:** LONG TERM FOLLOW UP OF MODIFIED LAPAROSCOPIC TRANSCUTANEOUS INGUINAL HERNIA REPAIR WITH HIGH SUTURE LIGATURE OF THE HERNIA SAC Matias Bruzoni, MD, FACS, Zachary J. Kastenber, MD, Joshua D. Jaramillo, BA, James K. Wall, MD, Robert Wright, MA, Sanjeev Dutta, MD, MBA, Stanford University
- 8:17 am **S039:** LAPAROSCOPIC PYELOPLASTY IN INFANTS: SINGLE-SURGEON EXPERIENCE WITH 114 OPERATIONS Chandrasekharam Vvs, Dr., Rainbow Children's Hospitals
- 8:25 am **S041:** LAPAROSCOPIC URETERO-PYELOLITHOTOMY IN CHILDREN Ana María Castillo-Fernández, MD, Sergio Landa-Juárez, MD, Ramón Esteban Moreno Riesgo, MD, Hermilo De La Cruz-Yañez, MD, Carlos García-Hernández, MD, Hospital de Pediatría, Centro Médico Nacional SXXI. IMSS
- 8:29 am **S042:** EXPERIENCE OF LAPAROSCOPIC PYELOPLAST IN THE TREATMENT OF URETEROPELVIC JUNCTION OBSTUCTION IN INFANTS (<3 MONTHS) Aiwu Li, Jian Wang, Qiangye Zhang, Wentong Zhang, Hongchao Yang, Weijing Mu, Department of Pediatric Surgery, Qilu Hospital, Shandong University
- 8:35 am **S043:** LAPAROSCOPIC EXTRAVESICAL URETERAL REIMPLANTATION FOLLOWING LICH GREGOIRE TECHNIQUE. MEDIUM-TERM PROSPECTIVE STUDY Manuel Lopez, Eduardo Perez-Etchepare, MD, François Varlet, MD, PhD, Department of Pediatric Surgery, University Hospital of Saint Etienne

Complete Schedule

FRIDAY, JULY 25

- 8:41 am **S044:** ROBOTIC ASSISTED LAPAROSCOPIC MANAGEMENT OF DUPLEX RENAL ANOMALY IS FEASIBLE AND SAFE WITH EQUAL SHORT TERM SURGICAL OUTCOMES TO TRADITIONAL PURE LAPAROSCOPIC AND OPEN SURGERY Daniel B. Herz, MD, Paul A. Merguerian, MD, Venkata R. Jayanthi, MD, Seth A. Alpert, MD, Jennifer A. Smith, RN, Nationwide Children's Hospital; Children's Hospital at Dartmouth
- 8:47 am **S045:** TRANSRENAL STENTING IN LAPAROSCOPIC PYELOPLASTY IN INFANTS AND CHILDREN: A SAVE TECHNIQUE Tobias Luithle, MD, Florian Obermayr, MD, Joerg Fuchs, MD, Department of Pediatric Surgery and Pediatric Urology, University Children's Hospital, Tuebingen, Germany
- 8:53 am **S046:** RETROPERITONEOSCOPIC PYELOPLASTY IN 134 CHILDREN Ravindra Ramadwar, Dr., Bombay Hospital, Hinduja Hospital & Joy Hospital, Mumbai, India
- 8:59 am **S047:** PREOPERATIVE COLOUR DOPPLER ULTRASOUND IN CHILDREN WITH PELVIURETERIC JUNCTION OBSTRUCTION AND SUSPECTED LOWER POLE CROSSING VESSELS – VALUE FOR THE LAPAROSCOPIC SURGEON? Nagoud Schukfeh, Martin Metzelder, Paul Andreas, Udo Vester, Division of Pediatric Surgery, Department of General-, Visceral- and Transplant Surgery, University Clinic Essen, Essen, Germany and Department of Pediatric Nephrology, University Clinic Essen, Essen, Germany
- 9:05 am **S048:** ONE TROCAR ASSISTED PYELOPLASTY IN CHILDREN Giovanni Cobellis, PhD, Fabiano Nino, MD, Carmine Noviello, PhD, Mercedes Romano, PhD, Francesco Mariscoli, MD, Lorenzo Rossi, MD, Ascanio Martino, MD, Pediatric Surgery Unit, Academic Children's Hospital, Ancona
- 9:11 am **S049:** LAPAROSCOPIC WILMS' TUMOUR NEPHRECTOMY Ewan M. Brownlee, Fraser D. Munro, Gordon A. MacKinlay, OBE, Hamish Wallace, Royal Hospital for Sick Children, Edinburgh

9:30 am – 4:30 pm **Exhibits/Posters Open**

9:30 am – 10:00 am **Break**

10:00 am – 11:00 am **SCIENTIFIC SESSION: Gastrointestinal & Hepatobiliary II**
CHAIRS: Karen A. Diefenbach, MD & Long Li, MD

- 10:00 am **S050:** EVOLUTION OF MINIMALLY INVASIVE TREATMENT OF CHOLEDOCHOLITHIASIS (CL) IN PEDIATRICS. EXPERIENCE AT A SINGLE CENTER Mauro Capparelli, MD, Horacio Questa, MD, Maria M Bailez, MD, Garrahan Children's Htal Buenos Aires, Argentina

Complete Schedule

FRIDAY, JULY 25

- 10:07 am **S051:** THE LEARNING CURVE ON THE LAPAROSCOPIC EXCISION OF CHOLEDOCHAL CYST WITH ROUX-EN-Y HEPATOENTEROSTOMY IN CHILDREN Jiangbin Liu, PhD, Zhibao Lv, Professor, Department of Pediatric Surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University and Department of Pediatric Surgery, Children's Hospital of Fudan University, Shanghai, PR China
- 10:14 am **S052:** PERIOPERATIVE COMPLICATIONS OF LAPAROSCOPIC CHOLEDOCHAL CYST EXCISION Zhigang Gao, MD, Qixing Xiong, MD, Jinfa Tou, MD, Qiang Shu, Pro, Pediatric Surgery Department
- 10:21 am **S054:** LAPAROSCOPIC SIMPLE OBLIQUE DUODENO-DUODENOSTOMY IN MANAGEMENT OF CONGENITAL DUODENAL OBSTRUCTION IN CHILDREN Tran N. Son, MD, PhD, Nguyen T. Liem, MD, PhD, Hoang H. Kien, MD, National Hospital of Paediatrics, Hanoi, Vietnam
- 10:28 am **S055:** THREE-PORT TOTAL COLECTOMY AND SUBSEQUENT ROBOTIC PROCTECTOMY WITH ILEAL POUCH-ANAL ANASTOMOSIS IN FULMINANT ULCERATIVE COLITIS. INITIAL EXPERIENCE G. Elmo, MD, T. Ferraris, MD, D. Liberto, MD, M. Urquizo, MD, P. Lobos, MD, F. De Badiola, MD, Pediatric Surgery Hospital Italiano de Buenos Aires
- 10:35 am **S056:** WHAT HAPPENS BEYOND AN OPEN ANULUS INGUINALIS PROFUNDUS FOUND AT LAPAROSCOPIC PYLOROMYOTOMY IN INFANTS? - A JOURNEY INTO TERRA INCOGNITA Reza M. Vahdad, MD, Lars B. Burghardt, Matthias Nissen, MD, Svenja Hardwig, MD, Ralf B. Troebs, Prof., Dr., med, Tobias Klein, MD, Alexander Semaan, Thomas Boemers, Prof., Dr., med, Grigore Cernaianu, MD, 1) Department of Pediatric Surgery, Cologne, Germany, 2) Department of Pediatric Surgery, Ruhr-University Bochum, Germany, 3) Department of Pediatric Surgery, University Hospital Luebeck, Germany
- 10:42 am **S057:** LAPAROSCOPIC TRANSHIATAL GASTRIC PULL-UP IN 6 CHILDREN Nidhi Khandelwal, Dr., Ravindra Ramadwar, Dr., Bombay Hospital, Mumbai, India
- 10:49 am **S058:** THE SMALL BOWEL IN ITS HAMMOCK: HOW TO AVOID IRRADIATION THANKS TO THE SIGMOID Sabine Irtan, MD, PhD, Eric Mascard, MD, Stephanie Bolle, MD, Laurence Brugieres, MD, PhD, Sabine Sarnacki, MD, PhD, Department of pediatric surgery, APHP, Hopital Necker, Paris, France; Sorbonne Paris City University, Paris, France

Complete Schedule

FRIDAY, JULY 25

11:00 am – 12:00 pm **SCIENTIFIC SESSION: Panel – “Laparoscopy in the Neonate and Infant: What’s New?”**

MODERATOR: David C. van der Zee, MD, PhD

DESCRIPTIONS: This panel will provide an update of the most recent developments in neonatal minimally invasive surgery.

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Describe the technique for a safe anastomosis with low risk of postoperative leakage
- Define the different steps of the procedure
- Avoid using too high pressures in neonates.

TIME	TOPIC	PANELIST
11:00 am	MIS in the Neonate and Infant: What’s New – Introduction	David C. van der Zee, MD, PhD
11:05 am	Approaches to Long Gap Esophageal Atresia	David C. van der Zee, MD, PhD
11:20 am	Thoracoscopy Indications and Techniques for Rare Conditions	Timothy D. Kane, MD
11:35 am	Laparoscopy in the Neonate – Indications, Techniques	Milissa A. McKee, MD
11:50 am	Round Table Discussion	All

12:00 pm – 1:00 pm **Lunch Break**

12:00 pm – 1:00 pm **TOP POSTERS 21–40: Digital Presentation** NON CME

CHAIR: Joachim F. Kuebler, MD

12:00 pm **T021: THORACOSCOPIC IBIS HEAD REPAIR OF CONGENITAL PARTIAL DIAPHRAGMATIC EVENTRATION. A NEW ANATOMICAL RECONSTRUCTIVE CONCEPT** Mohamed M. Elbarbary, MD, Ahmed E. Fares, MD, Haytham E. Tantawy, MD, Ayman H. Abdelsattar, MD, Mahmoud M. Marei, MD, Hamed M. Seleim, MD, Wissam M. Mahmoud, MD, Departments of Pediatric Surgery, Cairo University, Fayoum University, Tanta University

Complete Schedule

FRIDAY, JULY 25

- 12:03 pm **T022:** IS LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE FOR INGUINAL HERNIA EFFECTIVE COMPARED WITH THE OPEN METHOD? –A SINGLE INSTITUTION EXPERIENCE OF OVER 1000 CASES Hironu Miyake, Koji Fukumoto, Go Miyano, Masaya Yamoto, Hiroshi Nouse, Keiichi Morita, Masakatsu Kaneshiro, Naoto Urushihara, Shizuoka Children’s Hospital
- 12:06 pm **T023:** DEVELOPMENT OF MINIMALLY INVASIVE SURGERY (MIS) IN A MEDIUM-VOLUME PEDIATRIC SURGICAL CENTER: A TEN YEAR EXPERIENCE OF 1387 OPERATIONS Patrick Ho Yu Chung, MBBS, FRCS, Kenneth Kak Yuen Wong, PhD, Paul Kwong Hang Tam, MBBS, MS, Department of Surgery, Li Ka Shing Faculty of Medicine, The University of Hong Kong
- 12:09 pm **T024:** HYBRID SIMULATION: A NOVEL CURRICULAR CHANGE FOR AN ESTABLISHED TRAINING COURSE Katherine A. Barsness, MD, MS, Deborah M. Rooney, PhD, Carroll M. Harmon, MD, PhD, Northwestern University Feinberg School of Medicine, University of Michigan Medical School, University of Buffalo School of Medicine
- 12:12 pm **T025:** LAPAROSCOPIC INTERRUPTED MUSCULAR ARCH REPAIR IN RECURRENT UNILATERAL INGUINAL HERNIA AMONG CHILDREN Sherif M. Shehata, PhD, Akram M. ElBatarny, MD, Mohamed A. Attia, MD, Ashraf A. AlAttar, MD, Abdel Ghani Shalaby, MD, Department of Pediatric Surgery, Tanta University Hospital, Tanta, Egypt
- 12:15 pm **T026:** LAPAROSCOPIC TREATMENT OF LIVER HYDATID DISEASE IN CASES OF CYST RUPTURE IN CHILDREN Sagidulla Dosmagambetov, Bulat Dzenalaev, Aitzan Baimenov, Vladimir Kotlovovskiy, Aslan Ergaliev, Aslbek Tusupkaliev, Ibatulla Nurgaliev, Roza Kenzalina, Kidirbek Altaev, Kuben Satibaldiev, Egor Roskidailo, Department of Laparoscopic Surgery, Regional Pediatric Hospital, Aktobe, Kazakhstan
- 12:18 pm **T027:** OUTCOMES OF SINGLE PORT SURGERY FOR PERFORATED APPENDICITIS IN CHILDREN: SINGLE SURGEON EXPERIENCE. Adesola C. Akinkuotu, MD, Paulette I. Abbas, MD, Shiree Bery, MD, Ashwin Pimpalwar, MD, Texas Children’s Hospital and the Division of Pediatric surgery, Michael E. DeBaKey Department of Surgery, Baylor College of Medicine, Houston, TX
- 12:21 pm **T028:** THORACOSCOPIC APPROACH OF BILATERAL CHYLOTHORAX: VIDEO Marcelo Martinez Ferro, MD, Fernando Rabinovich, MD, Carolina Millan, MD, Horacio Bignon, MD, Gaston Bellia, MD, Luzia Toselli, MD, Mariano Albertal, MD, Private Children’s Hospital of Buenos Aires, Fundación Hospitalaria, Buenos Aires, Argentina

Complete Schedule

FRIDAY, JULY 25

- 12:24 pm **T029:** THE USE OF ROBOTIC SURGERY ALLOWS FOR IMPROVED DEXTERITY AND VISUALIZATION DURING THORACOSCOPIC THYMECTOMY Shannon F. Rosati, MD, Dan Parrish, MD, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center
- 12:27 pm **T030:** TREATMENT OF THE CHYLOPERICARDIUM THROUGH MINIMAL INVASIVE TECHNIQUES REPORT OF A PEDIATRIC CASE Carlos Garcia-Hernandez, MD, Lourdes Carvajal-Figueroa, MD, Adriana Calderon-Urreta, MD, Sergio Landa-Juarez, MD, Hospital Star Medica Lomas Verdes. México
- 12:30 pm **T031:** LAPAROSCOPIC URETEROVESICAL PLASTY FOR MEGAURETER'S TREATMENT Sergio Landa-Juárez, MD, Ana María Castillo-Fernández, MD, Angélica Alejandra Guerra-Rivas, MD, Arturo Medécigo Vite, MD, Hermilo De La Cruz-Yañez, MD, Carlos Garcia-Hernández, MD, Hospital de Pediatría, Centro Médico Nacional Siglo XXI. IMSS
- 12:33 pm **T032:** VIDEO ASSISTED EXTRACORPOREAL PYELOPLASTY Edgar Rubio Talero, MD, Fernando A. Escobar Rivera, MD, Clínica Saludcoop Tunja
- 12:36 pm **T033:** THE USE OF A 5-MM ENDOSCOPIC STAPLER FOR RECTAL TRANSECTION DURING LAPAROSCOPIC SUBTOTAL COLECTOMY Simone Frediani, MD, Silvia Ceccanti, MD, Romina Iaconelli, MD, Falconi Ilaria, MD, Debora Morgante, MD, Denis A Cozzi, MD, Policlinico Umberto I Hospital and Sapienza University of Rome, Rome, Italy
- 12:39 pm **T034:** THE CHARACTERIZATION OF PECTUS EXCAVATUM INCLUDING ITS ASYMMETRY Sergio B. Sesia, MD, Margarete M. Heitzelmann, Sabine Schaedelin, MSc, Olaf Magerkurth, MD, Frank-Martin Haecker, MD, University Children's Hospital of Basel, Department of Pediatric Surgery and Department of Pediatric Radiology, Spitalstrasse 33, 4056 Basel, Switzerland; University of Basel, Clinical Trial Unit, Schanzenstrasse 55, 4031 Basel, Switzerland
- 12:42 pm **T035:** CURRENT PRACTICE AND OUTCOMES OF THORACOSCOPIC ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA REPAIR: A MULTI-INSTITUTIONAL ANALYSIS IN JAPAN Hiroomi Okuyama, MD, PhD, Hiroyuki Koga, MD, PhD, Tetsuya Ishimaru, MD, PhD, Hiroshi Kawashima, MD, Atsuyuki Yamataka, MD, PhD, Naoto Urushihara, MD, Osamu Segawa, MD, PhD, Hiroo Uchida, MD, PhD, Tadashi Iwanaka, MD, PhD, Dept of Pediatric Surgery, Hyogo College of Med.; Juntendo University School of Med.; The University of Tokyo Hosp.; Saitama Children's Hosp.; Shizuoka Children's Hosp.; Tokyo Women's Medical University; Nagoya University Graduate School of Med.

Complete Schedule

FRIDAY, JULY 25

- 12:45 pm **T036:** SINGLE-INCISION LAPAROSCOPIC ENDORECTAL PULL-THROUGH FOR HIRSCHSPRUNG'S DISEASE WITH TROCARLESS INSTRUMENT VIA AN ANOTHER STAB INCISION Shao-tao Tang, MD, Shi-wang Li, MD, Li Yang, Department of Pediatric Surgery, Union Hospital of Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430022, China
- 12:48 pm **T037:** AUDIT OF INITIAL EXPERIENCE OF LAPAROSCOPIC PYLOROMYOTOMY Helai Habib, MBBS, BSc, Mohamed Shalaby, FRCS, Paed, Surg, Philip Hammond, FRCS, Paed, Surg, Atul Sabharwal, FRCS, Paed, Surg, Royal Hospital for Sick Children, Yorkhill, Glasgow, UK
- 12:51 pm **T038:** OUTCOMES AFTER EARLY SPLENECTOMY FOR HEMATOLOGICAL DISORDERS Elizabeth Renaud, MD, Nirmal Gokarn, MD, Deepa Manwani, MD, Steven Borenstein, MD, Dominique Jan, MD, PhD, Montefiore Medical Center
- 12:54 pm **T039:** BRINGING SURGEONS TOGETHER ACROSS THE WORLD: DIAGNOSIS AND MANAGEMENT OF ACUTE APPENDICITIS. Margaret Nalugo, MPH, Todd A. Ponsky, MD, George W. Holcomb III, MD, Akron Children's Hospital, Children's Mercy Hospital
- 12:57 pm **T040:** A NOVEL REPAIR OF A VAGINAL FORNIX LACERATION FOLLOWING INTERCOURSE Ulises Garza Serna, MD, David Bliss, MD, Nam Nguyen, MD, Kasper Wang, MD, University of Southern California, Children's Hospital Los Angeles

1:00 pm – 1:30 pm **KEYNOTE LECTURE: "Lean Processes in the Hospital"**
SPEAKER: Dirk Pfitzer, Porsche Consulting GmbH.



Dirk Pfitzer is a partner at PORSCHE CONSULTING and responsible for the center of competence in the field of health care/pharmaceuticals/medical technique. He joined PORSCHE CONSULTING 9 years ago after 5 years working at a major consulting and strategy company. He studied business management at the University of Bayreuth, Germany and Madrid, Spain. PORSCHE CONSULTING is a 100% subsidiary of PORSCHE

Corp. and belongs to the leading consulting companies for operative excellence. Dirk Pfitzer was in charge for a variety of projects regarding the improvement of efficiency and competitiveness in the field of health care providers. He and his team could successfully accomplish projects in more than 70 hospitals, either private or university hospitals. The spectrum of their activities comprises projects in order to reduce costs and increase proceeds as well as to implement improvements at a process level.

Complete Schedule

FRIDAY, JULY 25

1:30 pm – 2:30 pm **PANEL: Single Site Surgery**
 MODERATOR: Todd A. Ponsky, MD

DESCRIPTIONS: Designed for practicing pediatric surgeons who have an interest in advanced laparoscopy. Specifically this session will address the pros and cons of single port laparoscopy in children.

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Identify situations where there is an increased risk of injury to the bowel or bile ducts from single site surgery in pediatric patients. (patient safety)
- Articulate the application of single site surgery in children
- Compare single site surgery to standard laparoscopy in children in regards to technical feasibility and patient outcome.

TIME	TOPIC	PANELIST
1:30 pm	Current Practice with Impact on Routine	Martin Lacher, MD
1:45 pm	How Far Can We Go?	Carroll M. Harmon, MD, PhD
2:00 pm	A Critical Appraisal	Shawn D. St. Peter, MD
2:15 pm	Q&A	All

2:30 pm – 3:30 pm **SCIENTIFIC SESSION: Thorax**
 CHAIRS: Timothy D. Kane, MD & Pablo Laje, MD

- 2:30 pm **S059:** EXTENDED NUSS FOR 146 RECURRENCES OF PECTUS EXCAVATUM K. Schaarschmidt, Prof, MD, S. Polleichtner, MD, M. Lempe, MD, F. Schlesinger, MD, U. Jaeschke, MD, Helios Center of Pediatric & Adolescent Surgery Berlin-Buch
- 2:38 pm **S060:** 100 INFANT THORACOSCOPIC LOBECTOMIES: LEARNING CURVE AND A COMPARISON WITH OPEN LOBECTOMY Pablo Laje, MD, Erik G. Pearson, MD, Tiffany Sinclair, MD, Mohamed A. Rehman, MD, Allan F. Simpao, MD, David E. Cohen, MD, Holly L. Hedrick, MD, N. Scott Adzick, MD, Alan W. Flake, MD, The Children's Hospital of Philadelphia
- 2:46 pm **S061:** TWO DECADES EXPERIENCE WITH THORACOSCOPIC LOBECTOMY IN INFANTS AND CHILDREN, STANDARDIZING TECHNIQUES FOR ADVANCED THORACOCPIC SURGERY Steven Rothenberg, MD, William Middlesworth, MD, Angela Kadenhe-chiweshe, MD, The Morgan Stanley Children's Hospital, Columbia University; The Rocky Mountain Hospital For Children

Complete Schedule

FRIDAY, JULY 25

- 2:54 pm **S062:** THORACOSCOPIC THORACIC DUCT LIGATION FOR CONGENITAL AND ACQUIRED DISEASE [Bethany J. Slater, MD](#), Steven S. Rothenberg, MD, FACS, FAAP, Rocky Mountain Hospital For Children
- 3:02 pm **S063:** COMPARISON OF THORACOSCOPIC AND OPEN DIAPHRAGMATIC PLICATION IN NEONATES AND INFANTS [Yury Kozlov, MD](#), Vladimir Novozhilov, MD, Department of Neonatal Surgery, Municipal Pediatric Hospital, Irkutsk, Russia; Department of Pediatric Surgery, Irkutsk State Medical Academy of Continuing Education (IGMAPO), Irkutsk, Russia
- 3:10 pm **S064:** THORACOSCOPIC LEFT CARDIAC SYMPATHETIC DENERVATION IN CHILDREN WITH MALIGNANT ARRHYTHMIA SYNDROMES [Ryan Antiel, MD](#), Aodhnait Fahy, BMBCh, PhD, J. Martijn Bos, MD, PhD, Abdalla Zarroug, MD, Michael Ackerman, MD, PhD, Christopher Moir, MD, Mayo Clinic
- 3:18 pm **S065:** DIAPHRAGMATIC EVENTRATION IN CHILDREN; LAPAROSCOPY VERSUS THORACOSCOPIC PLICATION [Go Miyano, MD](#), Masaya Yamoto, MD, Masakatsu Kaneshiro, MD, Hiromu Miyake, MD, Keiichi Morita, MD, Hiroshi Nouse, MD, Manabu Okawada, MD, Hiroyuki Koga, MD, Geoffrey J Lane, MD, Koji Fukumoto, MD, Atsuyuki Yamataka, MD, Naoto Urushihara, MD, Department of Pediatric Surgery, Shizuoka Children's Hospital, Department of Pediatric General & Urogenital Surgery, Juntendo University of Medicine.
- 3:26 pm **S097:** THORACOSCOPIC CDH REPAIR – A SURVEY ON OPINION AND EXPERIENCE AMONG IPEG MEMBERS [Martin Lacher, MD, PhD](#), Shawn D St. Peter MD, Paolo Laje MD, Benno M Ure MD, PhD, Caroll M Harmon MD, PhD, Joachim F Kuebler MD, Hannover Medical School (on behalf of the IPEG Research Committee)

3:30 pm – 4:00 pm **Break**

4:00 pm – 5:00 pm **SCIENTIFIC SESSION: Bariatric, Robotics & Alternative Technologies**
CHAIRS: John J. Meehan, MD & Holger Till, MD, PhD

- 4:00 pm **S066:** LEARNING CURVE ANALYSIS IN PEDIATRIC SURGERY USING THE CUMULATIVE SUM (CUSUM) METHOD – A STATISTICAL PRIMER AND CLINICAL EXAMPLE [Thomas P. Cundy](#), Nicholas E. Gattas, Alan White, Guang-Zhong Yang, Ara Darzi, Azad Najmaldin, Imperial College London, UK. Leeds General Infirmary, UK

Complete Schedule

FRIDAY, JULY 25

- 4:06 pm **S067:** MAN VS. MACHINE: A COMPARISON OF ROBOTIC-ASSISTED VS. LAPAROSCOPIC SLEEVE GASTRECTOMY IN SEVERELY OBESE ADOLESCENTS [Victoria K. Pepper, MD](#), Terrence M. Rager, MD, MS, Karen A. Diefenbach, MD, Wei Wang, MS, MAS, Mehul V. Raval, MD, MS, Steven Teich, MD, Ihuoma Eneli, MD, Marc P. Michalsky, MD, Nationwide Children's Hospital
- 4:12 pm **S068:** INTERNATIONAL ATTITUDES OF EARLY ADOPTERS TO CURRENT AND FUTURE ROBOTIC TECHNOLOGIES IN PEDIATRIC SURGERY [Thomas P. Cundy](#), Hani J. Marcus, Archie Hughes-Hallett, Azad Najmaldin, Guang-Zhong Yang, Ara Darzi, Imperial College London
- 4:18 pm **S069:** LAPAROSCOPIC SLEEVE GASTRECTOMY IN CHILDREN AND ADOLESCENTS: THE TECHNIQUE AND THE STANDARDIZED PERI-OPERATIVE CLINICAL PATHWAY [Aayed R. Alqahtani, MD, FRCSC, FACS](#), Mohamed O. Elahmedi, MD, Department of Surgery and Obesity Chair, King Saud University
- 4:24 pm **S070:** COMORBIDITY RESOLUTION IN MORBIDLY OBESE CHILDREN AND ADOLESCENTS UNDERGOING SLEEVE GASTRECTOMY [Aayed R. Alqahtani, MD, FRCSC, FACS](#), Mohamed O. Elahmedi, MD, Awadh R. Al Qahtani, MD, FRCSC, Department of Surgery and Obesity Chair, King Saud University
- 4:30 pm **S072:** EVALUATION OF THE SAFETY OF LAPAROSCOPIC GASTROSTOMY IN PEDIATRIC PATIENTS WITH HYPOPLASTIC LEFT HEART SYNDROME USING INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHY [Hanna Alemayehu, MD](#), E. Marty Knott, DO, Jason D. Fraser, MD, William B. Drake, MD, Shawn D. St. Peter, MD, Kathy M. Perryman, MD, David Juang, MD, Children's Mercy Hospital
- 4:36 pm **S073:** A COMPARATIVE STUDY OF OUTCOME OF SIMPLE PURSE STRING SUTURE LAPAROSCOPIC HERNIA REPAIR IN CHILDREN [Mairi Steven, Miss](#), Stephen Bell, Dr., Peter Carson, Dr., Rebecca Ward, Dr., Merrill McHoney, Mr., Royal Hospital for Sick Children, Edinburgh, UK
- 4:42 pm **S074:** VERTICAL SLEEVE GASTRECTOMY: PRIMARY VERSUS REVISIONAL WEIGHT LOSS SURGERY IN ADOLESCENTS AND YOUNG ADULTS [Jeffrey Zitsman, MD](#), Melissa Bagloo, MD, Beth Schrope, MD, PhD, Aaron Roth, MD, Miguel Silva, MD, Mary DiGiorgi, PhD, Marc Bessler, MD, Columbia University Medical Center

Complete Schedule

FRIDAY, JULY 25

5:00 pm – 6:00 pm **PANEL: Live Surgery**
CHAIR: Marcelo Martinez Ferro, MD

DESCRIPTION: This panel will discuss the current status and the real value of Live Surgery as an education tool for Pediatric Minimally Invasive Surgeons.

OBJECTIVES

At the conclusion of this session, participants will be able to:

- Identify special settings needed to perform live case demonstrations
- Develop a “Live case Surgical Time Out” a specific “Check list” for live case demonstrations to enhance patient safety
- Recognize the real educational value of live case demonstrations in their practice
- Recommend specific “IPEG Live case demonstrations guidelines”.

TIME	TOPIC	PANELIST
5:00 pm	Introduction	Marcelo Martinez Ferro, MD
5:02 pm	State of the Art	Steven Rothenberg, MD
5:14 pm	Ethical Implications	Go Miyano, MD
5:26 pm	Pitfalls and Complications	Maria Marcela Bailez, MD
5:38 pm	IPEG Survey	George W. Holcomb III, MD
5:50 pm	Q&A	ALL

7:00 pm – 11:30 pm **MAIN EVENT: Celeigh and IPEG Dance Off – After Hours!**
(Black Tie and Kilts Optional)

Complete Schedule

SATURDAY, JULY 26

IPEG'S 23rd ANNUAL CONGRESS

Saturday, July 26

Lennox 3

8:00 am – 9:00 am

MISCELLANEOUS: Short Oral Papers

CHAIRS: Celeste Hollands, MD and Sean S. Marven, MD

- 8:00 am **S075:** A ROBOTIC APPROACH TO MEDIAN ARCUATE LIGAMENT SYNDROME Victoria K. Pepper, MD, Karen A. Diefenbach, MD, Andy C. Chiou, MD, David L. Crawford, MD, University of Illinois School of Medicine at Peoria, Order of Saint Francis Medical Center, Nationwide Children's Hospital
- 8:04 am **S076:** LAPAROSCOPIC EXCISION OF PERIPANCREATIC TUMOR AND MESENTERIC CYST Thai Lan N. Tran, MD, Nam X. Nguyen, MD, University of California, Irvine Medical Center
- 8:08 am **S077:** HIDING THE SCARS. EVOLUTION OF THE PEDIATRIC LAPAROSCOPIC CHOLECYSTECTOMY – THE 2X2 HYBRID TECHNIQUE Jeh Yung, MD, Georgios Karagkounis, MD, Gavin Falk, MD, Todd Ponsky, MD, FACS, Akron Children's Hospital; Cleveland Clinic
- 8:12 am **S078:** FETOSCOPY AND LASER: A GOOD THERAPEUTIC ALLIANCE IN MINIMALLY-INVASIVE FETAL SURGERY Alan Coleman, MD, Jose Peiro, MD, Foong-Yen Lim, MD, Cincinnati Children's Hospital Medical Center
- 8:16 am **S079:** IMPACT OF CUSTOMIZED PRE-BENDEDED BAR IN SURGICAL TREATMENT OF PECTUS EXCAVATUM Ruben Lamas-Pinheiro, MD, Pedro Correia-Rodrigues, Jaime C Fonseca, PhD, João L Vilaça, PhD, Jorge Correia-Pinto, MD, PhD, Tiago Henriques-Coelho, MD, PhD, Pediatric Surgery Department, Faculty of Medicine, Hospital de São João, Porto, Portugal
- 8:20 am **S080:** SINGLE INCISION LAPAROSCOPIC SURGERY FOR PERFORATED APPENDICITIS: DOES OBESITY AFFECT OUTCOMES ? Adesola C. Akinkuotu, MD, Paulette I. Abbas, MD, Ashwin Pimpalwar, MD, Texas Children's Hospital and the Division of Pediatric Surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, TX
- 8:24 am **S081:** DIAGNOSTIC LAPAROSCOPY FOR INTRA-ABDOMINAL EVALUATION AND VENTRICULOPERITONEAL SHUNT PLACEMENT IN CHILDREN Sandra M. Farach, MD, Paul D. Danielson, MD, Nicole M. Chandler, MD, All Children's Hospital Johns Hopkins Medicine
- 8:28 am **S082:** RISK OF REDO LAPAROSCOPIC FUNDOPLICATION IN CHILDREN: BEWARE THE RESPIRATORY PHYSICIAN? Edward Gibson, MBBS, Warwick J. Teague, DPhil, FRACS, Sanjeev Khurana, MS, FRCSI, FRACS, Department of Paediatric Surgery, Women's and Children's Hospital, Adelaide, Australia

Complete Schedule

SATURDAY, JULY 26

- 8:32 am **S083:** THORACOSCOPIC REPAIR ON THE CONGENITAL DIAPHRAGMATIC EVENTRATION IN CHILDREN? CONTINUOUS OR INTERRUPTED SUTURE FOR PPLICATION [Jiangbin Liu, PhD](#), Professor, Zhibao Lv, Professor, Department of Pediatric Surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University and Department of Pediatric Surgery, Children's Hospital of Fudan University, Shanghai, PR China
- 8:36 am **S084:** VALIDATION OF A NOVEL PARAMETER FOR THE EVALUATION OF PECTUS EXCAVATUM: THE KANSAS CITY CORRECTION INDEX Gaston Bellia, MD, Mariano Albertal, MD, Luzia Toselli, MD, Carolina Millan, MD, Horacio Bignon, MD, Giselle Corti, Javier Vallejos, MD, [Marcelo Martínez Ferro](#), Private Children's Hospital of Buenos Aires, Fundación Hospitalaria, Buenos Aires, Argentina
- 8:40 am **S085:** SPONTANEOUS PNEUMOTHORAXES: A SINGLE-INSTITUTION RETROSPECTIVE REVIEW [Victoria K. Pepper, MD](#), Terrence M. Rager, MD, MS, Wei Wang, MS, MAS, Dennis R. King, MD, Karen A. Diefenbach, MD, Nationwide Children's Hospital
- 8:44 am **S086:** LAPAROSCOPIC RESECTION OF ABDOMINAL NEUROBLASTOMA WITH RENAL PEDICLE INVOLVEMENT [Paula Flores, MD](#), Martin Cadario, MD, Yvonne Lenz, MD, Garrahan Hospital. Buenos Aires. Argentina.
- 8:48 am **S087:** LOWER ESOPHAGEAL BANDING IN EXTREMELY LOW BIRTH WEIGHT PREMATURE INFANTS WITH OESOPHAGEAL ATRESIA AND TRACHEO-ESOPHAGEAL FISTULA IS A LIFE SAVING PRACTICE FOLLOWED BY A SUCCESSFUL DELAYED PRIMARY THORACOSCOPY RECONSTRUCTION [Manuel Lopez, MD](#), Eduardo Perez-Etchepare, François Varlet, MD, PhD, Department of Pediatric Surgery, University Hospital of Saint Etienne

- 9:00 am – 9:30 am **General Assembly** NON CME
Presentation of the IPEG 2015 President
- 9:30 am – 9:45 am **Awards** NON CME
Coolest Tricks, Basic Science and IRCAD

Complete Schedule

SATURDAY, JULY 26

9:45 am – 10:45 am **SCIENTIFIC SESSION: Single Site Surgery**

CHAIR: Martin L. Metzelder, MD

- 9:45 am **S088:** DEVELOPMENT OF BLIND AREA VISUALIZATION SYSTEM IN MAGNIFIED FIELD OF VIEW USING AN AUGMENTED REALITY IN PEDIATRIC ENDOSURGERY ~AMAZING SEE-THROUGH NEEDLE DRIVER~ [Satoshi Ieiri^{1,2}](#), MD, PhD, [Yuya Nishio³](#), [Satoshi Obata¹](#), MD, [Ryota Souzaki^{1,2}](#), MD, PhD, [Yo Kobayashi³](#), PhD, [Masakatsu Fujie³](#), PhD, [Makoto Hashizume²](#), MD, PhD, FACS, Tomoak, ¹Department of Pediatric Surgery, Faculty of Medicine, Kyushu University, ²Department of Advanced Medicine and Innovative Technology, Kyushu University Hospital, ³The faculty of science and engineering, Waseda University
- 9:51 am **S089:** IS SINGLE INCISION APPENDECTOMY SUPERIOR TO TRADITIONAL LAPAROSCOPY IN CHILDREN? [Stephanie F. Polites](#), MD, [Shannon D. Acker](#), MD, [James T. Ross](#), [David A. Partrick](#), MD, [Abdalla E. Zarroug](#), MD, [Kristine M. Thomsen](#), [Donald D. Potter](#), MD, Mayo Clinic, Rochester, MN; Children's Hospital Colorado, Aurora, CO; University of Iowa, Iowa City, IA
- 9:57 am **S090:** IMPACT OF EXPERIENCE ON QUALITY OUTCOMES IN SINGLE-INCISION LAPAROSCOPY FOR SIMPLE AND COMPLEX APPENDICITIS IN CHILDREN [Sandra M. Farach](#), MD, [Paul D. Danielson](#), MD, [Nicole M. Chandler](#), MD, All Children's Hospital Johns Hopkins Medicine
- 10:03 am **S091:** CAN HYPERTROPHIC PYLORIC STENOSIS BE TREATED WITH NATURAL ORIFICE TRANSESOPHAGEAL SURGERY APPROACH USING A NOVEL ENDOLUMINAL CATHETER DEVICE? EX-VIVO VALIDATION OF A NEW RABBIT MODEL FOR PYLORIC STENOSIS [Carolyn T. Cochenour](#), BS, [Timothy Kane](#), MD, [Axel Krieger](#), PhD, [Peter Kim](#), MD, PhD, [Sheikh Zayed Institute for Pediatric Surgical Innovation](#), Children's National Health System, Washington, DC, USA
- 10:09 am **S092:** ROUTINE UTILIZATION OF SINGLE-INCISION PEDIATRIC ENDOSURGERY (SIPES): A FIVE YEAR INSTITUTIONAL EXPERIENCE [Aaron D. Seims](#), MD, [Tate R. Nice](#), MD, [Vincent E. Mortellaro](#), MD, [Martin Lacher](#), MD, PhD, [Muhammad E. Ba'ath](#), MD, [Scott A. Anderson](#), MD, [Elizabeth A. Beierle](#), MD, [Colin A. Martin](#), MD, [David A. Rogers](#), MD, [Carroll M. Harmon](#), MD, PhD, [Mike K. Chen](#), MD, [Robert T. Russell](#) MD, MPH, Children's of Alabama
- 10:15 am **S093:** SILS APPROACH TO INFLAMMATORY BOWEL DISEASE [Claudio Vella](#), MD, [Sara Costanzo](#), MD, [Giorgio Fava](#), MD, [Luciano Maestri](#), MD, [Giovanna Ricciettoni](#), MD, Pediatric Surgery Department, "V.Buzzi" Children's Hospital ICP, Milan – Italy

Complete Schedule

SATURDAY, JULY 26

- 10:21 am **S094:** CLIPPED VERSUS STAPLED SIPES (SINGLE INCISION PEDIATRIC ENDO SURGERY) APPENDECTOMY: PATIENT OUTCOME, ECONOMIC CONSIDERATIONS, AND ENVIRONMENTAL IMPACT Hayden W. Stagg, MD, Oliver Muensterer, MD, PhD, Samir Pandya, MD, Matthew Bronstein, MD, [Lena Perger, MD](#), McLane Children's at Scott and White, Texas A&M, Temple TX, USA; Maria Fareri Children's Hospital at Westchester Medical Center New York Medical College, Valhalla NY, USA
- 10:27 am **S095:** INITIAL EXPERIENCE OF MINIMALLY INVASIVE LAPAROSCOPIC SURGERY ASSISTED BY PERCUTANEOUS INSTRUMENTS ASSEMBLED IN OPERATIVE FIELD [Ryosuke Satake, MD](#), Keisuke Suzuki, MD, Tetsuro Kodaka, PhD, Kan Terawaki, PhD, Makoto Komura, PhD, Saitama Medical University, Department of pediatric surgery
- 10:33 am **S096:** INTERNATIONAL OPINION ON THE FUTURE OF MINIMALLY INVASIVE SURGERY - FROM A(BESECON) TO Z(AGREB) [Roland W. Partridge](#), Paul M. Brennan, Mark M. Hughes, Iain A. Hennessey, Royal Hospital for Sick Children, Edinburgh, UK, Alder Hey Children's Hospital, Liverpool, UK

10:45 am – 12:00 pm **SATURDAY MOVIE MATINEE: Complications: “My Worst Nightmare” – Complicated Cases, Pitfalls and Unusual Solutions**



Popcorn and soft drinks will be provided

CHAIRS: Philipp O. Szavay, MD & Mark L. Wulkan, MD

DESCRIPTION: This session is designed to show videos of operations where a complication occurred. The causes and strategies to prevent those complications will be discussed.

OBJECTIVES

At the conclusion of this session, participants will be able to:

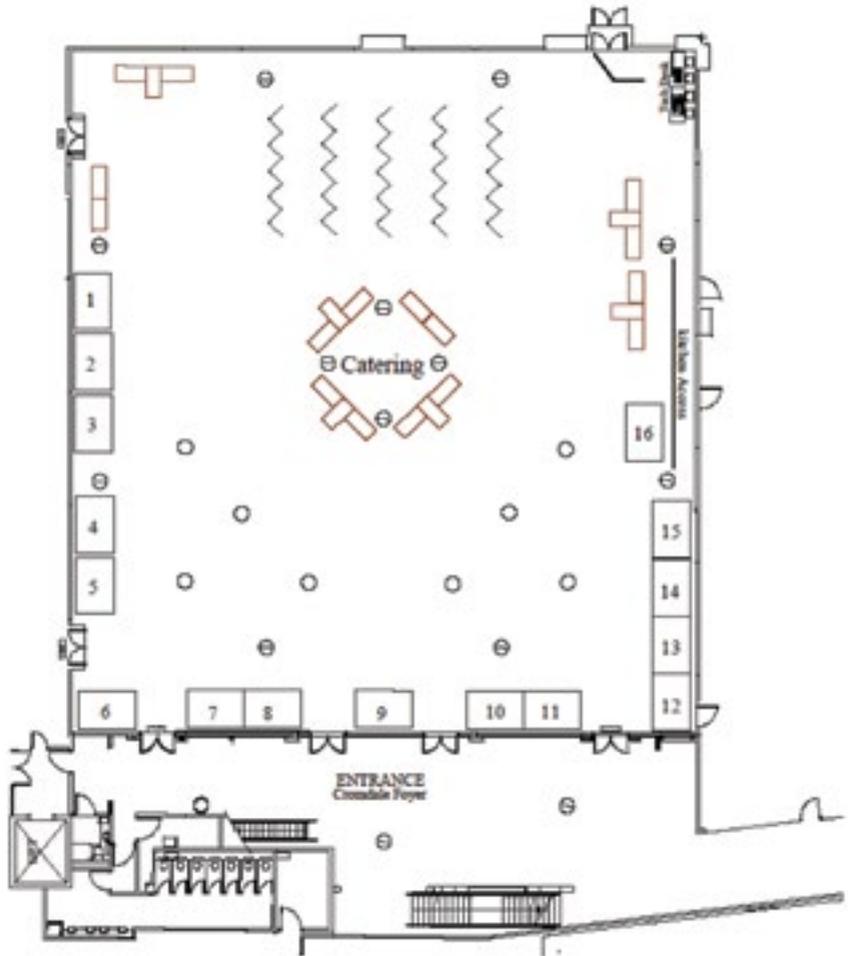
- Identify strategies to decrease conversion rates due to complications occurring during MIS.
- Describe techniques to manage complications safely and appropriately (patient safety).
- Identify technical strategies to manage complications.
- Apply techniques learned in the situation of a complication.
- Predict cases, where a complication might be anticipated (patient safety).

12:00 pm

Closing Remarks



Exhibitors & Exhibit Hall Floorplan



EXHIBITORS

B. Braun Aesculap	<i>Booth #10</i>	Richard Wolf UK Ltd.	<i>Booth #3</i>
JustRight Surgical	<i>Booth #13</i>	Shire	<i>Booth #6</i>
Cardica Inc.	<i>Booth #9</i>	Stryker Endoscopy	<i>Booth #8</i>
Karl Storz Endoscopy	<i>Booth #1</i>	Surgical Innovations	<i>Booth #4</i>
LaproSurge Ltd	<i>Booth #7</i>	Vygon (UK) Ltd.	<i>Booth #5</i>
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1. Document (on this form) any concerns about commercially-biased presentations/ materials during educational sessions, and
2. Immediately take your completed form to the IPEG staff at Meeting Registration Desk

Your feedback will be shared with a members of the Executive Committee, who will make the faculty and course chair(s) aware of these concerns.

COMMERCIAL BIAS

The International Pediatric Endosurgery Group (IPEG) has an obligation to the medical profession and society as a whole to elucidate bias in order to protect the objectivity, scientific integrity and quality of its continuing medical education (CME) programs and to provide CME in an ethical and impartial manner. **Bias is defined** when a preference or predisposition exist toward a particular perspective or result that interferes with an individual's ability to be impartial, unprejudiced or objective in order to further personal gain and disregard for data. Particular preferences may be favorable or unfavorable. When bias exists, impartial judgment and neutrality may be compromised. Bias may be minimized through a declaration of conflict of interest or commercial interests, an evaluation of peer-reviewed evidence-based medicine with an integration of clinical expertise and/or experience, and an assertion of published sources for evidence-based reporting. IPEG requires presenters at all educational events to specifically avoid introducing bias, commercial or otherwise, into their presentations.

Presentation: (eg session name, etc)

Commercial Bias by: (ie faculty name, company rep)

Promotion via: (eg handouts, slides, what they said, actions)

Commercial Bias about: (check all that apply)

- Patient treatment/management recommendations weren't based on strongest levels of evidence available.
- Emphasis was placed on one drug or device versus competing therapies, and no evidence was provided to support its increased safety and/or efficacy.
- Trade/brand names were used.
- Trade names versus generics were used for all therapies discussed.
- The activity was funded by industry and I perceived a slant toward the grantors.
- The faculty member had a disclosure and I perceived a slant toward the companies with which he/she has relationships.
- Other (please describe): _____

Please return this form to Vanessa Cheung at vanessa@ipeg.org or fax to **310-437-0585**.

CME Worksheet 2014 Meeting

TIME	ACTIVITY	CREDITS AVAILABLE	HOURS ATTENDED
TUESDAY, JULY 22, 2014			
4:00 pm – 8:00 pm	Postgraduate Lecture: MIS in Infants and Neonates	3.75	
TOTAL CREDITS AVAILABLE FOR TUESDAY		3.75	
WEDNESDAY, JULY 23, 2014			
8:00 am – 11:00 am	Hands On Lab: Critical Technical Skills for Neonatal and Infant Minimally Invasive Surgery <small>NON CME</small>	0	
8:00 am – 11:00 am	Simulator Hands on Lab: Advanced Neonatal High Fidelity Course for Advanced Learners <small>NON CME</small>	0	
1:00 pm – 5:00 pm	Simulator Hands On Lab: Innovations in Simulation-Based Education for Pediatric Surgeons <small>NON CME</small>	0	
5:00 pm – 7:00 pm	Joint IPEG/BAPS Opening Ceremony/Welcome Reception	0	
TOTAL CREDITS AVAILABLE FOR WEDNESDAY		0	
THURSDAY, JULY 24, 2014			
7:00 am – 8:00 am	Morning Scientific Video Session I: Coolest Tricks, Extraordinary Procedures	1.0	
8:05 am – 9:00 am	Scientific Session: Gastrointestinal	1.0	
9:00 am – 9:30 am	Presidential Address & Lecture: “Music, Endoscopic Surgery and IPEG”	0.5	
10:00AM – 11:30AM	Basic Science and Misc	1.5	
12:00 pm – 1:00 pm	Top Posters 1-20: Digital Presentation <small>NON CME</small>	0	
1:00 pm – 3:00 pm	IPEG/BAPS Presidential Debate: “Esophageal and Diaphragmatic Surgery–Thoracoscopic vs Open”	2.0	
3:30 pm – 5:20 pm	IPEG/BAPS Best Clinical Paper Session	1.75	
5:20 pm – 5:50 pm	Karl Storz Lecture: “Developing Neonatal MIS Surgery, Innovation, Techniques, and helping an Industry to Change”	0.5	
TOTAL CREDITS AVAILABLE FOR THURSDAY		8.25	

CONTINUED ▶

CME Worksheet 2014 Meeting CONTINUED

TIME	ACTIVITY	CREDITS AVAILABLE	HOURS ATTENDED
FRIDAY, JULY 25, 2014			
7:00 am – 8:00 am	Morning Scientific Video Session II	1.0	
8:00 am – 9:30 am	Scientific Session: Urogenital	1.5	
10:00 am – 11:00 am	Scientific Session: Gastrointestinal & Hepatobiliary II	1.0	
11:00 am – 12:00 pm	Scientific Session: Panel – “Laparoscopy in the Neonate and Infant: What’s New?”	1.0	
12:00 pm – 1:00 pm	Top Posters 21–40: Digital Presentation <small>NON CME</small>	0	
1:00 pm – 1:30 pm	Keynote Lecture: “Learn Processes in the Hospital”	0.5	
1:30 pm – 2:30 pm	Panel: Single Site Surgery	1.0	
2:30PM–3:30 pm	Scientific Session: Thorax	1.0	
4:00 pm – 5:00 pm	Scientific Session: Bariatric, Robotics and Alternative Technologies	1.0	
5:00 pm – 6:00 pm	Panel: Live Surgery	1.0	
TOTAL CREDITS AVAILABLE FOR FRIDAY		9.0	
SATURDAY, JULY 26, 2014			
8:00 am – 9:00 am	Miscellaneous: Short Oral Papers	1.0	
9:00 am – 9:30 am	General Assembly <small>NON CME</small>	0	
9:30 am – 9:45 am	Awards <small>NON CME</small>	0	
9:45 am – 10:45 am	Scientific Session: Single Site Surgery	1.0	
10:45 am – 12:00 pm	Saturday Movie Matinee: Complications–“ My Worst Nightmare” – Complicated Cases, Pitfalls and Unusual Solutions”	1.25	
12:00 pm – 1:00 pm	Closing Remarks	0	
TOTAL CREDITS AVAILABLE FOR SATURDAY		3.25	
TOTAL POSSIBLE CREDITS		24.25	

To receive a **CME Certificate** for this meeting, please complete the on-line survey at www.research.net/s/2014ipeg.

If you have questions about this CME section, please email Vanessa Cheung/IPEG CME Department at Vanessa@ipeg.org.

AN ADDITIONAL CHARGE OF US\$25.00 WILL BE ASSESSED FOR REQUESTS RECEIVED AFTER SEPTEMBER 30, 2014

Faculty Disclosures

The following faculty, IPEG Program and Executive Committee Members provided information indicating they have a financial relationship with a proprietary entity producing health care goods or services, with the exemption of non-profit or government organizations and non-health care related companies. (Financial relationships can include such things as grants or research support, employee, consultant, major stockholder, member of speaker's bureau, etc.)

Faculty	Disclosure	Commercial Interest	What Was Received	What Was the Role
Hossen Allal	Nothing to Disclose			
Aayed Al-Qahtani ♦	Nothing to Disclose			
George Azzie	Nothing to Disclose			
Marcela Bailez ★ ♦	Nothing to Disclose			
Katherine Barsness ♦	Nothing to Disclose			
Matthew Clifton	Nothing to Disclose			
David Crabbe	Nothing to Disclose			
Mark Davenport	Nothing to Disclose			
Dafydd A. Davies	Nothing to Disclose			
Alex Dzakovic	Nothing to Disclose			
Karen A. Diefenbach	Nothing to Disclose			
Simon Eaton	Nothing to Disclose			
Peter Thomas Esslinger	Nothing to Disclose			
Paula Flores	Nothing to Disclose			
Justin Gerstle	Nothing to Disclose			
Stefan Gfroerer	Nothing to Disclose			
Miguel Guelfand ♦	Nothing to Disclose			
Carroll M. Harmon ♦	Nothing to Disclose			
George W. Holcomb III ♦		JustRight Surgical	Ownership Interest	Advisory Committee
		JustRight Surgical	Ownership Interest	Consultant
Celeste Hollands ★	Nothing to Disclose			
Timothy Kane ★	Nothing to Disclose			
Joachin Kuebler		Aesculap AG	Expense allowance for being tutor of a MIC Course	Speaking/ Teaching
		Aesculap Academy	Reimbursement for teaching in workshop: Minimal Invasive Pediatric Surgery	Speaking/ Teaching
Martin Lacher	Nothing to Disclose			
Pablo Laje ♦	Nothing to Disclose			

★ Executive Committee ♦ Program Committee

Faculty Disclosures CONTINUED

Faculty	Disclosure	Commercial Interest	What Was Received	What Was the Role
Andreas Leutner	Nothing to Disclose			
Marc A. Levitt ★	Nothing to Disclose			
Charles Leys	Nothing to Disclose			
Long Li ★ ◆	Nothing to Disclose			
Manuel Lopez	Nothing to Disclose			
Tobias Luthle	Nothing to Disclose			
Gordon MacKinlay	Nothing to Disclose			
Maximillano Marcic	Nothing to Disclose			
Marcelo Martinez Ferro	Nothing to Disclose			
Sean Marven ◆	Nothing to Disclose			
Milissa McKee	Nothing to Disclose			
John J. Meehan	Nothing to Disclose			
Martin Metzelder	Nothing to Disclose			
Mac P. Michalsky	Nothing to Disclose			
Carolina A. Millan	Nothing to Disclose			
Go Miyano	Nothing to Disclose			
Oliver Muensterer ◆	Nothing to Disclose			
Daniel Ostlie ★	Nothing to Disclose			
Dirk Pfitzer	Nothing to Disclose			
Agostino Pierro	Nothing to Disclose			
Todd A. Ponsky ★ ◆		GlobalCastMD	Ownership	Owner
Steven Rothenberg		JustRight Surgical	Ownership Interest	Consultant
Juergen Schleef	Nothing to Disclose			
Shawn D. St Peter ◆	Nothing to Disclose			
Philipp O. Szavay ◆	Nothing to Disclose			
Holger Till ★	Nothing to Disclose			
Rick Turnock	Nothing to Disclose			
Benno Ure ★ ◆		Braun Aesculap	Honoraia	Independent Contractor
Rezza Vahdad	Nothing to Disclose			
David C. van der Zee ★	Nothing to Disclose			
Mark L. Wulkan ★ ◆	Nothing to Disclose			
CK Yeung ◆	Nothing to Disclose			
Suzanne Yoder	Nothing to Disclose			

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Presenter Disclosures

Presenter	Disclosure	Company	What Was Received	What Was the Role
Shannon N. Acker, MD	Nothing to Disclose			
Adam C. Alder, MD	Nothing to Disclose			
Hanna Alemayehu, MD	Nothing to Disclose			
Aayed R. Alqahtani, MD, FRCSC, FACS ♦	Nothing to Disclose			
Ryan Antiel, MD	Nothing to Disclose			
Karim Awad, MSc, MRCS	Nothing to Disclose			
Joanne Baerg, MD	Nothing to Disclose			
Maria M. Bailez, MD ♦	Nothing to Disclose			
Katherine A. Barsness, MD, MS ♦	Nothing to Disclose			
Mark Bishay	Nothing to Disclose			
Mariana Borges-Dias	Nothing to Disclose			
Kanika A. Bowen, MD	Nothing to Disclose			
Tim Bradnock	Nothing to Disclose			
Kirsty Brennan	Nothing to Disclose			
Ewan M. Brownlee	Nothing to Disclose			
Matias Bruzoni, MD, FACS	Nothing to Disclose			
Ana Maria Castillo-Fernandez, MD	Nothing to Disclose			
Patrick Ho Yu Chung, Dr.	Nothing to Disclose			
Matthew S. Clifton, MD	Nothing to Disclose			
Giovanni Cobellis, PhD	Nothing to Disclose			
Alan Coleman, MD	Nothing to Disclose			
Santiago Correa, MD	Nothing to Disclose			
Thomas P. Cundy	Nothing to Disclose			
Kuiran Dong, MD	Nothing to Disclose			
Mohamed M. Elbarbary, MD	Nothing to Disclose			
Akram M. Elbatarny, MD, MRCSEd	Nothing to Disclose			
Gaston Ricardo Elmo, MD	Nothing to Disclose			
Sandra M Farach, MD	Nothing to Disclose			
Xiaoyan Feng, MD	Nothing to Disclose			
Paula Flores, MD	Nothing to Disclose			
HamidReza Foroutan, Dr.	Nothing to Disclose			
Simone Frediani, MD	Nothing to Disclose			

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Presenter Disclosures CONTINUED

Presenter	Disclosure	Company	What Was Received	What Was the Role
Zhigang Gao, MD	Nothing to Disclose			
Carlos Garcia-Hernandez, MD	Nothing to Disclose			
Cindy Gomes Ferreira, MD	Nothing to Disclose			
Jonathan Goring	Nothing to Disclose			
Patrick Green	Nothing to Disclose			
Helai Habib, MBBS, BSc	Nothing to Disclose			
Michael Harrison, MD	Nothing to Disclose			
Daniel B. Herz, MD	Nothing to Disclose			
Jinshi Huang, MD	Nothing to Disclose			
Satoshi Ieiri, MD, PhD	Nothing to Disclose			
Corey W. Iqbal, MD	Nothing to Disclose			
Sabine Irtan, MD, PhD	Nothing to Disclose			
David Juang, MD	Nothing to Disclose			
Timothy D. Kane, MD	Nothing to Disclose			
Nidhi Khandelwal, Dr	Nothing to Disclose			
Vladimir Kotlovskiy, Prof.	Nothing to Disclose			
Yury Kozlov, MD	Nothing to Disclose			
Neetu Kumar	Nothing to Disclose			
Pablo Laje, MD ♦	Nothing to Disclose			
Ruben Lamas-Pinheiro, MD	Nothing to Disclose			
Sergio Landa-Juarez, MD	Nothing to Disclose			
Suolin Li, MD	Nothing to Disclose			
Aiwu Li	Nothing to Disclose			
Jiangbin Liu, PhD, Professor	Nothing to Disclose			
Manuel Lopez, MD	Nothing to Disclose			
Tobias Luithle, MD	Nothing to Disclose			
Justin B. Mahida, MD, MBA	Nothing to Disclose			
Maximiliano Alejo Maricic, MD	Nothing to Disclose			
Marcelo Martinez Ferro, MD	Nothing to Disclose			
Antonio Messineo, MD	Nothing to Disclose			
Martin Metzelder	Nothing to Disclose			

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Presenter Disclosures CONTINUED

Presenter	Disclosure	Company	What Was Received	What Was the Role
Carolina Millan, MD	Nothing to Disclose			
Meghna V Misra, MD	Nothing to Disclose			
Hironu Miyake	Nothing to Disclose			
Go Miyano, MD ♦	Nothing to Disclose			
Vincent Mortellaro, MD	Nothing to Disclose			
Oliver J. Muensterer, MD, PhD ♦	Nothing to Disclose			
Nam X Nguyen, MD	Nothing to Disclose			
Tate Nice, MD	Nothing to Disclose			
Satoshi Obata, MD	Nothing to Disclose			
Stephen Oh, MD	Nothing to Disclose			
Manabu Okawada, MD	Nothing to Disclose			
Hiroomi Okuyama, MD, PhD	Nothing to Disclose			
Daniel J. Ostlie, MD	Nothing to Disclose			
Samir Pandya, MD	Nothing to Disclose			
Roland W. Partridge	1 Disclosure	esSurgical Ltd "Simulator"	Ownership Interest	Management Position
Emily A. Partridge	Nothing to Disclose			
Dariusz Patkowski, Prof, MD, PhD	1 Disclosure	Bbraun	Honoraria	Speaking/ Teaching
Victoria K Pepper, MD	Nothing to Disclose			
Lena Perger, MD	Nothing to Disclose			
Ashwin Pimpalwar, MD	Nothing to Disclose			
Abigail B. Podany, MD	Nothing to Disclose			
Stephanie F Polites, MD	Nothing to Disclose			
Todd Ponsky, MD, FACS ♦	4 Disclosures	Stryker	Honoraria	Speaking/ Teaching
		GlobalCastMD	Ownership Interest	Management Position
		Storz	Honoraria	Consultant
		Covidian	Honoraria	Consultant
Ravindra Ramadwar, Dr.	Nothing to Disclose			
Elizabeth Renaud, MD	Nothing to Disclose			
Fernando Rey, MD	Nothing to Disclose			
Shannon F. Rosati, MD	Nothing to Disclose			
Steven Rothenberg, MD ♦	2 Disclosures	Karl Storz	Consulting Fee	Consultant
		Just Right Surgical	Ownership Interest	Consultant

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Presenter Disclosures CONTINUED

Presenter	Disclosure	Company	What Was Received	What Was the Role
Edgar Rubio Talero, MD	Nothing to Disclose			
Ryosuke Satake, MD	Nothing to Disclose			
K. Schaarschmidt, Prof., MD	Nothing to Disclose			
Avraham Schlager, MD	Nothing to Disclose			
Aaron D. Seims, MD	Nothing to Disclose			
Sergio B. Sesia, MD	Nothing to Disclose			
Bethany J. Slater, MD	Nothing to Disclose			
Yu. Sokolov, MD, PhD	Nothing to Disclose			
Tran N. Son, MD, PhD	Nothing to Disclose			
Shawn St. Peter ♦	Nothing to Disclose			
Mairi Steven, Miss	Nothing to Disclose			
Lisanne J. Stolwijk, MD	Nothing to Disclose			
Shinya Takazawa, MD	Nothing to Disclose			
Yujiro Tanaka, MD, PhD	Nothing to Disclose			
Shao-tao Tang, MD	Nothing to Disclose			
Warwick J. Teague, DPhil, FRACS	Nothing to Disclose			
Reza M. Vahdad, MD	Nothing to Disclose			
Claudio Vella, MD	Nothing to Disclose			
J. Vlot, MD, PhD	Nothing to Disclose			
Chandrasekharam Vvs, Dr.	Nothing to Disclose			
James Wall, MD, MS	2 Disclosures	Cardica Magnamosis	Consulting Fee Ownership Interest	Consultant Advisory Committee
Bo Xiang, MD	Nothing to Disclose			
Benjamin Zendejas, MD, MSc	Nothing to Disclose			
Jeffrey Zitsman, MD	Nothing to Disclose			

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SAVE THE DATE!

For **IPEG's 24th Annual Congress for Endosurgery in Children**, April 14-18, 2015, held at Gaylord Resort & Convention Center, Nashville, Tennessee, in conjunction with the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES).

Abstract submission open in **Summer 2014**.

Long Term Research Fund Donors

In an effort to further IPEG's mission of education, research and improved patient care, the IPEG Executive Committee formed the IPEG Long Term Research Fund (LTRF). The primary goal of the LTRF is to award an annual research grant to IPEG members. This grant is meant to stimulate and support high-quality original research from IPEG members in basic science. The IPEG Research Grant is made possible by the donations of numerous IPEG members. Without your promotion and financial support of this grant, this award would not be possible.

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SOCIAL PROGRAMS

IPEG/BAPS Opening Ceremony Welcome Reception

Cromdale Hall

Wednesday, July 23, 2014
5:00 pm – 7:00 pm

MAIN EVENT: Ceileigh and IPEG Dance Off – After Hours!

Black Tie and Kilts Are Optional

Lennox 1 & 2

Friday, July 25, 2014
7:00 pm – 11:30 pm

Oral Abstracts

S001: MINIMALLY INVASIVE SURGERY FOR PEDIATRIC TRAUMA – A MULTI-CENTER REVIEW

REVIEW Hanna Alemayehu, MD, Diana Diesen, MD, Matt Santore, MD, Matthew Clifton, MD, Todd Ponsky, MD, Margaret Nalugo, MPH, Timothy Kane, MD, Mikael Petrosyan, MD, Ashanti Franklin, MD, George W Holcomb III, MD, MBA, Shawn D. St. Peter, MD, The Children's Mercy Hospital, Kansas City, MO; Children's Medical Center, Dallas, TX; Children's Healthcare of Atlanta at Egleston, Atlanta, GA; Akron Children's Hospital, Akron, Ohio; Children's National Medical Center, Washington, DC

INTRODUCTION: Although minimally invasive surgery (MIS) has been used in the management of pediatric trauma for over three decades, the literature remains sparse. The purpose of this study is to characterize the role of MIS in pediatric trauma.

METHODS: After obtaining Institutional Review Board approval at each institution, a retrospective review was conducted on children who underwent thoracoscopy or laparoscopy for the management of trauma over the past 13 years. Five pediatric regional trauma centers in the United States participated. Data included patient demographics, mechanism of injury, indication for operative intervention, conversion to open procedure, complications, and post-operative course.

RESULTS: There were 175 patients with a mean age of 9.1 (1.0–17.3) years and 71% were male. Blunt trauma occurred in 65% with the most common mechanism of injury being all-terrain vehicle or motor vehicle crash (40%). Laparoscopy performed in 164 (94%), thoracoscopy in 7 (4%), and 4 (2%) patients had both. Conversion to open occurred in 39%, although no additional procedure was necessary after conversion in 4 cases. Median operative time was 84(16–369) minutes.

Indications for the MIS approach included penetrating injury (n=53), peritonitis (n=30), free fluid with abdominal pain in the setting of blunt trauma (n=24), pneumoperitoneum (n=15), and other indications (n=77). Of the 110 procedures completed without conversion, 60 (55%) were diagnostic, while the remaining were therapeutic. The most common therapeutic procedure was laparoscopic or laparoscopic assisted repair of bowel injuries (n=19), followed by various laparoscopic repairs (n=12), laparoscopic distal pancreatectomy (n=5), thoracoscopic evacuation of hemothorax (n=4), other thoracoscopic interventions (n=4), laparoscopic splenectomy (n=2), and laparoscopic repair of traumatic abdominal wall hernias (n=2). Procedures that required conversion were also most commonly for bowel injury (n=54). Patients with peritonitis and pneumoperitoneum were most likely to require conversion to an open procedure (76.6% and 60% respectively). Reasons for conversion included technical difficulty (n=66), hemorrhage (n=16), or hemodynamic instability (n=3), and some patients had more than one reason for conversion.

Mean time to a regular diet was 4.6 ± 9 days, and mean hospital stay was 6.7 ± 6.6 days. Complications occurred in 19 patients and included intra-abdominal abscess (n=5), pancreatic pseudocyst (n=2), wound infection (n=2), small bowel obstruction (n=2), and others (n=9). Long-term sequelae following their traumatic injuries occurred in 10 patients, and permanent disability was found in 2 patients.

CONCLUSION: Laparoscopy and thoracoscopy hold utility for a wide variety of traumatic injuries in stable children and can be used to accomplish the goals of the operation without conversion in the majority of cases.

Oral Abstracts CONTINUED

S002: OPEN VS. LAPAROSCOPIC MANAGEMENT OF APPENDICITIS PERITONITIS IN CHILDREN: CLINICAL TRIAL

Fernando Rey, MD, Andres Perez, MD, William Murcia, MD, Fenando Fierro, MD, Ivan Molina, MD, Juan Valero, MD, Jorge R. Beltran, MD, Fundación HOMI Hospital de la Misericordia, Pediatric Surgery Unit, Universidad Nacional de Colombia, Bogotá (COL)

SUMMARY: The minimally invasive surgical treatment for perforated appendicitis and peritonitis in children has taken an important place in the management of this condition. Questions regarding the comparative results of open and laparoscopic approach in this disease are under investigation. The literature currently lacks evidence to come to new conclusions on this issue.

STUDY DESIGN: Randomized clinical trial of the surgical approach of patients with appendicitis and peritonitis, from October 2010 to March 2011. A 18-month postoperative follow up is also included. Demographic data, symptoms, surgical results and postoperative data were recorded.

RESULTS: 46 patients were included, 28 patients managed with open surgery and 18 with laparoscopy. There were no deaths in either group. We had 6 reinterventions in the open group and none in the laparoscopic one ($p=0.06$), with an average of 1.32 porc and 1 respectively, 6 surgical site infections in the open approach and 5 in the laparoscopic. A total of 6 bowel obstruction in the open approach and 2 in laparoscopic, the average age for both groups was 8.72 and 9.46 years (confidence interval [CI] 8.04-10.88 vs 95% 7.07 - 10.37) ($p: 0.4$); the average time in hours of abdominal pain at the time of the assessment by the surgeon was 60.71 and 60.72 hours (range

(21-168) vs (20-120) $p: 0.64$) respectively for open and laparoscopic surgery. Mean surgical time was 43.78 minutes for open surgery and 75.11 for the other one (range (20-86) vs (32-175) $p: 0.0001$). Pain was rated by patients at 24 after surgery with postoperative analog pain scale, a mean of 2.67 points for open approach and 1.94 points to laparoscopic (range (1-4) vs. (1-3) $p: 0.0094$).

Patients with complications had longer time of abdominal pain before surgery than those did not complicated, 76.53 and 54.48 hours respectively (range (48 - 168) vs (20 - 126) $p: 0.0033$)

There was no statistical difference in the mean postoperative hospital days (8.21 days to 9.94 days open and the laparoscopic). All patients were free of symptoms at five months follow-up.

CONCLUSIONS: For patients with appendicitis with peritonitis without signs of shock, the laparoscopic approach requires more operative time, but provides better results in terms of postoperative pain. Laparoscopic approach seems to have a trend of lower rate of reoperation; however this is not significant statistically. For other variables there are not statistical significant differences.

S003: FEASIBILITY OF SINGLE INCISION 3 STAGE TOTAL PROCTOCOLECTOMY AND ILEAL POUCH ANAL ANASTOMOSIS

Avraham Schlager, MD, Matthew T. Santore, MD, Ozlem Balci, MD, Drew A. Rideout, MD, Kurt F Heiss, MD, Matthew S. Clifton, MD, Emory University/Children's Healthcare of Atlanta

BACKGROUND: Total proctocolectomy (TPC) and ileal pouch anal anastomosis (IPAA) is the standard of care for patients with ulcerative colitis refractory to medical care. Safety and efficacy have

Oral Abstracts CONTINUED

been demonstrated for both the two and three stage laparoscopic approach. We present a 3 stage single-site laparoscopic TPC and IPAA series and discuss potential advantages of this technique.

METHODS: We retrospectively reviewed all patients who underwent single-site three-stage TPC and IPAA for ulcerative colitis at our institution. Primary outcomes included operative time, time to oral intake, time to stoma function, time to cessation of intravenous opiates, length of stay, and post-operative surgical complications. The Gelpoint advanced access platform (Applied Medical, Santa Margarita, CA) was used in at least one stage of all cases. This device facilitated open division of major arterial vessels, extraction of the colon, and extracorporeal construction of the J-pouch.

RESULTS: A total of 8 patients were identified that had undergone single-site surgery with the Gelpoint advanced access platform for at least one component of their TPC-IPAA. Six of 8 underwent single-site TPC and all 8 underwent single-site IPAA followed by standard ileostomy closure. No single-site patient required additional port placement or conversion to open surgery. Median age at TPC was 14 years (range 10-17 years). Five patients were female. Overall median follow up time was 20 months (range 5-45 months) from the first operation and 6 months (range 1-12 months) from the time of ileostomy closure.

Mean operating time for TPC was 227 ± 41 minutes. Mean time until patients tolerated clear liquid diet was 1.3 ± 0.5 days and 4.1 ± 2.6 days until tolerating a regular diet. Stoma function returned on average at 1.75 ± 0.71 days. Post-operative intravenous opioid use lasted an average

of 4.6 ± 2.4 days. Median length of stay was 6 days (range 3-18). There were two surgical complications after TPC, both of which required ileostomy revision; one following a conventional 5-port laparoscopic resection and the other after a single-site resection.

Mean operating time for IPAA using the single-site approach was 283 ± 50 minutes. Mean time to tolerance of clear liquids was 1.0 ± 0.5 days and regular diet was 3.3 ± 1.1 days. Stoma function returned on average at 1.6 ± 0.5 days. Postoperative intravenous opioid use lasted an average of 3.3 ± 1.4 days. Median length of stay was 4 days (range 3-9 days). Surgical complications following IPAA included one anastomotic leak at the J-pouch (which closed spontaneously) and another patient who developed a mucosal bridge in the J-pouch staple line requiring surgical division.

CONCLUSION: Single-site TPC-IPAA using the Gelpoint advanced access platform is both feasible and safe. In addition to the improved cosmetic result, the single-site access point offers added advantages of wound protection, ease of ligation for major arterial vessels, extraction of the specimen, as well as extracorporeal J-pouch construction.

S004: EVALUATION OF LIFE QUALITY OF CHILDREN AFTER LAPAROSCOPIC-ASSISTED TRANSANAL ENDORECTAL (SOAVE) PULL-THROUGH FOR HIRSCHSPRUNG'S DISEASE Bo Xiang, MD, Yang Wu, PhD, West Chian Hospital

PURPOSE: To assess the life quality of patients two years after laparoscopic-assisted transanal endorectal (Soave) pull-through for Hirschsprung's disease (HD) and compare with that of traditional Duhamel procedures in the same center.

Oral Abstracts CONTINUED

METHODS: A total of 297 cases of HD from January, 2007 to December, 2010 had been diagnosed in our hospital. And 245 of them belonged to the normal-segment type which were included in our study. 173 of them had received laparoscopic-assisted transanal endorectal (Soave) pull-throughs and 72 had traditional Duhamel procedures. Post-surgical anal dilations lasted for 6 months. Anorectal manometry had been performed regularly at 3, 6, 12 and 24 months after operations. We adopted the Wenxer scores, Fecal Incontinence Quality of Life (FIQL) questionnaire, and Self-rated Health Measurement Scale Version 1.0 (SRHMS) scores to evaluate life quality after surgery for Hirschsprung's disease. Children with 2-year follow-ups and more had been included in this study. Those younger than five at the time of investigations were excluded.

RESULTS: Effective 2-year follow-ups were carried out and clinical data had been retrieved among 85(58 laparoscopic Soave, 27 traditional Duhamel) of those 103 children (82.5%) older than three at the time of surgery.

1. Life quality scoring: Classified as ~60(poor), 60~80(moderate) and 80~(good), the average scores for laparoscopic Soave group and traditional Duhamel group were 75.43 ± 13.01 and 79.00 ± 10.77 respectively (t test, $p=0.22$) with no statistical significance. (Table 1)

2. Anorectal manometry: recovery of recto-anal inhibitory reflex (RAIR) occurred in nine of 58(15.5%) of laparoscopic Soave patients and nine of 27(33.3%) of traditional Duhamel patients (chi-square $p=0.06$). The occurrence rates were higher in the traditional Duhamel group though there was no statistical difference. (Table 2)

CONCLUSIONS: Our present 2-year data limited to the normal - segment type revealed that life quality of children receiving laparoscopic-assisted transanal endorectal (Soave) pull-throughs did not significantly differ from those who receiving traditional Duhamel procedures. Meanwhile traditional Duhamel procedures might be more beneficial regarding to RAIR recovery.

TABLE 1: Life Quality Scoring 2 year after surgery

Life Quality Scoring	80~ (good)	60~80 (moderate)	~60 (poor)	Total
Lap- Soave	23	28	7	58
Tra - Duhamel	13	12	2	27
Total	36	40	9	85

t test, $p=0.22$

Lap - Soave: laparoscopic-assisted transanal endorectal (Soave) pull-through

Tra - Duhamel: traditional Duhamel procedures

TABLE 2: Recto-anal inhibitory reflex (RAIR) 2 year after surgery

RAIR occurrence	Lap- Soave	Tra - Duhamel	Total
Positive	9	9	8
Negative	49	18	67
Total	58	27	85

chi-square $p=0.06$

Lap - Soave: laparoscopic-assisted transanal endorectal (Soave) pull-through

Tra - Duhamel: traditional Duhamel procedures

Oral Abstracts CONTINUED

S005: SELECTIVE TRANSPERITONEAL ASPIRATION OF A DISTENDED BOWEL WITH A SMALL-CALIBER NEEDLE DURING LAPAROSCOPIC NISSEN FUNDUPLICATION: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL

Carlos Garcia-Hernandez, MD, Lourdes Carvajal-Figueroa, MD, Sergio Landa-Juarez, MD, Adriana Calderon-Urrieta, MD, Hospital Star Medica Lomas Verdes, México

BACKGROUND/PURPOSE: Anecdotal reports have demonstrated the feasibility of needle aspiration to deflate a distended bowel loop during open surgery, but we are not aware of any prospective study that has evaluated the safety and efficacy of this technique during laparoscopic surgery. Therefore, we designed a randomized controlled study to evaluate the use of the selective transperitoneal needle aspiration of a bowel loop (STAB) in infants undergoing laparoscopic Nissen Fundoplication.

METHODS: The study was conducted between January 2010 and December 2013. Candidates were patients of less than 6 months of age, scheduled for laparoscopic Nissen fundoplication, in which severe colonic distention was observed during the surgery.

We randomized the patients to the study drug or placebo in a 1:1 mode. The treatment group received STAB, while the control group was subject to conventional maneuvers discretionally by the surgeon.

PROCEDURE: In both groups, we performed the Nissen Technique according to standard laparoscopic approach. The presence of severe colonic distention was identified after placing all ports. We introduced a 30-gauge hypodermic needle into the abdominal wall in a perpendicular fashion. We

advanced the needle into the transverse colon at its anti-mesenteric border and continued with gentle aspiration. In case of suboptimal result after first attempt, aspiration could be performed at other sites if required. Afterwards, the procedure proceeded as planned. In the control group, the operators performed conventional maneuvers such as deviating downwards the dilated loop using surgical tools and/or placing the patient on a high Fowler's position.

We performed 403 Nissen procedures laparoscopically, 102 were in infants ≤ 6 months old, while only 44 presented severe transverse colonic distension.

SAMPLE SIZE: STAB facilitated the surgical procedure and drastically reduced surgical time. Thus, we calculated our sample size with use of the following inputs: 90% power, a critical p value of 0.05, and 50% reduction in surgical time. This resulted in a necessary sample size of 21 subjects per group, for a total required sample size of 42 subjects.

RESULTS: We performed STAB in 23 patients and conventional measures in 21. STAB attempts were 45: 8 (36.4%) patients required one puncture, 8 (36.4) required two punctures and 7 (27.3%) required three. Mean age was 66.9 ± 38.1 days in the STAB group and 64.7 ± 36.2 days in the control group, $p = \text{NS}$. Mean operative time was shorter in the STAB group than in controls (34.6 ± 6.1 vs. 70.8 ± 7.1 minutes, $p < 0.001$), which constituted a $50.7 \pm 9.1\%$ absolute reduction. Open conversion ($N=3$, 14.3%) only occurred in the open group. There were no additional intraoperative or postoperative complications.

DISCUSSION: We proposed the use of STAB as alternative therapy to decompress a dilated large-bowel

Oral Abstracts CONTINUED

loop during laparoscopic surgery. This maneuver is simple and efficient and has no clinical complications. Future studies are required to evaluate its role in the subset of other patients or procedures, as well as the safety of STAB in dilated small-bowel loops. Nonetheless, the present study may be considered hypothesis generating for other surgical settings.

SO06: LAPAROSCOPIC REPAIR OF MALROTATION. WHAT ARE THE INDICATIONS IN NEONATES AND CHILDREN?

Go Miyano, MD, Keiichi Morita, MD, Masakatsu Kaneshiro, MD, Hiromu Miyake, MD, Hiroshi Nouse, MD, Masaya Yamoto, MD, Koji Fukumoto, MD, Naoto Urushihara, MD, Department of Pediatric Surgery, Shizuoka Children's Hospital

AIM: To present our experience of treating malrotation with laparoscopy to more clearly define its role in neonates and children and to compare outcome of open repair with outcome of laparoscopic repair with respect to age at the time of surgery.

MATERIALS & METHODS: We conducted a retrospective analysis of all Ladd's procedures performed at our institution between 2007 and 2012. In order to compare postoperative outcome, we divided our subjects into 2 groups according to age at the time of surgery. The neonate group (N) comprised subjects who had surgery up to and including day 30 of life, and the child group (C) comprised subjects who had surgery from day 31 of life onwards.

RESULTS: There were 26 Ladd's procedures performed during the study period. Of these, 9 were laparoscopic (lap-Ladd) and 17 were open (open-Ladd). When categorized according to age at surgery, there were 14 cases in group N (3

lap-Ladd; 11 open-Ladd) and 12 cases in group C (6 lap-Ladd; 6 open-Ladd). None of the cases in our series had suspected diagnoses of ischemic or necrotic bowel preoperatively. Mean age and mean body weight at surgery were higher in lap-Ladd than open-Ladd but differences were not significant. Intestinal volvulus was confirmed at surgery in 3/3 lap-Ladd and 9/11 open-Ladd in group N and in 5/6 lap-Ladd and 6/6 open-Ladd in group C ($p=ns$). No cases required bowel resection in our series. Mean operating time was significantly longer in lap-Ladd (130.7 minutes) versus open-Ladd (81.1 minutes) in group N, as well as in lap-Ladd (119.2 minutes) versus open-Ladd (74.2 minutes) in group C. The rate of conversion of lap-Ladd to open-Ladd was 1/3 (33.3%) in group N and 1/6 (16.7%) in group C. There was 1 case each of bowel obstruction (1/11, 9.1%) in open-Ladd in group N and chylorrhea from mesentery (1/6, 16.7%) in open-Ladd in group C both necessitating laparotomy. Recurrence of signs and symptoms of malrotation occurred in 1/3 (33.3%) lap-Ladd in group N. Mean time taken to recommence feeding in group N was shorter for lap-Ladd (3.7 days) versus open-Ladd (4.1 days) as it was also in group C; lap-Ladd (2.6 days) versus open-Ladd (3.0 days), but these differences were not significant ($p=0.73$ for group N; $p=0.64$ for group C). Length of hospitalization was similar for all group N cases (lap-Ladd: 13.7 days; open-Ladd: 13.9 days), but shorter for lap-Ladd (6.6 days) compared with open-Ladd (8.2 days) in group C, which was not statistically significant ($p=0.94$ for group N; $p=0.28$ for group C).

CONCLUSION: Our data confirm that lap-Ladd is a safe procedure, but we do not recommend lap-Ladd for the treatment of malrotation in patients 30 days of age or less.

Oral Abstracts CONTINUED

S007: LAPAROSCOPIC REPAIR OF CONGENITAL DUODENAL OBSTRUCTION IN NEONATE Jinshi Huang, MD,

Department of Surgery, Jiangxi Provincial Children's Hospital

OBJECTIVE: To evaluate the curative effect of laparoscopic surgery treatment of congenital duodenal obstruction(CDO),such as web or annular pancreas, in neonate.

METHODS: Thirty-eight neonates with CDO who underwent laparoscopic surgery were analyzed retrospectively from September 2009 to August 2013(22 with web,and 16 with annular pancreas), Outcomes of interest were operative time, postoperative leaks, and postoperative full time of feeding.

RESULTS: The laparoscopic procedures were completed without intraoperative complication in 38 neonates, Conversion to open surgery was required in 2 patients (5.3 %).Average operating time was 102±19 minutes. There were no duodenal anastomotic leaks. time to initial feeding 5.7±2.8 days, and time to full oral intake 8.7±2.0 days. Average hospitalization time was 10.7±3.2 days.Follow-up upper gastrointestinal tests show no evidence of stricture or bstruction.

CONCLUSION: The laparoscopic surgery treatment of CDO is safe and efficacious.

INDEX WORDS: Laparoscopic ,congenital, duodenal obstruction

S008: COMPLICATIONS AFTER LAPAROSCOPY FOR RECTOVESICAL FISTULA HamidReza Foroutan, Dr.,

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INTRODUCTION: Rectovesical fistula is one of the challenging cases of

anorectal malformation. The traditional procedure of PSARP, Laparotomy and then pull-through is the treatment of choice. With the advances in Laparoscopic surgery in small children, it seemed that laparoscopic assisted anorectoplasty would be an accepted alterative.

Here we present the intermediate term results of 3-7 years for these patients

METHODS AND MATERIALS: Eleven patients with rectovesical fistula were operated on laparoscopically during the last 7 years. All of these patients had diverting colostomy at newborn age and had laparoscopic assisted anorectoplasty at the age of 3-6 months. The operations were performed in supine position and the external sphincter was localized with muscle stimulator. The patients were followed for 3-7 years postoperatively. Anorectal manometry, MRI, endosonography were performed.

RESULTS: Eleven patients were followed. Three were continent with very occasional soilage. Five patients had frequent bowel movement with soilage. Three patients had severe perineal dermatitis, one of whom had sigmoid pull through due to very short rectum. Three patients had constipation. Two patients had dribbling. All had good weight gain. Most patients had decreased sphincter tone. MRI showed well positioning of the sphincter.

CONCLUSION: Laparoscopic assisted anorectoplasty is feasible and intermediate term follow up showed relatively high complications. Some modifications of the procedure can improve the results

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S009: LAPAROSCOPIC MESH RECTOPEXY FOR COMPLETE RECTAL PROLAPSE

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AIM: To describe the operative technique of the treatment of complete rectal prolapse (RP) through minimal invasive approach in children presenting recurrent RP.

MATERIAL AND METHODS: We present an operating technique inspired from the Orr-Loygue-Cerbonnet operating technique modified for laparoscopy. The operative steps are: diagnosis (presence of a peritoneal hernia in the Douglas), peritoneal opening of the Douglas, posterior rectal dissection, tension-free mesh rectopexy, peritoneal closure. Operative treatment was proposed after complete work-up excluding cystic fibrosis and medullar anomalies, for persistent RP despite well conducted medical treatment during 6 months at least. Low-fibre diet was prescribed for the first 2post-operative weeks.

RESULTS: Since 2001, eight patients (3M/5F) with a median age of 6, 5years (2-17years) benefitted from laparoscopic treatment of RP. Mean operative time was 98minutes (range 80-125). There were no conversion, nor operative complications. Mean hospital stay was 3.5days (range 2-5). No post-operative constipation, nor recurrence were reported during the mean follow-up period of 4.1years.

CONCLUSION: The modified Orr-Loygue-Cerbonnet laparoscopic operating technique is a simple, reproducible

and efficient treatment of persistent complete RP in children. To avoid post-operative constipation, it is important to perform a tension-free mesh rectopexy.

S010: SINGLE INCISION LAPAROSCOPIC SPLENECTOMY USING THE SUTURE SUSPENSION TECHNIQUE FOR SPLENOMEGALY IN CHILDREN WITH HEREDITARY SPHEROCYTOSIS

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BACKGROUND: Laparoscopic splenectomy has become a gold standard in the treatment of spleen disorders related to hematologic diseases. With increasing laparoscopic surgery experience and improved new vessel sealing equipment, single incision laparoscopic splenectomy (SILS) has emerged as an alternative to multiport laparoscopy, but the application of SILS to massive splenectomy is still challenging due to technical difficulties. The aim of this study was to describe the suture suspension technique contributing to SILS for the treatment of hereditary spherocytosis with splenomegaly.

METHODS: A retrospective review was conducted to evaluate all SILS for splenomegaly performed by a single surgeon between June 2010 and December 2013. On preoperative ultrasonography, the spleen size index ranged from 0.67 to 0.82 (the normal spleen index should be <0.2). A 2-3 cm umbilical incision was used for the placement of a multichannel single-port. A needle with a 1-0 suture was percutaneously introduced from the left hypocondriac region at the midaxillary line into the abdomen, then penetrated out from the anterior chest wall at the midclavicular line for suspending the massively enlarged spleen. Pulling the suture both ends could provide

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excellent exposure of the splenic hilum. Dissection was facilitated by the use of a 5-mm curved reusable grasper and a 5-mm conventional Harmonic scalpel, and splenic vessels were ligated at the hilum with a 5-mm Hem-o-lok clips. The resected spleen was placed in an endosurgical bag, morcellated, and removed from the abdomen via the umbilical incision.

RESULTS: Nine children with hereditary spherocytosis underwent SILS during the study period without conversion to an open procedure or requiring additional ports. The suture suspension technique was successfully used in all patients and markedly improved the exposure of the splenic hilum. The median operative time was 122.6±31.2 min, and the median extracted spleen weight was 562±74.5 g (range, 420–1260 g). No intraoperative or postoperative complications were recorded. The umbilical incision healed well with a satisfactory cosmetic effect.

CONCLUSIONS: Our preliminary experience shows the the suture suspension technique that enables safe and feasible SILS for the management of splenomegaly in children with hereditary spherocytosis. More experience is needed to assess advantages and disadvantages compared with the standard laparoscopic approach.

S011: LAPAROSCOPIC GASTROSTOMY AND LAPAROSCOPIC NISSEN/GT IN CHILDREN WITH COMPLEX CONGENITAL HEART DEFECTS

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BACKGROUND: In children with complex congenital heart defects, the effect of laparoscopy on cardiac physiology and the resultant morbidity are not well

described. The goal of this paper was to describe intraoperative physiology, estimate intraoperative physiologic stability, and report operative outcomes during laparoscopic gastrostomy tube (GT), and laparoscopic fundoplication with gastrostomy tube in patients with complex congenital heart defects.

METHOD: An IRB approved retrospective chart review of all children with complex congenital heart defects who underwent GT or Nissen with GT from January 2010 to January 2014 was conducted. Data collection included patient demographics, intraoperative physiologic parameters, and postoperative outcomes. All procedures were performed in the cardiovascular operating rooms, with cardiovascularly trained anesthesiologists. Statistical analysis consisted of descriptive statistics, and non-parametric analysis.

RESULT: 28 patients were identified, 16 male and 12 female, with a mean age of 115 days (range 20 – 1173 days). The mean weight at operation was 4.2kg (range 2.2 – 12.5kg). Cardiac defects included hypoplastic left heart syndrome (n=6), complex single ventricle (n=7), tetralogy of Fallot (n=6), AV Canal (n=1), aortic arch hypoplasia/interruption (n=3), ventriculoseptal defects (n=3), pulmonary vein hypoplasia (n=1) and large patent ductus arteriosum (n=1). There were 21 laparoscopic GTs placed and 7 laparoscopic Nissen/GTs performed. The mean operative time was 35min (range 12 – 63min) for GT, and 71min (range 62 – 200min) for Nissen/GT. The mean blood loss was 1mL (0 – 2mL) for GT, and 2mL (range 2 – 10mL) for Nissen/GT. There were no conversions to an open procedure for either procedure. Intraoperatively the mean minute ventilation was 1.3L (range 0.1 – 2.3L) with a mean intervention rate of 4 changes per

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case in patients who underwent GT. The mean minute ventilation was 1.4L (range 0.2 – 2.2L) with a mean intervention rate of 9 changes per case in patients who underwent Nissen/GT. The mean end tidal CO₂ was 35 (range 28 – 45) for GT and 45 range (range 41 – 45) for Nissen/GT. The mean FiO₂ was 50% (range 20 – 100%) for GT with a mean of 4 interventions per case. The mean FiO₂ was 47% (range 27 – 100) for Nissen/GT with a mean of 7 interventions per case. The mean SPO₂ was 87% (range 77 – 100%) for GT and 92% (range 71 – 100%) for Nissen/GT. The mean temperature was 36.0C (range 32.8 – 37.9C) for GT, and 35.4C (range 33.0 – 37.7C) for Nissen/GT. There was one intraoperative complication due to hypothermia resulting in cardiac shunting and the need for ECMO. There were no postoperative complications.

CONCLUSION: The increased CO₂ introduced via laparoscopic insufflation does not appear to adversely affect patient stability and can be adequately managed with intraoperative ventilation. The performance of laparoscopic GT and Nissen/GT can be achieved safely in patients with complex congenital heart defects.

S012: ENDOSCOPIC SURGICAL SKILL VALIDATION SYSTEM FOR PEDIATRIC SURGEONS USING A REPAIR MODEL OF CONGENITAL DIAPHRAGMATIC HERNIA

Satoshi Obata, MD, Satoshi Ieiri, MD, PhD, Munenori Uemura, PhD, Ryota Souzaki, MD, PhD, Noriyuki Matsuoka, Tamotsu Katayama, Makoto Hashizume, MD, PhD, FACS, Tomoaki Taguchi, MD, PhD, FACS, Department of Pediatric Surgery, Faculty of Medical Science, Kyushu University, Department of Advanced Medicine and Innovative Technology, Kyushu University Hospital, Kyoto Kagaku Co., Ltd

PURPOSE: Pediatric surgeons require both basic and, highly advanced endoscopic surgical skills because of the various operations and different physical sizes of patients. The Japanese Society for Endoscopic Surgery developed an endoscopic surgical skill qualification(ESSQ) system for all surgical fields, including pediatric surgery. However, it is difficult to evaluate quantitative endoscopic skills using this ESSQ system. We therefore developed a validation system for objective endoscopic surgical skills for pediatric surgeons based on a disease model. The aim of this study is to verify the skill quality for pediatric endoscopic surgery.

METHODS: We developed a thoracic repair model of congenital diaphragmatic hernia mimicking a new born case(body weight:3 kg, diaphragm defect:1.5 x 1.0 cm, Fig. 1, 2). The examinees divided into two groups, 10 experts and 19 trainees(all right handed). They performed 2 tasks; Task 1 was a reduction of the herniated small intestine(5 mm diameter, length 30 cm) from the thoracic space to the abdomen (Fig 3a); Task 2 was to perform 3 suture ligatures of the diaphragm defect using an intracorporeal knot tying(Fig. 3b). The evaluation points were the time required to complete Task 1, the time score calculated using the residual time from 900 seconds(time limit:15 min) for Task 2, the number of complete full-thickness sutures, maximum air pressure tolerance, degree of diaphragm deformation, and residual defect areas after suturing. This model improved using the Suture Simulator Instruction Evaluation Unit(Kyoto Kagaku Co., Ltd). Additionally, we evaluated the total path length and velocity of each tip of the forceps using a 3-dimensional position measurement instrument with an electromagnetic tracking

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system(AURORA; Northern Digital Inc. Canada) to assess bi-hand coordination. All data were expressed as the mean \pm standard deviation. A statistical analysis was performed using the two tail paired and unpaired t test and $p < 0.05$ was considered statistically significant.

RESULTS: Table 1 shows the results of the time of Task 1($p=0.0074$), time score($p=0.0118$), numbers of complete full-thickness suture($p=0.0056$), maximum air pressure tolerance($p=0.0119$), degree of diaphragm deformation($p=0.0109$), and defect residual areas($p=0.1573$). In the time of Task 1, time score, the number of complete full-thickness sutures, maximum air pressure tolerance, and degree of diaphragm deformation, experts were significantly superior to the trainees. Tables 2 and 3 compare the total path length and velocity of tip of the forceps between the left and right hand in tasks 1 and 2. In trainees(Table2), the total length and velocity of the left forceps were inferior to those of the right forceps in both Tasks($p < 0.05$, respectively). Conversely, no significant differences were seen among experts between both forceps(Table3)($p > 0.05$, respectively) for both tasks.

CONCLUSIONS: This study revealed that experts possessed quick and accurate skills. Experts have excellent bi-hand coordination and they can use both hands equally compared to trainees. Our model validated the quality of endoscopic surgical skills between experts and trainees of pediatric surgeons. We next plan to develop effective training models for novice pediatric surgeons.



Fig. 1 Overview of the congenital diaphragmatic hernia repair model. (a, b)

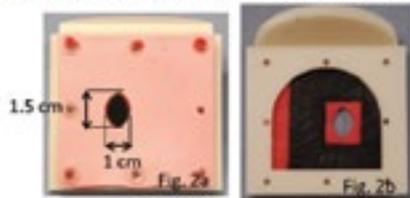


Fig. 2 Task sheet for the diaphragmatic defect (a: thoracic side, b: abdominal side)



Fig. 3 a Task 1: Reduction of the herniated small intestine b Task 2: 3 suture ligatures on the diaphragmatic defect

Table 1. The results of time of task 1, time score, number of complete full-thickness suture, maximum air pressure tolerance, degree of diaphragm deformation and defect residual area

	Time of Task 1 (sec)	Time score	No. of Complete Full-thickness Sutures	Maximum Air Pressure Tolerance (kPa)	Degree of Diaphragm Deformation (%)	Defect Residual Area (mm ²)
Expert (n=5)	90.8 6(22.77)	15.8 6(22.39)	2(80.0)	1.8(0.4)	44.8 6(24)	11.87 6(24.87)
Trainee (n=12)	40.37 4(20.49)	11.11 4(18.6)	1(11.11)	2.8(0.7)	54.2 4(34)	22.19 4(26.2)
p value	0.0074	0.0118	0.0056	0.0119	0.0109	0.1573

Table 2. Comparison of the total path length and velocity of the tip of the forceps between the left and right hand in Tasks 1 and 2 for the trainees.

	Task 1		Task 2	
	Length mm	Velocity mm/s	Length mm	Velocity mm/s
left hand	704.22 \pm 247.53	17.88 \pm 7.24	3202.73 \pm 523.17	11.20 \pm 3.30
right hand	1059.31 \pm 475.19	24.79 \pm 11.04	3120.64 \pm 501.44	11.17 \pm 4.16
p value	0.0012	0.0012	0.0417	0.0001

Table 3. Comparison of total path length and velocity of the tip of the forceps between the left and right hand in Tasks 1 and 2 for the experts.

	Task 1		Task 2	
	Length mm	Velocity mm/s	Length mm	Velocity mm/s
left hand	646.33 \pm 202.46	18.89 \pm 8.67	3237.72 \pm 660.48	14.70 \pm 4.21
right hand	881.88 \pm 217.28	22.78 \pm 8.82	3432.26 \pm 618.87	12.28 \pm 3.19
p value	0.1903	0.2008	0.5576	0.2553

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S013: THE DEVELOPMENT AND PRELIMINARY EVALUATION OF A SYNTHETIC NEONATAL ESOPHAGEAL ATRESIA/TRACHEOESOPHAGEAL FISTULA REPAIR MODEL *Katherine A.*

Barsness, MD, MS, Deborah M. Rooney, PhD, Lauren M. Davis, BA, Ellen K. Hawkinson, BS, Northwestern University Feinberg School of Medicine; University of Michigan School of Medicine

BACKGROUND: Thoracoscopic esophageal atresia/tracheoesophageal fistula (EA/TEF) repair is technically challenging. We have previously reported our experiences with a high-fidelity hybrid model for simulation-based educational instruction in thoracoscopic EA/TEF, including the high cost of the tissue for these models. The purposes of this study were to 1) to create a low-cost synthetic tissue EA/TEF repair simulation model and 2) to evaluate the content validity of the synthetic tissue simulator.

METHODS: Review of the literature and computed tomography images were used to create Computer-aided drawings (CAD) for a synthetic, size appropriate EA/TEF tissue insert. The inverse of the CAD image was then printed in six five different sections to create a mold that could be filled with platinum-cured silicone. The silicone EA/TEF insert was then placed in a previously described neonatal thorax and covered with synthetic skin. Following IRB-exempt determination, 47 participants performed some or all of a simulated thoracoscopic EA/TEF during two separate international meetings (IPEG and WOFAPS). X[D1]Fourteen participants were identified as “experts”, having 6-50 self-reported thoracoscopic EA/TEF repairs, and thirty “novice”, having 0-5 self-reported thoracoscopic EA/TEF repairs. Three participants did report prior experience with thoracoscopic EA/TEF

repair and were ranked as undesignated. All comparative data between expert and novice participants excluded the undesignated group. Participants completed a self-report, six-domain, 24-item instrument consisting of twenty-three 5-point rating [D2]scales (1=not realistic to 5=highly realistic) and one 4-point Global rating scale. Content validity was evaluated using the many-Facet Rasch model and estimating inter-rater consistency was estimated using intra-class correlation (ICC) for items relevant to simulator characteristics.

RESULTS: A review of the participants’ ratings indicates there were no overall differences across sites (IPEG vs. WOFAPS, $p=0.84$), or experience (Expert vs. Novice, $p=0.17$). The highest observed averages were 4.4 (Value of Simulator as a Training Tool), 4.3 (Physical Attributes-chest circumference, chest depth and intercostal space) and 4.3 (Realism of Experience-fistula location). The lowest observed average OA’s were 3.5 (Ability to Perform-closure of fistula) and 3.7 (Ability to Perform-Acquisition target trocar sites), 3.8 (Physical Attributes-landmark visualization), 3.8 (Ability to Perform-anastomosis and dissection of upper pouch) and 3.9 (Realism of Materials-skin). The Global Rating was 2.9, coinciding with a response of “this simulator can be considered for use in neonatal TEF repair training, but could be improved slightly”.

CONCLUSIONS: We have successfully created a low-cost synthetic EA/TEF tissue insert for use in a neonatal thoracoscopic EA/TEF repair simulator. Analysis of the participants’ ratings of the synthetic EA/TEF simulation model indicate that it has value and can be used to train pediatric surgeons to perform thoracoscopic EA/TEF repair, with minor revisions. Areas for improvement were

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identified, and these areas will be the focus for future modifications to this novel synthetic EA/TEF repair simulator.

S014: VIDEO-BASED SKILL ASSESSMENT OF ENDOSCOPIC SUTURING IN A PEDIATRIC CHEST MODEL AND A BOX TRAINER Shinya Takazawa, MD, Tetsuya Ishimaru, MD, PhD, Kanako Harada, PhD, Yusuke Tsukuda, Naohiko Sugita, PhD, Mamoru Mitsuishi, PhD, Tadashi Iwanaka, MD, PhD, The University of Tokyo Hospital

PURPOSE: Pediatric minimally-invasive surgery requires special surgical skills because of the small working space and tissue fragility. We previously reported a pediatric chest model developed for the training and assessment of specific pediatric surgical skills. This paper presents a video-based method for assessing skills for endoscopic suturing in the pediatric chest model compared with a box trainer.

METHODS: A commercial suture pad was placed in a rapid-prototyped pediatric chest model of a one year-old patient to simulate a suture required in the thoroscopic repair of esophageal atresia type C. Twenty-eight pediatric surgeons (9 experts, 9 intermediates, and 10 trainees) each completed an endoscopic intracorporeal suturing and knot-tying task both in the pediatric chest model and in a box trainer. The tasks were video-recorded and rated by two blinded observers using two evaluation methods: the 29-point checklist method and the error assessment sheet method. The experimental protocol was approved by the Ethics Committee.

RESULTS: The suturing performance of the three groups is shown in Table 1. In all metrics for both setups, the expert group performed significantly better than the trainee group. The overall performance of the intermediate group was similar

or slightly worse than the expert group in the box trainer. In contrast, the performance of the expert group was significantly better than the intermediate group in the pediatric chest model. Significant specific differences between the expert and trainee groups in the pediatric chest model were observed in some checklist items related to the ability to keep the needle in view at all times, the knot-tying technique, and techniques for avoiding possible tissue damage.

CONCLUSIONS: The expert group showed significantly better suturing performance than either the intermediate or trainee groups in the pediatric chest model, suggesting that this method can better assess the pediatric-specific expert skills obtained by performing many clinical procedures. Therefore, we conclude that the pediatric chest model together with a training program for the identified pediatric-specific skills is a good endoscopic surgical training and assessment platform for pediatric surgeons.

Table 1. Comparison of the suturing performance of the three groups

		Expert	Intermediate	Trainee
Box trainer	29-point checklist	21 (3.8)*	20.5 (3.3)*	14.3 (5.6)
	Error score	7 (4.8)	9.5 (2.8)*	12 (5.4)
	Completion time (sec)	134 (81)	130 (103.5)	187 (109)
Pediatric model	29-point checklist	23 (4.5)**	17.6 (4.5)	17.8 (7.3)
	Error score	6 (4.5)*	10.8 (4.5)	11.3 (5.5)
	Completion time (sec)	186 (86)*	237 (200)	305 (313)

Median values (interquartile range); *p<0.05 vs Trainee, #p<0.05 vs Intermediate (Mann-Whitney U)

S015: ANATOMICAL VALIDATION OF AN INANIMATE MODEL FOR TRAINING THORACOSCOPIC REPAIR OF TRACHEO ESOPHAGEAL FISTULA/ESOPHAGEAL ATRESIA – TEF/EA Maximiliano A. Maricic, MD, Maria M., Bailez, MD, National Children's Hospital S.A.M.I.C. "Prof. Dr. Juan P. Garrahan"

INTRODUCTION: We present the results of anatomical validation of an inanimate model created for training thoracoscopic

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repair of esophageal atresia with lower trachea esophageal fistula (EA/TEF)

MATERIALS & METHODS: This model has been previously presented in IPEG 2013. It is made of a piece of wood used as a support, 3 corrugated plastic tubes of different diameters (50mm \emptyset , 25mm \emptyset , and 15mm \emptyset) simulating ribs, intercostal spaces, trachea and spine and tubular latex balloons as the acigos vein and esophagus, with a thin self-adhesive transparent film that fixed all structures as the parietal and mediastinal pleura, all introduced into a plastic container with a lid that simulates the thoracic cavity of a newborn. The cost of materials is less than 50US\$.

A compact system monitor, light source and endocamera, a 4mm lens and 3mm instruments are used to reproduce all steps of the procedure.

Initial validation consisted of a Likert type survey completed by 16 international experts and pediatric surgeons from different countries (Brazil, France, Luxemburg, Switzerland and Argentina), already trained in MIS TEF repair. We define 4 categories depending on their experience in MISTEF/AE repair: a) beginners (less than 5) b) intermediate (5-20) c) seniors (20-30) d) experts (+30).

The survey included 18 questions regarding different aspects related to similarity with real surgery with 5 possible answers graded from non to high degree of similarity, and "not serve to generate skills" to "can generate the vast majority of skills"

RESULTS: Seven respondents were experts, 4 intermediate, 3 beginners and 2 seniors.

One hundred percent of them felt that the model has a high degree or good likeness of similarity (grade 5 and 4)

in relation to external and endoscopic appearance (visual environment), dimensions, esophageal anatomy and double layer anastomosis; 91% (15/16) in relation to instruments positioning, internal dimensions and appearance of work area esophageal dimensions, ligation and section of TEF and upper pouch dissection; 82% (14/16) regarding anatomical appearance (pleura, ribs, trachea, Azygos vein, nerve, lung), trans anastomotic tube, placement and positioning of trocars and 73% (13/16) referring to dissection of the esophagus and azygos vein.

All respondents believe that the simulator can generate skills in use of 3mm Instrumental; 91% of them in handling camera and 82% in dissection, suturing and tissue handling.

DISCUSSION: The process of functional anatomical validation is a necessary step before its validation as a training method. After survey results we are in the process of improving the items that had a lower rate to develop a more accurate and reliable model for example including it into a doll to improve similarity with port positioning and including a tubular acigos vein.

S016: THE LAPAROSCOPIC DUODENO-DUODENOSTOMY SIMULATOR: A MODEL FOR CUSTOMIZABLE MINIMALLY

INVASIVE SURGERY TRAINERS [Joanne Baerg, MD](#), Nicole Carvajal, Danielle Ornelas, Candice Sanscartier, Diana Lopez, Cristine Cervantes, William Grover, PhD, Gerald Gollin, MD, Loma Linda University Children's Hospital and University of California Riverside Biomedical Engineering Department

INTRODUCTION: Simulator training is an important step toward proficiency in minimally invasive surgery (MIS) for pediatric surgeons. MIS repair of duodenal

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atresia requires suturing skills that are difficult to acquire. We sought to develop a prototype of an inexpensive, synthetic, and customized MIS simulator for laparoscopic duodeno-duodenostomy.

METHODS: Two pediatric surgeons, in cooperation with a University Bioengineering Department, designed and developed a synthetic model to simulate laparoscopic duodenal atresia repair in an infant.

RESULTS: The simulator was constructed in three parts: organ construction, training box construction and assembly.

Organ construction: Solid molds of small intestine, duodenum, stomach and liver were designed in SolidWorks software in acrylonitrile butadiene styrene using a 3D printer. The size of each mold was designed to be dimensionally accurate to life-sized infant organs. Premium liquid latex rubber was then dispersed over the plastic molds to construct the organs. The duodenal segments included a layer of thin gauze sandwiched between layers of latex. **Training box construction:** The box was modeled after the body cavity of an infant, from the lower neck to the top of the thighs. The interior volume mimics the pneumoperitoneum of an infant abdomen during laparoscopic surgery. After constructing a Styrofoam top and bottom frame template that simulated the top and bottom of the infant body, fiberglass resin was painted over the template to construct the body cavity. Three holes designating the placement of a grasper, a needle driver and an endoscope were cut from the top frame. Top and bottom frames were secured to each other. A reusable rubber grip was secured over the top frame so the laparoscopic instruments could be placed through it. **Assembly:** Organs were secured in the box with Velcro. The

modeled small intestine, duodenum and stomach were placed in the bottom frame and the liver was placed inside the top frame of the body cavity. A silicone rubber sheet covered the top frame. The simulated duodeno-duodenostomy was judged to be realistic by the surgeons who trialed the simulator. The material was durable and did not tear or deform after multiple anastomoses.

CONCLUSION: An inexpensive, life-sized and durable synthetic simulator for MIS duodeno-duodenostomy was constructed. This serves as an initial proof of concept that customizable simulators of pediatric MIS procedures can be constructed using 3-D printing technology and latex to construct organs. The development of operation-specific simulators has the potential to speed the safe and efficient integration of rare pediatric MIS procedures into practice.



S017: OPTIMIZING WORKING SPACE IN LAPAROSCOPY – CT MEASUREMENT OF THE INFLUENCE OF SMALL BODY SIZE IN A PORCINE MODEL J. Vlot, MD, Lme Staals, MD, PhD, Prof. RMH Wijnen, MD, PhD, Prof. RJ Stolker, MD, PhD, Prof. NMA Bax, MD, PhD, Erasmus MC: University Medical Center Rotterdam

INTRODUCTION: In our continuing research into the determinants of laparoscopic working space, the influence of small body size was investigated.

METHODS: In eight 6-kg pigs, the effects of intra-abdominal

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CO₂pneumoperitoneum pressure (IAP), pre-stretching of the abdominal wall, and neuromuscular blockade (NMB) on laparoscopic working space volume and distances were studied. Computed tomography was used to measure working space during two stepwise abdominal insufflation-runs up to an IAP of 15 mmHg. Results were compared with data from earlier experiments in 20-kg pigs.

RESULTS: In 6-kg pigsworking-space dimensions were five times smaller than in 20-kg pigs. Cardiorespiratory parameters were stable up to an IAP of 8-10 mmHg. Working-space volume, anteroposterior (AP) diameter and symphysis-diaphragm distance increased linearly up to an IAP of 8 mmHg. Above 8 mmHg, compliance decreased. Eighty percent of the total volume (618 ml) and of AP diameter (3 cm) at 15 mmHg had been achieved at an IAP of 10 mmHg. Pre-stretching by a first insufflation resulted in a statistically significant increase in working space volume and in AP-diameter during the second insufflation. This effect was significantly larger than in 20-kg pigs. Neuromuscular blockade did not have a significant effect on working space.

CONCLUSIONS: Working space in growing individuals is very limited. Eighty percent of the working space created by an IAP of 15 mmHg was already achieved at 10 mmHg, while cardiorespiratory side effects at an IAP of 8-10 mmHg seem acceptable. Pre-stretching of the abdominal wall significantly increased working space, even more so than in 20-kg pigs. As in 20-kg pigs, NMB had no significant effect on laparoscopic working space. Pre-stretching of the abdominal wall is a promising cheap, safe and easy strategy to increase laparoscopic working space, lessening the need for prolonged high-pressure pneumoperitoneum.

S018: THE EFFECTS OF CO₂-INSUFFLATION WITH 5 AND 10 MMHG DURING THORACOSCOPY ON CEREBRAL OXYGENATION AND HEMODYNAMICS IN PIGLETS *Lisanne J. Stolwijk, MD,*

Stefaan H. Tytgat, MD, Kristin Keunen, MD, N Suksamanapan, MD, Maud Y. van Herwaarden, MD, PhD, Petra M. Lemmers, MD, PhD, David C. van der Zee, Prof., Dr., Wilhelmina's Children Hospital University Medical Center Utrecht

AIMS: An increasing percentage of surgical interventions in neonates is performed by minimal invasive techniques. Near infrared spectroscopy is a non-invasive method that can be used to assess changes in cerebral oxygenation, an estimator of cerebral perfusion, by monitoring regional cerebral oxygen saturation (rScO₂). Values below 40% are related with brain damage. rScO₂ can be influenced by mean arterial blood pressure (MABP), mean airway pressure, arterial saturation (SaO₂) and pCO₂. Recently, concerns have been raised regarding a decrease of cerebral oxygenation in neonates during thoracoscopy as a result of CO₂-insufflation (Bishay 2013).

METHODS: Piglets were anaesthetized, intubated, ventilated and surgically prepared for CO₂-insufflation and insertion of a trocar in the right hemithorax took place. Insufflation was done with 5 or 10 mmHg CO₂ during one hour. Physiologic parameters SaO₂, heart rate (HR), MABP and rScO₂ were monitored. cFTOE, an estimator of cerebral oxygen extraction ((SaO₂ - rScO₂) / SaO₂) was calculated. Arterial blood gases were drawn every 15': pre(T0), during(T1-T4) and after CO₂-insufflation(T5).

RESULTS: Ten piglets (4kg) were randomized for 5(P5) and 10(P10) mmHg CO₂-insufflation.

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Two P10 piglets needed resuscitation after insufflation, none P5.

P5 showed stable SaO₂, HR and MABP during the entire procedure. pCO₂(mmHg) increased from 36±4 at T0 to 70±19 at T4 (p<0.05) and rScO₂(%) from T0 42±3 to 57±1 at T5 (p<0.001).

P10 showed a decrease of MABP (mmHg) from 84±8 at T0 to 54±21 at T3 (p<0.05). HR increased from T0 152±18 to 218±9 at T3 (p<0.05), pCO₂(mmHg) from 35±6 at T0 to 74±8 at T3 (p=0.01), rScO₂(%) from 37±4 at T0 to T5 50±5 (p=0.05).

cFTOE in P10 compared to P5 was higher at all time points and significant at T5(p<0.05)(fig 1).

CONCLUSION: Insufflation of CO₂ during thoracoscopy with 10 mmHg caused more severe hemodynamic instability compared to 5 mmHg. Although higher CO₂-levels are related with higher brain perfusion by cerebral vasodilation insufflation of 10 mmHg seemed to be related with a decrease of cerebral perfusion as represented by a higher oxygen extraction.

CO₂-Insufflation of 5 mmHg for thoracoscopy seems to be safe for cerebral oxygenation.

S019: MAGIC (MAGNETIC ANTI-GLYCEMIC ILEAL CONDUIT) I: JEJUNAL-ILEAL MAGNETIC COMPRESSION ANASTOMOSIS CORRECTS INSULIN RESISTANCE IN DIABETIC PIGS

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PURPOSE: Bariatric surgery corrects insulin resistance independent of weight loss, possibly through enterokine signaling pathways. We hypothesize that a Magnetic Anti-Glycemic Ileal Conduit (MAGIC), created with a magnetic compression anastomosis between the proximal jejunum and distal ileum, corrects insulin resistance.



METHODS: Yucatan mini pigs (n = 12) received a high fat diet for 3 months to induce insulin resistance. Animals were randomly assigned to 4 groups (n=3). Baseline intravenous glucose tolerance tests (IVGTT) were performed in fat-fed pigs and one farm pig as a control. Eight animals underwent the MAGIC procedure using either 23 mm (n=3) or 17 mm diameter (n=5) magnets. Four animals underwent sham operation. Groups were survived for 2, 4, 8 or 12 weeks, at which points IVGTTs were repeated to assess changes in insulin sensitivity. Plasma glucose and serum insulin by ELISA was measured (n=8). Animals were euthanized and the anastomosis procured for histology.

RESULTS: Baseline insulin resistance was confirmed in fat-fed pigs versus control (Insulin area under the curve normalized to weight [AUC]: 0.330 ± 0.206 vs 0.053, p < .005). Insulin sensitivity improved by 2 weeks in animals after MAGIC treatment compared with sham (AUC: 0.169 ± 0.098 vs 0.382 ± 0.30, p < 0.005). While animals with 23 mm magnets experienced excessive weight loss (>25%) observed by 4 weeks, this was ameliorated in pigs with 17 mm magnets (48% ± 3 vs 18% ± 14). No anastomotic leaks or strictures were observed in any animals. All animals took

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liquids on the day of surgery and were tolerating solids on POD 1. Two animals had diarrhea that abated, but none required supplements or TPN.

CONCLUSION: MAGIC jejunal-ileal bypass may be an effective treatment for insulin resistance and the metabolic syndrome, with the potential for an outpatient minimally invasive procedure.

S020: AMNIOSEAL I: A BIOMIMETIC POLYMER ADHESIVE TO PRESEAL THE AMNIOTIC MEMBRANE TO PREVENT PPROM AFTER FETOSCOPY Corey W. Iqbal, MD, Dillon A. Kwiat, BS, Stephanie Kwan, BS, Hoyong Chung, PhD, Robert H. Grubbs, PhD, Michael R. Harrison, MD, University of California San Francisco Fetal Treatment Center; Children's Mercy Hospital Fetal Health Center

PURPOSE: Preterm premature rupture of membranes (PPROM) is a common problem after fetoscopy and remains the "Achilles Heel" of fetal therapy.

HYPOTHESIS: We hypothesize that presealing the amniotic membrane with a biomimetic polymer adhesive that works in an aqueous environment, similar to that produced by the mollusk, prior to amniotomy will prevent PPROM.

METHODS: With IACUC approval, pregnant rabbits underwent celiotomy with exposure of the uterus. Fetuses were randomly assigned (by position in the uterine horns) to either (1) no intervention, (2) Amnioseal injection between the myometrium and amnion followed by needle puncture or (3) saline injection between the myometrium and amnion followed by needle puncture. One week postoperatively, the integrity of the amniotic sac was assessed for leak by injection of methylene blue and oligohydramnios was assessed indirectly by fetal lung-to-body weight ratio.

RESULTS: Eighty-seven rabbit fetuses were studied. Direct evidence of membrane leakage was present in 36% of Amnioseal treated animals and 67% of saline treated animals ($p=0.03$). The membrane was completely disrupted in 43% of the saline group compared to 15% with Amnioseal ($p=0.03$). Mean lung-to-body weight ratio was lowest (suggesting oligohydramnios) in the saline control group (0.026 ± 0.001) while the Amnioseal group (0.030 ± 0.002) was closer to the untreated group (0.032 ± 0.002).

CONCLUSIONS: Amnioseal was effective in reducing membrane rupture as measured by direct membrane assessment and fetal lung-to-body weight ratio. This may be a useful strategy to prevent PPROM after fetoscopy.

S021: THE PEDIATRIC DEVICE CONSORTIUM: A MODEL FOR SURGICAL INNOVATION Elisabeth J. Leeftang, MD, Elizabeth A. Gress, Dillon A. Kwiat, Hanmin Lee, MD, Shuvo Roy, PhD, Michael R. Harrison, MD, Departments of Pediatric Surgery and Bioengineering and Therapeutic Sciences, University of California, San Francisco

The Pediatric Device Consortium (PDC) has served for 4 years as a platform for open brainstorming, creating solutions through a multidisciplinary approach and completing the cycle of device innovation from concept to commercialization.

The consortium's twice weekly meetings afford a venue for iteration of its 13 active projects and support for people with new ideas at any stage of development. These meetings are a



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sounding board for potential devices, project updates and future directions. The interactive web portal provides resources for education, collaboration and communication. The organization consists of a program administrator, principal investigators, partner programs, and specialists in product development, regulatory affairs, and intellectual property. Residents, engineers and students from a variety of disciplines work on physical devices and are surrounded by a diverse technological pool.

The model of the PDC has contributed to over 30 pediatric devices, with 3 projects in the clinical stages and one commercially available device. Fifteen articles have been published in peer-reviewed medical and engineering journals and research presented at over 20 conferences. Meetings attract 12-20 people on average from different backgrounds. To accelerate the adoption of pediatric devices into the market, the PDC has facilitated 5 partnerships between innovators and existing companies and has helped launch 6 start-ups around technologies born in the PDC. The PDC has raised more than \$11 million as an impressive return on the Food and Drug Administration's \$2 million investment.

Momentum continues to gather in the newly formed Surgical Innovations Group – encompassing all surgical specialties, bioengineering and a multicenter incubator, a device accelerator for funding devices and the Innovation Pathway for researchers. What began as a free forum has grown into an innovation powerhouse with name recognition and clinical solutions.

S022: LONG TERM HEMODYNAMIC EFFECTS OF NUSS REPAIR IN PECTUS EXCAVATUM FOR VENTRICULAR FUNCTION BY “CARDIOVASCULAR MAGNETIC RESONANCE CINE-SSFP-IMAGING”, RESULTS OF BERLIN-BUCH NUSS-CARDIO-MRI STUDY K.

Schaarschmidt, Prof., MD, Susanne Polleichtner, MD, A. Töpper, MD, A. Zagrosek, MD, M. Lempe, MD, F. Schlesinger, MD, J. Schulz-Menger, Prof., MD, Helios Center of Pediatric and Adolescent Surgery Berlin-Buch

OBJECTIVE: Exercise intolerance in pectus excavatum is known, but true physiological impairment is difficult to prove. Controversial is, whether Nuss improves cardio-pulmonary performance although cardiac relief was reported 2006 by Colnecho-cardiographically and in 2013 by Maagaard clinically. Cardiac nuclear magnetic resonance imaging (CMRI) has low inter-observer variance but shows severe interferences by ferro-magnetic Nuss bars and investigation capacities are limited.

METHODS: 7/2009- 11/2011 53 PE patients of 12.8-42.9y (21.1±8.6) with a Haller of 9.9± 5.7 (4.3-18.1) and BMI of 20.8±3.6 entered the study and 37 series (30 male /7 female) free of artifacts allowed complete evaluation. This ongoing prospective study quantifies right +left ventricular function by CMR before, 2 weeks, 3 months, 1 year after Nuss and finally 3 years postop after bar removal. The use of titanium bars (13'-17') in all patients avoided bar interferences in CMR. Cardiac function was assessed by Cine-SSFP-imaging covering the left ventricle (LV) as short axis and the right ventricle (RV) axial orientation in axial orientation. We quantified the enddiastolic and endsystolic volumes of LV and RV: and

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calculated the ejection fractions (EF) and stroke volumes (SV) using CMR42 (circle cvi, Canada).

Parameter	CMR Preop	CMR 2 weeks	CMR 3 months	CMR 1 year	significant (P value)
RVEF %	45.7±5.3	51.6±4.6	49.4±4.2	48.3±4.5	< 0.0001
RVSV ml	85.5±22	92.3±21	89.3±19	90.6±20	p < 0.092
LVSV ml	87.2±20	94.6±21	88.9±19	92.0±18	p < 0.061

TABLE 1: Change of cardiac function in pectus excavatum after Nuss repair

RESULTS: Haller index was significantly improved after Nuss surgery (pre: 9.9 ± 5.7 vs. post: 2.8 ± 0.5 , $p < 0.001$) indicating a successful repair in all patients. The right ventricle lies anteriorly and to the right and is predominantly compromised by pectus excavatum. Thus right ventricular ejection fraction (RVEF) and stroke volumes of both ventricles (RVSV and LVSV) are highly significantly increased 2 wk, 3 mo and 1 year after Nuss (see table 1), while LVEF just reaches significance with p of 0.05.

CONCLUSIONS: Cardiovascular improvement by Nuss repair has been suspected for a long time due to decreased palpitations and exercise heart rates but could never be measured in a strictly reproducible way. Although this is an early report and still a small series it shows hemodynamic improvement after Nuss repair significantly and consistently in all control scans. Cine-volumetric CMR measurement shows preoperative impairment in PE and significant postoperative improvement of the most important right and left functional parameters after several postoperative periods following Nuss repair and may become a new standard for PE evaluation in the future.

S023: 3-DIMENSIONAL VISION IMPROVES LAPAROSCOPIC SURGERY IN SMALL SPACES Xiaoyan Feng, MD,

Anna Morandi, MD, Martin Boehne, MD, Tawan Imvised, MD, Benno Ure, MD, PhD, Joachim F. Kuebler, MD, Martin Lacher, MD, PhD, Center of Pediatric Surgery, Department of Pediatric Cardiology and Intensive Care Medicine, Hannover Medical School, Germany

AIM OF THE STUDY: Three-dimensional (3D) cameras, a recent technical innovation in laparoscopic surgery, have been postulated to enhance depth perception and to facilitate operations. However, they have not been tested in conditions where the focus is close to the optical system. Thus, it is unclear whether 3D cameras could improve laparoscopic surgery in neonates and infants. We tested the advantages of 3D vs 2D vision during laparoscopic surgery in rabbits, mimicking the size of a neonatal patient.

MATERIALS & METHODS: Cadaver New Zealand white rabbits (mean weight 2800 g) were operated by two experienced laparoscopic surgeons. All animals underwent 6 surgical procedures: Nissen fundoplication, small bowel anastomosis and closure of a diaphragmatic hernia using 2D and 3D systems (3D: 0°, 10mm laparoscope; 2D: 30°, 10mm laparoscope, Karl Storz, Tuttlingen, Germany). The sequence of the three cases and visual technique (2D vs 3D) was changed every time. Primary endpoint was operation (OR) time. Secondary endpoints were measured to exclude confounders and included the hemodynamic response of the surgeon (heart rate, blood pressure, cardiac output assessed by noninvasive electrical velocimetry Aesculon®) as well as the assessment of the psychomental stress level (measurement of concentration by a "bp-test", reaction

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time (seconds) and performance in a video game (Score; Pac-man). Finally, subjective data were assessed with questionnaires on a 0–4 scale after each operation.

RESULTS: 42 procedures were completed in 7 rabbits with a total of 21 2D- and 21 3D-operations. The mean cumulative OR time for all three operations in the 3D group was significantly shorter compared to the 2D group (3D: 23.0 min vs 2D: 29.5 min, $p < 0.01$). This effect could be shown for all three operations independently (Nissen fundoplication: mean time 3D 8.9min vs 2D 11.6min, $p = 0.02$; Diaphragmatic reconstruction: mean time 3D 7.5 min vs 2D 9.7 min, $p = 0.0009$; Intestinal anastomosis: mean time 3D 6.6 min vs 2D 8.2 min, $p = 0.014$). There were no differences in the cardiovascular response of the surgeon comparing 3D and 2D (heart rate, blood pressure, cardiac output) as well as psychomental stress levels (concentration, reaction time and performance in the Pac-man video game). Subjective evaluation of the surgical performance revealed that 3D offers a better perception of the depth.

CONCLUSION: The use of 3D laparoscopy in small spaces using a rabbit model is associated with faster operation times. This finding was independent of the overall shape of the surgeon assessed by hemodynamic and psychomental measurements. 3D may therefore facilitate reconstructive minimal invasive surgery in small children.

S024: MINIMALLY INVASIVE CDH REPAIR: EFFECTIVE FOR SELECT PATIENTS Tate Nice, MD, Scott Anderson, MD, Sebastian Pasara, Rafik M. Bous, Robert Russell, MD, MPH, Carroll M. Harmon, MD, PHD, Children's of Alabama, University of Alabama at Birmingham

PURPOSE: Minimally invasive approaches to congenital diaphragmatic hernia (CDH) repair were once hailed for their perceived benefits. However, increased recurrence rates have been frequently reported, demonstrating that a minimally invasive approach may be less effective than conventional open repair. The purpose of this study was to examine the outcomes of infants selectively chosen for minimally invasive repair compared to infants who underwent open repair with special attention to recurrence.

METHODS: A retrospective review of patients with CDH repair at our institution was performed from June 1999 to June 2012. (IRB #X130829007). Only Bochdalek CDH repairs were included. Participants were excluded for repair after 6 months of age or death. Infants were then grouped based on repair type: open repair (laparotomy or thoracotomy), endoscopic repair (thoracoscopic or laparoscopic), or conversion (starting endoscopic and converting to an open procedure). Repair type was chosen based on surgeon's assessment of patient's condition and organ involvement. Demographic data (gestational age, birth weight, Apgar scores at 1, 5, and 10 minutes) and treatment data (repair day of life, patch use) were collected. Hernia data included side and organ involvement. Outcome measures included length of stay, ventilator days, follow-up length, and hernia recurrence. Hernia recurrence was based on chest x-ray, CT scan, or need for recurrent hernia surgery. The three patient groups were compared using analysis of variance and the Freeman-Halton extension of Fisher's exact test for continuous and categorical variables, respectively; non-parametric statistics were used when deemed appropriate. An intention-to-treat analysis was also performed comparing open to the aggregate group of endoscopic and conversion repairs.

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RESULTS: Sixty-four infants underwent open repair and 26 underwent endoscopic repair, 7 of which were converted to open during the study period. Demographically the groups differ only by APGAR scores at 1 minute of life (Open:5, Endoscopic:7, Conversion:7, $p=0.025$) and ECMO requirement (Open:37.5%, Endoscopic:5.3%, Conversion:14.3%, $p=0.011$). While hernia side and patch use were not statistically different between repair groups, organ involvement differed significantly [Table 1]. Ventilator days were decreased in the endoscopic group, however length of stay was not significantly different. Median follow-up in days was similar between groups. There were 11 (17.2%) recurrences in the open group, none (0%) in the endoscopic group, and 1 (14.3%) in the conversion group ($p=0.114$). The intention-to-treat analysis confirmed no statistical difference in recurrence between the open (17.2%) and endoscopic/conversion repair (3.8%) ($p=0.169$).

CONCLUSION: By selectively utilizing minimally invasive techniques rather than applying to all patients, effective repairs of Bochdalek CDH can be obtained with a low recurrence rate. Overall patient condition, need for ECMO, and organ involvement should factor into the repair technique decision. Hernia recurrence is similar between open and endoscopic repairs as long as minimally invasive repairs are utilized selectively.

Table 1

	Open 64	Endo 26	Conversion 7	p-value (p<0.05)
A. Sexes Male %	59.4	69.2	0	0.285
B. Gestat. Birth %	21.7	23	0	0.237
C. Chole %	37.5	30	0	1
D. Hernia Side %	39.1	12	14.3	0.046
E. Stomach %	60.6	23	14.3	0.066
F. Duod. Birth %	21.6	69.2	0	0.024
G. Colon %	60.6	100	85.7	0.251
H. Spleen %	60.6	70	100	0.003
ECMO	34	23	32	0.121
Vent. Days	28.7	9	34	0.007
Follow-up Days	61.1	74	71.1	0.605
Recurrence	17.2 (17/64)	0 (0/26)	14.3 (1/7)	0.114

S025: FURTHER EXPERIENCE WITH STAGED THORACOSCOPIC REPAIR OF A LONG GAP ESOPHAGEAL ATRESIA USING INTERNAL STATIC TRACTION SUTURE

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BACKGROUND: Repair of long gap esophageal atresia (EA) is a challenge. Several different techniques have been invented. Most of them require staged procedures with negative consequences of rethoracotomy. Three years ago, we presented our initial experience with endoscopic technique using internal static traction suture for management of long gap esophageal atresia (EA).

OBJECTIVE: To evaluate the safety and efficacy of repetitive thoracoscopic technique using static internal traction suture for repair of long gap EA.

METHOD: Between June 2010 and January 2014, fourteen infants (7 girls, 7 boys) with long gap EA (no distal tracheo-esophageal fistula - TEF), were managed by a thoracoscopic approach in 5 different hospitals. The first author was involved in all chest procedures except two. All the children had a feeding gastrostomy. The thoracoscopic procedure was preceded by bronchoscopy to exclude a proximal fistula. Thoracoscopy was performed in right semi-supine position using 3 ports around the right scapula. The azygos vein was not divided. Both esophageal ends were mobilized and the proximal TEF present in four newborns was closed. Non-absorbable 2-0 suture

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was advanced to the proximal and distal esophagus and with the aid of sliding knot; both ends were approximated and left under the tension. At the subsequent endoscopic approach, under favorable conditions, a definite anastomosis over an 8F nasogastric tube by single stitches of 5-0 absorbable braided suture was constructed. Otherwise, new traction suture was applied.

RESULTS: The first stage thoracoscopic surgery was performed between 2 and 51 days of life. The esophageal anastomosis was completed in 12 infants between 31 and 175 days of life: 10 infants were managed only by thoracoscopic approach, one baby was converted in the last procedure and the other one had the last procedure performed in an open fashion by intention. Two infants are still awaiting a definitive procedure. All infants had 37 procedures performed (35 thoracoscopies, 1 thoracoscopy with conversion, 1 thoracotomy). The number of procedures to complete the anastomosis was between 2 and 5 (mean: 2.86). The traction suture caused esophageal perforation in one case that required thoracoscopic closure. The other baby had probably hidden perforation that resulted in pleural cavity obliteration and required conversion during esophageal anastomosis. In other cases, we experienced no difficulties with repetitive approach to the pleural cavity, as well as exposition, dissection and suture of esophagus after the previous procedures.

In 12 children with anastomosed esophagus, a contrast study was performed 5-7 days postoperatively. Anastomotic healing was satisfactory in each case. Oral feeding was progressively started replacing the gastrostomy route. There was late mortality in one case

because of heart defect. Six children required calibration/dilatation of the anastomosis for a mild and treatable stricture. One case had antireflux surgery.

CONCLUSION: We believe our technique is an alternative option for the repair of long gap esophageal atresia, and offers functional native esophagus in early infancy. Thoracoscopic approach allows for avoiding negative consequences of open thoracotomy for a growing child. Repetitive thoracoscopy does not hinder the exposure for dissection in posterior mediastinum.

S026: B-TYPE NATRIURETIC PEPTIDE LEVELS CORRELATE WITH PULMONARY HYPERTENSION AND REQUIREMENT FOR EXTRACORPOREAL MEMBRANE OXYGENATION IN CONGENITAL

DIAPHRAGMATIC HERNIA *Emily A. Partridge*, Lisa Herkert, Brian Hanna, Natalie E. Rintoul, Alan W. Flake, N. Scott Adzick, Holly L. Hedrick, William H. Peranteau, Children's Hospital of Philadelphia, Philadelphia, PA USA

AIM OF THE STUDY: B-type natriuretic peptide (BNP), an established biomarker of ventricular pressure overload, is used in the assessment of disease severity and treatment guidance in children with pulmonary hypertension (PH). PH is commonly observed in congenital diaphragmatic hernia (CDH) and represents the most frequent indication for the initiation of extracorporeal membrane oxygenation (ECMO) therapy. However, the use of BNP levels to guide treatment in this patient population has not been well defined. We investigate BNP levels in a large cohort of CDH patients treated at a single institution and correlate them with clinical outcomes

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METHODS: We retrospectively reviewed charts of all CDH patients enrolled in our pulmonary hypoplasia program from 2004–2013. PH was assessed by echocardiography using defined criteria, and patients were further stratified into the following cohorts: no PH, short-term PH (requiring nitric oxide but no additional vasodilatory therapy), long-term PH (requiring continued vasodilatory therapy post-discharge), and ECMO (requiring ECMO therapy). BNP levels prior to CDH repair and/or ECMO cannulation from each patient cohort were analyzed by Mann-Whitney t-test ($p < 0.05$).

RESULTS: One hundred and eleven patients were studied. BNP levels were significantly lower in patients with normal pulmonary pressures compared to patients with PH ($p < 0.0001$) [Table 1]. Those patients who went on to require ECMO therapy had significantly higher BNP levels compared to patients with no PH ($p = 0.0341$). BNP levels were also significantly increased in both ST-PH and LT-PH patients compared to those with no PH. Although not statistically significant, there was a trend towards higher BNP levels in patients with LT-PH compared to ST-PH ($p = 0.0696$).

CONCLUSION: Plasma BNP levels correlate with pulmonary hypertension and requirement for ECMO in CDH patients. Monitoring of serial BNP levels may provide a useful prognostic tool in the management of CDH.

S027: SINGLE INCISION LAPAROSCOPIC ILEAL POUCH–ANAL ANASTOMOSIS IN CHILDREN—HOW DOES IT COMPARE TO A TRADITIONAL LAPAROSCOPIC-ASSISTED APPROACH? Stephanie F. Polites, MD, Abdalla E. Zarroug, MD, Christopher R. Moir, MD, Donald D. Potter, MD, Mayo Clinic, Rochester, MN; University of Iowa, Iowa City, IA

PURPOSE: Laparoscopic ileal pouch–anal anastomosis (IPAA) has been associated with decreased complications when compared to open IPAA in children. Though single incision laparoscopic (SIL) IPAA has been shown to be feasible and safe, outcomes have not been compared to those of traditional laparoscopic-assisted (LA) procedures. The purpose of this study was to compare the two techniques to determine if benefits to the single incision approach exist in children with ulcerative colitis (UC) and familial adenomatous polyposis (FAP).

METHODS: All children ≤ 18 who underwent SIL and LA IPAA between 2000 and 2013 at our institution were identified from a prospectively maintained database of surgical procedures. Single incision laparoscopic IPAA was first performed in 2010 and utilized a modified glove port with a wound protector/retractor. Many SIL procedures required one accessory port and traditional LA procedures often used a 5-cm Pfannenstiel incision for proctectomy and IPAA following laparoscopic colon mobilization. Demographic, preoperative, operative, and postoperative information was obtained retrospectively from patients' medical records and compared between SIL and LA approaches using t-tests for continuous variables and chi square or fisher exact tests for discrete variables. Results for operative time and postoperative length of stay (LOS) were stratified by number of stages (one, two, or three) and postoperative complications were stratified by diagnosis (UC or FAP).

RESULTS: Children who underwent SIL IPAA ($n = 19$) and LA IPAA ($n = 62$) were not significantly different in age, gender, diagnosis, biologic use (UC patients only), staged approach, and stapled vs. mucosectomy with hand sewn

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anastomosis (Table 1). An accessory port was used in 53% of SIL procedures and a Pfannenstiel incision in 87% of LA procedures. Single incision laparoscopic IPAA had equivalent mean operative times to LA for two (353 vs. 385 minutes, $p=.32$) and three stage (316 vs. 339 minutes, $p=.60$) procedures but operative time for one stage procedures was shorter with SIL (308 vs. 355 minutes, $p<.001$). Median LOS was shorter following SIL for all patients (4 vs. 7 days, $p<.001$) and, specifically, for two stage patients (4 vs. 6 days, $p=.009$). Patients with CUC had more unplanned returns to the operating room following LA IPAA (40% vs. 13% for SIL, $p=.07$) and more bowel obstructions (18% vs. 7% for SIL, $p=.43$); however, these differences were not significant. Occurrence of pelvic abscess, anastomotic leak, and revision of IPAA was also equivalent between SIL and LA for both UC (7 vs. 11%, $p=.99$) and FAP (25% vs. 24%, $p=.99$) but these results are limited by small sample size.

Table 1	Primary (n=14)	2-Stage (n=13)	P value
Age (yrs)	1.4±0.6	1.7±1.7	0.8
Mean Op Time (min)	44±13	73±30	0.005
Total Charges (\$)	136±46	216±76	<0.001
Testicular Survival/Atrophy	13/1	12/1	0.96

TABLE 1: Characteristics of children who underwent IPAA

CONCLUSIONS: Single incision laparoscopic IPAA is a safe alternative to traditional laparoscopic-assisted IPAA for children with UC or FAP and may reduce postoperative LOS without affecting short term postoperative morbidity. Additional studies are needed to determine if there are long term benefits.

S028: CURRENT OPERATIVE STRATEGIES AND EARLY COMPLICATIONS OF DEFINITIVE SURGERY FOR HIRSCHSPRUNG'S DISEASE IN THE UK AND IRELAND: FINDINGS FROM A PROSPECTIVE NATIONAL COHORT STUDY

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AIM OF STUDY: 1) To describe operative strategies and early complications for a national cohort of infants with Hirschsprung's Disease (HD) and 2) investigate factors associated with surgical complications.

METHODS: Between October 2010 – September 2012, each paediatric surgical centre in the UK and Ireland prospectively identified infants presenting before 6 months of age with histologically-proven HD. Data including demographics, operative approach and complications (anastomotic leak/stricture, infection, perianal excoriation, enterocolitis, and unplanned operations) in the first 28 days were recorded.

Univariate analysis using Mann-Whitney tests for numerical variables and chi-squared tests for categorical variables were used to investigate factors predictive of any complication. Variables significant at 5% level were used for multivariate logistic regression analysis to determine independent predictors of complications. All analyses were done using Minitab (v16) at $P<0.05$.

RESULTS: In 2 years, there were 317 reported cases of HD and data were available for 287/317(91%). 260 infants

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had definitive surgery (180 primary and 80 staged pull-throughs). Colonic mobilization was laparoscopic, open and exclusively transanal in 113(43.5%), 108(41.5%) and 39(15%) cases respectively. Rectal dissection technique was submucosal, posterior and perirectal in 137(52.7%), 96(36.9%) and 26(10%) respectively.

The overall early complication rate was 96/260(36.9%). Independent predictive factors of complications were any additional anomaly (OR=2.32, 95% CI 1.19-4.51, $p=0.013$) and rectal dissection technique (table 1). Compared to submucosal dissection, complications were more likely with posterior (OR=1.93, 95% CI 1.11-3.36, $p=0.02$) and perirectal dissection (OR 2.87, 95% CI 1.21-6.81, $p=0.017$). Factors not significantly predictive of complications were age, weight, primary/staged surgery, aganglionosis length, abnormal proximal resection margin, and colonic mobilization technique. Case fatality was 8/287(2.8%). No infant died after definitive surgery.

CONCLUSIONS: This national cohort study delineates current operative strategies for HD in the UK and Ireland. Early complications are common and appear related to coexisting anomalies and rectal dissection technique.

S029: PRELIMINARY EVALUATION OF A NOVEL INFANT THORACOSCOPIC LOBECTOMY SIMULATOR Katherine A. Barsness, MD, MS, Deborah M. Rooney, PhD, Lauren M Davis, BA, Ellen K. Hawkinson, BS, Northwestern University Feinberg School of Medicine, University of Michigan Medical School

PURPOSE: Thoracoscopic lobectomy requires advanced minimally invasive skills. Simulation-based education has

the potential to improve these skills without patient risk. Although validity evidence exists for an “adult” simulator, none exists for a pediatric simulator. The study purpose was to 1) create a size-appropriate infant scale lobectomy model and 2) evaluate validity evidence for performance measures on the simulator.

METHODS: IRB exempt pilot study. A size appropriate rib cage for a 3-month old infant was created from literature and CT image review. Fetal bovine tissue injected with a blood substitute completed the model. Thirty-three participants performed the simulated thoracoscopic lobectomy during a national course. Participants completed a self-report, six-domain, 26-item instrument consisting of 4-point rating scales (1=Not realistic to 4=Highly realistic). Using self-reported thoracoscopic lobectomy experience, we categorized participants as “experienced” (n=11) or “novice” (n=20). Content validity was evaluated by examining the rating differences using the many-Facet Rasch model and estimating inter-rater consistency using Intraclass correlation (ICC).

RESULTS: Table 1. Experienced surgeons (Observed Average (OA)=3.6) had slightly higher overall ratings than novice (OA=3.4), $p = .001$. The highest combined observed averages were for Chest circumference and depth (both OA = 3.8), while the lowest ratings were Realism of mediastinum, (OA = 3.3), and Realism resistance-trocar placement (OA = 3.2). Averaged global opinion rating was 2.9, indicating the simulator can be considered for teaching thoracoscopic lobectomy, but could be improved slightly. Inter-rater reliability was high [ICC(1,k) $\alpha=$.91].

CONCLUSIONS: With comments/ratings consistent with high physical attributes and realism, we successfully created an infant

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lobectomy simulator. Simulator ratings from novice and experienced participants were high, indicating it was realistic, relevant to clinical practice and valuable as a learning tool. In spite of high ratings, the simulator requires minor improvements and evaluation of additional validation evidence prior to implementation as an educational and testing tool.

S030: GASTROSCHISIS – THE ROLE OF BREAST MILK IN REDUCING TIME TO FULL FEEDS

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AIM OF STUDY: Gastroschisis is increasingly common and is associated with prolonged hospital stay and cost. This study aimed to examine the effect of feed type on the time to full enteral nutrition in infants with simple gastroschisis.

METHODS: In this prospective study, data were collected for all neonates born with simple gastroschisis between April 2007 and May 2011. Information obtained included patient demographics, feed type and rate of feed advancement. Patients were divided into 3 groups: Group A – exclusively breast milk fed (BM), Group B – combination of breast and formula feeds (C M) and Group C – formula milk (FM). Time to full feed was calculated for each patient. Cost of hospitalisation was estimated for each group using current Healthcare Resource Group (HRG) codes.

MAIN RESULTS: 50 patients were born with gastroschisis during the 210 week study period of which 38/50 were “simple”. The number of patients in each group were: BM n=20, C M n=8 and FM n=10. A significant difference in the median time to full feed was observed between BM (19 days), C M

(26 days) and FM (31 days) ($p=0.024$) (figure 1). The mean cost of treating patients in the BM group was £17,615 and the mean cost for patients fed C M and FM was £28,556. ($p < 0.001$). If all patients had been fed exclusively with BM, then there would have been a reduction in cost of £49,230 per year.

CONCLUSION: Our data demonstrate that breast milk significantly reduced the time to full feed in our population and was associated with a reduction in bed occupancy and cost. We recommend that breast milk is the feed of choice for all children with simple gastroschisis where it is practically available.

S031: ONCOLOGIC MIS SURGERY: ROLE OF IDRFs CRITERIA IN PATIENT SELECTION AND PLANNING

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INTRODUCTION: Minimally invasive surgery (MIS) in solid tumors is reserved for selected patients according to morphological criteria and cancer protocols. The availability of high-resolution imaging techniques and the application of Image-Defined Risk Factors (IDRFs) for neuroblastoma allows to select cases of solid tumors that could be submitted to MIS procedures.

MATERIAL AND METHODS: Records of patients affected by solid tumors, diagnosed and treated in our centre in the last 6 years were reviewed.

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For the diagnostic findings: CT angiography, MR angiography with multiplanar reconstruction technique with maximum intensity projection (MIP) and volume rendering (VR) to define the anatomical features, vascular supply, relationships of the tumor with vital structures were used to determine an IDRFs classification for the surgical risk in solid masses. The multidisciplinary approach involving surgeon, radiologist, oncologist and pathologist allowed us to identify cases eligible for a MIS procedure: biopsy or surgical excision, according to IDRFs, staging and biology of the tumor.

RESULTS: In the period of study a total of 221 patients with solid tumor (aged 3 months-14 years) were surgically treated. 50 of them met the criteria for MIS approach. 25 patients underwent a MIS diagnostic biopsy : 3 hepatoblastoma, 2 hepatocellular carcinoma, 1 focal nodular hyperplasia, 4 lymphoma, 2 Castleman disease, 5 neuroblastoma, 2 rhabdomyosarcoma, 2 germ cell tumors, 1 pulmonary blastoma, 1 retroperitoneal osteosarcoma and 2 renal neoplasms. Primary surgical excision was planned in 25 patients: 6 neuroblastoma, 2 ganglioneuroblastoma, 3 ganglioneuroma, 1 pheochromocytoma, 1 adrenal lymphangioma, 4 ovarian cystadenoma, 5 ovarian teratoma, 1 granulosa tumor, 1 presacral teratoma, 1 chest teratoma. All the procedures were successfully completed with MIS technique. A good hemostasis was always achieved. No secondary localizations at trocarsites or local recurrences were observed. The median hospital stay was 48 hours for patients undergone a diagnostic biopsy and 5 days for patients submitted to primary surgery.

CONCLUSIONS: The extension of IDRFs criteria to the vast majority of solid tumors can be effective in

oncologic surgery. This classification is of utmost importance not only for the morphological assessment of the mass but also as a guidance for patients' selection and planning in MIS surgery.

S032: GLUTAMINE SUPPLEMENTATION IMPROVES MONOCYTE FUNCTION IN SURGICAL INFANTS REQUIRING PARENTERAL NUTRITION – RESULTS OF A RANDOMISED CONTROLLED TRIAL

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BACKGROUND: Our aim was to determine whether, in surgical infants requiring parenteral nutrition (PN), parenteral and enteral glutamine supplementation influences monocyte HLA-DR expression, a marker of monocyte activation and immune function.

METHODS: This was an ethically-approved prospective double-blind randomised controlled trial in surgical infants (corrected gestational age <3 months) receiving PN for at least five days for congenital or acquired intestinal anomalies (July 2009 – March 2012). Infants were randomised using weighted minimisation to receive either parenteral plus enteral glutamine supplementation ((total 400mg/kg/day) or isonitrogenous control. Monocyte HLA-DR expression was assessed (as a secondary outcome measure) at enrolment, after five days, and on reaching full enteral feeds (or prior to transfer to another centre). Data are given as mean±SEM and compared by unpaired t-test with Welch's correction.

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MAIN RESULTS: Sixty infants (35 boys, 25 girls) were enrolled in the study. The median age at enrolment was 6 days (range 0–95), corrected gestational age 37 weeks (24–49), and weight 2.3 kg (0.6–4.6). The underlying diagnoses were: 25 patients had congenital/neonatal intestinal obstruction, 19 had anterior abdominal wall defects, 13 had necrotising enterocolitis, and 3 had other causes of intestinal dysfunction. Glutamine and control groups had similarly low HLA-DR expression at enrolment/surgery, which slowly increased in each group during the study (Figure). However, the postoperative restoration in HLA-DR expression was faster in infants receiving glutamine so that HLA-DR expression was significantly higher after five days and at the end of the study. HLA-DR expression was significantly lower during episodes of clinical sepsis (51±4 vs. 64±2; $p=0.008$).

CONCLUSION: Parenteral plus enteral glutamine supplementation in infants receiving PN after gastrointestinal surgery significantly increases monocyte activation, reflecting improved immune function.

S033: COMPARISON OF 30-DAY OUTCOMES BETWEEN THORACOSCOPIC AND OPEN LOBECTOMY FOR CONGENITAL PULMONARY LESIONS

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INTRODUCTION: Multiple single-institution studies have demonstrated feasibility and safety of thoracoscopic resection for congenital pulmonary lesions. The purpose of this study was to compare postoperative length of stay and 30-day outcomes between thoracoscopic and open lobectomy performed non-emergently for

congenital pulmonary lesions using a validated national database.

METHOD: We identified all lobectomies performed on patients with congenital pulmonary lesions in the 2012 National Surgical Quality Improvement Program Pediatric (NSQIP Pediatric) database and compared demographic, clinical, and 30-day outcome characteristics between patients who underwent an open or thoracoscopic lobectomy. Patients who underwent an emergent operation or had a resection associated with a diagnosis of cancer were excluded. Minor and major complications were defined as any occurrence of the complications listed in the table within 30 days of surgery. A multivariable regression model was fit to determine the risk-adjusted effect of a thoracoscopic approach on postoperative length of stay (LOS) after adjusting for factors associated with open resection on univariable analysis.

RESULTS: Of the 102 patients who underwent a non-emergent lobectomy for a congenital pulmonary lesion, 40 (39%) underwent thoracoscopic lobectomy. In comparison to patients undergoing thoracoscopic lobectomy, patients undergoing open lobectomy were less likely to be admitted from home on the day of surgery (82% vs. 97%, $p=0.02$), and were more likely to be classified as American Society of Anesthesia (ASA) class 3 or greater (47% vs. 15%, $p=0.001$), to receive oxygen support prior to surgery (13% vs. 0%, $p=0.021$), to have other congenital anomalies (50% vs. 30%, $p=0.046$), and to have cardiac risk factors (26% vs. 5%, $p=0.007$). Both groups had similar total operative time (open vs. thoracoscopic, p -value) (144 vs. 173 minutes, $p=0.196$), duration of time in the operating room (252 vs. 271 minutes, $p=0.397$), and

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duration of anesthesia from induction to recovery (316 vs. 283 minutes, $p=0.598$). In comparison to patients undergoing thoracoscopic lobectomy, patients undergoing open lobectomy had significantly longer postoperative LOS (4 vs. 3, $p=0.002$) and more often received an intraoperative or postoperative transfusion within 72 hours of surgery (12% vs. 0%, $p=0.003$) (Table). The difference in LOS was not significant in the multivariable analysis.

CONCLUSION: This NSQIP Pediatric study represents the largest multi-institutional compilation of patients undergoing non-emergent lobectomy for congenital pulmonary lesions using validated data with standardized definitions of postoperative outcomes. This study suggests that patients undergoing thoracoscopic lobectomy have fewer comorbidities at baseline and receive fewer perioperative transfusions and have a shorter postoperative length of stay. Accrual of additional patients within the NSQIP Pediatric database will allow for further risk-adjusted analyses of outcomes to control for differences in baseline characteristics between patients undergoing open and thoracoscopic resections.

Table 1. Perioperative and 30-day outcomes.

	Open (n=62)	Thoracoscopic (n=88)	p-value
Length of stay, days [median (IQR)]	4 (3-6)	3 (2-4)	0.002*
Days from operation to discharge [median (IQR)]	4 (3-7)	3 (2-4)	0.002*
Any major complication	3 (5)	1 (1)	1.000
Superficial surgical site infection (SSI)	0 (0)	1 (1)	0.390
Urinary tract infection	3 (5)	0 (0)	1.000
Any major complication	18 (29)	4 (4)	0.073
Deep or organ space SSI	0 (0)	1 (1)	0.390
Unplanned reoperation	3 (5)	0 (0)	1.000
Pneumonia	1 (2)	1 (1)	0.390
Ventilator dependence for > 24 hours	4 (6)	1 (1)	0.295
Sepsis or septic shock	0 (0)	1 (1)	0.390
Intraoperative or postoperative transfusion within 72 hours of surgery	12 (19)	0 (0)	0.003*
Unplanned return to operating room	3 (5)	1 (1)	1.000
Unplanned readmission	2 (3)	0 (0)	0.133

All cells are expressed as frequencies (percent) except where indicated otherwise. Asterisks denote significant differences at $p < 0.05$. IQR, Interquartile range. There were no instances of the following major complications in either group: pulmonary embolism, progressive renal insufficiency, acute renal failure, CVA or stroke, coma > 24 hours, cardiac arrest or MI, venous thromboembolism, or death.

S034: HIGH VOLUMES IMPROVE OUTCOMES – A NATIONAL REVIEW OF HYPOSPADIAS SURGERY IN ENGLAND 1999–2009 Patrick Green^{3,1}, David Wilkinson^{2,1}, Shanthy Beglinger¹, Rachel Hudson¹, David Edgar¹, Simon Kenny^{1,2}, ¹University of Liverpool, Liverpool UK; ²Alder Hey Children's Hospital NHS Foundation Trust, Liverpool UK; ³Royal Liverpool and Broadgreen University Hospitals Trust, Liverpool UK

AIMS: A review of outcomes following hypospadias surgery reveals a wide disparity in reported outcomes. This may in part be explained by variations in surgical technique, caseload and the availability of specialist perioperative care. Having previously reported preliminary data from specialist paediatric centres in England, we sought to determine outcomes from all centres performing hypospadias surgery in England to identify whether there is a direct relationship between caseload and surgical outcome.

METHODS: All children undergoing hypospadias surgery in English NHS trusts were identified using the Hospital Episode Statistics database (1999–2009). Patient demographics, institution type and associated diagnostic (IC D10) and treatment codes (OPC S4.6) were collected for both primary repairs and postoperative complications. The unique patient identifier allows all operative complications to be tracked irrespective of the centre to which they present. Analysis was performed on the whole cohort with separate subgroup analysis for those cases with severity of hypospadias recorded. Statistical analysis included linear regression and Mann-U Whitney for non-parametric data with $p < 0.05$ taken as significant.

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RESULTS: 18357 primary operations for hypospadias were performed in England between 1999 and 2009 at a median age of 24.5 months. Hypospadias operations were carried out at a total of 60 different centres each carrying out between 1 and 144 cases/year. The overall, non-adjusted complication rate for low (<20cases/year) volume centres was 18.1% falling to 12.2% in high (>20cases/year) volume centres (odds ratio 1.6, 95%CI 1.4-1.8, p<0.0001).

CONCLUSIONS: There appears to be a significantly increased risk of complications following primary hypospadias surgery performed in centres operating on less than 20 cases per year. Population-level HES data provides a valuable resource to determine outcomes for conditions such as hypospadias which are treated in a range of centres and by different surgical specialities.

S035: TRANSUMBILICAL LAPAROENDOSCOPIC SINGLE SITE SURGERY WITH CONVENTIONAL INSTRUMENTS FOR CHOLEDOCHAL CYST IN CHILDREN: EARLY RESULTS OF 86 CASES Tran N. Son, MD, PhD, Nguyen T. Liem, MD, PhD, Vu X. Hoan, MD, National Hospital of Paediatrics, Hanoi, Vietnam

INTRODUCTION: Reported experience with trans-umbilical laparo-endoscopic single site surgery (TULESS) for choledochal cyst (ChC) in children is still limited. The aim of this study is to present our early results of TULESS for childhood ChC.

METHODS: Medical records of all children undergoing TULESS for ChC at our center from September, 2012 to December, 2013 were reviewed. Our TULESS operations started with a z-shaped umbilical skin incision and placement of three 3-5mm ports at separate points in the same incision site. Roux-en-Y loop was created extracorporally through the umbilical

incision. Excision of ChC and hepatico-intestinal anastomosis were performed using conventional straight laparoscopic instruments.

RESULTS: 86 patients (64 girls, 22 boys) were identified with median age 24.5 months (range: 1 month - 11 years). The most common clinical manifestations were abdominal pain - 67.4%, vomiting - 51.2%, jaundice - 26.7%. The median diameter of ChC was 3 cm (range: 1.5 - 12 cm). The ChC was successfully excised by TULESS in all cases. Ladd procedure for associated intestinal malrotation was carried out at the same time in one patient. Hepaticoplasty was performed in 12 cases (13.9%) with hepatic duct diameter less than 5mm. Hepatico-jejunostomy was performed in 84 cases (97.7%) and hepatico-duodenostomy in 2 cases (2.3%). Anastomosis with an aberrant bile duct was performed in 5 patients. Additional trocars were needed in just one case (1.2%). There was no conversion to open surgery. The median operative time was 195 minutes (range: 150 minutes to 400 minutes). Abdominal drain was used in 8 patients (9.3%) in the early period and no drain was used in the remaining 78 patients (90.7%). There was no anastomotic leakage. Mild umbilical infection was noted in 2 patients (2.3%). The median postoperative hospital stay was 5 days (range 3-9 days). At a median follow up of 6 months (range: 1 - 14 months), one patient (1.2%) from the early period suffered from hepaticojejunal anastomotic stenosis with cholangitis and needed a redo surgery; all other patients were in good health. The postoperative cosmesis was excellent as all TULESS patients were virtually scarless.

CONCLUSIONS: TULESS with conventional laparoscopic instruments for ChC in children is feasible, cost effective, with

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excellent postoperative cosmesis. The early outcome is promising and TULESS can be a viable option for scarless surgical management of childhood ChC at experienced centers.

S036: SALINE VERSUS TISSUE PLASMINOGEN ACTIVATOR IRRIGATIONS AFTER DRAIN PLACEMENT FOR APPENDICITIS--ASSOCIATED ABSCESS: A PROSPECTIVE RANDOMIZED TRIAL

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BACKGROUND: Emerging data suggest instillation of tissue plasminogen activator (tPA) is safe and potentially efficacious in the treatment of intra-abdominal abscesses. To date, prospective comparative data are lacking in children. Therefore, we conducted a prospective, randomized trial comparing abscess irrigation with tPA to irrigation with saline alone.

METHODS: After IRB approval, children with an abscess secondary to perforated appendicitis who had a percutaneous drain placed for treatment were randomized to twice daily instillation of 13ml of 10% tPA or 13 ml of normal saline. All patients were treated with once daily dosing of ceftriaxone and metronidazole throughout their course. The primary outcome variable was duration of hospitalization after drain placement. Utilizing a power of 0.8 and an alpha of 0.05, a sample size of 62 patients was calculated. Data was analyzed on intention to treat basis.

RESULTS: 62 patients were enrolled between 1/2009 and 2/2013. There were no differences in age, weight, body mass index, gender distribution, abscess size,

abscess number, admission temperature, admission white blood cell count or duration of symptoms. There was no difference in duration of hospitalization after drainage (Table). One patient could not tolerate tPA secondary to pain with flushes.

CONCLUSION: There are no advantages to routine tPA flushes in the treatment of abdominal abscess secondary to perforated appendicitis in children.

S037: LAPAROSCOPIC FOWLER-STEVENS ORCHIOPEXY, A RANDOMIZED PILOT STUDY COMPARING THE PRIMARY AND 2-STAGE APPROACHES

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BACKGROUND: Intra-abdominal testes that lack sufficient vessel length to perform an orchiopexy require division of the testicular vessels. Historically, the vessels are divided at the initial operation and the orchiopexy is then performed as a 2-stage procedure with the assumption that development of neovascularization occurs along the vas deferens during the interim. Recent reports suggest the orchiopexy may be performed primarily at the time of vessel division. However, these strategies have not been prospectively compared. Therefore, we conducted a randomized pilot trial to examine the role for a larger comparative study.

METHODS: After IRB approval, all patients undergoing laparoscopic orchiopexy for a non-palpable testis were considered for enrollment. This study was designed as a pilot study to evaluate testicular survival at 6 months follow-up. After obtaining consent, computer randomization was used to determine a primary or

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2-stage orchiopexy. All procedures were performed by 5 surgeons and allotment had no effect on surgeon selection.

RESULTS: Between October 2007 and September 2013, 112 patients were enrolled in the study. Twenty-nine patients met criteria for randomization based on inability to bring the testis to the contralateral internal ring. There was no difference in the approach between surgeons. Data was complete in 27 cases. Outcome data is shown in table 1.

CONCLUSION: Approximately 70% of patients with a non-palpable testis will not require vascular division. This study suggests that when vascular division is required, the primary orchiopexy may be equivalent to the traditional 2-stage with testicular survival with potential advantages in total operative time and charges. These data provide evidence for sufficient equipoise to proceed with the development of a large multi-institutional trial comparing these two approaches.

Table 1	Primary (n=14)	2-Stage (n=13)	P value
Age (mo)	1.4±1.5	1.7±1.7	0.8
Mean Op Time (min)	44±13	73±30	0.005
Total Charges (\$)	136±44	216±76	<0.001
Testicular Survival Atrophy	13/1	12/1	0.96

TABLE 1

S038: LONG TERM FOLLOW UP OF MODIFIED LAPAROSCOPIC TRANSCUTANEOUS INGUINAL HERNIA REPAIR WITH HIGH SUTURE LIGATURE OF THE HERNIA SAC Matias Bruzoni, MD, FACS, Zachary J. Kastenberg, MD, Joshua D. Jaramillo, BA, James K. Wall, MD, Robert Wright, MA, Sanjeev Dutta, MD, MBA, Stanford University

BACKGROUND: Laparoscopic inguinal hernia repair in children may reduce post-operative pain, improve cosmesis, allow for less manipulation of the cord structures, and offer easy access to

the contralateral groin. Recurrence rates remain a concern. In 2011, our institution described a modification of the laparoscopic transcutaneous technique that replicates high transfixation ligation of the hernia sac with the aim of inducing more secure healing, preventing suture slippage, and distributing tension across two suture passes. We now describe our long-term follow-up of patients undergoing this novel repair.

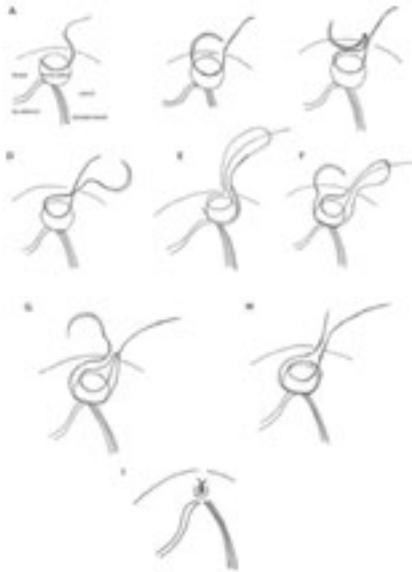
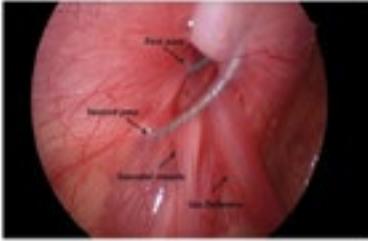
METHODS: After obtaining IRB approval, a retrospective chart review and phone follow-up was performed of all patients that underwent this procedure between October 2009 and November 2013. Data collection included demographics, laterality of hernia, evidence of recurrence, complications, and time to follow-up.

RESULTS: Three surgeons (0 – 10 years experience) performed 207 laparoscopic transfixation suture ligature repairs on 146 patients. Demographics were as follows: mean age 29.8 months (range 1-192 mo); male 66.4% and female 33.6%; 59% of the neonates (n=61) were premature infants (<37 weeks GA). Repairs were bilateral in 41.8% of patients, right sided in 34.2%, and left sided in 24%. 31% of preoperatively diagnosed unilateral hernias were found to have a contralateral defect. Mean follow-up was 24.1 months (range 2-50 mo). One 2 month old syndromic patient with severe congenital heart disease recurred twice while another patient recurred after repair post incarceration. Overall recurrence rate was 1.4%. The complication rate was 1.9% (3 hydroceles and 1 inguinal hematoma; all resolved spontaneously).

CONCLUSION: The laparoscopic transcutaneous high transfixation ligature technique can be performed by surgeons of varying experience and produce recurrence rates comparable to

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the standard open repair, with the added benefits of laparoscopy.



S039: LAPAROSCOPIC PYELOPLASTY IN INFANTS: SINGLE-SURGEON EXPERIENCE WITH 114 OPERATIONS

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AIM: Laparoscopic pyeloplasty is a technically demanding operation, especially in infants. To our knowledge, till date, there are only 5 published series of laparoscopic pyeloplasty specifically in infancy, with a combined total of 94 patients. The aim of this paper is

to report the results our large single-surgeon experience with transperitoneal laparoscopic pyeloplasty in infants with a minimum of 6-month follow-up.

METHODS: The records of all infant laparoscopic pyeloplasties over a 4.5-year period (109 babies, 114 kidneys, mean age 3.8 months, mean weight 5.3 kg) were analyzed. Preoperative evaluation included renal ultrasound and diuretic renogram (using Tc 99m DTPA) in all children. The indications for pyeloplasty was severe hydronephrosis (SFU grade 4 and/or AP diameter > 20mm) with obstructed drainage on DTPA renogram and a differential function of <40% in the affected kidney. Transperitoneal laparoscopic pyeloplasty was performed in all babies with 3 ports. Double J stent was used in 102 kidneys. Follow-up renal ultrasound (114 kidneys) was done at 3-6 months and diuretic renogram (76 patients) at 6-12 months after the surgery; data were compared using statistical software (medcalc).

RESULTS: There were 104 unilateral and 5 bilateral pyeloplasties. The mean operating time was 106 min (70-145) and median hospital stay was 2 days (2-8). There were no major intraoperative complications. There was one intraoperative cautery injury to the appendix; appendectomy was done in the same sitting. One child (1%) developed urinary leak that spontaneously resolved. Four (5%) children had port-site infections which were managed conservatively. At a mean follow-up of 18 months, all children are asymptomatic; ultrasound demonstrated significant reduction in the anteroposterior diameter of renal pelvis in all children (mean pre-operative diameter 34.4 +/- 13.4 mm versus mean postoperative diameter 10.6 +/- 5.7mm, $p < 0.0001$). On Follow-up

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renogram, all renal units demonstrated improved drainage. There was a significant improvement in the differential function of the operated kidney in unilateral cases (preoperative 22.1 +/- 8.6 % versus postoperative 35.6 +/- 11.4 %, $p < 0.0001$)

CONCLUSIONS: To our knowledge, this is the largest series of infant laparoscopic pyeloplasty reported till date. Laparoscopic pyeloplasty could be safely and successfully performed even in small infants, with minimal complications and good results. Significant reduction in hydronephrosis & improvement in differential function can be expected in the majority of children.

S041: LAPAROSCOPIC URETERO-PYELOLITHOTOMY IN CHILDREN Ana María Castillo-Fernández, MD, Sergio Landa-Juárez MD, Ramón Esteban Moreno Riesgo MD, Hermilo De La Cruz-Yañez MD, Carlos García-Hernández MD, Hospital de Pediatría, Centro Médico Nacional SXXI. IMSS

PURPOSE: To evaluate laparoscopic uretero-pyelolithotomy as a feasible and safe procedure in children.

PATIENTS & METHODS: We conducted a descriptive study (case series) from January 2011 to December 2013, including patients 2 to 13 years old with pyelic and superior ureteral lithiasis, who underwent laparoscopic pyelolithotomy (Fig.1) by peritoneal or retroperitoneal approach with additional ureterolithotomy when necessary.



FIG 1: Pielotomy

RESULTS: Eleven procedures were performed in 10 patients, 9 peritoneal and one retroperitoneal approach, because one of the patients had bilateral lithiasis disease.

Ipsilateral additional ureterolithotomy was necessary in 3 patients for embedded stones in proximal uréter (27.2%). The mean operative time in abdominal procedures was 196 min (range 75-355 min) and 170 min in the retroperitoneal approach. The blood loss volume was 59.3 ml (range 3-250 ml) and 10 ml respectively. One patient had urinary tract infection and urinary fistula which closed spontaneously. Opioid analgesic was required in 5 patients (45.4%) for 2.4 days (range: 1-3 days). The mean hospital stay was 5.2 days (range 2-13 days). Stone disease free condition was ensured by pyeloscopy in all patients before finishing the procedure (Fig. 2).



FIG 2: Pieloscopy



FIG 3: Removal of calculus

CONCLUSIONS: Laparoscopic uretero-pyelolithotomy by either peritoneal or retroperitoneal approach is a feasible and safe alternative treatment in the pediatric population. In our experience

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all patients with stone free condition (Fig. 3). The promising results of this series, encourages further clinical trials.

S042: EXPERIENCE OF LAPAROSCOPIC PYELOPLAST IN THE TREATMENT OF URETEROPELVIC JUNCTION OBSTRUCTION IN INFANTS (<3 MONTHS)

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BACKGROUND: Although early detection and early therapy are important to the treatment of Ureteropelvic Junction Obstruction (UPJO) and laparoscopic pyeloplast has been widely applied in older children patients with UPJO, related reports are still less in the treatment of infants (< 3 months) patients with UPJO up to now. The aim of this study was to summarize the therapeutic efficacy and our operative experience of transperitoneal laparoscopy pyeloplasty in infants (< 3 months) with UPJO.

PATIENTS & METHODS: From Jan 2010 to Dec 2013, 40 infants patients (54.45 ± 5.72 days, from 20 to 88 days) with UPJO were treated with transperitoneal laparoscopy pyeloplasty, and 22 infants patients (57.61 ± 6.32 days, from 22 to 90 days) with UPJO were treated with open pyeloplasty. Three-hole method was used in laparoscopy pyeloplasty and 3 5-mm trocars were punctured at umbilical, middle point between umbilical and anterior superior iliac spine and the intersection point of costal margin at midclavicular line respectively. Ultrasonic scalpel was used to discover the renal pelvis. Suspension with silk thread of renal pelvis was applied for a better suture and a easier insertion of double J tube into the ureteral. Double J tube was inserted easily with the help of a pneumoperitoneum puncturing through the abdominal

wall. Clinical data was collected and compared between laparoscopy group and open group, such as operation time, intraoperative blood loss, postoperative blood transfusion, postoperative hospital stay and postoperative complication.

RESULTS: In laparoscopy group the operation time was 123.1 ± 34.8 minutes which were similar to that of open procedure ($P > 0.05$); intraoperative blood loss was 4.2 ± 1.7 ml, which was much lower than that of open procedure (16.8 ± 2.5 ml) ($P < 0.05$); the postoperative hospital stay was 8.1 ± 2.3 days, which was obviously lower than that of open procedure (14.4 ± 2.8 days) ($P < 0.05$); no conversions to open surgery and no postoperative blood transfusion were required; no incision infection, retroperitoneal hematoma, double J tube shifting or anastomotic leakage was in this group besides 1 urinary infection case. In the open group there were 3 retroperitoneal hematoma cases, 2 incision infection cases, 2 double J tube shifting cases, 1 anastomotic leakage case and 2 0.5U erythrocyte concentrated cases. Compared with the long incision of abdominal wall (8.5 ± 1.3 cm) in open group, 3 5-mm trocars were much more artistic for infants in the laparoscopy group. After a follow-up period from 6 months to 2 years, all the infants patients recovered well and no cases in the two groups had obstruction of ureter or vesicoureteral reflux by the imaging examination such as magnetic resonance hydrography (MRU) or computed tomography hydrography (CTU).

CONCLUSION: As a well minimally invasive surgical method, transperitoneal laparoscopic-assisted pyeloplasty brings less injury to both order children patients and infants (< 3 months) patients with UPJO. According to our operative

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experience and the analysis of clinical data, this operative method is safe, reliable and effective in the treatment of UPJO of infants (< 3 months) patients, which should be generalized on the basis of qualified endoscopic techniques.

S043: LAPAROSCOPIC EXTRAVESICAL URETERAL REIMPLANTATION FOLLOWING LICH GREGOIRE TECHNIQUE. MEDIUM-TERM

PROSPECTIVE STUDY Manuel Lopez, Eduardo Perez-Etchepare, MD, François Varlet, MD, PhD, Department of Pediatric Surgery, University Hospital of Saint Etienne

OBJECTIVES: to evaluate medium terms results of Laparoscopic Extravesical Ureteral Reimplantation, following Lich-Gregoir Technique in the treatment of Vesico Ureteral Reflux and obstructive megaureter.

METHODS: Between August 2007 and November 2013, 115 renal units in 89 patients, 113 with VUR and Two with obstructive Megaureter with deterioration of renal function were treated by Laparoscopic Extravesical Ureteral Reimplantation. 24 patients had Duplex Collector System; in five cases were associated to obstruction: three with complete deterioration of upper polar function. 6 Patients presented recurrence of VUR after endoscopic ureteral injection.

RESULTS: Laparoscopic Extravesical Ureteral Reimplantation was feasible in all cases. Mean age was 52 month; mean surgical time was 70 minutes in unilaterals, 144 minutes in bilateral Vesicoureteral reflux and 135min in Obstructive megaureter. In one-stage: three laparoscopic hemi-nephro-ureterectomy with excision of ureterocele and one nephrectomy were performed.

The mean hospital stay was 27 hours. The overall Vesicoureteral reflux resolution was 96.5%. Three renal units were downgraded to unilateral grade 2 Vesicoureteral reflux were considered to have failure treatment. Two of them underwent subsequent sub-ureteral injection therapy and one underwent redo open procedure. The follow-up period was 27 months.

CONCLUSION: Laparoscopic Extravesical Ureteral Reimplantation following Lich-Gregoir technique is an effective procedure in unilateral, bilateral and Duplex Collector System with Vesicoureteral reflux and obstructive megaureter. When refluxing Duplex Collector System is associated with obstruction, and total deterioration of upper polar function; hemi-nephro-ureterectomy with excision of ureterocele can be safely and effectively performed in a single-stage. Laparoscopic Extravesical Ureteral Reimplantation permits shorter hospital stay, decreased postoperative discomfort, reduced recovery period with success rates similar to the open technique.

S044: ROBOTIC ASSISTED LAPAROSCOPIC MANAGEMENT OF DUPLEX RENAL ANOMALY IS FEASIBLE AND SAFE WITH EQUAL SHORT TERM SURGICAL OUTCOMES TO TRADITIONAL PURE LAPAROSCOPIC AND OPEN

SURGERY Daniel B. Herz, MD, Paul A. Merguerian, MD, Venkata R. Jayanthi, MD, Seth A. Alpert, MD, Jennifer A. Smith, RN, Nationwide Children's Hospital; Children's Hospital at Dartmouth

OBJECTIVE: The surgical management of duplex renal anomalies is as varied as their presentation. Traditionally, open or Laparoscopic Heminephrectomy with partial ureterectomy (HN), upper to lower ureter ureteroureterostomy (UU), common sheath ureteroneocystostomy

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(UN), or a combination is employed based on renal moiety function, and/or presence or absence of vesicoureteral reflux (VUR). In children, Robot Assisted Laparoscopy (RAL) adds value because it allows renal moiety removal and/or ureteral reconstruction in situ with excellent visualization and the ability to suture in a confined space.

METHODS: IRB approved retrospective analysis of all children with duplex renal anomalies that had robot assisted laparoscopic surgery between 2008 and 2013 was performed. All children had either RAL HN, RAL UU, or RAL UN based on renal moiety function, degree of ureteral obstruction, and/or the presence or absence of vesicoureteral reflux. Data collection included demographics and diagnosis at the time of RAL surgery, type of RAL surgical intervention, immediate RAL surgical outcomes and complications, as well as renal outcomes at 2 years post-surgery.

RESULTS: A total of 55 children (57 renal units) were treated. Twenty-eight (29) children had RAL HN, 14 had RAL UU, and 10 had RAL UN. Forty (73%) children were female and 15 (27%) male. Ages were 4 months to 14.8 years (Average = 4.2 years) at the time of surgery. Diagnoses were Duplex Ureterocele (n=28), Duplex Ectopic Ureter (n=23), and High Grade Secondary VUR (n=4). RAL ureteral tailoring was required in 7 children, 4 during UU for mismatched donor and recipient ureteral caliber, and 3 during common sheath UN. Of the children who had HN, the moiety removed was upper pole (upHN) in 26 and lower pole (lpHN) in 3, and the mean differential function of the excised moiety was 9% (range = 2-13%). Of the children who had UU or common sheath UN, the upper moiety differential renal function was 31% (range = 17-44%). VUR was cured

in 8 and persisted in 2 children after common sheath UN. VUR developed in 10 lower ureters after RAL upHN (Grade II-III in 8 and Grade IV in 2). Of these, 5 were successfully treated endoscopically, 1 with RAL UN, and 4 resolved spontaneously. Of those who had RAL UU, VUR was present pre-operatively in the recipient ureter in 4 (29%, Grade I-III) and all resolved spontaneously within 2 years of post-operative observation. A total of 4 (7.7%) complications occurred: ureteral leak (1), ureteral obstruction (1), vascular injury to lower renal moiety (1), and port-site herniation (1). There were no open conversions. Hypertension either improved or was cured in 3 of 4 children with this pre-operative co-morbidity.

CONCLUSIONS: RAL surgical management of duplex renal anomaly is safe and effective, and has similar outcomes and complication rates to open and pure laparoscopic surgery. However, our report shows that RAL can be used for pelvic reconstruction in this population which, if more widely accepted and applied, could obviate the need for open surgery.

S045: TRANSRENAL STENTING IN LAPAROSCOPIC PYELOPLASTY IN INFANTS AND CHILDREN: A SAVE TECHNIQUE Tobias Luithle, MD, Florian Obermayr, MD, Joerg Fuchs, MD, Department of Pediatric Surgery and Pediatric Urology, University Children's Hospital, Tuebingen, Germany

INTRODUCTION: Laparoscopic dismembered pyeloplasty is increasingly becoming the standard treatment for ureteropelvic junction obstruction in infants and children. As in the open approach various techniques for temporary ureteral stenting have been proposed. We present our experience with transrenal transanastomotic stenting via a transperitoneal approach.

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METHODS: A retrospective analysis was performed on a consecutive series of 161 patients (166 renal units, RU) who underwent a laparoscopic pyeloplasty using a transperitoneal laparoscopic approach at our institution between March 2004 and December 2013. In 150 patients (155 RU) a silicon ureteral catheter (Dirocath®, Braun, Germany) was used for stenting the anastomosis. The catheter was fixed on a curved metal spear which was introduced transabdominally via a renal calyx under laparoscopic vision and led out through the flank. Two additional holes were cut in the catheter draining the renal pelvis. No perirenal drainage was inserted routinely. Eleven patients were excluded (no stent (n=4), double-J-ureteral stent (n=3), percutaneous nephrostomy (n=4)).

RESULTS: 104 boys and 46 girls with a median age of 22 months (range: 1-214 months) underwent laparoscopic transabdominal pyeloplasty. An aberrant lower-pole vessel was evident in 24 cases. Associated anomalies were horseshoe kidney (n=2) and a duplex system with lower pole obstruction (n=2). Stent size was 4 French in 7, 6 French in 130 and 8 French in 17 RU. Stents were removed without anesthesia after 7 days (median, range: 3-21 days)

Stent associated complications occurred in 11 patients (7,3 %). The stent dislocated in 6 RU. 2 Stents were repositioned, a percutaneous nephrostomy was introduced in 1 and a double-J stent in 2 RU, respectively. Stent obstruction occurred in 3 RU, and was treated conservatively in 2 RU and with early removal and double-J stent placement in one. Leakage along the catheter in one RU and percutaneous leakage after stent removal in two RU was treated conservatively. Transrenal stenting was not associated with relevant blood loss.

CONCLUSION: Laparoscopic transrenal tranastomotic stenting is safe and easy to perform. Placement under direct vision reduces the risk of bleeding. Stent associated complications are low and rarely requiring major secondary intervention. Stent removal without the necessity of cystoscopy and therefore additional anesthesia is a major advantage compared to double-J stent placement.

S046: RETROPERITONEOSCOPIC PYELOPLASTY IN 134 CHILDREN Ravindra Ramadwar, Dr., Bombay Hospital, Hinduja Hospital & Joy Hospital, Mumbai, India

AIM: Retroperitoneoscopic pyeloplasty was performed in 134 patients since January 2005 to January 2014. The aim of the study was to identify all the parameters that helped in reducing the operative time.

METHOD: All patients who underwent retroperitoneoscopic pyeloplasty since January 2005 were enrolled in the study. Data were collected prospectively and results were analyzed.

RESULTS: 134 patients (Age 4 weeks -18 years) (right side 63, left side 71) underwent retroperitoneoscopic Anderson Hynes pyeloplasty since January 2005 to January 2014. Mean operative time was 122 minutes. A balloon was used to open retroperitoneal space in 87 procedures and open insertion of trocar with CO2 insufflation was used to open the retroperitoneal space in 47 procedures. Movement of kidney and pelvis during ventilation added to the difficulty in suturing in 81 procedures. Addition of trans-abdominal suture on pelvis in 53 procedures reduced the movements and mean operative time decreased significantly (93 min vs. 158 min). 12 patients had UTI preoperatively and 4 patients had preoperative insertion of DJ stent. In 14 patients cystoscopy,

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retrograde pyelography and insertion of stent or guide wire was performed just before pyeloplasty. Mean operative time for these patients with preoperative stenting was 168 minutes. Antegrade stenting was performed in 84 patients and pelvi-ureteric stent was kept in 32 infants below 6 months of age. Pyeloplasty sutures were interrupted in initial 16 procedures and continuous in 116 procedures. Mean operative time reduced significantly (189 min vs. 100 min).

CONCLUSION: Open insertion of trocar and CO₂ insufflation opens the retroperitoneal space adequately in children. There is no need to use a balloon for this purpose. Placement of trans-abdominal stay suture, ante-grade stenting and continuous suturing reduced the operative timings significantly.

S047: PREOPERATIVE COLOUR DOPPLER ULTRASOUND IN CHILDREN WITH PELVIURETERIC JUNCTION OBSTRUCTION AND SUSPECTED LOWER POLE CROSSING VESSELS – VALUE FOR THE LAPAROSCOPIC SURGEON?

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BACKGROUND: Lower pole crossing vessels (LCV) are known to be present in about 15 to 45% of pediatric patients with pelviureteric junction obstruction (PUJO). Colour Doppler ultrasound (CD) is a reliable non-invasive tool to identify LCV especially in older children, when hydronephrosis is symptomatic and/or intermittent. However, the caliber of LCV varies as well as their position and distance differs to main renal hilar vessels, which might lead

to intraoperative misinterpretation of anatomic findings.

AIM: To evaluate sensitivity and specificity of CD with regard to intraoperative findings in children with suspected LCV causing PUJO.

METHODS: Between November, 2012, to February, 2014, 13 consecutive children (5 male, 8 female; mean age 9.8 years, range 2 - 17 years) with unilateral PUJO (9 left, 4 right-sided) underwent laparoscopic transabdominal dismembered pyeloplasty and were prospectively studied. All had usual criteria with need for surgery. Preoperative CD was applied to investigate the presence of LCV and films were linked to the surgeon for a detailed briefing.

RESULTS: CD was correct in 12 out of 13 (92%). LCV was found at CD in 9 and in 10 cases at surgery, whereas 3 cases without LCV were proven to be absent intraoperatively. A very thin LCV was found at surgery in 1 case but not at CD. CD had a sensitivity, specificity, positive predictive, and negative predictive value of 90%, 100%, 100% and 75%, respectively. Attending preoperative CD by the surgeon was extremely helpful, due to precise one-to-one transformation of ultrasonographic into intraoperative findings.

CONCLUSION: CD is of high value for the laparoscopic surgeon, due to high sensitivity and specificity as well as highly accurate to detect the position of LCV and main renal vessels to avoid misinterpretation, due to the variety of LCV anatomy. Thus, laparoscopic surgeons should attend CD prior to laparoscopic pyeloplasty especially in older children with renovascular hydronephrosis to increase the patient's safety.

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S048: ONE TROCAR ASSISTED PYELOPLASTY IN CHILDREN Giovanni Cobellis, PhD, Fabiano Nino, MD, Carmine Noviello, PhD, Mercedes Romano, PhD, Francesco Mariscoli, MD, Lorenzo Rossi, MD, Ascanio Martino, MD, Pediatric Surgery Unit, Academic Children's Hospital, Ancona

INTRODUCTION: Anderson-Hynes dismembered pyeloplasty is considered the gold standard in the surgical treatment of ureteropelvic junction obstruction (UPJO) in children. Minimally invasive approaches have been proposed but all presents technical difficulties. Retroperitoneoscopic approach is limited by the small working space, while the laparoscopic one convert an extraperitoneal surgery in transperitoneal. The techniques based on the use of robots still have high costs and are not adequately widespread. Aim of the study was to evaluate the efficacy of the One Trocar Assisted Pyeloplasty (OTAP) in pediatric age.

MATERIALS & METHODS: Between May 2006 and June 2013 a total of 52 children underwent OTAP for UPJO. Patients were divided in three groups according to age at intervention. Group 1: 30 patients (range 1 month - 2 years; mean 9 months); Group 2: 13 patients (range 2 - 6 years; mean 4,1 years); Group 3: 9 patients (range 6 - 14 years; mean age 11 years). Intraoperative complications, operative time, conversion rate, length of hospitalization, recurrence and the cosmetic results were considered.

RESULTS: There were no intraoperative complications. Mean operative time was 127 minutes (range 85 - 213) in group 1, 107 minutes (range 90 - 195) in group 2 ($p > 0,05$ vs G1) and 156 minutes (range 95 - 215) in group 3 ($p < 0.05$ vs G1; $p < 0.05$ vs G2). Conversion rate was 21% in group

1, 23% in group 2 ($p > 0.05$ vs G1) and 60% in group 3 ($p < 0.05$ vs G1; $p < 0.05$ vs G2). Mean hospital stay was 3.5 days in all groups. One recurrent UPJO was observed in group 1. Cosmetic results were excellent in all patients.

DISCUSSION: In our experience OTAP is a safe and effective minimally invasive technique, easily reproducible, with fast learning curve, low operative time, low costs and good cosmetic results. In case of inadequate exposure of the pelvis the procedure can be easily completed with an extension of the incision. The OTAP could be considered the procedure of choice in early childhood.

S049: LAPAROSCOPIC WILMS' TUMOUR NEPHRECTOMY Ewan M. Brownlee, Fraser D. Munro, Gordon A. MacKinlay, OBE, Hamish Wallace, Royal Hospital for Sick Children, Edinburgh

AIM OF THE STUDY: Since 2002, Wilms' tumour nephrectomies have been performed laparoscopically in our centre where possible. We planned to review the outcomes of our initial 10 years' experience with this approach.

METHODS: A retrospective review of case notes and local electronic databases was performed examining all patients undergoing laparoscopic Wilms' tumour nephrectomies at a single centre from 2002 to 2011 inclusive.

MAIN RESULTS: 12 patients were identified with median age at surgery of 43 months (IQR 25-47). SIOP protocol was followed with tumours initially biopsied (either laparoscopic-assisted or image-guided) then neo-adjuvant chemotherapy administered. 2 of the first 3 procedures required conversion to open procedures due to large size of tumour preventing access to renal vessels. Since then, no further conversions have been required,

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although one procedure required insertion of an extra port. Of the 10 patients successfully undergoing laparoscopic resection, median operative time was 180 mins (IQR 176–210). Pathological staging was: Stage I – 4 patients; Stage II – 4 patients; Stage III – 1 patient; Stage IV – 1 patient. Histology confirmed complete resection of all tumours except the Stage III tumour which had widespread peritoneal deposits. The resected Stage III tumour showed 99% necrosis and the patient responded well to further post-operative chemotherapy, not requiring any radiotherapy. The patient with Stage IV Wilms had a Stage I tumour pathologically, but had pulmonary metastases which were treated successfully with radiotherapy. One patient with a Stage I tumour had recurrence of disease, presenting 9 months post-operatively with ascites. This renal bed and peritoneal recurrence was biopsied and treated with chemotherapy and radiotherapy, and the patient has now been disease free for 59 months since. All other patients are disease-free at follow up to a median of 61 months (range 39–122).

CONCLUSION: Laparoscopic approach for Wilms' tumour nephrectomy can achieve similar results to open nephrectomy. There seems to be a learning curve for this procedure although this was not reflected in a trend in operative times. All patients have disease-free survival to date.

S050: EVOLUTION OF MINIMALLY INVASIVE TREATMENT OF CHOLEDOCHOLITHIASIS (CL) IN PEDIATRICS. EXPERIENCE AT A SINGLE CENTER Mauro Capparelli, MD, Horacio Questa, MD, Maria M. Bailez, MD, Garrahan Children's Htal Buenos Aires, Argentina

INTRODUCTION: Sequence of treatment of CL in children is controversial. The aim

of this study is to show the evolution in the diagnosis and treatment of this disease in a single center and propose a diagnostic and therapeutic algorithm.

MATERIAL & METHODS: A retrospective analysis of the medical records of patients with suspected CL, assisted between December 1992 and June 2013, was performed. Patients were divided into 2 groups, based on the inclusion of nuclear magnetic cholangioresonance (NMCR) and endoscopic retrograde cholangiopancreatography (ERCP) in 2009. The suspicion of CL was compared with the subsequent confirmation by ERCP or intraoperative cholangiography (IOC).

RESULTS: Group 1: CL was suspected in 61 patients among 443 undergoing laparoscopic cholecystectomy (LC) (13,8%), Only 24.5% (15/61) had CL during the IOC, requiring instrumentation of the bile duct (BD) through initial trans-cystic approach (TCA) with 9 failures. Of these, 7 were converted to open surgery and 2 were resolved by postoperative ERCP. Group 2: From a total of 270 patients undergoing cholecystectomy, CL was suspected in 101. Of these, 31(30,6%) required instrumentation of the BD: 23 preoperative ERCP (only 1 required subsequent TCA) and 9 TCA, with 4 failures, which underwent postoperative ERCP. There were no conversions to open surgery. Overall 69.3 to 75.5% of patients, in whom CL was suspected, did not require any instrumentation of the BD. The presence of jaundice and CL at ultrasonography (US), had a high percentage of CL detected by IOC or ERCP (60%), whereas pancreatitis and dilated bile duct (DBD) on US, only 10.8 and 22%, respectively. CRNM showed a 100% specificity and 95.8% sensitivity.

CONCLUSIONS: 1) There is a high percentage of spontaneous resolution

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of CL in pediatric patients. 69.3 to 75.5% of patients, in whom CL was suspected, did not require any instrumentation of the BD. 2) NMCR and ERCP are useful tools and, used selectively, have lowered conversion rate to open surgery in our serie (0% in Group 2). 3) We propose this diagnostic and therapeutic algorithm: a) In patients with a pancreatitis background without CL or DBD in US we propose: LC without neither previous NMCR nor ERCP . b) In those presenting with jaundice and CL in US we propose a NMCR. In the presence of CL in this study, we indicate an ERCP. If it is successful, we performed LC without IOC. In the presence of normal BD at CRNM we propose LC without CIO, while the finding of DBD without CL in this study, we indicate IOC during LC.

S051: THE LEARNING CURVE ON THE LAPAROSCOPIC EXCISION OF CHOLEDOCHAL CYST WITH ROUX-EN-Y HEPATOENTEROSTOMY IN CHILDREN

Jiangbin Liu, PhD, Zhibao Lv, Professor, Department of Pediatric Surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University and Department of Pediatric Surgery, Children's Hospital of Fudan University, Shanghai, PR China

AIMS & OBJECTIVES: To review the experience from the two major children's hospital of Shanghai city in China on the laparoscopic cyst excision with Roux-en-Y hepatoenterostomy for choledochal cyst in children and to establish the learning curve for surgeons.

MATERIAL & METHODS: from April 2009 to September 2013, 73 cases of choledochal cyst were performed by laparoscopic cyst excision with Roux-en-Y hepatoenterostomy in Shanghai Children's Hospital, Shanghai Jiao Tong University and Children's Hospital of Fudan University2. All the patients were divided into 3 groups chronologically. group A, from

April 2009 to September 2010, 17 cases; group B, from November 2010 to May 2012, 31 cases; group C, from June 2012 to September 2013, 25 cases. All the surgical procedure were finished by one surgeon. The following factors such as average operative time, conversion rate, volume of bleeding, postoperative hospital stay, and postoperative complications were analyzed among the 3 groups.

RESULTS: The average operative time in group A (6.7 ± 1.9 hours) was longer than those of group B (3.5 ± 0.7 hours) and C (3.7 ± 0.5 hours, and all P values < 0.01) respectively. And also the conversion rate of group A (5/17, 29.4%) was higher than those of group B (3/31, 9.6%) and C (2/25, 8%, all P values < 0.01). Volume of bleeding (32.5 ± 12.2 ml) was larger than those of group B (18.5 ± 9.4 ml) and C (19.5 ± 5.7 ml, all P vales < 0.05). But the postoperative hospital stay or postoperative complications in all the 3 groups were nearly same. And there were no difference between group B and group C on the upper 5 factors.

CONCLUSION: The learning curve on the laparoscopic cyst excision of choledochal cyst with Roux-en-Y hepatoenterostomy in children is extremely steep before 15 cases for surgeon. After that, the average operative time, conversion rate and volume of bleeding declined dramatically.

S052: PERIOPERATIVE COMPLICATIONS OF LAPAROSCOPIC CHOLEDOCHAL CYST EXCISION

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OBJECTIVE: To investigate perioperative complications of laparoscopic chiledochal cyst excision and the hepatic-jejunum Roux-en-Y anastomosis.

METHODS: March 2012– December 2013, 72 cases of chiledochal cyst were

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performed laparoscopic choledochal cyst excision and the hepatic-jejunum Roux-en-Y anastomosis including 9 males and 63 female cases, 55 cases of cystic type and spindle type of 17 cases.

RESULTS: 72 cases of choledochal cyst were successfully completed under laparoscopic procedure, average operation time 3.5h (2.5-5.5 h).

INTRAOPERATIVE COMPLICATIONS: 1) Right hepatic duct injury: one case suffered right hepatic duct injury from the sharp separation process because right hepatic duct adhesion to the neck of gallbladder. We find bile leak from the right bile duct. Interrupted suture with 5-0 PDS-2 line repair was performed directly. No postoperative bile leakage was found. 2) Hepatic duct separation: 1 case suffered hepatic duct separation. The diameter of the cyst is 8cm. MRCP can not show the right and left hepatic duct clearly. When separate the common bile duct. The diameter of the left hepatic duct is about 1.5cm. So we take left hepatic duct as common bile duct and take right hepatic duct as the neck of the gallbladder. During separate the right side of the duct we found we make a mistake. At last intraoperative two cholangioenterostomy was performed. No postoperative bile leakage was found.

POSTOPERATIVE COMPLICATIONS: 1) Bleeding: 2 cases suffered postoperative bleeding when one case had laparotomy 8 hours after laparoscopic procedure. 600ml continuous blood transfusion can not stable the blood pressure. Bleeding lies the bed of cyst, continue suture of cyst bed was performed and bleeding stopped. The other bleeding case had conservative treatment after continuous blood transfusion. This case had postoperative bleeding about 400ml. 2) Bile leakage: 2 cases suffered

from postoperative bile leakage. One case found bile from drainage. 21 days after surgery the bile disappeared. The other case got abdomen pain and fever after 5 days of surgery. Ultrasound show encapsulated fluid around the liver with diameter about 10cm. Peritoneal drainage was performed, after 3 weeks of drainage bile leakage cured and the drainage tube was removed. 3) Anastomotic stenosis: Obstructive jaundice was found in one case after 2 weeks of cholangioenterostomy. Laparoscopic procedure found cholangioenterostomy anastomotic stenosis. Recholangioenterostomy was performed by laparoscopic procedure. 4) Pancreatitis: Pancreatitis was found in one case after 6 days surgery, sudden abdominal pain started in this case. Blood amylase increased significantly suggesting pancreatitis. After 4 weeks nasal tubes feeding the baby was cured. All 72 cases of patients were followed up for 1-19 months. No long-term complications were found.

CONCLUSIONS: Laparoscopic choledochal cyst excision and hepatic-jejunal Roux-en-Y anastomosis is a complex, high-risk procedure, it need skilled laparoscopic techniques. Precise intraoperative skills help to reduce intraoperative and postoperative complications.

S054: LAPAROSCOPIC SIMPLE OBLIQUE DUODENO-DUODENOSTOMY IN MANAGEMENT OF CONGENITAL DUODENAL OBSTRUCTION IN CHILDREN
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INTRODUCTION: The technique of diamond-shape duodeno-duodenostomy is usually recommended for surgical repair of congenital duodenal obstruction (CDO). The aim of this report is to present our

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technique of laparoscopic simple oblique duodeno-duodenostomy (LSOD) and its results in management of CDO in children.

METHODS: Medical records of patients with diagnosis CDO undergoing LSOD at our center from March, 2009 to December, 2013 were reviewed. For the LSOD, one infra- or trans-umbilical 5mm port for camera and two 3mm ports for instruments were used. After mobilization of the distant part of the duodenum, two 5.0 PDS seromuscular sutures were placed on the duodenal wall proximal and distal to the obstruction and tacked to the anterior abdominal wall for traction. The lower duodenum was incised longitudinally distal to the traction suture. The upper duodenum incision was placed away from the traction suture and extended downward obliquely. The duodeno-duodenostomy was performed as a "simple" anastomosis.

RESULTS: 48 patients were identified (23 boys, 47.9%) with median age at operation 11 days (ranged 1 day - 4 years, 42 patients (87.5%) were neonates). The median weight at operation was 2600 g (ranged 1600g to 10kg). . Type I atresia, annular pancreas and type III atresia were found in 31 (64.5%), 9 (18.8%) and 8 (16.7%) patients, respectively. The median operative time was 90 minutes (ranged 60 - 150 minutes). There was no conversion to open surgery, no anastomotic leakage or stenosis. The median time from the operation to initial oral feeding was 3 days. Postoperative complications were documented in 2 patients (4.2%): severe ventilator-associated pneumonia causing death at postoperative day17 in one patient with bodyweight 1700g and gastrointestinal bleeding due to decreased prothrombin treated successfully in another. All other patients were discharge in good health with a median postoperative hospital stay of 7 days. At a median follow-up of 18 months

(range 1 - 48 months), all the patients were asymptomatic.

CONCLUSIONS: The technique of LSOD is safe, efficacious and can be a viable option in management of selected cases of CDO in children at experienced centers.

S055: THREE-PORT TOTAL COLECTOMY AND SUBSEQUENT ROBOTIC PROCTECTOMY WITH ILEAL POUCH-ANAL ANASTOMOSIS IN FULMINANT ULCERATIVE COLITIS. INITIAL EXPERIENCE G. Elmo, MD, T. Ferraris, MD, D. Liberto, MD, M. Urquizo, MD, P. Lobos, MD, F. De Badiola, MD, Pediatric Surgery Hospital Italiano de Buenos Aires

SUMMARY: INTRODUCTION: Three-stage total colectomy with ileal pouch-anal anastomosis is indicated in patients with fulminant ulcerative colitis (UC) in which medical treatment fails or suffer complications such as toxic megacolon or intestinal perforations due to chemotherapy.

The purpose of this paper is to present our initial surgical experience in pediatric patients with fulminant UC which underwent total laparoscopic colectomy using three ports only and subsequent robotic proctectomy.

MATERIALS & METHODS: We analyze pediatric patients with UC treated at Hospital Italiano de Buenos Aires Gastroenterology service since January 2010 until December 2013. We only included patients tested and treated because of fulminant UC.

Three stage surgery correspond to: Three-port total colectomy as the first stage, robotic proctectomy as the second, and finally ileostomy closure.

RESULTS: All five patients underwent total colectomy with only three ports without intraoperative complications or conversion to laparotomy. One

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patient was explored because of partial bowel obstruction, with enterolysis and subsequent full recovering.

Every patient improved and normalized laboratory variables leaving corticosteroid therapy.

Three of this patients underwent robotic proctectomy with ileal pouch-anal anastomosis without complications and good postoperative evolution. The other two patients are waiting for surgery.

Following time is an average of 17 months. They didn't present pouchitis and present approximately 5 to 8 stools per day with good anal continence.

CONCLUSION: Although this is our initial experience, we can infer that:

Patients with fulminant UC must be hospitalized and stabilized clinically. Total laparoscopy colectomy with three ports and Hartmann's closure of the rectum can be easily performed, reaching nutritional recovering of these patients.

Once the patient is stabilized and corticosteroid therapy is finished, robotic proctectomy and J ileal pouch seems to be a feasible alternative to open proctectomy or laparoscopic proctectomy in patients with fulminant UC.

S056: WHAT HAPPENS BEYOND AN OPEN ANULUS INGUINALIS PROFUNDUS FOUND AT LAPAROSCOPIC PYLOROMYOTOMY IN INFANTS? – A JOURNEY INTO TERRA INCOGNITA [Reza](#)

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This prospective study was done to analyze the incidence of metachronous inguinal hernia (MIH) after identification of an asymptomatic open anulus inguinalis profundus (OAIP) during laparoscopic pyloromyotomy (LP) in infants. We deliberately used this term instead of patent processus vaginalis (PPV) as the latter implies intraoperative information about length, width and diameter of the processus vaginalis. This term suggests that MIH is almost obligate. Instead, this information is not provided by most studies and exact data about MIH after LP is rare.

METHODS: We prospectively analyzed the incidence of OAIP at LP and MIH in 80 infants (68 boys, 12 girls, m:f = 5.6:1) who underwent LP at one institution between February 2007 and October 2012. The incidence of MIH after LP was additionally compared retrospectively between all infants who underwent LP (92) and 141 infants who underwent open pyloromyotomy (OP) between February 2004 and August 2012 at the same institution.

RESULTS: OAIP was prospectively evaluated and encountered in 32/80 (40%) of infants (1 girl and 31 boys, Table 1). MIH after LP developed only in 8/32 (25%) of infants (1 girl and 7 boys) in this group. Retrospectively, MIH developed in 8/92 of all LP and in 2/141 of OP, being more frequent ($P=.016$, Fisher exact test) after LP. The median follow-up period was 22.5 months (range: 4 – 52 months) for LP and 73 months (range: 6 – 108 months) for OP.

CONCLUSION: OAIP during LP was a frequent finding, but only one quarter of infants with OAIP developed MIH. MIH developed significantly more often after LP comparing to OP.

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Prognostic factors for the identification of MIH after OAIP are lacking. Since it is a frequent finding, further standardized laparoscopic parameters for the measurement of the PPV are needed. A system that laparoscopically quantifies a PPV and correlates with MIH remains to be developed. Further studies with this aim are needed. Until such a system has been established and validated, we recommend that the surgeon should record the presence of an OAIP, but not proceed with prophylactic repair of asymptomatic OAIP.

The increased incidence of MIH after LP compared to OP needs to be validated by further studies.

Contribution of endotracheal intubation (EI), asymptomatic open abdomen inguinal hernia (OAI) and sex of the children who underwent laparoscopic tubulotomy (LP)

Case		asymptomatic open abdomen inguinal hernia (OAI)		Total
		no	yes	
Sex	endotracheal intubation	11	0	11
	herniomy	7	1	8
	Total	18	1	19
Age	endotracheal intubation	27	24	51
	herniomy	6	7	13
	Total	33	31	64
Total	endotracheal intubation	48	24	72
	herniomy	13	8	21
	Total	61	32	93

S057: LAPAROSCOPIC TRANSHIATAL GASTRIC PULL-UP IN 6 CHILDREN Nidhi Khandelwal, Dr., Ravindra Ramadwar, Dr., Bombay Hospital, Mumbai, India

INTRODUCTION: Oesophageal replacement for oesophageal atresia and caustic oesophageal strictures involves major dissection in abdomen, chest and neck. To minimise surgical trauma, laparoscopic transhiatal gastric pull up appeared to be a good alternative.

AIM: To evaluate the feasibility and safety of laparoscopic transhiatal gastric pull-up in children with oesophageal atresia, caustic oesophageal stricture and motility

disorder

METHOD: Six children (age 1- 5 years) were selected for laparoscopic transhiatal gastric pull-up. Four patients had had oesophageal atresia with feeding gastrostomy and oesophagostomy. One patient had a caustic oesophageal stricture requiring dilatation every two weeks for more than one year. Sixth patient had severe dilatation of oesophagus with respiratory distress with aperistaltic oesophagus on manometry. All patients underwent laparoscopic transhiatal gastric pull-up. In five patients feeding jejunostomy was also performed. In two patients oesophagectomy was performed under vision upto arch of aorta. The cervical and upper thoracic oesophagus was dissected easily from neck incision on right side. The posterior mediastinal dissection was done under vision to create adequate space for stomach.

RESULTS: All children withstood the procedure very well. The mean operative time was 140 min (range 120- 190 min). Posterior mediastinal dissection was bloodless and none of the patients require blood transfusion. Postoperatively five patients were electively ventilated for 24 hours and in them jejunostomy feeding was commenced after 48 hours. One patient with large dilated oesophagus was extubated on table and nasogastric feeding was commenced after 72 hours. In the same child oral feeding was commenced on 5th postoperative day and was on soft diet on 7th postoperative day. Contrast study was performed on postop day 7 in all patients. Four patients had minor leak which resolved spontaneously within 14 days of surgery. In these patients oral fluids were introduced on 7th day after contrast study. Five patients were on full oral feeds by 15th postop day.

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Jejunostomy was removed after one month. In one patient anastomotic ulcer bleeding occurred on 21st postop day. He had carotid blow out which was embolized. He needed thoractomy and revision of his gastric pull up in staged operation. He was on jejunostomy feeds for 8 months and then was successfully weaned of to oral feeding. At follow-up (1-7 years) there was significant weight gain and no major feeding issues.

CONCLUSION: Laparoscopic transhiatal gastric pull-up with dissection of posterior mediastinum under vision appears to be feasible and safe.

S058: THE SMALL BOWEL IN ITS HAMMOCK: HOW TO AVOID IRRADIATION THANKS TO THE SIGMOID

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BACKGROUND: Irradiation is the cornerstone treatment of bone cancers of the pelvic rim, either Ewing sarcoma or Malignant peripheral nerve sheath tumors (MPNSTs). High doses exceeding 50 Gy may be required causing early or late damages to the surrounded organs. The small bowel is particularly sensitive to high dose radiotherapy with functional and anatomical side effects such as malabsorption, diarrhea, stricture or fistula formation. Several surgical or non-surgical methods have already been described to displace the bowel out of the radiotherapy field with various results.

AIM: We hereby described the use of laparoscopy to perform a hammock with the sigmoid to avoid small bowel irradiation and following consequences.

MATERIALS & METHODS: Three patients, one male and two females, aged 13.1, 5.7 and 12.9 years were respectively diagnosed with metastatic Ewing sarcoma of the right iliac branch, localized MPNST of the left sciatic notch and localized BECOR tumor of the left hemisacrum. All three underwent neoadjuvant chemotherapy according to leading protocols. A hemisacrectomy under S2 was performed for the two female patients while no orthopedic surgery was required for the male patient due to excellent local response to chemotherapy. A 54 Gy intensity-modulated radiotherapy of the posterior part of the pelvis was intended for all patients either after surgery or neoadjuvant chemotherapy.

RESULTS: The laparoscopy procedure was performed the same day as the orthopedic surgery. It consisted in the fixation of the sigmoid to the anterior parietal wall, the anterior transposition of the 2 ovaries and of the rectum associated to a colostomy for the two female patients, the anterior fixation of the uterus in one female patient and the dissection of left iliac vessels to move them anteriorly in the other female patient. For the male patient, only the fixation of the sigmoid to the anterior parietal wall was performed. Three ports were used for each procedure, one 10-mm optic umbilical port and two 5-mm working ports in the right and left flanks. Fixation was done with resorbable sutures. The loop of sigmoid was moved to the right, fixed to the anterior parietal wall on a transversal line two centimeters below the umbilicus. Stomas were placed in the right iliac fossa and complete the hammock to prevent slippage of the small intestine in the pelvis. If needed, sutures were added between the mesocolon of the right colon and those of the sigmoid. The post-operative course was uneventful.

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in all patients. Stomas were closed 5 and 7 months after completeness of the radiotherapy course, associated with the replacement of the uterus, ovaries and colon. With a mean follow-up of 7, 29 and 30 months, all patients are alive without any recurrences or symptoms.

CONCLUSION: The laparoscopic “hammock technique” is an efficient and safe approach not only to protect the small bowel from irradiation by using the sigmoid but also to ease and secure the orthopedic procedure done only by posterior approach by displacing the abdominal organs forward.

S059: EXTENDED NUSS FOR 146 RECURRENCES OF PECTUS EXCAVATUM

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OBJECTIVE: Nuss procedure for primary pectus excavatum repair in adolescents has stood the test of time. The difficult cases are recurrences after Ravitch + Nuss or multiple previous repairs particularly at an advanced age, asphyxiating chondrodystrophy and floating sternum. In many patients additional procedures like longitudinal bars, patches for closure of chest wall defects and lung hernias or repair of excessive rib flare have to be added to standard Nuss procedure all of which we call “Extended Nuss”.

METHODS & PROCEDURES: Under epidural PCA 146/1429 adolescents and adults had a redo Nuss repair in Berlin-Buch (age 13–54 years, mean 19.3 +/- 8.7 y; 129 male / 17 female. Previous Operations were 53 Ravitch (14 with floating sternum), 29 Nuss (11 with massive bar dislocation, 6 with secondary pectus carinatum), 17 Ravitch+ Nuss, 11 multiple operations (3–6), 13 Willital, 7 Rehbein, 4 Brunner, 3

Lennard, 2 Sulama, 1 bilateral free gluteal flaps. 7 were our own recurrences (4 Nuss, 3 Willital). 17 had a preschool repair and an asphyxiating chondrodystrophy and 21 presented with severe instability. 61 were referred from German Hospitals, 85 from European countries and abroad. As a rule existing Ravitch incisions were extended laterally but not opened in the midline, previous Nuss scars were used sometimes extended. Very extensive pleurolysis of both lungs was required in 80% of the patients, particularly in the 28 patients who had more than one previous chest repair. The majority of patients required 2 Nuss bars (12–17 inch), 11 required 3 Nuss bars, 4 patients >3 bars up to 8 bars (3 Nuss + 5 longitudinal Willital). 37 patients required multiple sternal and rib osteotomies, 9 patches (surgisis). 9 patients were referred with persisting pericardial effusions mostly caused by displaced Nuss bars, in 2 thoracoscopic pericardial windows had to be performed in 2 pericardial cyst were resected during Redo Nuss.

RESULTS: In 146 patients recurrent or residual deformities could be corrected to very near normal from the Nuss accesses. In 7 Patients existing midline incision were partly opened in addition to fix sternal deformities, fractures or pseudoarthroses. Meanwhile in 113/146 patients the bars are removed: 98 rated their result as excellent, 12 as good, 3 as fair; 2 of the latter had a second redo Nuss (second high bar) meanwhile.

CONCLUSION: In our hands Extended Nuss is a very reliable Method to repair all sorts of recurrences regardless of the method previously used. It seems to be an advantage to approach the sternum from a new access (laterally) after failed Ravitch type surgery. Very often the bilateral thoracoscopic view gives valuable clues why the previous surgery failed

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S060: 100 INFANT THORACOSCOPIC LOBECTOMIES: LEARNING CURVE AND A COMPARISON WITH OPEN LOBECTOMY

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OBJECTIVE: To assess the learning curve and outcomes for 100 consecutive attempted infant thoracoscopic lobectomies by a single surgeon for asymptomatic, prenatally diagnosed lung lesions and to compare the outcomes to a contemporaneous series of age-matched patients undergoing open lobectomy.

METHODS: The medical records of all patients undergoing lung lobectomy between March 2005 and January 2014 at a prenatal referral center were retrospectively reviewed. Included in the study were asymptomatic infants less than 4 months of age with congenital lung lesions who underwent: 1) attempted thoracoscopic lobectomy, or 2) open lobectomy. Patients older than 4 months, patients undergoing emergent lobectomy for symptomatic disease, and patients with isolated extralobar bronchopulmonary sequestrations were excluded.

RESULTS: The first 100 attempted thoracoscopic lobectomies by a single surgeon were compared with 188 open lobectomies performed in asymptomatic infants younger than 4 months of age with prenatally diagnosed lung lesions. There were no significant differences in mean age (7.2 vs. 7.9 weeks), mean weight at surgery (4.8 vs. 5.0 kg), mean interval to chest tube removal (1.5 vs. 1.5 days), and mean hospital stay (2.9 vs. 3.1 days) between the thoracoscopic and open groups, respectively. The mean operative

time in the thoracoscopic group was significantly longer: 185 minutes (103 to 515; median: 174 - SD = 64) compared to 111 minutes (56 to 272; $p < 0.001$; median 101 - SD = 42 minutes) in the open group. However, the operative time decreased markedly with increasing thoracoscopic experience from 208 to 175 minutes (mean) for the first and last thirds of the thoracoscopic series, respectively. This was despite the primary surgeon increasingly assuming a teaching role for the second half of the series. Similarly, the conversion rate to open lobectomy decreased with increasing experience from 10 to 2 during the first and second thirds of the series respectively, with no cases converted in the final third (total conversion rate: 12%). Three cases were converted for bleeding and the remainder for fused fissures or abnormal lobulation. There was 1 major hemorrhage in the thoracoscopic group early in the series and no other major complications in either group. There were 9 minor postoperative complications in the thoracoscopic group (9%) and 9 in the open group (4.8%); $p = 0.248$. There were 4 prolonged air leaks in the thoracoscopic group (4%) and 6 in the open group (3.2%); $p = 0.984$. From an anesthetic perspective, at equivalent minute ventilation volumes the mean end-tidal CO₂ was higher in the thoracoscopic group: 51.7 mmHg versus 38.6 mmHg ($p < 0.001$). However, with appropriate ventilator management, this value plateaued and did not progressively increase during the operation.

CONCLUSION: Infant thoracoscopic lobectomy is a technically challenging procedure with a noteworthy learning curve. In centers with high prenatal referral volumes, the learning curve can be rapidly overcome and the procedure can be safely performed with comparable outcomes and superior cosmetic results to open lobectomy.

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S061: TWO DECADES EXPERIENCE WITH THORACOSCOPIC LOBECTOMY IN INFANTS AND CHILDREN, STANDARDIZING TECHNIQUES FOR ADVANCED THORACOSCOPIC SURGERY

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OBJECTIVES: This study evaluates the safety and efficacy of thoracoscopic lobectomy in infants and children.

METHODS: From January 1994 to November 2013, 346 patients underwent video assisted thoracoscopic lobe resection at 2 institutions (RMHC/CHONY). All procedures were performed by or under the direct guidance of a single surgeon. Ages ranged from 1 day to 18 years and weights from 2.8 to 78 kg. Pre-operative diagnosis included sequestration/congenital adenomatoid malformation (CPAM) -306, severe bronchiectasis -24, congenital lobar emphysema -13, and malignancy -3

RESULTS: 341 of 346 procedures were completed thoracoscopically. Operative times ranged from 35 minutes to 240 minutes (avg. 115 minutes). Average operative time when a trainee was the primary surgeon was 160 minutes. There were 80 upper, 25 middle, and 241 lower lobe resections. There were 4 intra-operative complications (1.1%) requiring conversion to an open thoracotomy. The post-operative complication rate was 3.3%, and 3 patients required re-exploration for a prolonged air leak. Hospital stay (LOS) ranged from 1 to 16 days (avg 2.4) at RMHC and 4.2 at CHONY. In patients < 5kg and < 3 months of age the average operative time was 90 minutes and LOS 2.1 days. **CONCLUSIONS:** Thoracoscopic lung resection is a safe

and efficacious technique. With proper mentoring it is an exportable technique, which can be performed by pediatric surgical trainees. The procedures are safe and effective even when performed in the first 3 months of life. Early resection avoids the risk of later infection and the small but real risk of malignancy.

S062: THORACOSCOPIC THORACIC DUCT LIGATION FOR CONGENITAL AND ACQUIRED DISEASE Bethany J. Slater, MD, Steven S. Rothenberg, MD, FACS, FAAP, Rocky Mountain Hospital For Children

PURPOSE: Congenital and acquired chylothorax presents a unique management challenge in neonates and infants. A failure of conservative therapy requires surgical ligation to prevent continued fluid and protein losses. This paper exams a 15-year experience with thoracoscopic ligation of the thoracic duct.

METHODS: From June 1999 to December 2013, 20 patients presented with chronic chylothorax refractory to conservative management. 16 patients were s/p cardiac procedures, 1 patient was s/p TEF repair, 1 patient was s/p ECMO for meconium aspiration, and 2 cases had congenital chylothorax. Ages ranged from 3 weeks to 3 years old and weights ranged from 2.6 to 12.7 Kg. All procedures were performed in the right chest with 3 ports. Initially a 5 mm port was needed to insert a 5mm tissue sealing device but the last 2 procedures were performed with 3mm ports as a 3mm sealer became available. All cases consisted of sealing of the duct at the level of the diaphragm with the tissue sealer and or sutures, a mechanical pleurodesis, and insertion of tissue glue at the level of the diaphragm. A chest tube was left in all cases. The chyle leak was noted to significantly diminish during the procedure in all cases.

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RESULTS: All cases were completed successfully thoracoscopically. Operative time ranged from 20 to 55 minutes. There were no intra-operative complications. One patient with congenital bilateral chylothoracies required a second procedure with a left partial pleurectomy. The chest tube duration post-procedure ranged from 4 to 14 days. Two patients failed the ligation and required a second procedure, a thoracoscopic pleurectomy in one, and a chemical pleurodesis in the other.

CONCLUSION: Thoracoscopic thoracic duct ligation is a safe and effective procedure even in sick post-cardiac surgery patients. The site of the leak can be identified in the majority of cases and tissue sealing technology appears to be effective in sealing the duct. The minimally invasive nature of the procedure has hastened the request from the PICU and cardiac services to perform the operative to avoid the often chronic and debilitating fluid and protein losses associated with a major chyle leak.

S063: COMPARISON OF THORACOSCOPIC AND OPEN DIAPHRAGMATIC PPLICATION IN NEONATES AND INFANTS

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BACKGROUND: Thoracoscopic plication of the diaphragm is an alternative to conventional surgical treatment of diaphragmatic evisceration via thoracotomy in neonates and infants. The aim of this study is to compare of these two groups of patients for the last 11 years.

METHODS: We reported the data of 35 small babies who underwent standard posterolateral thoracotomy (18 patients – Group I) and video-assisted thoracoscopic surgery for diaphragmatic plication (17 patients – Group II). The two groups were compared for patients demographics, operative report and postoperative parameters.

RESULTS: The groups were similar in terms of demographics and preoperative parameters. There was significant difference in mean operative time between open and thoracoscopic procedure (71,67 min vs 51,76 min; $p < 0,05$). Duration of care in neonatal intensive unit and length of hospital stay were significantly shorter in the Group II (5,89 d vs 3,23 d; $p < 0,05$ and 13,06 d vs 9,88 d; $p < 0,05$). Early postoperative complications (hemothorax, pneumothorax) were frequent in thoracotomy group (16,67% vs 0%; $p = 0,229$). Rate of the recurrences was dominated in the thoracotomy group (11,11% vs 0%; $p = 0,486$).

CONCLUSION: Thoracoscopic plication of the diaphragm in infants of the first three months of the life demonstrated results better than open surgery.

S064: THORACOSCOPIC LEFT CARDIAC SYMPATHETIC DENERVATION IN CHILDREN WITH MALIGNANT

ARRHYTHMIA SYNDROMES Ryan Antiel, MD, Aodhnait Fahy, BMBCh, PhD, J. Martijn Bos, MD, PhD, Abdalla Zarroug, MD, Michael Ackerman, MD, PhD, Christopher Moir, MD, Mayo Clinic

BACKGROUND: Long QT syndrome (LQTS) and catecholaminergic polymorphic ventricular tachycardia (CPVT) can lead to ventricular arrhythmias and sudden death. Video-assisted thoracoscopic left cardiac sympathetic denervation

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(LCSD) surgery provides another treatment option for patients with either pharmacologic therapy resistance/intolerance or those with a particularly severe arrhythmic phenotype.

METHODS: Retrospective evaluation of all pediatric patients who underwent LCSD surgery at our institution between January 2005 and May 2013.

RESULTS: 79 patients (37 female, mean age 9.8 years) underwent LCSD; 77 patients (97.5%) underwent a thorascopic approach, while 2 patients (2.5%) underwent an open approach. LCSD was performed on 14 patients (18%) for high-risk LQTS, 33 (42%) required additional protection, 19 (24%) for beta-blocker intolerance, and 13 (16%) for a break through cardiac event. Sixty-two percent of these patients (49/79) were classified clinically as high risk of fatal arrhythmias. Pathology confirmed successful removal of sympathetic chain in all cases. Anatomical chain abnormalities were noted in 31 patients (39%), with split trunk or bifid chain being the most commonly identified variant. The average operation time was 48.6 ± 21 minutes. One thorascopic case was converted to an open approach due to hemorrhage. Thirty-five patients (44%) had a radiographically detected, hemodynamically insignificant pneumothorax post-LCSD. Only 5 (6%) patients had a pneumothorax that required chest tube placement. There was no significant difference noted between the average preoperative QTc value (490 ± 68 ms) and postoperative QTc values (478 ± 56 ms). The average time from operation to dismissal was 2.6 days (range 1-17 days).

CONCLUSION: We present the largest single center series of pediatric patients who underwent LCSD. Although not

viewed as curative, prophylactic LCSD offers a safe, minimally invasive treatment option for patients with sudden-death-predisposing conditions. Failure to recognize and remove anatomic variations of the sympathetic chain could result in a suboptimal denervation.

S065: DIAPHRAGMATIC EVENTRATION IN CHILDREN; LAPAROSCOPY VERSUS THOROSCOPIC PPLICATION Go Miitano,

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AIM: To determine what is the most appropriate minimally invasive surgical approach for performing diaphragmatic plication; thoracoscopy or laparoscopy.

MATERIALS & METHODS: We retrospectively reviewed the medical records of children diagnosed with congenital diaphragmatic eventration at Shizuoka Children's Hospital and Juntendo University Hospital between 2007 and 2012. Thorascopic plication (TP) is performed under general anesthesia using single lung ventilation with three 5mm ports; pneumothorax is established at a pressure of 4mmHg, and plication is performed using interrupted 4-0 nonabsorbable sutures. Laparoscopic plication (LP) is performed with three or four 5mm trocars with pneumoperitoneum at a pressure of 8mmHg; plication is performed with 4-0 nonabsorbable sutures, and the initial line of plication is sutured to the anterior abdominal wall for stability. Choice

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of procedure, whether laparoscopic or thoracoscopic was based on each operating surgeons' preference.

RESULTS: We treated 20 cases of diaphragmatic eventration by LP (n=13) and TP (n=7). Etiology in LP was phrenic nerve injury secondary to cardiac surgery (n=9) and mediastinal tumor resection (n=2), and congenital muscular deficiency of the diaphragm (n=2). Etiology in TP was phrenic nerve injury secondary to cardiac surgery (n=1) and congenital muscular deficiency of the diaphragm (n=6). In LP, eventration was left-sided in 9 cases, right-sided in 2 cases, and bilateral in 2 cases. In TP, eventration was left-sided in 4 cases, and right-sided in 3 cases. Respiratory distress developed in all cases and preoperative ventilator support was required in 6 LP cases and 3 TP cases. Mean age at the time of surgery was 18.3 months (range: 0 – 45) in LP and 25.1 months (range: 0 – 75) in TP. Mean weight at the time of surgery was 8.0kg (range: 2.7 – 15.9) in LP and 9.7kg (range: 2.2 – 27) in TP. Mean operating time was 155.6 minutes (range: 90 – 290) in LP and 167.0 minutes (range: 122 – 303) in TP (p=NS). Mean intraoperative end-tidal CO₂ was 41.9mmHg (range: 35 – 52) in LP and 36.9mmHg (range: 33 – 41) in TP (p=.01). One TP case required conversion to thoracotomy (p=NS). Mean duration of postoperative ventilator support was 1.2 days (range: 0 – 5) in LP and 1.3 days (range: 0 – 5) in TP (p=NS). Mean time taken to recommence feeding postoperatively was 1.6 days (range: 1 – 4) in LP and 1.6 days (range: 1 – 4) in TP (p=NS). Atelectasis occurred in 1 case in each of LP and TP (p=NS) and while there were 6 cases of recurrence in LP, there were none in TP (p=.04). Mean duration of follow-up, 2.7 years for LP and 2.4 years for TP, were not statistically different.

CONCLUSION: Both TP and LP appear to be safe and beneficial for treating small children with diaphragmatic eventration. Although we found a statistically higher incidence of recurrence of eventration after LP, there is no consensus about the role of TP for treating eventration in patients who need further cardiac surgery.

S066: LEARNING CURVE ANALYSIS IN PEDIATRIC SURGERY USING THE CUMULATIVE SUM (CUSUM) METHOD – A STATISTICAL PRIMER AND CLINICAL EXAMPLE

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BACKGROUND: Cumulative sum (CUSUM) analysis is recognized as a preferred statistical method for evaluating outcomes following introduction of any newly implemented surgical technique or technology, and particularly for monitoring individual surgeons' performance. Despite its ostensive virtues, the CUSUM method remains under-utilized in the surgical literature in general, and is described in only a small number of publications within the field of pediatric surgery. This study aims to introduce the CUSUM analysis technique and apply this statistical method to evaluate the learning curve for pediatric robot-assisted laparoscopic pyeloplasty (RP).

METHODS: Intra-operative and post-operative clinical data were prospectively recorded for consecutive pediatric RP cases performed by a single-surgeon (ASN) between March 2006 and October 2013. CUSUM charts and tests were generated to quantitatively investigate the learning curve for set-up time, docking time, console time, operating time, total operating room time, and post-

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operative complications. Conversions and avoidable operating room delay were separately evaluated with respect to case experience. Comparisons between case experience and time-based outcomes were assessed using the Student's t-test and one-way ANOVA for bi-phasic and multi-phasic learning curves respectively. Comparison between case experience and complication frequency was assessed using the Kruskal-Wallis test.

RESULTS: A total of 90 RP cases were evaluated. The youngest patient in the series was 1 month of age, and the smallest patient weighed 4.1 kilograms. The median duration of follow up was 3.9 years (range 0.6 – 7.9 years). Multi-phasic learning curves were observed for set-up and docking time, and bi-phasic learning curves for all other operating room time variables. The learning curve transitioned beyond the learning phase at cases 10, 15, 42, 57, and 58 for set-up time, docking time, console time, operating time, and total operating room time respectively. All comparisons of mean operating times between the learning phase and subsequent phases were statistically significant ($P = <0.001 - 0.01$). No significant difference was observed between case experience and frequency of post-operative complications ($P = 0.125$), although the CUSUM chart demonstrated a directional change in slope for the last 12 cases in which there were high proportions of more complicated re-do cases and patients < 6 months of age. Two cases were converted to open procedures (2.2%, Cases 8 and 86). Three cases required repeat procedures for PUJO recurrence (3.4%, Cases 28, 52 and 79). We regard the overall success rate of this series as 96.7%. Avoidable delay was recorded in 53% of cases with mean delay time of 26.6 ± 12.3 minutes. The causes of delay

were attributed to surgical assistant inexperience or error (39%), equipment unavailability or malfunction (29%), nursing scrub staff inexperience or error (22%), anesthesia issues (7%), and robot malfunction (3%). There was no significant difference between case experience and avoidable delay ($P = 0.48$).

CONCLUSIONS: The CUSUM method has a valuable role for learning curve evaluation and outcome quality monitoring in pediatric surgery. In applying this statistical technique to the largest reported single-surgeon series of pediatric RP, we demonstrate numerous distinctly shaped learning curves and well-defined learning phase transition points.

S067: MAN VS. MACHINE: A COMPARISON OF ROBOTIC-ASSISTED VS. LAPAROSCOPIC SLEEVE GASTRECTOMY IN SEVERELY OBESE ADOLESCENTS

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PURPOSE: Coupled with the rising prevalence of childhood obesity, the concomitant increase in obesity-related comorbid diseases, including cardiovascular disease, type 2 diabetes, dyslipidemia, obstructive sleep apnea and hypertension, poses new challenges for both the current and future health care systems. While accumulating evidence demonstrates the safety and efficacy of weight loss surgery in the treatment of severely obese adolescents, the application of operative robotic technology has not been explored in this emerging surgical population. The aim of this study was to determine the safety and efficacy of robotic-assisted

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laparoscopic sleeve gastrectomy in the treatment of severe adolescent obesity. In addition, we compared 30-day outcomes and associated total operative and hospital charges among robotic-assisted versus laparoscopic vertical sleeve gastrectomy at the same institution.

METHODS: A retrospective analysis of 14 consecutive robotic (ROB) and 14 consecutive laparoscopic (LAP) adolescent patients undergoing sleeve gastrectomy by one surgeon at a single institution was conducted. Data collection included age, gender, body mass index (BMI), ethnicity, obesity-related comorbidities, hospital length of stay (LOS), operative time, post-operative complications and 30-day clinical outcomes and readmission rates. The total operative and hospital charges were also examined. Subjects with a LOS greater than seven days were considered outliers for the purpose of analysis. A comparative analysis was performed using nonparametric Wilcoxon two-sample test or t-test as appropriate.

RESULTS: Analysis between groups demonstrated no difference in age, gender, BMI, ethnicity, and associated comorbidities. In addition, there was no difference in post-operative complications, 30-day readmission rates (n=1 LAP, n=1 ROB), or weight loss between groups. While the operative time was significantly longer within the robotic group (ROB 136 minutes vs. LAP 99 minutes, $p = 0.0006$), the LOS was significantly less on initial analysis (ROB 67.5 hours vs. LAP 115.1 hours, $p = 0.0094$). Following exclusion of outliers (n=3 LAP, n=0 ROB), the reduction in hospital LOS still approached statistical significance (ROB 67.5 vs. LAP 76.1 hours, $p = 0.052$). Analysis of the operative charges for the robotic group were significantly

greater (\$41,006 (ROB) vs. \$31,824 (LAP), $p=0.0016$). On initial analysis of the total hospital charges, the robotic cohort was less compared to the laparoscopic group (\$57,836 (ROB) vs. \$64,541 (LAP), $p=0.0366$). Following the exclusion of outliers however, (n=3 LAP, n=0 ROB), total hospital charges in the robotic group were higher compared to the laparoscopic group (\$57,836 (ROB) vs. \$47,587 (LAP), $p=0.0004$).

	Robotic	Laparoscopic	P value
Initial BMI (kg/m ²)	48.91	48.27	0.3781
Weight loss (kg) (1 month)	14.00	13.26	0.1873
%EWL (1 month)	18.75	13.95	0.6015
% Change BMI (1 month)	10.23	12.30	0.9
All patients	n=24	n=24	
Operative time (min)	136.00	99.29	0.0002
Length of stay (hours)	67.54	115.06	0.0094
Excluding outliers	n=24	n=24	
Operative time (min)	136.00	99.79	0.0006
Length of stay (hours)	67.54	76.14	0.0520

Table 1: Length of stay and 30-day Outcomes. There were no differences in post-operative complications or 30-day readmission rates between the two groups. All data points represent mean value except where specified. % EWL = (weight loss/excess weight) × 100; % Change BMI = (Change in BMI/initial BMI) × 100

CONCLUSIONS: Robotic-assisted sleeve gastrectomy is both safe and efficacious within the adolescent population and demonstrates results similar to the laparoscopic approach. The charges for sleeve gastrectomy are currently higher when performed using robotic assistance. This difference appears to be driven almost entirely by operative charges, but may be partially offset by shorter post-operative length of stay. Additional prospective studies are warranted.

S068: INTERNATIONAL ATTITUDES OF EARLY ADOPTERS TO CURRENT AND FUTURE ROBOTIC TECHNOLOGIES IN PEDIATRIC SURGERY Thomas P. Cundy,

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BACKGROUND: Perceptions toward surgical innovations are critical to the social processes that influence an individual's innovation-decision process

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and drive the technology's overall rate of adoption. Cross-sectional surveys are therefore important tools for understanding and tracing the diffusion of an innovation such as robotic surgery. This focused survey study aims to capture international attitudes of early adopter pediatric surgeons to current and future robotic technologies in order to 1) examine what specific features are driving its appeal and enthusiasm, 2) to explore attitudes toward limiting factors to adoption that are acting as barriers to diffusion, and 3) to investigate opinions toward future robotic technologies for pediatric surgery and the detailed needs of this technology end-user community.

METHODS: An electronic survey was distributed to pediatric surgeons with personal experience or exposure in robotic surgery. The survey was distributed over one calendar month between June and July 2013. Surveys were circulated in the following three settings; 1) personal approach of recognized experts attending the 22nd IPEG Annual Congress, 2) delegates and faculty attending the Inaugural European Paediatric Robotic Surgery Workshop at the 6th Hamlyn Symposium on Medical Robotics, and 3) personal email invitation to corresponding authors of relevant publications in the field identified during a recent systematic review. Participants were classified as experts or non-experts for further sub-group analysis. Coded Likert scale responses are analyzed using the Friedman test or Mann-Whitney test.

RESULTS: A total of 48 responses were received (22 experts, 26 non-experts), with 14 countries represented. The most highly rated benefits of robot-assistance were wristed instruments, stereoscopic vision, and magnified view.

In comparing responses between expert and non-expert sub groups, significant differences were found only for the feature of motion scaling with experts being less agreeable that this was of benefit ($P = 0.008$). The most highly rated limitations were capital outlay expense, instrument size, and consumables/maintenance expenses. Statistically significant differences in responses between expert and non-expert groups were observed only for haptic feedback loss ($P = 0.023$), with experts being less agreeable that this was a limitation. The most preferred instrument and scope diameter sizes were 3mm and 5mm respectively. The majority of respondents (51%) felt a price of €500,000 – €1.0 million was reasonable for a new robotic system. When asked, "is there is a future role for robot-assisted minimally invasive surgery in children?", 72% (34/47) responded "definitely", 26% (12/47) responded "probably". Future technologies that respondents were most interested in were microbots, image guidance, and flexible snake robots (mean aggregated 5-point level of interest Likert scale scores 4.43 ± 0.62 , 4.30 ± 0.75 , and 4.30 ± 0.72 respectively).

CONCLUSIONS: Existing features of putative benefit and limitation in robotic surgery are perceived with widely varied weightings. Insight provided by these responses will help to inform relevant clinical, engineering, and industry groups such that unambiguous goals and priorities may be assigned for the future. In general, the early adopter cohort of pediatric surgeons sampled seem most receptive towards future robotic technology that is smaller, less expensive, more intelligent and flexible.

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S069: LAPAROSCOPIC SLEEVE GASTRECTOMY IN CHILDREN AND ADOLESCENTS: THE TECHNIQUE AND THE STANDARDIZED PERI-OPERATIVE CLINICAL PATHWAY Aayed R. Alqahtani, MD, FRCSC, FACS, Mohamed O. Elahmedi, MD, Department of Surgery and Obesity Chair, King Saud University

BACKGROUND: In the presence of growing concerns about bariatric surgery in children and adolescents, knowledge regarding peri-operative management and standardized care are lacking. This study establishes a pediatric bariatric surgery clinical pathway, utilizing our current largest-to-date experience in Laparoscopic Sleeve Gastrectomy (LSG) in this age group.

METHODS: This study reviews the details of the clinical pathway including preoperative workup and planning, intraoperative and in-hospital management, and postoperative care and follow-up. Results attained by patients on whom this protocol was applied were reported

RESULTS: Up to December 2013, 273 patients underwent LSG (50.4% females) with standardized care. Mean age was 14.4 ± 4.0 years (Range: 5 to 21 years). Median preoperative BMI (interquartile range) was 46.5 (41.56 – 52.63). Median excess weight loss at 1, 2, and 3 postoperative years was 61.7%, 62.8%, and 68.9% respectively. There were minor complications in 9 patients whom were all managed conservatively, and there were no mortalities, leaks or reoperations. At 3 postoperative years, compliance to follow-up dropped to 22%. Applying the protocol increased the compliance rate to 73.6%, bringing the overall compliance during the study period to 90.3%.

CONCLUSIONS: Applying a standardized clinical pathway in LSG for pediatric patients results in safe and effective outcomes with low complication rates, maximum co-morbidity resolution, and minimum morbidity as well as improved follow-up compliance.

S070: COMORBIDITY RESOLUTION IN MORBIDLY OBESE CHILDREN AND ADOLESCENTS UNDERGOING SLEEVE GASTRECTOMY Aayed R. Alqahtani, MD, FRCSC, FACS, Mohamed O. Elahmedi, MD, Awadh R. Al Qahtani, MD, FRCSC, Department of Surgery and Obesity Chair, King Saud University

BACKGROUND: Bariatric surgery is becoming important for the reversal of co-morbidities in children and adolescents. We previously reported the safety and efficacy of laparoscopic sleeve gastrectomy (LSG) in the pediatric population. However, evidence pertaining to the effect of LSG on co-morbidities in this age group is scarce.

OBJECTIVE: To assess the remission and improvement of co-morbidities (dyslipidemia, hypertension, diabetes, and obstructive sleep apnea (OSA)) after LSG in children and adolescents.

SETTING: Data extracted from King Saud University Obesity Chair Research Database for all pediatric patients under the age of 21 years who underwent LSG between March 2008 and December 2013.

METHODS: Anthropometric changes, complications, remission and improvement in comorbidities were assessed over 3 years. OSA was diagnosed using the Pediatric Sleep Questionnaire (PSQ) and polysomnography. Diabetes, prediabetes, hypertension, prehypertension and dyslipidemia were assessed using standard pediatric-specific definitions.

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RESULTS: The review yielded 273 patients. 94 patients were prepubertal (5-12 years of age, mean: 9.8 ± 2.3), 139 adolescents (13-17 years of age, mean: 15.4 ± 1.7), and 40 were young adults (18-21 years of age, mean: 19.1 ± 0.8). Overall mean age was 14.4 ± 4.0 years (range: 4.94 - 20.99), and 50.4 % were females. Mean Body Mass Index (BMI) and BMI z-score were 48.2 ± 10.1 kg/m² and 2.99 ± 0.35 respectively. Mean BMI z-score at 1, 2 and 3 years postoperative was 2.01 ± 0.87 , 2.00 ± 1.1 , and 1.65 ± 0.65 , respectively with no significant difference observed across age groups. Mean preoperative height was 158.0 ± 15.1 cm, and at one, two, and three years postoperative it was 160.3 ± 13.5 , 161.4 ± 14.1 , and 163.2 ± 11.0 , respectively. The highest height gain was observed in prepubertal children (11.6 ± 5.5 cm). All patients at different age groups experienced normal growth velocity between the 3rd and 97th centile for height. Within two years of follow-up, 90.3% of comorbidities were in remission or improved, 64.9% of which were within the first three months postoperatively. No further improvement or remission was observed beyond two years, and there was no recurrence up to 3-years in those patients who were seen in follow-up. The lost to follow-up in each of the three years was 4.2%, 7.6%, and 15.3% respectively.

CONCLUSIONS: LSG performed on children and adolescents results in remission or improvement of more than 90% of comorbidities within 2 years after bariatric surgery, with few complications, no mortality and normal growth.

S072: EVALUATION OF THE SAFETY OF LAPAROSCOPIC GASTROSTOMY IN PEDIATRIC PATIENTS WITH HYPOPLASTIC LEFT HEART SYNDROME USING INTRAOPERATIVE TRANSESOPHAGEAL ECHOCARDIOGRAPHY Hanna Alemayehu, MD, E. Marty Knott, DO, Jason D. Fraser, MD, William B. Drake, MD, Shawn D. St. Peter, MD, Kathy M. Perryman, MD, David Juang, MD, Children's Mercy Hospital

INTRODUCTION: Patients with single ventricle physiology (SVP), specifically, hypoplastic left heart syndrome (HLHS) frequently need long-term enteral access, however they are at an extremely high operative risk. Nothing has been published on the physiologic impact on SV function during laparoscopy in this patient population. Therefore, we performed intraoperative echocardiography (TEE) to study the physiologic effects of laparoscopic surgery in these patients.

METHODS: After IRB approval patients with SVP undergoing laparoscopic gastrostomy were studied with intraoperative TEE. Patients were separated into those with HLHS and others with SVP. Data is reported as mean +/- standard deviation. Student's T-test was used for continuous variables.

RESULTS: From 8/2011 - 2/2013 a total of 11 patients with SVP underwent laparoscopic gastrostomy, including 6 with HLHS. One of the 6 HLHS and 1 of the SVP underwent concurrent fundoplication. All patients were post-first stage palliation. Average follow-up was 335 ± 163 days. There was no 30 day mortality. TEE data is in found in Table 1. Depression in fractional shortening was found to be statistically significant in HLHS during insufflation (P = 0.03).

CONCLUSIONS: There was a statistically significant depression in cardiac function

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in children with HLHS with initiation of pneumoperitoneum, which resolves with desufflation. Overall, the children tolerated pneumoperitoneum. TEE allows for real-time assessment of ventricular function and volume and may improve safety during longer procedures.

Table 1. Intraoperative TEE data. Fractional Systolic Chamber Length (FSCCL)

Diagnosis	Pre FSCCL	Max FSCCL	% change	Post FSCCL	% change
HLHS	0.20	0.33	+65.0	0.20	-0.0
HLHS	0.14	0.1	-28.4	0.14	0.0
HLHS	0.24	0.23	-4.2	0.27	12.5
HLHS	0.17	0.15	-11.8	0.20	17.7
HLHS	0.1	0.30	+200.0	0.21	110.0
HLHS	0.22	0.24	+9.1	0.21	-4.5
Transcatheter Intervaginal suture with Left ventricle	0.10	0.17	+69.0	0.17	+72.0
Transcatheter Intervaginal suture with Right ventricle	0.10	0.25	+150.0	0.15	+50.0
Intervaginal suture with VSD Left ventricle	0.10	0.30	+200.0	0.21	110.0
Intervaginal suture with VSD Right ventricle	0.20	0.25	+25.0	0.35	75.0
Clinical PFC, laparoscopic PFC	0.10	0.1	-0.0	0.10	+0.0
Manipulative PFC dependent compression	0.00	0.1	200.0	0.10	100.0
CTFLA, Manipulative PFC, laparoscopic PFC, VSD, and laparoscopic suture with	0.10	0.105	5.0	0.11	10.0

S073: A COMPARATIVE STUDY OF OUTCOME OF SIMPLE PURSE STRING SUTURE LAPAROSCOPIC HERNIA REPAIR IN CHILDREN [Mairi Steven, Miss](#), Stephen Bell, Dr., Peter Carson, Dr., Rebecca Ward, Dr., Merrill McHoney, Mr., Royal Hospital for Sick Children, Edinburgh, UK

AIM OF THE STUDY: To compare surgical outcomes for a simple purse string method of laparoscopic inguinal hernia repair (LH), with a traditional open inguinal hernia repair (OH) in children in a single centre.

METHODS: Following institutional ethical approval, a retrospective review of all children undergoing LH from January 2010 to December 2013 was compared to a historic cohort of all OH between January 2010 and December 2011. LH was performed by a simple purse string technique using non-absorbable braided

suture. Patient demographics were collected and outcomes compared including operation time, length of stay and complication rate. Groups were compared using independent t test or Mann Whitney test as appropriate with a p value <0.05 deemed significant. 95% confidence intervals (CIs) are given.

MAIN RESULTS: 103 patients (23F: 80M) underwent LH over four years compared to 151 (25F:126M) OH in the first two years. Median age in the LH group was 0.56 years (range 0.04 to 14.7) compared to 0.52 years (range 0.04 to 13.47) in the OH group (p=0.81). The median weight in the LH group was 7.8 kilograms (2–58.2) compared to 7.6 kilograms (2.06–48.4) in the OH group (p=0.84). In the OH group there were 8 bilateral herniae and 143 unilateral of which 3 had contralateral explorations. In the LH group the intended operation was bilateral in 18 (17.4%) and 85 were clinically unilateral but at operation a contralateral patent processus vaginalis was repaired in 26 i.e. 30.5%. The median operative time was 50.5 minutes (range 20–95 minutes) in the LH group and 20 minutes (range 10–90) in the OH cohort (p<0.0001). Same day discharge was possible in 56 % who had LH and in 33% who had OH (p=0.0002). No intraoperative complications were encountered during LH and the procedure was well-tolerated. The comparative post-operative complications are shown in the table.

Complication	Laparoscopic (n=103)	Open (n=151)	p value (95% CI)
Wound infection	1 (0.97%)	0	0.32 [1-0.009 to 0.02]
Recurrence	3 (2.9%)	6 (3.9%)	0.55 [1-0.05 to 0.02]
Metachronous hernia	1 (1.2%)	6 (4.2%)	0.15 [1-0.007 to 0.01]
Testicular atrophy	0	1 (0.7%)	0.91 [1-0.006 to 0.01]
Testicular ascent	0	2 (1.2%)	0.16 [1-0.05 to 0.02]
Port site hernia	1 (1.2%)	N/A	N/A
Overall	6 (7.8%)	15 (9.9%)	0.56 [1-0.09 to 0.05]

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CONCLUSION: LH yields similar results to OH, however, the operation time is significantly longer. All complication rates were statistically similar on balance. The difference in metachronous hernia rates is tending to significance owing to the concurrent detection and repair of a contralateral patent processus vaginalis at laparoscopy.

S074: VERTICAL SLEEVE GASTRECTOMY: PRIMARY VERSUS REVISIONAL WEIGHT LOSS SURGERY IN ADOLESCENTS AND YOUNG ADULTS [Jeffrey Zitsman, MD](#), [Melissa Bagloo, MD](#), [Beth Schrope, MD, PhD](#), [Aaron Roth, MD](#), [Miguel Silva, MD](#), [Mary DiGiorgi, PhD](#), [Marc Bessler, MD](#), Columbia University Medical Center

INTRODUCTION: Laparoscopic vertical sleeve gastrectomy (VSG) is becoming the preferred weight loss operation for morbidly obese adolescents and young adults. The procedure has been used both as a primary procedure as well as a secondary procedure following failed laparoscopic adjustable gastric banding (LAGB). We retrospectively reviewed our case series to date to compare early post-operative outcomes in patients who underwent VSG as a primary weight loss procedure with those who underwent VSG as a secondary procedure following previous LAGB.

METHODS: Between June, 2010 and January, 2014, 50 consecutive patients (range 12.7 to 22.7 yr, mean 17.3 yr) underwent VSG to treat morbid obesity under an IRB-approved protocol. 40 patients underwent VSG as a primary weight loss procedure (Group 1) while 10 underwent conversion for failure to lose weight following LAGB (Group 2). All patients were evaluated by a multidisciplinary team. Data collected included age, gender, and ethnicity. Weight and body mass index changes

were recorded as were co-morbid conditions and complications.

RESULTS: Mean pre-operative weight and BMI were 139.0 kg and 49.2 kg/m², respectively, in Group 1, and 154.0kg and 55.2 kg/m² in Group 2 (p = .104). All procedures were completed laparoscopically without intraoperative complication. Mean operating time was 128 minutes in Group 1 and 197 minutes in Group 2 (p < .0001). One patient in each group underwent laparoscopic cholecystectomy concurrently. One patient in each group stayed in the hospital an additional day for pain control. No patient experienced significant vomiting or abdominal pain in follow-up of 2-36 months. One patient (Group 1) experienced mesenteric venous thrombosis in the second week post-op. BMI decreased an average of 10.0+4.1 kg/m² at 6 months post-op in Group 1 and 7.0+2.6 kg/m² (p=0.033). All patients were able to tolerate a regular diet. Comorbidities improved with weight loss following VSG.

CONCLUSION: Early results demonstrate successful weight loss in adolescents and young adults following VSG used as either a primary or secondary weight loss procedure.

S075: A ROBOTIC APPROACH TO MEDIAN ARCULATE LIGAMENT SYNDROME [Victoria K. Pepper, MD](#), [Karen A. Diefenbach, MD](#), [Andy C. Chiou, MD](#), [David L. Crawford, MD](#), University of Illinois School of Medicine at Peoria, Order of Saint Francis Medical Center, Nationwide Children's Hospital

INTRODUCTION: Median arcuate ligament syndrome (MALS) is an uncommon and controversial disease. The syndrome is characterized by a triad of postprandial abdominal pain, an epigastric bruit which increases with expiration, and a > 50%

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extrinsic compression of the celiac artery on vascular imaging. Patients can have significant history of weight loss and this weight loss is a positive prognostic indicator for surgical intervention. While most frequently seen in females ages 40–50, we present a case of MALS in an 18-year-old female.

METHODS: An 18-year-old female was referred to vascular surgery after extensive work-up for post-prandial pain and weight loss. The patient underwent CTA with inspiratory and expiratory phases which revealed compression of the celiac axis. The patient was scheduled for robotic median arcuate ligament release. After induction of anesthesia, insufflation of the abdomen was performed via a Verus needle. Five trocars were placed including a 12-mm trocar just left and superior of the umbilicus, a second 12 mm trocar in the left lateral abdomen, and three 8 mm trocars (left upper quadrant, right lateral abdomen, and right upper quadrant). After division of the gastrohepatic ligament, the right crus of the diaphragm was identified and freed from the esophagus. This dissection was continued inferiorly until the left gastric artery was identified and isolated. Dissection was continued proximally until the celiac trunk and common hepatic artery were identified. The bands composing the median arcuate ligament were divided, releasing and straightening celiac axis.

RESULTS: The patient tolerated the procedure well and was discharged post-operative day 3. The patient had complete resolution of symptoms with weight gain and is currently 1 year post-op.

CONCLUSIONS: Robotic-assisted median arcuate ligament release has been shown to be safe and feasible in previous studies. This video demonstrates the

feasibility of the procedure within the pediatric population as well as the potential improvement in visibility and range of motions offered by the robotic instruments.

S076: LAPAROSCOPIC EXCISION OF PERIPANCREATIC TUMOR AND MESENTERIC CYST

Thai Lan N. Tran, MD, Nam X. Nguyen, MD, University of California, Irvine Medical Center

The patient is a 13 year-old previously healthy male who presented with an acute onset of epigastric pain. He underwent extensive workup, which revealed a cystic mass at the root of the mesentery abutting the SMA. In addition, there were two solid lesions locating within the body of the pancreas, straddling between the splenic vein and the portal vein. The patient was brought to the operating room and placed supine on the split leg table. Four 5 mm trocars were inserted in the following locations: infraumbilical, left subcostal, and two on either side of the umbilicus at the midclavicular line.

We began the operation by taking down the gastrocolic ligaments and entering the lesser sac. Two stay sutures were placed through and through the abdominal wall and tacking the posterior aspect of the stomach up to the abdominal wall in order to expose the retroperitoneal space. We noticed a solid tumor locating within the body of the pancreas. The mass was abutting against the portal vein to the right and the splenic vein inferiorly. We began taking down the retroperitoneal tissues and meticulously dissect the tumor using a combination of Harmonic scalpel and hook electrocautery. After peeling the tumor away from the surrounding tissues, we noticed that this is actually a bilobar tumor, with the inferior lobe extended underneath the pancreas towards the inferior border

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of the pancreas. With tedious dissection, we were able to circumferentially remove both lobes without any injuries to the major blood vessels.

Next, we turned our attention to the cystic lesion by first reflecting the colon superiorly. We noticed that the tumor is located at the root of the mesentery. We began by scoring the overlying peritoneum and dissected out the surface of the cyst. As we nearly complete the circumferential dissection, we opened the cyst and looked inside to confirm this is the cyst with a previously placed pigtail drain. With careful dissection, we were able to dissect the cyst off of the SMA and shell the cyst out of the root of the mesentery.

Postoperative course was uncomplicated and the patient was sent home on POD 3. Final pathology revealed benign hamartoma.

In conclusion, we showed in this patient that laparoscopic approach is feasible for complex abdominal masses.

S077: HIDING THE SCARS. EVOLUTION OF THE PEDIATRIC LAPAROSCOPIC CHOLECYSTECTOMY – THE 2X2 HYBRID TECHNIQUE Jeh Yung, MD, Georgios Karagkounis, MD, Gavin Falk, MD, Todd Ponsky, MD, FACS, Akron Children's Hospital; Cleveland Clinic

Cholecystectomy has evolved impressively in the past 30 years. From traditional open to mini-open to laparoscopic and now single-incision, incisions have become gradually smaller, significantly improving injury to the patient, length of stay, postoperative pain and cosmesis. This evolution has been of particular importance for pediatric surgery due to the higher expectations for cosmetic outcome, with the ideal being a truly scarless operation. Single-incision

laparoscopic surgery (SILS) has arguably reached that goal; technical limitations are, however, preventing it from replacing traditional multiport laparoscopic surgery (MLS). Lack of instrument triangulation and inconvenient proximity between the surgeon's and the assistant's ports result in prolonged operative time and a steeper learning curve. Our hybrid method intends to combine the benefits of both MLS and SILS through a 2x2 approach, in which two umbilical ports are combined with two 3 mm subcostal access points. Thanks to this configuration, instrument triangulation is possible, the surgeon and the assistant can work comfortably in tandem and the cosmetic result is excellent, with a scarless abdominal wall after healing. Furthermore, the steps of the operation parallel those of traditional MLS, which facilitates its adoption by experienced laparoscopic surgeons.

S078: FETOSCOPY AND LASER: A GOOD THERAPEUTIC ALLIANCE IN MINIMALLY-INVASIVE FETAL SURGERY

Alan Coleman, MD, Jose Peiro, MD, Foong-Yen Lim, MD, Cincinnati Children's Hospital Medical Center

INTRODUCTION: Fetoscopy is becoming more widely utilized in the diagnosis and treatment of a variety of prenatal conditions. The indications and uses are also expanding with further innovation of techniques and equipment. In some cases such as twin-twin transfusion syndrome (TTTS), fetoscopic laser photocoagulation has become the therapy of choice in treating prenatal disorders. We will review our outcomes with fetoscopic laser interventions for various indications and discuss the current literature on the subject.

METHODS: We retrospectively reviewed all patients who underwent fetoscopic interventions with laser therapy from

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2004 – 2014. Diagnoses included TTTS, amniotic band syndrome (ABS), and giant chorioangioma. Indications for laser intervention and complications were recorded. Outcomes included mortality and rate of complications. We reviewed the literature for current outcomes and further indications.

RESULTS: We performed over 730 interventions with fetoscopic laser from 2004 – 2014. Among the diagnoses treated were TTTS (n=714), ABS (n=14), and chorioangioma (n=3). In those treated for TTTS, 5 patients had two consecutive laser treatments and 35 patients had incomplete delivery data. Of the remaining 674 interventions, 33 pregnancies were triplets and 641 pregnancies were twins. In our twin cases, both twins survived to delivery in 70% (n=446/641) of cases and at least one twin in 90% (n=560/624) of cases. Among our ABS patients, we performed release of amniotic bands involving the umbilical cord in 64% (n=9/14) of cases and isolated compromised extremities in the remaining 36% (n=5/14). Laser therapy was utilized in conjunction with other modalities in 3 cases of chorioangioma that led to high output cardiac states. In reviewing the literature, we also found other indications for laser therapy not currently in widespread use including posterior urethral valve ablation in bladder outlet obstruction, cord coagulation in twin reversed arterial perfusion sequence, fetoscopic balloon decompression/deflation for tracheal occlusion release in congenital diaphragmatic hernia, and decompressive laryngotomy for congenital high airway obstruction syndrome.

CONCLUSIONS: Minimally invasive fetoscopic laser interventions have

become more prevalent with improved outcomes compared initial descriptions. Further innovation and experience will only lead to an increase in the indications treated with fetoscopy and laser interventions.

S079: IMPACT OF CUSTOMIZED PRE-BENDED BAR IN SURGICAL TREATMENT OF PECTUS EXCAVATUM Ruben Lamas-Pinheiro, MD, Pedro Correia-Rodrigues, Jaime C. Fonseca PhD, João L. Vilaça PhD, Jorge Correia-Pinto MD, PhD, Tiago Henriques-Coelho MD, PhD, Pediatric Surgery Department, Faculty of Medicine, Hospital de São João, Porto, Portugal

INTRODUCTION & AIMS: Pre-surgical automatic and personalized bar bending for pectus excavatum (PE) allows a correct size and shape of the bar using CT scan information. In the present study, we reviewed the experience in PE surgical treatment at a tertiary center comparing the Nuss procedure performed using pre-bended (i3D) with manual bended (MB) bars.

MATERIAL & METHODS: Patients submitted to NP from January of 2000 to December 2013 were included. Clinical files were retrospectively reviewed for demography, previous PE correction, anesthetic and operative details. Patients submitted to surgery with the new i3D Excavatum system pre-bended bars were compared to those where classic manual bar bending was performed.

RESULTS: During 14 years, 139 patients were operated, 98 males (78%), with a mean age of 14.9±3.2 years. Eight patients had been previously submitted to Ravitch procedure. Since 2007, the i3D pre-bended bar was used in 96 patients (69%). The i3D and MB groups were identical for gender, but the patients in MB were younger (median

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13.9 vs. 14.7 years, $p=0.024$) and had a superior Haller index (mean 4.2 vs. 3.4, $p=0.002$). In i3D group, surgery last less time (median 72 vs. 120 minutes, $p<0.001$), the hospital stay was shorter (median 5 vs. 7 days, $p<0.001$) and there were less complication (7% vs. 43%, $p<0.001$). Complications were mainly skin erosion (i3D - 0 vs. MB - 6), pneumothorax (i3D - 1 vs. MB - 5), lung atelectasis (i3D - 1 vs. MB - 1) and wound infections (i3D - 2 vs. MB - 1). There was no mortality in both groups. The bar was removed later in the i3D group: median period with the bar was 32 months versus 28 months ($p<0.001$).

DISCUSSION: The introduction of i3DExcavatum system improved the outcomes. Since the bar is bended before surgery, a clear reduction in operative time was achieved. However, we cannot exclude the learning curve in the first years of implementation of the NP in our center.

S080: SINGLE INCISION LAPAROSCOPIC SURGERY FOR PERFORATED

APPENDICITIS: DOES OBESITY AFFECT OUTCOMES?

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INTRODUCTION: In children with acute appendicitis, obesity has been linked with worse post-operative outcomes in open and conventional laparoscopic appendectomy. Improvements in laparoscopic surgery have led to the use of single incision laparoscopic surgery (SILS) for surgical procedures including appendectomies. At our institution, SILS appendectomies are performed routinely by a single surgeon. We hypothesize that obese children have worse post-operative outcomes

compared to non-obese children undergoing SILS appendectomy for acute, perforated appendicitis.

METHODS: We reviewed the records of all pediatric patients who underwent SILS appendectomy for acute, perforated appendicitis, performed by a single surgeon, between 2008 -2013. The diagnosis of acute, perforated appendicitis was based on pathology results. Patient characteristics including age, body weight, gender and outcomes were compared between both obese and non-obese children. Body weight percentiles were calculated based on age-appropriate growth charts. Obesity was defined as body weight greater than 95th percentile.

RESULTS: 70 patients underwent SILS appendectomy for acute, perforated appendicitis. 26 of these were obese. Of these patients, 35(48.6%) were male. None of the patients in either group were converted to conventional laparoscopic or open appendectomy. There was no difference in length of operation (69.2 ± 25.1 vs. 65.6 ± 25.8 minutes; $p=0.57$), length of hospital stay (6.0 ± 3.9 vs. 5.1 ± 3.1 days; $p=0.32$) or time to full diet (2.9 ± 2.0 vs. 2.6 ± 2.1 days; $p=0.55$) between obese and non-obese children. Obese patients had a higher incidence of post-operative wound infection than non-obese children (26.9% vs. 4.7%; $p=0.02$). There were no differences in other post-operative complications such as intra-abdominal abscess, wound seroma and post-operative ileus (Table 1).

CONCLUSION: Obese children treated with SILS appendectomy for acute, perforated appendicitis appear to have similar outcomes when compared to non-obese children except for a higher wound infection rate.

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TABLE 1: Outcomes of obese and non-obese children undergoing SILS appendectomy for perforated appendicitis

Outcome	Obese (n=26)	Non-obese (n=44)	p-value
Length of operation, min			
mean±SD	69.2±25.1	65.6±25.8	0.57
Length of stay, days			
mean±SD	5.1±3.1	6.0±3.9	0.32
Time to full diet, days			
mean±SD	2.6±2.1	2.9±2.0	0.55
Wound infection	7/26	2/43	
n(%)	(26.9)	(4.7%)	0.02
Intra-abdominal abscess	4/26	7/43	
n(%)	(15.4%)	(16.3%)	1.0
Wound seroma	0/26	1/43	
n(%)	(0%)	(2.3%)	1.0
Post operative ileus	4/26	10/44	
n(%)	(15.4%)	(22.7%)	0.55

S081: DIAGNOSTIC LAPAROSCOPY FOR INTRA-ABDOMINAL EVALUATION AND VENTRICULOPERITONEAL SHUNT PLACEMENT IN CHILDREN

Sandra M. Farach, MD, Paul D. Danielson, MD, Nicole M. Chandler, MD, All Children's Hospital Johns Hopkins Medicine

BACKGROUND: Studies have shown that laparoscopic assistance for the placement of ventriculoperitoneal (VP) shunts is a safe, effective, and minimally invasive approach for distal peritoneal shunt placement. A relative contraindication to abdominal shunt placement is a history of peritonitis or prior abdominal surgery. In an effort to reduce the need for ventriculoatrial shunt placement, laparoscopy can be used for diagnosis and intervention. The purpose of our study was to review our experience with diagnostic laparoscopy for VP shunt placement in patients with a potential hostile abdomen.

METHODS: After Institutional Review Board approval, a retrospective analysis of all patients who underwent diagnostic laparoscopy for ventriculoperitoneal shunt placement from March 2009 to

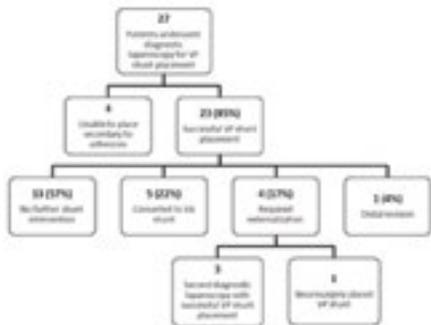
March 2013 was performed. Patient demographics and outcomes were analyzed, including age at diagnostic laparoscopy, gender, diagnosis or indication for shunt placement, previous shunt placement, prior abdominal operations or procedures, cause of shunt failure, shunt revisions, and length of shunt patency.

RESULTS: During the four year study period, a total of 27 patients underwent diagnostic laparoscopy for ventriculoperitoneal shunt placement at a mean age of 7.7 ± 6.8 years. Medical indications for shunt placement included: hemorrhagic hydrocephalus (40.7%), congenital hydrocephalus (22.2%), spina bifida (18.5%), myelomeningocele (11.1%), and arachnoid cyst (7.4%). Twenty five patients who underwent laparoscopy had previous shunts placed in the peritoneum (mean number of prior shunts placed was 1.6 ± 0.8), while two underwent initial shunt placement. Sixteen patients (59%) had undergone previous non-shunt related abdominal operations. Indications for shunt externalization prior to diagnostic laparoscopy included: infection (n=10), malfunction (n=10), and pseudocyst (n=5). Twenty three (85%) patients had successful peritoneal shunt placement. There were four patients (15%) in whom peritoneal shunt could not be placed at the time of laparoscopy secondary to extensive adhesions. Of the 23 patients who had successful peritoneal shunt placement, 13 (57%) did not require further shunt intervention, 5 (22%) underwent conversion to a ventriculoatrial shunt, 4 (17%) underwent re-externalization, and 1 (4%) required distal shunt revision (Figure 1). Of the four patients who required externalization, 3 underwent a second diagnostic laparoscopy procedure with successful peritoneal shunt placement. Mean length

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of follow up after diagnostic laparoscopy was 1.6 ± 1.1 years. Two patients (7.4%) were lost to follow up.

CONCLUSIONS: Utilization of diagnostic laparoscopy eliminated the need for initial ventriculoatrial shunt placement in 85% of patients. Sixty percent of patients required no further shunt revision and this resulted in an overall long term shunt patency of 70%. Laparoscopic assisted peritoneal shunt insertion in pediatric patients is a safe and minimally invasive technique with the additional benefit of exploration and adhesiolysis to determine suitability of shunt placement.



S082: RISK OF REDO LAPAROSCOPIC FUNDOPLICATION IN CHILDREN: BEWARE THE RESPIRATORY PHYSICIAN?

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AIM OF THE STUDY: The success and shortcomings of laparoscopic fundoplication in children with complicated gastro-oesophageal reflux (GOR) remains a matter of scrutiny and debate. Redo-fundoplication presents challenges for the patient and surgeon alike. Recent literature has emphasised extensive oesophageal

mobilisation as a cause of surgical failure due to wrap transmigration. We however, have neither adopted minimal oesophageal mobilisation nor perceived a preponderance of wrap transmigration at redo fundoplication. This study aimed to determine the incidence of wrap transmigration in children requiring redo-fundoplication, and to quantify the risk of hypothesised alternative antecedents for redo surgery.

METHODS: A single-centre retrospective study was performed of all children undergoing primary laparoscopic fundoplication between 2008 and 2012 inclusive. Primary outcome was need for redo-fundoplication. Data were also collected regarding demographics, medical history, referral details, investigations and operative approach. Relative risk of redo-fundoplication was calculated for each hypothesised antecedent with Cox regression; $p < 0.05$ significant.

MAIN RESULTS: 95 children underwent primary laparoscopic fundoplication; 1/95 was followed up interstate and so excluded from analysis. 15/94 (16%) children required redo-fundoplication and a further 2/94 died. 3/15 required >1 redo. Indications for redo-fundoplication were: 5/15 too tight wrap, 10/15 GOR recurrence. 4/15 (27%) had wrap transmigration. The risk of redo-fundoplication was significantly increased if referral for fundoplication was by a respiratory physician (vs. gastroenterologist; HR 19.9, CI 95% 2.7-145.2, $p = 0.003$). However, neurological status, indication for primary fundoplication, and presence of a gastrostomy were not significantly associated with redo surgery; see table.

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	n	Female	Age	95% CI	P
All included patients	21	17	--	--	--
Age at primary surgery (yr)					
<12 years	20	9	1.6 (ref)	--	--
12-14 years	20	9	1.1	0.20-1.8	0.02
15-17 years	20	9	1.8	0.94-2.7	0.04
>18 years	19	4	1.9	0.20-3.6	0.03
Gender					
Female	16	9	1.6 (ref)	--	--
Male	5	0	1.2	0.50-1.9	0.01
Respiratory status					
Normal	18	9	1.6 (ref)	--	--
Normal + preexisting condition	15	6	2.0	0.60-3.3	0.03
Abnormal	10	9	3.8	0.70-6.9	0.01
Referring team					
General surgery	17	9	1.6 (ref)	--	--
Respiratory	7	4	19.8	3.7-34.9	0.001
General medicine	7	6	3.7	0.60-6.7	0.02
Red suture					
SOI without respiratory status	16	9	1.6 (ref)	--	--
SOI with respiratory status	5	0	0.03	0.14-2.1	0.50
Timing of operation					
None	16	7	1.6 (ref)	--	--
Post-tumour resection	5	2	0.99	0.07-1.9	0.17
Subsequent surgery	10	9	0.98	0.10-1.9	0.96

*P-values <0.05 are in bold. CI=95% CI; SOI=Solid Organ Injury; Ref=Reference; CI=Confidence Interval.

CONCLUSIONS: This, like other series, reports a concerning incidence of redo fundoplication. However, even if wrap transmigration were eliminated, our redo surgery rate remains >10%. The association of redo-fundoplication with referral by a respiratory physician is thought-provoking. This may reflect the severity of GOR sequelae and/or superadded strain on the fundoplication wrap in the most respiratory-impaired children.

S083: THORACOSCOPIC REPAIR ON THE CONGENITAL DIAPHRAGMATIC EVENTRATION IN CHILDREN? CONTINUOUS OR INTERRUPTED SUTURE FOR PPLICATION [Jiangbin Liu, PhD, Professor](#), [Zhibao Lv, Professor](#), Department of Pediatric Surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University and Department of Pediatric Surgery, Children's Hospital of Fudan University, Shanghai, PR China

OBJECTIVES: To review the experience and compare the results of the continuous or interrupted suture on the congenital diaphragmatic eventration in children by thoracoscopic repair.

METHODS: From January 2010 to September 2013, 21 children with congenital diaphragmatic eventration were repaired by thoracoscopic repair in

Shanghai Children's Hospital, Shanghai Jiao Tong University and Children's Hospital of Fudan University. There were 9 boys and 12 girls, average age 1.5 ± 0.9 years (range 0.4-4.5 years). The patients were divided into 2 groups according to different suture in the thoracoscopic repair and duplication. Group 1, the diaphragm were repaired by interrupted suture. 8 cases. Group 2, the repair on the diaphragm were treated by continuous suture, 13 cases. The following factors such as average operation time, volume of bleeding, drainage, postoperative hospital stay and postoperative complications were analyzed.

RESULTS: The age, body weight of patients, symptoms or signs and the numbers of eventrated intercostal space of diaphragm were no difference between 2 groups. The average operation time in group 1 and group 2 was different (75 ± 21 vs 33 ± 17 min, $P < 0.01$). The volume of bleeding, postoperative stay in hospital, and drainage in the two groups were nearly same. There was no mortality in operation and the patients were followed up from 0.45 to 3.3 years, and only 1 case of recurrence was found in group 1.

CONCLUSIONS: Thoracoscopic repair on the diaphragmatic eventration by continuous suture is a safe, reliable, convenient and effective procedure for plication, which can take the place of interrupted suture.

KEY WORDS: Eventration of diaphragm; Congenital; Diaphragm/Malformation; Diaphragm/Surgery; Thoracoscopy

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S084: VALIDATION OF A NOVEL PARAMETER FOR THE EVALUATION OF PECTUS EXCAVATUM: THE KANSAS CITY CORRECTION INDEX

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INTRODUCTION: The Haller index (HI) is the ratio of the distance between the anterior spine and posterior sternum to the widest transverse diameter of the chest. Although the HI remains the most commonly used parameter to determine surgical candidacy in patients with pectus excavatum (PE), it cannot discriminate between PE and controls. Recently, a group of investigators from Kansas introduced a new PE index, the correction index (St Peter SD et al. A novel measure for PE: the correction index, J Pediatr Surg. 2011 Dec;46 (12):2270-3.) The Kansas correction index (KCI) expresses the percentage of thoracic depression represented by the sternal defect, demonstrating optimum discrimination between PE and controls. In order to confirm those results, we aim to report our experience with the KCI for the assessment of PE severity.

METHODS: Retrospective analysis of prospectively collected chest computed tomographic data in PE (N=87) and controls (N=24). We calculated HI in a standard fashion. For the KCI, we drew a horizontal line across the anterior spine and measured two distances: the minimum distance between the posterior sternum and the anterior spine (D1) and the maximum distance between the line placed on the anterior spine and, the inner margin of the most anterior portion of the chest (D2). The difference between these

two lines (D1 and D2) is the amount of defect the patient has in their chest. KCI formula was as follows: $D2-D1/D2*100$.

RESULTS: The mean age was similar between groups (19.5±9.3 years old for PE and 22±2.9 years old for controls, $p=0.92$). The table illustrates the HI and KCI values from our study and St. Peters et al. In our study, 10/87 (11.4%) patients with PE had overlapped with controls (area under the ROC curve 0.48, $p=0.67$) compared to 47% in St. Peters et al. Using the KCI, only 2/87 (2.3%) patients overlapped (area under ROC curve 0.99, $p<0.001$), while no overlap was reported in St. Peters et al.

* Results are displayed as mean ± standard deviation (range). ** $p<0.05$ vs. Controls. # $p<0.05$ vs. St. Peters et al.

	PE	Controls	PE (St. Peters et al)	Controls (St. Peters et al)
N [#]	5.43 ± 5.4** (2.35 to 43.4)	2.34 ± 0.35 (1.79 to 3.24)	4.04 ± 1.10 1-1	2.33 ± 0.33 1-1
KCI ^{**}	37.4 ± 16.9** (9 to 91)	0.42 ± 6.9 (-22 to 12.4)	31.75 ± 18.66 1-1	0.82 ± 1.35 1-1

CONCLUSION: 1) Similar to St. Peters et al. KCI resulted in less overlap than HI. 2) Overlap with HI was low in our study, likely due to greater PE severity compared to St. Peters et al.

S085: SPONTANEOUS PNEUMOTHORAXES: A SINGLE-INSTITUTION RETROSPECTIVE REVIEW

Victoria K. Pepper, MD, Terrence M. Rager, MD, MS, Wei Wang, MS, MAS, Dennis R. King, MD, Karen A. Diefenbach, MD, Nationwide Children's Hospital

PURPOSE: Previous studies have evaluated the management of spontaneous pneumothorax in the pediatric population, but no standard of care has emerged with regard to the timing of surgical management. While some surgeons opt for a "conservative" approach with either observation or chest tube placement initially, others proceed with surgical intervention on the first occurrence. The purpose of this

Oral Abstracts CONTINUED

study was to review the management of spontaneous pneumothorax by multiple surgeons in a single institution in order to compare the outcomes of initial conservative and early operative treatment.

METHODS: A retrospective review of all patients at a single institution between October 2008 and October 2013 was performed. The diagnosis code for “pneumothorax” was used to identify all possible study candidates. Exclusion criteria included underlying pulmonary pathology, iatrogenic pneumothorax, traumatic pneumothorax, and age less than 10 years. Data was collected regarding age, race, gender, weight, and comorbidities. The initial management, any alterations in management, and length of stay (LOS) were examined for each occurrence of pneumothorax.

RESULTS: A total of 72 patients with 82 occurrences of initial pneumothorax were identified (10 patients had bilateral disease). Of the 82 occurrences, seven (8.54%) were treated at the outset with surgery (SM). Thirteen (17.3%) of the patients initially managed with conservative treatment (CM) were converted to surgical treatment during their first admission and an additional 3 patients underwent elective surgical management after initial discharge. There was no significant difference in age, gender, race, or comorbidities between those treated successfully conservatively versus those managed with surgery. There was a predominance of left-sided pneumothoraces in both subgroups (CM = 60.4% vs. SM = 65%). There was a significant difference between the average length of stay (LOS) in patients treated conservatively versus those with surgical management (CM = 3.9 days vs. SM = 9.7 days, $p < 0.0001$).

There was no difference in LOS between patients treated with immediate surgery (8.6 days) versus those converted to surgery from either chest tube management (9.9 days, $p = 0.3013$) or observation (11 days, $p = 0.4152$).

Of the 59 occurrences which did not undergo surgical management on the first admission, 19 developed a recurrent pneumothorax (32.2%). Fifteen of these patients (78.9%) received immediate surgical management. Of the remaining 4 patients, one (25%) was converted to surgery. Of the three patients who did not have surgery after their second occurrence, two (66.7%) had a third episode. Both of these patients underwent surgery during their third admission.

Of the total number of patients undergoing surgical management ($n = 41$), 7 (17.1%) had a recurrent ipsilateral pneumothorax post-operatively, and one child developed a contralateral lesion after bilateral pleurodesis.

SUMMARY: While the timing of surgery in patients with spontaneous pneumothoraces is a controversial subject, most surgeons agree that surgical management should be performed after the first or second occurrence. With a total postoperative recurrence rate of 19.5% post-operatively, 32.2% after the first occurrence, and 66.7% after the second episode, our data would suggest that patients may best benefit from surgical intervention after the second occurrence of pneumothorax.

S086: LAPAROSCOPIC RESECTION OF ABDOMINAL NEUROBLASTOMA WITH RENAL PEDICLE INVOLVEMENT [Paula Flores, MD](#), [Martin Cadario, MD](#), [Yvonne Lenz, MD](#), Garrahan Hospital. Buenos Aires. Argentina.

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Neuroblastoma is the most common extracranial solid malignancy in childhood, accounting for 8% to 10% of all cancers in the pediatric population. Almost half of the patients have disseminated disease. Patients with local compromise will have a better prognosis, although some will develop either local or disseminated relapse. One of the factors that determine treatment strategy is the tumor resectability. The International Neuroblastoma Risk Group (INRG) classification is a pretreatment staging system based on tumor imaging. The goal is to reduce the surgery-related complications in those patients undergoing primary surgical treatment. According to the INRG classification, abdominal tumors invading one or both renal pedicles are considered as “image defined risk factors” (IDRF), and neoadjuvant chemotherapy is highly recommended. On the other hand, complete resection of localized neuroblastoma would be the best option to spare chemotherapy in selected patients who will not benefit with it.

We present 2 patients aged 11 months and 3 years old with localized neuroblastoma with renal pedicle invasion. Tumor location and size were determined by preoperative CTscan. The mean tumor volume was 18 cc. A complete macroscopic resection was achieved in both cases with no perioperative morbidity. The mean operative time was 190 minutes and the patients’ hospital stay was 2 days. Pathological exams confirmed neuroblastoma with favorable biological factors in both cases. During the follow-up period (19 months and 27 months), the patients did not receive any additional therapy. Both patients are alive and with no evidence of disease. Kidneys size was calculated by ultrasound. No

reduction of kidney estimated dimension was found and the patients present normal blood pressure at the time of the analysis.

The INRG classification system was developed to facilitate the comparison of risk-based clinical trials conducted in different regions of the world by defining homogenous pretreatment patient cohorts. However, there are patients that will benefit with primary surgery, although the presence of IDRF. In our experience, there are some tumors with vessel encasement that can be bluntly resected founding the correct surgical dissection plane. Some tumors considered “unresectable” according to current protocols, are amenable to complete laparoscopic resection despite vessel involvement. Minimal invasive surgery allows an effective local control. In order to benefit from this de-escalation therapy strategy, the patients have to be strictly selected.

S087: LOWER ESOPHAGEAL BANDING IN EXTREMELY LOW BIRTH WEIGHT PREMATURE INFANTS WITH OESOPHAGEAL ATRESIA AND TRACHEO-ESOPHAGEAL FISTULA IS A LIFE SAVING PRACTICE FOLLOWED BY A SUCCESSFUL DELAYED PRIMARY THORACOSCOPY RECONSTRUCTION

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INTRODUCTION: In extremely low birth weight infants (ELBW<1000 g), several abnormalities are associated making surgical treatment a real challenge. High morbidity is associated with primary repair in these patients. Here, we report our experience with three cases of ELBW babies with EA.

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MATERIAL & METHODS: From september 2012 to January 2013, Three low birth weight infants with EA and TEF born prematurely with severe respiratory distress, the mean gestational age was 26(25-27) weeks, the median birth weight was 690 gr (500-790) were treated with initial banding of the gastroesophageal juncture followed by a gastrostomy. ARM was associated in one of them.

RESULTS: One baby died in the postoperative period because intracerebral hemorrhage at 7 days after initial surgery. In one of them a ligation without section of the TEF with removal of lower esophageal band was performed by thoracoscopy at 30 days and 1100 gr. The esophageal reconstruction and section of fistula was done by thoracoscopy at 70 and 80 days and 2100gr and 2200 gr. with uneventful course. None early complication. The follow-up was 12 months, one baby presented a small stricture requiring only one dilation of lower esophageal with uneventful course

CONCLUSION: LEB is a life saving practice in premature ELBW babies. The esophagus can tolerate the ligation even with a thread without having a long time stricture complication. Thoracoscopic reconstruction of the esophagus is possible in these babies.

S088: DEVELOPMENT OF BLIND AREA VISUALIZATION SYSTEM IN MAGNIFIED FIELD OF VIEW USING AN AUGMENTED REALITY IN PEDIATRIC ENDOSURGERY ~AMAZING SEE-THROUGH NEEDLE DRIVER~ Satoshi Ieiri^{1,2}, MD, PhD, Yuya Nishio³, Satoshi Obata¹, MD, Ryota Souzaki^{1,2}, MD, PhD, Yo Kobayashi³, PhD, Masakatsu Fujie³, PhD, Makoto Hashizume², MD, PhD, FACS, Tomoaki Taguchi¹, MD, PhD, FACS, ¹Department of Pediatric Surgery, Faculty of Medicine,

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BACKGROUND & AIM: In pediatric endosurgery, surgeons receive much benefit of magnified visual field even for small body patients. On the other hand, the more visual field was magnified, the more blind area of the forceps became bigger. In the previous study, we developed augmented reality (AR) navigation system and applied pediatric laparoscopic splenectomy (Ieiri S, et al., *Pediatr Surg Int*, 2012) and oncologic surgery (Souzaki R et al., *J Ped Surg*, 2013). Therefore we developed the blind area visualization system to resolve these demerits using AR technique for pediatric endosurgery. In this study, we verify an effectiveness of this system for pediatric surgeons.

METHODS: Developed system was composed of two cameras. One is for usual view point of surgeon, and the other is for compensation of blind area of forceps. Image of blind area of forceps was fused with a real-time endoscopic image of the operative field, providing a transparent forceps for the surgeon (Fig.1a). Surgeons can get "See-Through Needle Driver" using this augmented reality technique (Fig.1b). We examined the effectiveness of this system by backhand needle driving (Fig.2). Examinees were 17 pediatric surgeons and they were divided into 2 groups, 3 experts and 14 trainees. They had to perform 3 backhand needle driving in the box with (Fig.2a) or without this system (Fig.2b). The tip of the needle was hidden by shaft of forceps. Such being the case, this task was setup. Evaluation points were time and accuracy. Accuracy was calculated by measuring of deviation

Oral Abstracts CONTINUED

of exertion error. Statistical analysis was performed Mann-Whitney U test and $p < 0.05$ was considered statistically significant.

RESULTS: All 17 participants completed the evaluation task. There was no significant difference between with and without system for time, in experts and trainees, respectively. Figure 3 showed the results of needle driving accuracy. Exertion error of experts with and without system was 0.63 ± 0.43 and 1.40 ± 2.33 ($p = 0.001158$) (Fig.3a), respectively. Exertion error of trainees with and without system was 0.63 ± 0.43 and 1.40 ± 2.33 ($p = 0.843972$) (Fig.3b), respectively. Experts improved the backhand needle driving accuracy using this system.

CONCLUSIONS: The results revealed that the experts made skillful use “See-Through Needle Driver” using an AR technique. They would receive the maximum merit of this system for the magnified view of small working space. Next step, we must refine this system for in-vivo experiments. In the near future, this system would be applied for clinical use of advanced pediatric endosurgery, especially for small neonate and infant patients.

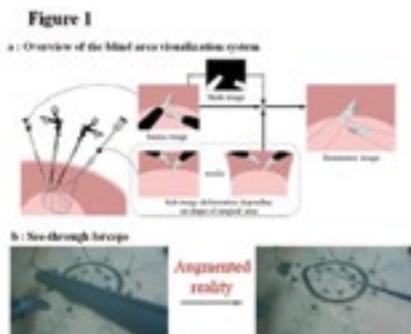


Figure 2 Evaluation task

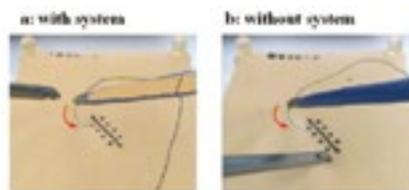
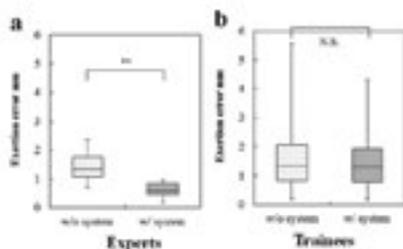


Figure 3
Exertion error of experts with and without system



S089: IS SINGLE INCISION APPENDECTOMY SUPERIOR TO TRADITIONAL LAPAROSCOPY IN CHILDREN?

Stephanie F. Polites, MD, Shannon D. Acker, MD, James T. Ross, David A. Partrick, MD, Abdalla E. Zarroug, MD, Kristine M. Thomsen, Donald D. Potter, MD, Mayo Clinic, Rochester, MN; Children’s Hospital Colorado, Aurora, CO; University of Iowa, Iowa City, IA

INTRODUCTION: Laparoscopic appendectomy (LA) has largely become the standard of care for children with acute appendicitis, and some institutions are now moving to single incision laparoscopic appendectomy (SILA). Data comparing SILA and LA is limited, and existing data originate from single institutions that select patients based on if they are best suited for SILA or LA. We aimed to compare SILA and traditional LA for acute appendicitis in children

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by comparing outcomes between two institutions which each use SILA or LA preferentially. We hypothesized that SILA and LA would have at least equivalent outcomes.

METHODS: We performed a retrospective review of all children ≤ 18 who underwent SILA at a single institution between July 2010 and July 2013 for acute appendicitis. Each SILA patient was matched to 2–3 patients who underwent LA at a second institution during the same time period. Patients were matched based on age, sex, weight, and perforation status. Demographic information, preoperative clinical information, operative time, and outcomes were collected. Linear regression was used to compare operative time and postoperative LOS and logistic regression was used to compare extended length of stay (>75 th percentile) for nonperforated appendicitis and infectious complications (superficial wound infections and intra-abdominal abscess). Multivariable analyses controlled for preoperative LOS and preoperative antibiotic use to adjust for differences between institutions.

RESULTS: A total of 184 children underwent SILA and were matched to 478 children who underwent LA. There were no clinically significant differences in age (mean 11.8 vs. 11.2 years), sex (52.2% vs. 54.8% male), weight (mean 50.5 vs. 46.3 kg), or perforation status (22.8% vs. 24.7% perforated) between the cohorts. Conversion to traditional LA was required in 2 SILA patients. Conversion to open appendectomy was required in 2 SILA patients and no LA patients. On univariate analysis (Table), mean operative time was significantly greater for SILA (64.1 vs. 45.9 minutes, $p < .001$) as compared to LA and this was

confirmed by multivariable analysis ($p < .001$). Postoperative LOS was shorter following SILA for both perforated (4.2 vs. 5.0 days, $p = .11$) and nonperforated (1.0 vs. 1.5 days, $p < .001$) appendicitis. Extended postoperative LOS (>2 days) was more likely following LA (30.0% vs. 12.7%, OR=3.3, 95% CI: 1.9–5.8, $p < .001$) on multivariable analysis. Rate of unplanned readmission (4.3% SILA group vs. 1.9% LA group, $p = 0.10$), superficial wound infections (1.6% vs. 0.2%, $p = .07$) and intra-abdominal abscess (4.3% vs. 2.1%, $p = .11$) were similar in both groups; however, on multivariable analysis, SILA was predictive of infectious complications (OR=3.6, 95% CI: 1.4–10.0, $p = .012$). Other complications were rare.

Outcome	SILA	LA	P value
Operative time, mean (minutes)	64.1	45.9	<.001
Postoperative LOS (perforated), mean (days)	4.2	5.0	.11
Postoperative LOS (nonperforated), mean (days)	1.0	1.5	<.001
Extended postoperative LOS (≥ 2 days)	12.7%	30.0%	<.001
Superficial wound infection	1.6%	0.2%	.19
Intra-abdominal abscess	4.3%	2.1%	.11
Unplanned readmission	4.3%	1.9%	.10

TABLE: Comparison of outcomes of single incision and traditional laparoscopic appendectomy

CONCLUSION: Operative outcomes for single incision laparoscopic appendectomy are similar to traditional laparoscopic appendectomy for perforated and nonperforated acute appendicitis in children. Traditional LA was associated with shorter operative times and reduced risk of infectious complications as compared to SILA. Single incision laparoscopic appendectomy was associated with a shorter hospital stay. Both techniques have an acceptably low complication rate; thus, the choice of procedure can be surgeon dependent.

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S090: IMPACT OF EXPERIENCE ON QUALITY OUTCOMES IN SINGLE-INCISION LAPAROSCOPY FOR SIMPLE AND COMPLEX APPENDICITIS IN CHILDREN

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BACKGROUND: Single incision laparoscopy (SIL) has been performed by more than 70% of pediatric surgeons. However, evolving surgical technology is often adapted without rigorous scientific investigation. Single incision appendectomy has been shown to be an effective treatment in appendicitis in children, but factors that impact outcomes are not well understood. We report our large experience with SIL, focusing on the impact experience may play on quality outcomes.

METHODS: At the inception of our SIL program, all patients were entered into a prospective database for quality monitoring. After Institutional Review Board approval, a retrospective review of patients who underwent SIL from August 2009 to November 2013 was performed. A total of 919 patients were reviewed. Patients who underwent appendectomy were grouped by early experience without trainees (first consecutive 100 cases), late experience without trainees, and late experience with surgical trainees. Our training program began in October 2012. Each cohort was further stratified into simple (acute) appendicitis and complex appendicitis. Quality measures including operative time, conversion to multi-port or open, and 30-day complications were analyzed.

RESULTS: A total of 703 patients underwent SIL appendectomy during the study period. All procedures were performed by two attending surgeons at

a single center. Mean age for all patients was 11.8 ± 4 (0–21.5) years and mean weight was 47.5 ± 20.4 (9.8–134) kilograms. The population consisted of 61% males. Four hundred eleven (58.5%) patients were diagnosed with acute appendicitis and 292 (41.5%) with complex appendicitis. Prior to the start of our training program, 357 patients and 248 patients underwent appendectomy for acute and complex appendicitis, respectively. Surgical trainees were involved in 54 and 44 appendectomies for acute and complex appendicitis, respectively. Quality measures are summarized in Table 1. There was a significant decrease in operative time between early and late groups for both simple appendicitis ($p < 0.05$) and complex appendicitis ($p < 0.05$). There was a significant increase in operative time following introduction of surgical trainees compared to the late group ($p < 0.05$), but not compared to the early group for simple appendicitis. There was no difference in operative times following the introduction of trainees for complex appendicitis. There were no significant differences in complications or readmission rates between any of the groups. No conversions occurred in patients with simple appendicitis, while two conversions (0.7%) occurred in patients with complex appendicitis.

CONCLUSION: The adoption of new technology requires a significant learning curve even for the experienced laparoscopist. There is the potential for significantly decreased operative times once experience is obtained. Surgical trainees with laparoscopic experience likely perform similar to attendings when introducing new technology. While there may be an appreciated increase in overall operative time with the introduction of trainees, this does not impact quality outcomes.

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CONCLUSION: We report a novel NOTES-based catheter device for potential treatment of HPS. In addition, we describe a new clinically relevant rabbit model of HPS using HA based dermal filler injection creating an effective obstruction of the pylorus mimicking HPS. Ex vivo validation of our approach using the endoluminal catheter resulting in an effective relief of pyloric obstruction confirms the potential for our non-invasive approach.

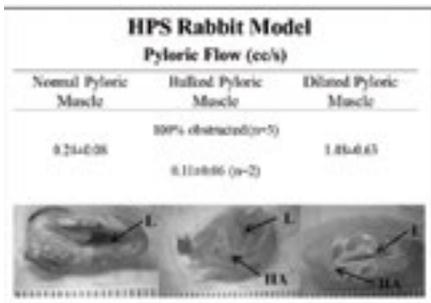


Figure 1: Pyloric lumen flow and gross histology of HPS rabbit model.

S092: ROUTINE UTILIZATION OF SINGLE-INCISION PEDIATRIC ENDOSURGERY (SIPES): A FIVE YEAR INSTITUTIONAL EXPERIENCE Aaron D Seims, MD, Tate R Nice, MD, Vincent E Mortellaro, MD, Martin Lacher, MD, PhD, Muhammad E Ba'ath, MD, Scott A Anderson, MD, Elizabeth A Beierle, MD, Colin A Martin, MD, David A Rogers, MD, Carroll M Harmon, MD, PhD, Mike K Chen, MD, Robert T Russell MD, MPH, Children's of Alabama

INTRODUCTION: Single-Incision Pediatric Endosurgery (SIPES) is a technical innovation that allows procedures to be performed through a single access site, which replaces the multiple ports traditionally utilized. Large series evaluating the versatility of SIPES in the pediatric population are not abundant in the literature. The purpose of this study is to review our long term experience with routine SIPES use.

METHODS & PROCEDURES: This is an IRB approved (FWA00005960) retrospective analysis of prospectively collected data. All SIPES cases performed at a tertiary children's hospital from March 2009 to December 2013 were included. Our prospective database includes standard demographics, procedure types, operative duration, estimated blood loss, instances of added ports or conversion to an open procedure, intraoperative and postoperative complications and duration of follow-up. Statistical analysis was performed using JMP® Software.

RESULTS: During the study period, 1322 SIPES operations were performed. Cases performed were: appendectomy (66.2%), cholecystectomy (15.9%), pyloromyotomy (4.3%), splenectomy (3.2%), intestinal procedure (3.0%), gynecologic operation (2.7%), inguinal hernia repair (2.6%) and miscellaneous procedure (2.1%). Miscellaneous operations included Nissen fundoplication (N=12), diagnostic laparoscopy (N=6), laparoscopic assisted biopsy (N=4), Ladd's procedure (N=2), hiatal/epigastric hernia repair (N=2), duodenal web resection (N=1) and peritoneal dialysis catheter repositioning (N=1). Table 1 presents data regarding median operative time, comparative multi-port operative times, need for additional ports and conversion to open for each procedural category. 871 (66%) patients were seen in follow-up, with a median duration of 26 days. 53 (6.1%) children experienced post-operative complication. 42 (4.8%) of these were surgical site infections, of which only four required incision and drainage. This compares favorably to published traditional laparoscopic wound infection rates of 3-6%. Less frequent post-operative complications that required operative intervention include recurrent inguinal hernia (N=4), umbilical hernia (N=3), intra-abdominal abscess (N=1), bleeding (N=1), abdominal compartment

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syndrome (N=1), bowel obstruction (N=1), stitch granuloma (N=1) and pain (N=1).

CONCLUSIONS: SIPES can be safely integrated into the routine of a busy operative practice for most traditional multi-port procedures. Operative times and complication rates for SIPES are comparable to prior reported multi-port laparoscopic series in the pediatric population. Future investigations may need to compare patient satisfaction with cosmesis and differences in post-operative pain between SIPES and traditional laparoscopic methods.

Table 1: Median Operative Duration & Conversion Rates

	Incision Operative Times (min)*	Multi-port Operative Times (min)	Additional Ports Required (%)	Conversion to Open (%)
Appendectomy (N = 67)	27 (19 - 44)	42	0.0	0.0
Cholecystectomy (N = 20)	55 (35 - 85)	65	4.0 [†]	0.0
Hydronephrosis (N = 27)	23 (18 - 27)	28	0.0	0.0
Splenectomy (N = 42)	52 [‡] (34 - 142)	69	44.3	4.7
Intestinal (N = 78)	52 [‡] (24 - 104)	148	23.1 [†]	1.3 [†]
Hernioplasty (N = 36)	48.5 (34 - 42)	148	0.0	0.0
Inguinal Hernia (N = 34)	20.5 (10 - 39.5)	148	0.0	0.0
Mitral Hernia (N = 25)	39 (20 - 118)	148	42.0 ^{††}	0.0

* Includes 10% large procedure

[†] Repetitive (more greater for gallbladder resection has not been counted as an additional port)

^{††} Additional port often used at pre-determined anatomy site

[‡] Includes 10% extension at SIPES site for intracorporeal anastomosis

^{‡‡} Includes instances where a port has been placed at a planned gastrostomy site

NS = not reported

S093: SILS APPROACH TO INFLAMMATORY

BOWEL DISEASE Claudio Vella, MD, Sara Costanzo, MD, Giorgio Fava, MD, Luciano Maestri, MD, Giovanna Riccipetoni, MD, Pediatric Surgery Department, "V.Buzzi" Children's Hospital ICP, Milan - Italy

INTRODUCTION: Patients affected by chronic inflammatory bowel diseases (IBD) may require numerous surgical procedures during lifetime. For this group of patients, laparoscopic surgery represents the gold standard, allowing to perform major procedures with minimal invasiveness and rapid remission. The single incision laparoscopic technique (SILS) is the ultimate

challenge and a further step compared to conventional video assisted therapies. We report our recent experience with the application of SILS technique in IBD patients.

MATERIALS & METHODS: Over the last 22 months, 13 procedures were carried out in 5 IBD patients using SILS technique. Demographics, clinical presentation and diagnostic details are briefly described. In all cases, a preformed SILS port was used, inserted into the abdomen through a skin incision of approximately 2.5 cm. The ileocecal segment in Crohn's disease (CD) and the colon in ulcerative colitis (UC) were mobilized using articulating instruments and Ligasure™ device. In all CD patients, the affected bowel was exteriorized through the umbilical SILS port to perform resection, anastomosis and stricturoplasty when needed. Total colectomy in UC patients was performed using a SILS access in the right lower quadrant, employing the portsite to pack the terminal ileostomy. During further reconstructive procedures, the SILS was introduced at the level of the previous ileostomy to perform dissection of the rectal stump, J-pouch creation, assistance of the ileoanal anastomosis. Then the SILS access became the site of protective ileostomy

RESULTS: Three males and 2 females, aged 7-14 years, were treated, 3 for Crohn's disease (CD) and 2 for ulcerative colitis (UC). The 3 CD cases presented with ileocecal stenosis, in 1 case associated with six further ileal stenoses. The 2 UC patients presented with hemorrhagic colitis resistant to medical treatment. A total of 13 procedures were performed using the SILS: 4 procedures in UC (2 colectomy + ileostomy and 2 J pouch ileoanal anastomosis + protective ileostomy), 9 procedures in CD (3 ileocecal resections + 6 stricturoplasties). The operative time ranged from 180 to

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360 minutes. All the SILS procedures were completed without conversion. No intraoperative nor postoperative complications occurred. The oral nutrition started 4 days after surgery in all cases. No adhesions were detected during procedures even after colectomy in complicated UC.

CONCLUSIONS: Our preliminary experience suggests that the SILS technique can be safely performed on patients with IBD. This approach permits a surprisingly rapid recovery of the patient with limited pain and excellent cosmetic results. The laparoscopic approach, avoiding multiple laparotomies, reduces the risk of adhesions, facilitating further surgical procedures if needed.

S094: CLIPPED VERSUS STAPLED SIPES (SINGLE INCISION PEDIATRIC ENDOSURGERY) APPENDECTOMY: PATIENT OUTCOME, ECONOMIC CONSIDERATIONS, AND ENVIRONMENTAL IMPACT Hayden W. Stagg, MD, Oliver Muensterer, MD, PhD, Samir Pandya, MD, Matthew Bronstein, MD, Lena Perger, MD, McLane Children's at Scott and White, Texas A&M, Temple TX, USA; Maria Fareri Children's Hospital at Westchester Medical Center New York Medical College, Valhalla NY, USA

BACKGROUND: In our practice, single-incision pediatric endosurgical (SIPES) appendectomy has been performed with a linear cutting endosurgical stapler. Recently, we transitioned to applying a series of polyethylene clips around the base with a reusable, sterilizable clip applicator, and subsequently cutting the appendix with endoscopic shears, leaving one to three clips in situ.

OBJECTIVE: This study compares the polyethylene clip technique to stapled technique in terms of peri-operative variables, patient outcome, costs, and amount of trash generated.

METHODS: We performed a retrospective analysis of SIPES appendectomies performed using the sterilizable polyethylene clip applicator and compared them to a same size control group of our most recent stapled appendectomies, done before transitioning to the clip technique. Patient demographics, operative time, training level of operating surgeon, blood loss, complications, and patient outcomes were recorded. We calculated the cost of the disposable items necessary for an appendectomy using either the traditional stapler or the novel polyethylene clip method. We also measured the amount of paper, plastic, and metal trash generated using a disposable stapler or polyethylene clips.

RESULTS: A total of 20 patients per group were included. In the clipped group, there were 13 simple, 4 complex, and 3 interval appendectomies, and in the stapled group there were 17 simple, 2 complex, and 1 interval. The average operating time was 51.6 (31-87) minutes in clipped versus 47.4 (26-96) minutes in stapled. All procedures were performed by general surgery residents (PGY 1-4) and in some cases included other concomitant interventions (resection of a vitelline artery, removal of endometrial implants, mesenteric lymph node biopsy) Mean estimated blood loss (EBL) was 4.3 (0-10) ml, and mean length of stay (LOS) was 1 (0-6) day in clipped group. In the stapled group mean EBL was 5.2 (2-10) ml, and mean LOS was 0.8 (0-3) days. There were no complications in either group. Between the two institutions involved in the study, costs for the disposable items were US\$ 32 for a cartridge of 6 polyethylene clips, versus a total of US\$ 291-338 for the endosurgical stapler (cost saving of US\$ 259-306 per case). Using clips generated 0.4g of paper and 9.8g of plastic trash, while using the disposable stapler generated 12.9g of

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paper, 381g of plastic, and 582g of metal trash (54x more trash than with clips).

CONCLUSIONS: The performance of laparoscopic appendectomies with polyethylene clips appears just as safe and efficient as using endosurgical staplers, but is more economical, and environmentally friendlier.

S095: INITIAL EXPERIENCE OF MINIMALLY INVASIVE LAPAROSCOPIC SURGERY ASSISTED BY PERCUTANEOUS INSTRUMENTS ASSEMBLED IN

OPERATIVE FIELD Ryosuke Satake, MD, Keisuke Suzuki, MD, Tetsuro Kodaka, PhD, Kan Terawaki, PhD, Makoto Komura, PhD, Saitama Medical University, Department of pediatric surgery

BACKGROUND: Needlescopic surgery is defined as minimally invasive surgery with instruments that are 3 mm in diameter or less and is sometimes referred to as minilaparoscopy. The major limitation of needlescopic surgery is the instruments themselves. The strength and durability of the instruments may limit tissue manipulation. Trocar-less instruments may also be useful to reduce abdominal trauma. Recently, the US Food and Drug Administration approved the Percutaneous Surgical Set (Ethicon), which is designed to be assembled and disassembled inside the body with limitations. We used percutaneous instruments assembled in the operative field for minimally invasive laparoscopic surgery. The Needle Forceps – Endo Relief™ was made by Hirata Precisions Co., Ltd. and was approved by the Ministry of Health and Welfare of Japan. The purpose of this study was to evaluate operative outcomes and ergonomics using new percutaneous instruments assembled in the operative field.

METHODS: The Endo Relief™ shaft of 2.4mm in diameter was inserted by the

puncture method. The abdominal inner-side tip of shaft is pulled out through the laparoscopic trocar. And the forceps shaft of 5 mm in diameter is connected to the tip of the shaft and the other outside tip of the shaft is attached to the handle in the operative field. We used Endo Relief™ in 1 case each of oophorocystectomy, ovarian hemostasis, splenectomy, and right hemicolectomy and 4 cases of pediatric appendectomy in minimally invasive surgery since 2013. A retrospective review of chart and Operative reports was performed on all laparoscopic surgeries using Endo Relief™ at Saitama Medical University, Saitama, in Japan.

RESULTS: In all cases but the first case, the required time for assembly of instruments was less than 2 minutes without problem. Oophorocystectomy was performed by single-incision laparoscopic surgery (TANKO) and the percutaneous instrument. Ovarian hemostasis was performed with 2 ports and the percutaneous instrument. The instrument was inserted from the lower-side abdomen to reach the ovary. Splenectomy was performed by TANKO and the percutaneous instrument. The instrument was inserted from the left-side abdomen to reach the splenic hilum. Right hemicolectomy was performed by TANKO and two percutaneous instruments. They were inserted at the lower abdomen and at the supraumbilical region as grasping forceps for the bowel. Appendectomy with strong adhesion in the 4 cases was performed by TANKO and percutaneous instruments. Two percutaneous instruments were inserted in 2 cases, and one instrument was inserted in the other 2 cases. The instruments did not malfunction in any operation. No operation was converted to open surgery. The strength and durability of the percutaneous instruments were sufficient for tissue manipulation, blunt dissection

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and coagulation. Wound infection at the insertion point was not observed in any patient. In addition, the wound by percutaneous instruments leaves minimally visible scars.

CONCLUSION: Percutaneous instruments could be simply assembled in the operative field with safety and certainty. This instrument had enough force for grasping tissues and organs. It may make an important contribution to shorten operative duration. Also, it ultimately limited tissue trauma and minimized the visibility of scars.

S096: INTERNATIONAL OPINION ON THE FUTURE OF MINIMALLY INVASIVE SURGERY – FROM A(BESECON) TO Z(AGREB)

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AIMS: Minimally Invasive Surgery (MIS) is now performed worldwide. This study quantifies the use of simulators, pre-operative 'warm-up', single incision MIS (SiMIS) and robotic MIS in Pediatric Surgery and other surgical specialties globally.

METHOD: An online survey was generated using a web-based survey tool (SurveyGizmo.com, Survey Gizmo, Boulder, USA). The authors invited contacts they have established on the 'professional media' network LinkedIn.com (LinkedIn Corporation, California, USA). A total of 1314 operating clinicians throughout the world were contacted.

RESULTS: 257 responses were received from 145 different cities ranging alphabetically from Abesecon to Zagreb and spanning 63 countries. 25% were Pediatric Surgeons. The responders are an experienced group (86% fully qualified specialists) with 63% performing more than 50 MIS cases per year. Support for the use of MIS simulators

was strong. 91% favour mandatory simulator training during surgical residency and 79% advocate compulsory demonstration of basic competency prior to trainees being allowed to operate on patients. 76% believe there is a role for 'take-home' MIS simulators to be used outside normal working hours. Amongst Pediatric Surgeons these figures were 95%, 79% and 73% respectively. Access to simulators was poor however, with only 32% having access to a simulator during working hours, falling to 18% outside working hours (Pediatric Surgeons: 42% and 15%).

The Pediatric Surgery group did not differ significantly from other specialties regarding warm-up, SiMIS and Robotic surgery, thus these are presented as overall results. 'Informal mental' warm-up, such as thinking through the steps of an operation, is practiced by 79%. 22% regularly perform a 'formal mental' warm-up, eg. revising a procedure on a smartphone application. 13% practice 'informal physical' warm-up, eg. placing a smaller case on a list before a major MIS procedure, and 5% regularly perform 'formal physical' warm-up eg. using a MIS simulator prior to an operating list. Significantly, 83% stated they would use a MIS simulator to warm-up before some or all cases if they had regular access to one.

44% have SiMIS equipment in their department but it is used infrequently, with only 13% having performed more than 25 SiMIS cases in their careers to date. Only 25% have access to Robotic MIS equipment and just 7% have performed more than 25 Robotic MIS cases in their career so far. There was greater enthusiasm for Robotic MIS than SiMIS, with 49% (vs SiMIS: 42%) hoping to undertake more of this type of MIS in the future. Perceived risks and benefits of robotic and SiMIS are reported.

CONCLUSION: This study provides a unique international perspective, presenting a

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snapshot of the current global 'state-of-the-art' of minimally invasive surgery and surgeons' aspirations for the future. It demonstrates that the global use of simulators, pre-operative 'warm-up', single incision MIS (SiMIS) and robotic MIS in Pediatric Surgery is similar to that in other surgical specialties worldwide. It highlights strong support for the use of MIS simulators, but that access to these devices remains poor.

S097: THORACOSCOPIC CDH REPAIR – A SURVEY ON OPINION AND EXPERIENCE AMONG IPEG MEMBERS Martin Lacher MD, PhD, Shawn D St. Peter MD, Paolo Laje MD, Benno M Ure MD, PhD, Caroll M Harmon MD, PhD, Joachim F Kuebler MD, Hannover Medical School (on behalf of the IPEG Research Committee)

BACKGROUND: Thoracoscopic repair of congenital diaphragmatic hernia (CDH) has become popular among pediatric surgical centers. Given the fact that there is an ongoing discussion on whether the benefits of the thoracoscopic repair outweigh the potential side effects, we aimed to investigate the opinion and experience of the members of IPEG on this topic.

METHODS: An online based survey was conducted between 10/2013 a 12/2013 on behalf of the IPEG Research Committee. All IPEG members were contacted by email and asked to complete an anonymous questionnaire that included personal background and 28 items on the management of CDH. Trainees/fellows were excluded from the study.

RESULTS: 159 attending pediatric surgeons (consultants), who perform thoracoscopic CDH repair routinely (40%), occasionally (49%), or never (11%), completed the questionnaire. Contraindications to thoracoscopic repair included: patient on ECMO (78%), preoperative need for ECMO

(42%), right sided hernia (15%), liver in chest (32%), weight < 2.5kg (35%), and persistent R-to-L shunting (50%). 72% of participants indicated that recent reports on significant hypercapnia and severe acidosis during thoracoscopic CDH repair have changed their management. 52% of participants said that during thoracoscopy they would tolerate any pH. In contrast, 48% indicated that they would only tolerate pH/pCO₂ levels down/up to 7.2/80mmHg (range pH:6.9-7.3; pCO₂:55-100mmHg). In cases where a patch is needed 39% of participants said they would continue thoracoscopically, 31% would convert and 31% stated that the decision would be based on the size of the defect. In case of conversion, 26% would convert to thoracotomy and 74% to laparotomy. 56% of participants reported recurrences after thoracoscopic repair. Of the last 5 thoracoscopic CDH repairs of each participant, the following recurrence rates were reported: 0/5 (44%), 1/5 (35%), 2-4/5 (6%), 5/5 (none). Recurrences occurred early (less than 6 months after surgery) in 43% of the cases, late (more than 6 months after surgery) in 37%, and early AND late in 20% of the cases. Overall, 50% of surgeons stated that CDH can be repaired equally by thoracoscopy and open thoracotomy and 50% disagreed with this statement.

CONCLUSION: Thoracoscopic CDH repair is currently being performed by 89% of all participating IPEG members. ECMO (at the time of surgery or prior to the surgery) and persistent R-to-L shunting are the main contraindications to thoracoscopic repair. CDH recurrence after thoracoscopic repair has occurred to 56% of participants at least once. The fact that only 50% of surgeons stated that CDH can be repaired equally by thoracoscopy and open surgery suggests that future studies should focus on identifying the appropriate patient population.

Video Abstracts

V001: LEFT UPPER LOBECTOMY FOR CPAM USING A 3MM TISSUE SEALING DEVICE; A STEP BY STEP APPROACH

Stephen Oh, MD, Steven S Rothenberg, MD, The Morgan Stanley Children's Hospital, Columbia University

PURPOSE: This video demonstrates a step by step method for performing a thoracoscopic lobectomy in an infant. The anterior approach and the use of a 3mm tissue dissector/ vessel sealer facilitates the case in the small chest cavity of an infant.

METHODS: A 3 month old female with a pre-nataly diagnosed LUL CPAM underwent elective left upper lobectomy. The procedure was performed through 3 trocars, a 4mm for the 30 degree 4mm telescope and 2 -3 mm ports. One of the 3mm ports was changed to a 5 mm port at the end of the procedure to apply a 5mm clip to the bronchus and remove the specimen. The 3 mm sealer was used to dissect out and seal all pulmonary vessels as well as complete the major fissure.

RESULTS: The procedure took 65 minutes. There were no failed seals, no intra-operative bleeding, and no airleak post-operatively. The chest tube was removed on day 2 and the patient was discharged on day 3.

CONCLUSIONS: The use of the anterior approach and a 3mm sealer allows for safe and effective lobectomy, even in the small chest cavity of an infant. The anterior approach provides the greatest space between the instrument insertion and the mediastinum. The 3 mm sealer works more efficiently and ergonomically in this small cavity than previously used 5mm devices, improving the ease of the operation.

V002: THORACOSCOPIC DIVISION OF H-TYPE TRACHEOESOPHAGEAL FISTULA

Matthew S. Clifton, MD, Paul M. Parker, MD, Emory University/Children's Healthcare of Atlanta

INTRODUCTION: H-type tracheoesophageal fistula repairs have historically been approached from either a low cervical or high thoracic incision, both of which are associated with attendant problems. Chief amongst these is adequate identification and isolation of the fistula; it is commonly located at the level of the thoracic inlet. The thoracoscopic approach provides a magnified, improved view of the relevant anatomy, and pulls the operative field to a site remote from the recurrent laryngeal nerve.

RUN TIME: 4 minutes 54 seconds

METHODS: A 3 day-old 2.2 kg baby girl was referred for repeated coughing with feeds and an esophagram which demonstrated an H-type tracheoesophageal fistula. Echocardiogram identified an atrial septal defect. In the operating room, rigid bronchoscopy showed a normal airway with the exception of a fistula in the posterior wall of the trachea; a #3 Fogarty balloon catheter was inserted through the fistula and the balloon inflated. Traction on the catheter wedged it into the esophageal lumen at the position of the fistula. Flexible bronchoscopy was used to perform a left mainstem bronchus intubation. The child was positioned in an exaggerated left lateral decubitus position. A right thoracoscopic approach was used with 3mm equipment. Dissection commenced cephalad to the azygous vein, below the level of the fistula. The position of the Fogarty balloon in the esophagus was identified and followed to isolate the fistula. The fistula was isolated with a silicone vessel loop and then the Fogarty

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withdrawn. The tracheal side of the fistula was closed with two 5mm Hem-o-lok clips, the esophageal side tied off with size 0 braided absorbable suture twice, and the fistula divided. At the completion of the operation, an 8 French feeding tube was guided through the esophagus and a 12 French chest tube placed into the right hemithorax.

RESULTS: Operative time for thoroscopic division of the H-type tracheoesophageal fistula was 90 minutes. Nasogastric feeds were initiated with return of bowel function. An esophagram on postoperative day 7 showed no leak and no stricture. Oral feeds were started and the thoracostomy tube removed. Repeat esophagram at 14 months showed no evidence of stricture.

CONCLUSION: We demonstrate the thoroscopic approach to repair of an H-type tracheoesophageal fistula. This approach utilizes placement of an intraluminal balloon catheter to identify the location of the fistula. Caudal traction on the fistula down into the chest minimizes the risk of injury to the recurrent laryngeal nerve.

V003: THORACOSCOPIC RESECTION OF A BRONCHOGENIC CYST LOCATED AT THE THORACIC INLET [Meghna V. Misra, MD](#), Tulio Valdez, MD, Anthony Tsai, MD, Brendan T. Campbell, MD, MPH, Connecticut Children's Medical Center

BACKGROUND: Bronchogenic cysts are a type of foregut duplication cyst. They can appear in several different locations in the mediastinum. Controversy exists over the best method by which to excise cysts that are located at the thoracic inlet. This is the first case report on complete thoroscopic excision of a bronchogenic cyst located at the thoracic inlet.

METHODS: The patient is a 9 month-old female who presented to the Emergency Department with progressive stridor for 3 weeks. Her symptoms did not improve despite trying a regimen of antibiotics and steroids. A chest Xray and neck Xray showed significant tracheal deviation. Bronchoscopy revealed tracheal compression by an external source. CT scan confirmed a mass at the thoracic inlet.

RESULTS: The decision was made to approach the mass thoroscopically. One 5mm port was used for the camera, one 5 mm port, one 3 mm port, and one 3 mm stab incision were used for exposure and dissection. Upon placing the camera in the chest, a bulge from the cyst was seen lying posterior to the subclavian vessels and anterior to the aorta. Once the cyst was exposed, a combination of blunt and sharp dissection was performed to mobilize the cyst. The cyst was decompressed to ease the dissection. As medial dissection of the cyst proceeded, attachment to the cricopharyngeus muscle was visualized. Dissection proceeded through a translucent plane between the cyst and the esophagus until the cyst came off of it completely. Once the cyst was removed, the trachea and the esophagus were clearly seen at the medial dissection plane. These structures appeared grossly intact.

CONCLUSION: The patient did well overall postoperatively. Her course was complicated by development of an asymptomatic esophageal diverticulum and a left recurrent laryngeal nerve traction injury. She recovered from both of these injuries completely. Complete thoroscopic excision of bronchogenic cysts at the thoracic inlet can be performed safely. However, complications can happen with any type of resection that is performed at

Video Abstracts CONTINUED

this location. Expectations should be set accordingly with family members regarding possible complications.

V004: THORACOSCOPIC APPROACH IN RECURRENT TRACHEOESOPHAGEAL FISTULA

Ruben Lamas-Pinheiro, MD, Carlos Mariz, MD, Joaquim Monteiro, MD, Tiago Henriques-Coelho, MD, PhD, Pediatric Surgery Department, Faculty of Medicine, Hospital de São João, Porto, Portugal

INTRODUCTION: Recurrent fistulisation after tracheoesophageal fistula (TEF) repair can be a complication of difficult management. There is very few data on thoracoscopic reintervention. The authors present a video of a thoracoscopic approach in a recurrent fistula after TEF repair by thoracotomy.

CASE: A child with 20 months of life was diagnosed with a recurrent fistula by bronchoscopy. The boy had a history of recurrent respiratory symptoms after a surgical correction of esophageal atresia with TFE by thoracotomy. A right side thoracotomy was performed: three trocars were used (two 5mm and one 3mm). Right upper lobe adhesions from previous surgery were divided with electrocautery. The azygus vein was identified and preserved. The TEF was identified just above the azygus vein, dissected and isolated, two titanium clips were applied and the fistula was then divided. The clips were reinforced with endoloops®. A prolene® mesh was interposed between the trachea and the esophagus. There were no postoperative complications. The nasogastric tube was removed in the first postoperative day and the child was discharged in the second day after starting oral feeding. Currently, the child is followed in outpatient clinic and he is otherwise healthy.

TIPS: Its possible to apply the thoracoscopic approach in the treatment of recurrent fistulisation after TEF repair. The use of a mesh or a tissue to separate the esophagus from the trachea is highly recommended.

V005: A THORACOSCOPIC APPROACH TO AN UNUSUAL MEDIASTINAL MASS

Victoria K. Pepper, MD, Peter C. Minneci, MD, Karen A. Diefenbach, MD, Nationwide Children's Hospital

PURPOSE: We present a thoracoscopic resection of an unusual mediastinal cystic mass in a 2-year-old boy.

METHODS/FINDINGS: A previously-healthy 2-year-old male presented to the emergency room with cough. On chest x-ray, he was found to have a mediastinal widening and subsequent chest CT revealed a cystic mediastinal mass. The patient was taken to the OR for thoracoscopic excision. A 5-mm port was inserted in the mid-axillary line. Two 5-mm ports were placed in the 4th and 8th intercostal spaces. Although pre-operative imaging suggested a thymic cyst, the thymus was visualized and no mass was associated with it. Inspection revealed that the mass was intrapericardial. After opening the pericardium, the mass was noted to be adherent to the aortic root. It was freed from the aorta with careful dissection. The patient did well post-operatively and was discharged home on post-operative day 3. Final pathology revealed a mature cystic teratoma.

CONCLUSION: While intrapericardial teratomas are rare, they should be a part of the differential in an abnormally presenting anterior or middle mediastinal mass. While care must be taken both with patient selection and intraoperative management, thoracoscopic resection

Video Abstracts CONTINUED

of these lesions is feasible, and has the potential benefits of smaller incisions, less post-operative pain, a shorter length of stay, and a quicker return to normal activity.

V006: THORACOSCOPIC PERICARDIAL WINDOW FOR TREATMENT OF REFRACTORY PERICARDIAL EFFUSION AND TAMPONADE Oliver J. Muensterer, MD, PhD, Samir Pandya, MD, Matthew E. Bronstein, MD, Gustavo Stringel, MD, Suvro S. Sett, MD, Divisions of Pediatric Surgery and Pediatric Cardiac Surgery, New York Medical College

BACKGROUND: Chronic pericardial effusions may present with a spectrum of symptoms. When the volume of fluid in the pericardium increases briskly, it may compromise cardiac function. In such cases, urgent pericardiocentesis for short term management is indicated. A more permanent solution is the creation of a pericardial window. In children, this is mostly performed through a subxiphoid open approach.

OBJECTIVE: We describe a thoracoscopic technique for creation of a pericardial window in a toddler.

CASE: A 2 year old girl with Down syndrome with acute myeloid leukemia treated with bone marrow transplant developed a large, chronic pericardial effusion as a result of graft-versus host disease (Figure A). Several attempts of ultrasound-guided pericardiocentesis were performed, with re-accumulation of the fluid and signs of cardiac tamponade within a few days. After stabilization, she was taken to the operating room where a pericardial window anterior to the right phrenic nerve was created thoracoscopically using ultrasound shears (Figure B). An 8F Jackson-Pratt drain was placed as a chest tube.

RESULTS: The procedure was well tolerated by the patient, and hemodynamics improved immediately. The operative time was 36 minutes and blood loss was minimal. The chest tube was removed on postoperative day 8, at which time the cardiac silhouette had normalized (Figure C). A chest CT performed one month later for worsening pulmonary status showed no recurrent pericardial or pleural effusion (Figure D).

CONCLUSIONS: Pericardial windows can be performed safely via a thoracoscopic approach in children with symptomatic chronic pericardial effusions. The procedure is simple, quick, and normalizes cardiac function immediately. The surface area of the pleura seems to be adequate for resorption of the pericardial fluid in this case.

V007: COMBINATION OF VALUABLE TECHNICAL RESOURCES FOR THE CORRECTION OF DIAPHRAGMATIC HERNIA (VIDEO) Carolina Millan, MD, Fernando Rabinovich, MD, Luzia Toselli, MD, Horacio Bignon, MD, Gaston Bellia, MD, Mariano Albertal, MD, Guillermo Dominguez, MD, Marcelo Martinez Ferro, MD, Private Children's Hospital of Buenos Aires, Fundación Hospitalaria, Buenos Aires, Argentina

The surgical management of anterolateral diaphragmatic hernia can pose a challenge to surgeons. In this video we shown several technical resources used to overcome limitations during laparoscopic correction of a left anterolateral diaphragmatic hernia.

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V008: THORACOSCOPIC MANAGEMENT OF AN ESOPHAGEAL LUNG, REPORT OF A CASE

Ivan Dario Molina, MD, Santiago Correa, MD, Ana Garces, MD, Mizrahim Mendez, MD, Edgar Alzate, MD, Fundación Hospital de la Misericordia, Universidad Nacional de Colombia

Esophageal lung is a rare bronchopulmonary foregut malformation, in which the main stem bronchus arises from the esophagus. Since the description by Keely et al. in 1960, less than 20 cases have been reported. We present a case of a 4-month-old female, who was referred to our institution after 2 months of management for respiratory recurrent infections. Contrast studies were performed during the evaluation and a right broncography was identified in the esophagogram. Bronchoscopy was performed confirming the atresic right bronchus. Complementary imaging and cardiology evaluation confirmed the absence of major vascular anomalies, especially a pulmonary artery sling that has been described in relation with this entity. Due to the hypoplastic lung in the absence of major vascular anomalies, thoracoscopic pneumonectomy was deemed possible. Procedure was performed with four ports and 3 mm equipment was used. Special attention was made identifying and dissecting the vascular structures first, and then the arising esophageal bronchus was dissected. The hypoplastic lung was extracted through a small incision inferior to the axilla. As for our knowledge this is the first case reported of thoracoscopic management of this pathology, and we consider that due to the hypoplastic lung and vessels, the thoracoscopic approach is safe and feasible for the management of the esophageal lung and even for de esophageal bronchus in the absence of major vascular anomalies.

V009: TRANSCONTINENTAL TELEMENTORING WITH PEDIATRIC SURGEONS– PROOF OF CONCEPT AND TECHNICAL CONSIDERATIONS

Todd A. Ponsky, MD, Marc H. Schwachter, MD, Ted Stathos, MD, Michael Rosen, MD, Robert Parry, MD, Margaret Nalugo, Steven Rothenberg, MD, Akron Children's Hospital, Rocky Mountain Hospital for Children, University Hospitals Case Medical Center

New skill acquisition poses a challenge for post-graduate practicing surgeons. Current methods for skill acquisition include practicing on simulation models and attending courses. However, these are probably not adequate for true skill acquisition. The true skill acquisition model for postgraduate surgeons most likely involves developing a relationship with an expert in which the mentee visits the mentor and vice versa. However, for this to be realistic there must be ongoing mentorship which can only be accomplished realistically with Telementoring. The concept of Telementoring has been discussed and even piloted in other areas of medicine. Here we show proof of concept and technical considerations for Telementoring in pediatric surgery. We describe the logistics and technical details of six transcontinental pediatric surgery telemonitoring cases between an expert in the less experienced pediatric surgeon.

V010: VAGINAL AGENESIS AND ATRESIA OF THE UTERINE CERVIX ASSOCIATED TO VESTIBULAR FISTULA

Maria M. Bailez, MD, Lucila Alvarez, MD, Garrahan Children's Hospital, Buenos Aires, Argentina

Uterovaginal anomalies are a spectrum of anomalies, which are often associated with renal and sometimes anorectal anomalies.

AIM: Show a succesful staged laparoscopic treatment of a patient previously

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operated for an ARM with a non diagnosed associated vaginal agenesis and atresia of the uterine cervix.

CASE: A 13 years old female presented with severe acute pelvic pain .She had undergone an anorectoplasty through a posterior sagittal approach for a vestibular fistula at the age of 2. She had never had menses yet. No vaginal opening was found at perineal exam. Ultrasonography showed an hematometra and a left complex adnexal mass. An initial laparoscopic approach showed a single uterus with an hematometra and a left ovarian endometrioma that was removed. With no evidence of associated hematocolpos, a cervical atresia associated to vaginal agenesis was suspected and a drain was placed in the fundus . Menses were inhibited using , allowing psychological support .An MRI confirmed atresia of the cervix. A combined laparoscopic and perineal approach to enable sigmoid vaginal replacement,cervical canalization and a uterovaginal anastomosis followed.

Three working ports were used . Bowel adhesions secondary to colostomy take down were freed . A 15 cm long distal sigmoid was isolated. Dissection between the urethra and rectum followed.Linear staplers were inserted from this approach to transect the colon.The uterine cervix area was dissected preserving its vascular supply. Recanalization of its lumen was achieved. Enlarging the suprapubic port entry was used to facilitate suturing of the proximal end of the neovagina around the cervix.

RESULTS: Operative time was 210 minutes. The patient presents irregular menses without clinical and ultrasonographic evidence of infection or obstruction after a 38 months follow up period

DISCUSSION: 1) Agenesis or atresia of the cervix uteri is an uncommon

entity. It is often associated with absence of the vagina. Although there is general agreement that if the cervix is absent, without any cervical stroma, hysterectomy is advisable to prevent ovarian endometriosis and pelvic infections, preservation of the uterus may be intended in selected patients.We have previously treated 4 patients with vaginal associated to cervix agenesis using a combined laparoscopic and perineal approach Laparoscopy was useful to define the anomaly and to complete hysterectomy after the evidence of total cervix aplasia and to perform a sigmoid vaginal replacement. This is our first patient undergoing a long term successful laparoscopic assisted sigmoid vaginal replacement, cervical canalization and uterovaginal anastomosis even after previous abdominal and perineal surgery (sigmoid colostomy and PSARP).

2) The diagnosis of a uterovaginal anomaly is a common misleading finding in patients with vestibular fistula . A meticulous perineal exam is mandatory in newborns with this anomaly to plan combined vaginal and anorectal reconstruction avoiding redo surgery and sequela related to obstructive functional mullerian ducts q.We have previously reported a combined endoscopic and laparoscopic initial assesment as a less invasive and time consuming approach for atypical ARM like the one presented.

V011: ENDOSCOPIC GASTRO CUTANEOUS FISTULA CLOSURE USING AN OVER THE SCOPE CLIP James Wall, MD, MS, Lucile Packard Children's Hospital Stanford

BACKGROUND: Gastrocutaneous fistula closure is commonly required for long-term gastrostomy sites. Standard surgical repair can be complicated in cases of local skin excoriation or extensive prior abdominal operations. Endoscopic

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methods have been described for closing a variety of enteric fistulas. Shape memory metal (Nitinol) clips that fit over an endoscope have recently been approved for several endoscopic purposes including closure of the intestinal wall. Such over the scope clips enable circumferential closure of larger defects than standard endoscopic clips passed through the working channel.

METHODS: We report a series of 4 patients who underwent endoscopic gastrocutaneous fistula closure using gold probe cauterization of the fistula tract followed by placement of an over the scope clip. Ages ranged from 6 to 21 years old. The patients were selected for this intervention based on persistent skin excoriation around the fistula site or history of extensive prior abdominal operations.

RESULTS: The procedure was technically feasible in all cases with an average operative time of 18 minutes. There were no failures at 1-month follow-up. One patient reported mild throat pain for 2 weeks following the procedure.

CONCLUSION: Endoscopic gastrocutaneous fistula closure using over the scope clips is technically feasible in the pediatric population with promising initial results. The size of the current endoscopic caps required to deliver these clips may not be suitable for very small children. The existing caps may additionally contribute to oropharyngeal trauma resulting in post-operative dysphagia.

V012: LAPAROSCOPIC RESECTION OF A NEUROENDOCRINE TUMOR OF THE COMMON BILE DUCT WITH HEPATICODUODENOSTOMY [Steven S. Rothenberg, MD](#), The Rocky Mountain Hospital For Children

INTRO: This video demonstrates the laparoscopic resection of a neuroendocrine tumor of the common bile duct (CBD) with a hepaticoduodenostomy

METHODS: A 15 year old female presented with evidence of acute cholangitis and evidence of biliary obstruction. Total bilirubin was 2.4 and an ultrasound showed a markedly dilated common hepatic duct and a question of a large intra-hepatic stone. An ERCP was performed and the obstructing mass was found to be extra-luminal. A transductal biopsy failed to obtain tissue for diagnosis. An intraductal stent was placed to relieve the obstruction. A CT scan was obtained and showed a 2.5 x 2.5 x 2.4 mass adjacent to and compressing the CBD. A laparoscopic biopsy was performed for diagnosis primarily to rule out lymphoma.

A laparoscopic resection was then performed using 3 – 5mm ports. The specimen was removed thru an enlarged umbilical incision intact inside a specimen bag. Proximal and distal margins were checked for tumor by frozen section.

A hepaticoduodenostomy was then performed to reconstruct the bile drainage system.

RESULTS: The surgery was completed successfully laparoscopically in 140 minutes. The patient was started on po feeds on the 4th post-operative day and discharged on day 5. The final pathology showed a Grade 1 neuroendocrine neoplasm with papillary features. There was no evidence of local or distant invasion.

At 2 week follow-up all lab values had returned to normal. A complete metastatic work-up was negative.

CONCLUSION: This case presents a rare finding of a primary bile duct tumor.

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Laparoscopy was a safe and effective technique for resecting the tumor and avoided the morbidity of a large laparotomy without compromising the cancer operation.

V013: LAPAROSCOPIC RESECTION OF A LARGE RETROPERITONEAL GANGLIONEUROMA

Bethany J. Slater, MD, Steven S. Rothenberg, MD, Rocky Mountain Hospital for Children

A 4 year old female presented with recurrent UTIs. An ultrasound was obtained for workup and demonstrated a 5 cm mass solid mass near the porta hepatis. A subsequent MRI showed a 5.8x4.9x4.8 cm heterogenous retroperitoneal mass compressing the inferior vena cava and displacing the second and third portions of the duodenum. Laboratory values were unremarkable. A laparoscopic biopsy of the mass was performed with pathology consistent with a ganglioneuroma. MIBG scan confirmed the localized mass with no evidence of metastatic disease. The patient was then taken to the operating room for laparoscopic resection of the retroperitoneal tumor. A 4 mm infraumbilical trocar was used for the camera, and a 3mm trocar in the right mid quadrant and 5 mm trocar in the left mid quadrant were inserted. The gallbladder was retracted superiorly with a suture through the abdominal wall. The transverse colon was mobilized inferiorly. The duodenum, which was densely adherent to the tumor, was dissected medially. The tumor was then carefully mobilized from the surrounding tissues including the inferior vena cava. There was a feeding vessel from the inferior vena cava which was sealed and divided using the Ligasure device. There were also two nerve roots identified which were divided near their

entrance from the vertebral column. The infraumbilical port site was changed to a 10mm trocar and an EndoCatch bag was inserted. The specimen was placed into the bag, morcelated sharply, and brought out in a piecemeal fashion. The patient did well post-operatively and was discharged home on POD # 3 with no complications. The final pathology revealed ganglioneuroma, and no further treatment was required.

V014: LAPAROSCOPIC LEFT PARTIAL ADRENALECTOMY IN A CHILD WITH VON HIPPEL-LINDAU AND RECURRENT PHEOCHROMOCYTOMA

A. B. Podany, MD, A. Dash, MD, D. V. Rocourt, MD, Pennsylvania State Hershey Medical Center

PURPOSE: Patients with Von Hippel-Lindau are at high risk of developing recurrent pheochromocytoma. In this 13 year-old patient status post right adrenalectomy with recurrence on the left, we hypothesized that a laparoscopic left partial adrenalectomy would be safe and effective at removing the tumor, while preserving native adrenal function.

METHODS: Though asymptomatic, due to the patient's prior history of pheochromocytoma, preoperative alpha blockade was undertaken. He presented electively on the day of surgery and underwent a laparoscopic left partial adrenalectomy. Key portions of the procedure include mobilization of the splenic flexure, circumferential dissection of the tumor with preservation of the renal vein, renal artery, and the adrenal vein, and separation of the tumor from normal residual adrenal gland.

RESULTS: Final pathology demonstrated complete resection and was consistent with a 2.6x2.3x1.9 cm pheochromocytoma with intact capsule. Postoperatively,

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the patient recovered well, with no complications and no requirement for cortisol replacement. He was discharged home on postoperative day number two. He will continue to be followed by his endocrinologist for annual screening.

CONCLUSIONS: The technique for laparoscopic partial left adrenalectomy described here has utility in the pediatric population to preserve adrenal function during years of growth. Patients with Von Hippel-Lindau are at high risk of recurrence and need continued surveillance. This patient will continue to benefit from preserved native adrenal function for months to years before potential recurrence.

V015: LAPAROSCOPIC LATERAL PANCREATICOJEJUNOSTOMY- PEUSTOW PROCEDURE- IN A 4 YEAR OLD WITH PANCREATIC DUCTAL OBSTRUCTION

Miller Hamrick, MD, Mikael Petrosyan, MD, Eric Jelin, MD, Timothy D. Kane, MD, Children's National Medical Center

BACKGROUND: Pancreatic ductal obstruction leading to ductal dilation and recurrent pancreatitis is uncommon in children. This is a video of a 4 year old girl who presented at 10 months of age with high grade duodenal obstruction, gastric pneumatosis, pneumobilia, and gas within a dilated pancreatic duct on abdominal computed tomography scan with presumed annular pancreas or pancreatic head enlargement or mass. At that time, she had undergone a laparoscopic duodenoduodenostomy and had symptomatic relief for 2 years. She returned at 3 years of age with pancreatitis on 3 separate occasions, once requiring hospital admission. At 4 years of age, she had 3 more episodes of pancreatitis and was admitted to undergo magnetic resonance imaging cholangiopancreatography (MRCP) and

ERCP. On MRCP, she was found to have a diffusely dilated main pancreatic duct (6-9 mm) distal to a large stone which was located at a strictured area of the main pancreatic duct. The accessory duct was draining the uncinate process and non-dilated. ERCP was performed and small pancreatic stone fragments were removed but the large stone could not be accessed. She was referred for operative intervention.

RESULTS: At 4 years 9 months of age, the child underwent a laparoscopic cholecystectomy, pancreatic duct stone clearance, and Roux-en-Y pancreaticojejunostomy (Peustow) anastomosis. The child weighed 17.9 kg at the time of operation which took 235 minutes and there were no intra-operative complications. This video shows the Peustow portion of the procedure. Five trocars were used. One 12 mm trocar in the umbilicus; and 4 x 5mm trocars in the left upper abdomen, left lower abdomen (periumbilical), right upper quadrant, and right lateral abdomen (periumbilical). The lesser sac was entered after taking down the gastrocolic omentum and utilizing trans-abdominal stay sutures to elevate the stomach anteriorly to expose the pancreas. A 10 mm laparoscopic ultrasound probe was used to identify the main pancreatic duct and cautery used to perform the pancreatotomy. A 3 cm longitudinal incision in the pancreatic duct was created and duct was irrigated clear of debris and protein plugs. A 3 French Fogarty catheter was used to remove the large stone from the proximal duct. A Roux-en-Y jejunostomy was created 20 cm from the ligament of Treitz extra corporeally using an endostapler and the Roux loop limb was passed retrocolic into the lesser sac. Stay sutures and a running 4-0 PDS non-absorbable suture

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were used to complete the side to side pancreaticojejunostomy anastomosis. A drain was left in the lesser sac.

CONCLUSION: Indication for lateral pancreaticojejunostomy or Puestow procedure is rare in children and even less often performed using laparoscopy. The use of laparoscopic ultrasound was critical in identifying the dilated pancreatic duct and enabled the performance of the procedure. Only 4 other laparoscopic Peustow procedures have been reported in children (ages 6-12), in addition to 1 robotic-assisted Puestow operation in a 14 year old. The rarity of this anomaly as well as the complexity of performing the operation laparoscopically likely impacts this observation.

V016: LAPAROSCOPIC CORRECTION OF COLORECTAL DUPLICATION AND VAGINOPLASTY

Kanika A. Bowen, MD, Kevin Platt, BS, Alli Wu, BS, Kasper Wang, MD, Children's Hospital of Los Angeles

INTRODUCTION: Tubular colorectal duplications are rare congenital anomalies with widely varied presentations. These anomalies are often misdiagnosed until discovered intra-operatively. Here, we present a case of an unusual colorectal duplication which we repaired laparoscopically.

CASE DESCRIPTION: An 8-month-old girl with a suspected cloaca, status post creation of a diverting colostomy and mucus fistula was referred from an outside hospital. The child also had an associated cleft lip/palate, a small ventricular septal defect, and hydroureter. On physical examination, the patient was thought to have an imperforate anus with a rectovestibular fistula. In the operating room, a rectovaginal fistula was instead identified, and a posterior sagittal anorectoplasty (PSARP) was

performed. At 13 months of age, after having accomplished adequate anal dilations, a colostomy takedown was performed. However, four weeks later, the patient was noted to be passing stool per vagina as well as per rectum. She was taken back to the operating room where a rectovaginal fistula was again identified within the introitus, and a diverting colostomy was re-established. A subsequent postoperative contrast enema also visualized the fistula. At 18 months, the patient returned to the OR for a planned ligation of the rectovaginal fistula via a posterior sagittal approach. In the prone position, the fistulous connection could not be identified. Thus, a laparoscopic exploration was performed whereupon a colorectal duplication with two distinct blood supplies, starting approximately 4 cm distal to the mucus fistula, was identified. One lumen communicated with the vagina and the other lumen connected to the anus. Proximally the two lumens coalesced to form a single lumen just distal to the mucus fistula. The rectovaginal fistula was divided laparoscopically. The duplicated lumens were made into a single channel by using a laparoscopic stapler passed distally through the mucus fistula under laparoscopic guidance, and the PSARP was revised. A subsequent postoperative contrast enema demonstrated no leak.

CONCLUSION: An imperforate anus with a colorectal duplication terminating in dual rectovaginal fistulae has not previously been reported. This case illustrates the difficulty in diagnosing colorectal duplications and the utility of laparoscopy in the treatment of these duplications.

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V017: LAPAROSCOPIC PROPHYLACTIC TOTAL GASTRECTOMY IN CHILDHOOD FOR THE PREVENTION OF HEREDITARY DIFFUSE GASTRIC CANCER [Benjamin Zendejas, MD, MSc](#), Abdalla E. Zarroug, MD, Michael L. Kendrick, MD, Department of Surgery, Mayo Clinic, Rochester, MN, USA

INTRODUCTION: Mutations in the E-cadherin (CDH1) gene confer an 80% lifetime risk of hereditary diffuse gastric cancer (HDGC).¹ Due to unreliable screening modalities, prophylactic total gastrectomy (PTG) is recommended for individuals at risk for HDGC.²⁻³ Due to genetic anticipation (cancer occurring at an earlier age with each successive generation), the age at which PTG is recommended is not clearly defined, but generally recommended before 20 years of age.⁴ We present the case of an asymptomatic 15 year old male, positive for CDH1 mutation, with a strong family history of HDGC (father and paternal uncle, both died from biopsy-proven diffuse gastric cancer at ages 42 and 15, respectively), who underwent a laparoscopic PTG for the prevention of HDGC.

MATERIALS AND METHODS: Pre-operative evaluation included genetic, psychological, endocrine, nutritional and surgical evaluations; the patient essentially went through our adolescent bariatric surgery program. Upper gastrointestinal endoscopy was unremarkable. His comorbidities included obesity (body mass index 34kg/m²), asthma, and depression. A laparoscopic PTG with Roux-en-Y esophagojejunostomy reconstruction was planned. Intraoperatively, with patient in the supine position, 5 working ports were placed. The gastrocolic ligament was divided and mobilized to the angle of His with division of the short gastric vessels.

The duodenocolic ligament was incised, and the first portion of the duodenum was cleared circumferentially and transected 2 cm distal to the pylorus. The right and left gastric vessels were divided. The gastroesophageal junction was cleared circumferentially. An esophagogastroscope was performed to localize and mark the Z-line and the distal esophagus was divided with a stapler. A Roux limb was created dividing the proximal jejunum 50 cm distal to the ligament of Treitz. A 150-cm limb was measured, and a side-to-side enteroenterostomy was created with a linear stapler. A window was made in the left mesocolon, and 20-cm of Roux limb was passed through this window into the lesser sac. A hand-sewn, two-layered end-to-side esophagojejunostomy was created. An air leak test was performed, no air leaks were identified. The gastrectomy specimen was removed and no intra-operative complications occurred.

RESULTS & CONCLUSIONS: Operative time was 117 minutes, estimated blood loss was 40 milliliters, and the patient tolerated the procedure well. A water soluble contrast esophagogram was performed the following morning which showed no contrast extravasation. His diet was advanced and he left the hospital without sequelae. Pathologic evaluation of the specimen revealed no invasive cancer. With a mean follow-up of 6 months, no perioperative complications have been identified. In conclusion, laparoscopic PTG can be safely and successfully performed in childhood kindreds at risk for hereditary diffuse gastric cancer. Until more is known about when these patients develop gastric cancer, strong consideration should be given to perform prophylactic gastrectomy during mid-teenage years in patients with a family history of early gastric cancer.

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VO18: LAPAROSCOPIC GASTRIC PPLICATION IN ADOLESCENTS AND YOUNG ADULTS WITH SEVERE OBESITY: DESCRIPTION OF FIRST PATIENT ENROLLED IN PILOT STUDY

Shannon F. Rosati, MD, Dan Parrish, MD, Poornima Vanguri, MD, Matthew Brengman, MD, FACS, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center

INTRODUCTION: Laparoscopic Gastric Plication (LGP) is a novel restrictive bariatric operation that has had some success in the adult patients with weight loss and improvement in associated comorbidities. We are currently conducting a prospective research study, IRB # HM14809, entitled "A Pilot Study of Laparoscopic Gastric Plication in Adolescents and Young Adults" and have included the details from our first case in this abstract.

PATIENT: This 17 year old girl is followed in our multidisciplinary weight loss program. While she had been adherent to the program, she was only able to lose approximately 7 pounds over 6 months (preop BMI was 42.5) and had several comorbidities.

TREATMENT: Three 5-mm and one 12-mm trocars were placed across the upper portion of her abdomen and a Nathanson liver retractor in the epigastrium. The fat pad over the cardia was excised with a

Harmonic scalpel, which was also used to ligate the short gastric blood vessels up to the angle of His as well as the vessels into the antrum, just inside the gastroepiploic artery to approximately 4-cm above the pylorus. Cautery injury to the stomach was carefully avoided. Four 2-0 polyester sutures were placed in an interrupted fashion along the greater curvature, as well as at the incisura, and one on the antrum. Each of these sutures included a small portion of the posterior stomach as well as the anterior stomach to imbricate in the greater curvature. A 35-cm 2-0 polypropylene running suture was then started just inferior to the angle of His and further plicated the greater curvature and antrum. Flexible esophagogastrosocopy confirmed that the plication was initiated in a satisfactory manner. A shorter second polypropylene suture was used to further imbricate the antrum of the stomach. A final running 2-0 polypropylene suture further imbricated the greater curvature from the angle of His to below the incisura. Care was taken to ensure that the diameter of the incisura was not compromised. Final esophagogastrosocopy confirmed good apposition of the plicated stomach mucosa along the entire course of the lesser curvature without evidence of obstruction. The port sites were closed in standard fashion. The patient tolerated the procedure well with minimal blood loss and no perioperative complications. She was discharged home on the third postoperative day on a liquid diet. At her two week follow up, she was noted to have no nausea or pain, was advanced onto her pureed diet, and had lost ten pounds.

CONCLUSION: This report details the perioperative results of the first patient enrolled in a new pilot study examining LGP in morbidly obese adolescents and young adults. As the LGP is purported to be reversible and some parents are

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hesitant to consent to gastric bypass or sleeve resection for their child, this operation may be a reasonable alternative for young patients that have not been successful with nonoperative treatment of their morbid obesity.

V019: LAPAROSCOPIC PARTIAL NEPHRECTOMY FOR THE TREATMENT OF LARGE CYSTIC NEPHROMA IN

CHILDREN Yujiro Tanaka, MD, PhD, Hiroo Uchida, MD, PhD, Hiroshi Kawashima, MD, Shinya Takazawa, MD, Takayuki Masuko, MD, PhD, Kyoichi Deie, MD, Hizuru Amano, MD, Michimasa Fujiogi, MD, Tadashi Iwanaka, MD, PhD, Prof, Department of Pediatric Surgery, Saitama Children's Medical Center & The University of Tokyo

BACKGROUND: Cystic nephroma (CN), also called multilocular cyst of the kidney, is a rare benign renal neoplasm. The differential diagnosis of cystic partially differentiated nephroblastoma (CPDN) is only possible based on pathological findings. Therefore, surgical resection is necessary to diagnose lesions suspected to be CN. Because CNs are usually well-demarcated and have a good prognosis, partial nephrectomy without preoperative chemotherapy is recommended for their treatment.

However, to our knowledge, laparoscopic treatment of CN has not been reported. In the present report, we describe two cases of large CN, which were successfully treated by laparoscopic partial nephrectomy.

CASE HISTORY:

CASE 1: A 9-month-old boy was referred to our department because of a lower polar multilocular cystic mass of the right kidney, which was incidentally detected by abdominal ultrasound during the follow-up of slight ureteropelvic junction stenosis of the left kidney. Computed tomography (CT) showed a well-circumscribed 4.3 × 3.7 × 3.8 cm mass, occupying two-thirds of the kidney.

CASE 2: Another 9-month-old boy was referred to our department for intussusception, and a left upper polar renal multilocular cystic mass was incidentally detected by abdominal ultrasound. CT showed a well-circumscribed 5.2 × 4.3 × 3.5 cm mass, occupying three-fourths of the kidney.

In both cases, CN or CPDN was suspected, but differential diagnosis was not possible without surgical resection.

PROCEDURE: After inserting a ureteral catheter to the pelvis, the affected kidney was approached transperitoneally. The precise area of the lesion was detected using a laparoscopic ultrasound probe, and the vessels of the affected part were identified, dissected and excised. After clamping the renal artery with a hemostat, the parenchyma of the affected part was dissected out and divided using a Harmonic Scalpel™. The partly cut pelvis was closed by monofilament sutures. The resected stump was coated with Beriplast™ P, covered with Surgicel™, and finally covered with the pediculate peritoneum, which was used for hemostat sealing and fixation of the remaining kidney.

RESULTS: Laparoscopic partial nephrectomy was performed at 11 months (Case 1) and 10 months (Case 2) of age. Operative time for Cases 1 and 2 was 460 min and 415 min, and total warm ischemia time was 63 min and 28 min, respectively. The lesion was not exposed during the operation in both cases, and the microscopic features were cysts lined by cuboidal cells separated by fibrous septae without any sign of malignancy, consistent with CN. Although some fluid accumulation was detected at the resection stump, it diminished in a month. The residual renal function was good and no residual tumor was found in both cases over a year.

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DISCUSSION: Laparoscopic partial nephrectomy is a feasible approach to treat large CNs occupying more than half the kidney, and preserve residual renal function. When it is difficult to close the resection stump by parenchymal suturing,

covering the stump with hemostatic agents and pediculate peritoneum is feasible. However, this procedure must be considered because, in CPDN, intraoperative tumor spill will result in a higher tumor stage.

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T001: REDUCED PORT DISTAL PANCREATECTOMY FOR GIANT PANCREATIC NEOPLASM: BEYOND THE EVENT HORIZON AND BACK [Samir Pandya, MD](#), Allison Sweny, MD, Oliver Muensterer, MD, New York Medical College, Maria Fareri Children's Hospital

BACKGROUND: Giant pancreatic masses in the pediatric population are managed with resection when feasible. When located in the distal pancreas, a distal pancreatectomy with splenic preservation is typically the ideal approach. Multiport laparoscopic surgery has been successful in small to moderate sized lesions.

OBJECTIVE: We report a reduced port approach to a giant neoplasm at the tail of the pancreas treated with distal pancreatectomy and splenic preservation.

METHOD & MATERIALS: A 15-year-old otherwise healthy male with left upper quadrant fullness, nausea and vomiting. A CT scan and MRI showed a 10cm mass at the tip of the pancreas. Tumor markers were negative. The patient had already undergone an open appendectomy previously and was very concerned about cosmesis. A single incision approach was therefore employed for the resection. Straight stick laparoscopic instruments and a vessel sealing device were used.

RESULT: Intraoperatively, the mass was densely adherent to the surrounding structures. The dissection of the distal splenic vein and artery proved to be extremely challenging using this approach. An additional 5mm port was placed in the left lower quadrant, which improved triangulation and facilitated completion of the procedure. The site was subsequently used for a flat suction drain. A distal pancreatectomy was successfully performed along with complete preservation of the splenic artery and

vein. The specimen was removed via the umbilicus and resulting cosmesis excellent.

CONCLUSION: Single incision distal pancreatectomy with splenic preservation for large tumors is technically very demanding with straight instruments. Early addition of a port at a proposed drain site can facilitate the dissection significantly. Reduced port surgery however may still have a role in select cases.

T002: LAPAROSCOPIC ADRENALECTOMY USING A SINGLE WORKING PORT: A CASE OF PRIMARY PIGMENTED NODULAR ADRENOCORTICAL DISEASE [Neetu Kumar](#), Kathryn Evans, Imran Mushtaq, Great Ormond Street Hospital, London

Primary Pigmented Nodular Adrenocortical Disease (PPNAD) is a rare condition of the adrenal glands. It is associated with adrenocorticotrophin hormone (ACTH) independent cushing syndrome. It is characterised by multiple small nodules (<1cm in diameter) in a small or normal sized adrenal gland. We present a case with PPNAD that was treated with bilateral adrenalectomy: the video showing the right-sided adrenalectomy completed laparoscopically using a single working port.

A two and a half year old girl presented with weight gain over 6 months, cushingoid appearance, behavioural changes and androgen hair. Biochemically she had ACTH independent disease. Radiological investigations did not show a tumour/mass in the adrenals and was inconclusive. Adrenal venous sampling showed excessive cortisol secretion from the left adrenal but studies on the right side were inconclusive. Laparoscopic left adrenalectomy was performed using a single working port.

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Post operatively she recovered well but was noted to have persistent cortisol secretion indicative of right adrenal disease. 3 weeks later, the patient underwent laparoscopic right adrenalectomy. This again was performed with a single working port. Histology showed appearances in keeping with bilateral PPNAD.

The accompanying video demonstrates laparoscopic right adrenalectomy performed in the prone position. Retroperitoneal space was created using the 'finger glove' balloon dissection method. A 5mm camera port was inserted just lateral to the erector spinae muscle in between the 12th rib and iliac crest. The second port was placed anterior to the camera. Gerotas fascia was opened, the kidney mobilised and the right adrenal gland identified. Using the spread and dissect method the vessels were divided with ligasure and the adrenal gland was removed. No assistant was required for this technique and the procedure completed within an hour.

The treatment of choice for PPNAD is bilateral adrenalectomy. The laparoscopic approach is much preferred to the open one. Various techniques have been described in the literature including the traditional 3 port, single port and robotic procedures. However, the single working port technique is a very efficient and safe way of dealing with such cases. With just 2 small incisions bilaterally, the child recovered very well and was discharged without any complications. We propose this technique as an additional novel approach for benign adrenal conditions like PPNAD.

T003: ROBOTIC-ASSISTED RESECTION OF A PYLORIC PANCREATIC REST WITH PERORAL ENDOSCOPIC REMOVAL AND RECONSTRUCTION BY PARTIAL GASTRODUODENOSTOMY [Oliver J Muensterer, MD, PhD](#), Samir Pandya, MD, Matthew E Bronstein, MD, Fouzia Shakil, MD, Aliza Solomon, DO, Michel Kahaleh, MD, Division of Pediatric Surgery and Pathology, New York Medical College, Division of Gastroenterology and Pediatric Gastroenterology, Weill Cornell Medical College

BACKGROUND: Gastric pancreatic rests consist of ectopic pancreatic tissue within the stomach wall and exhibit a typical endoscopic appearance. They frequently are asymptomatic, but can cause pain, erosions, and depending on their location, gastric outlet obstruction. Symptomatic pancreatic rests should be resected surgically.

OBJECTIVE: We report the first robotic-assisted resection of a pyloric pancreatic rest with endoscopic removal of the tumor through the pharynx and subsequent reconstruction of the gastric outflow tract by partial gastroduodenostomy.

CASE: A 10 year old girl presented with several months of worsening abdominal pain and nonbilious emesis. An upper gastrointestinal endoscopy showed a large pancreatic rest adjacent to and obstructing the pylorus (Figure, A), confirmed by endoscopic ultrasound. The patient was scheduled for robotic-assisted resection of the tumor. Intraoperatively, resection of the mass with part of the pylorus was performed (B). To avoid augmenting one of the robotic trocar sites for removal of the tumor, the mass was pushed into the stomach and retrieved endoscopically via the esophagus and pharynx (C). The Pylorus was reconstructed robotically by transverse gastroduodenostomy using

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interrupted sutures in 2 layers (D). The operative time was 320 minutes.

RESULTS: The patient tolerated the procedure well, advanced on her diet without difficulties, and was discharged home on postoperative day 3. Histopathology confirmed the diagnosis. She remained asymptomatic, and an upper gastrointestinal contrast study 3 months later showed normal passage of contrast from the stomach into the duodenum. She remains asymptomatic at 8 months follow-up.

CONCLUSIONS: Symptomatic pyloric pancreatic rests require careful excision with precise reconstruction of the gastric outflow tract, and therefore lend themselves to a robotic-assisted approach. Endoscopic removal through the mouth as a natural orifice allows for removal without augmenting one of the trocar sites and thereby minimizes visible scars. If careful resection and reconstruction is achieved, the outcome is excellent.

FIGURE: On the initial endoscopy (A), the pancreatic rest (asterisk) partially obstructing the pylorus (arrow) is seen. The mass (arrows) was resected robotically (B) and removed through the mouth by endoscopy (C). After resection, the pyloric channel (D) was reconstructed by partial gastroduodenostomy.



T004: LAPAROSCOPY FOR SMALL BOWEL OBSTRUCTION IN CHILDREN – AN UPDATE

UPDATE [Hanna Alemayehu, MD](#), Bryan David, Amita A Desai, MD, Corey W Iqbal, MD, Shawn D St. Peter, MD, The Children's Mercy Hospital

INTRODUCTION: We previously reviewed our institutional experience with laparoscopic management of small bowel obstruction (SBO) in children. The purpose of this study was to evaluate the evolution of minimally invasive surgery (MIS) for these patients, and compare our current outcomes with a historical control.

METHODS: After obtaining Institutional Review Board approval, a retrospective review of patients undergoing MIS for the management of acute SBOs was performed over a five-year period from 2008 to 2013. MIS was defined as a completely laparoscopic procedure, a laparoscopic-assisted procedure, or a laparoscopic procedure converted to open. Patients with chronic obstructions, colonic obstructions, or acute intussusceptions were excluded. Patients with inflammatory bowel strictures were included only if they presented with acute SBO. Data was collected; both descriptive and comparative analysis was performed. Additionally, this study population was compared to a historical control including patients from 2001 to 2008. All means reported \pm standard deviation.

RESULTS: There were 71 patients that were managed with MIS for SBO during the study period, of which 35 were male and 36 were female. 62 children underwent laparoscopy for their first episode of SBO, and 12 underwent laparoscopy for recurrent SBO, accounting for 74 episodes of SBO managed with MIS. The mean age at time of MIS for SBO was 10.2 ± 5.8 years, with a mean weight of 36.0 ± 20.4 kg. 55.3% (n=42) of these had previous

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abdominal surgery, with a mean number of 1.4 ± 0.7 surgeries prior to MIS for SBO. The mean time from a previous operation to undergoing MIS for SBO was 28.6 ± 48.1 months. The most common etiology of SBO was adhesions ($n=40$), followed by Crohn's disease ($n=10$), other causes ($n=8$), Meckel's diverticulum, ($n=5$), perforated appendicitis ($n=5$), volvulus ($n=4$), internal hernia ($n=2$) and anastomotic strictures ($n=2$). 50% ($n=37$) of SBOs were managed completely laparoscopically, 27% ($n=20$) with laparoscopic assisted procedures and 23% ($n=17$) converted to open procedures. The most common procedure performed was adhesiolysis only ($n=28$), followed by bowel resection with primary anastomosis ($n=19$). Post-operatively the mean number of days of nasogastric tube (NGT) decompression was 2.2 ± 3.4 days, mean time to a regular diet was 5.0 ± 4.2 days, and mean length of stay was 9.6 ± 19.1 days. Laparoscopy is associated with a shorter time of NGT decompression and time to regular diet (Table 1). There were 8 post-operative complications; intra-abdominal abscess ($n=3$), anastomotic stricture ($n=2$), anastomotic leak ($n=1$), bowel obstruction ($n=1$), and respiratory failure ($n=1$).

Compared to the historical control there were similar outcomes: mean number of days of NGT use was 1.6 ± 1.6 vs. 2.2 ± 3.4 in the current study ($p=0.42$), mean length of stay was 12.5 ± 20.2 days vs. 9.6 ± 19.1 days ($p=0.53$), mean complication rate was 14.7% vs. 10.8% ($p=0.45$), and mean conversion rate to open was 30.8% vs. 23.0% ($p=0.59$).

CONCLUSION: Laparoscopy continues to be a safe and vital diagnostic and therapeutic tool in the management of pediatric small bowel obstructions secondary to a wide variety of etiologies.

Table 1. Outcomes based on operative approach

	Laparoscopic n=37	Laparoscopic assisted n=20	Converted n=17	P
Mean number of post-operative NGT decompression	2.2	4.2	3.4	0.42
Mean time to a regular diet in days	5.0	4.2	7.0	0.45
Mean length of stay in days	9.6	19.1	19.1	0.53
Conversion rate to open (%)	0	15	24	0.59

TO05: LAPAROSCOPIC TRANSDUODENAL DEROOFFING OF THE PERIAMPULLARY DUODENAL DUPLICATION CYST IN AN INFANT

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INTRODUCTION: Duodenal cysts constitute about 5% of all gastrointestinal duplications with an incidence of less than 1 per 100,000 birth. In extremely rare instances, duodenal duplication cysts can communicate with pancreaticobiliary ducts. Here, we report a case of the periampullary duodenal duplication cyst communicating with the biliary system in an infant, which was treated with laparoscopic approach.

MATERIAL & METHODS: A 2-year-old girl presented with 2-week history of intermittent epigastric abdominal pain and bilious vomiting associated with failure to gain weight. Physical examination showed diffuse abdominal tenderness in the right upper quadrant. Laboratory studies were normal. The initial imaging with ultrasonography and CT showed 3 cm cystic mass, which was located within the duodenal wall in continuity with the head of the pancreas thereby causing some degree of duodenal obstruction. MRCP also revealed the cyst in the second part of duodenum, which occupied more than half of the duodenal circumference and was adjacent to the confluence of the common bile duct and pancreatic duct. Upper GI endoscopy showed the large submucosally located duodenal mass close to the

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ampulla of Vater, considerably protruding in the duodenal lumen. Laparoscopy was performed utilizing 5mm umbilical optical port and two 5mm working ports. After mobilization of the hepatic flexure of the colon and duodenum the temporary stay sutures brought through the abdominal wall were then placed on the duodenal wall. A 2.5-cm longitudinal duodenotomy was then made on the antimesenteric lateral portion of the descended duodenum. The intraduodenal submucosal cyst, 3.0x2.0x2.0cm in size, was thus exposed. Its inferior border was observed to be involving and displacing the Vater ampulla. The cyst was opened with the help of diathermy hook and it was found that the cyst was filled with viscous and bile stained material. The anterior wall of the cyst was excised, leaving the posterior one intact. Hemostasis was assured with monopolar diathermy. Extreme care was taken not to cause any damage to the papilla of Vater. The duodenum was then closed in a transverse fashion using extracorporeal interrupted sutures PDS 5-0.

RESULTS: The procedure was successfully completed. Operative time was 100 minutes. The patient recovered uneventfully and was discharged on the 7th postoperative day and remained asymptomatic at follow up at intervals up to 1 year. No evidence of the cyst recurrence was demonstrated on US. Pathological evaluation of the cyst sac showed inner mucosal lining with well formed villi and also well developed muscular coat, confirmed features of the intestinal duplication cyst.

CONCLUSION: The imaging, intra-operative and pathology findings in this patient appeared to be consistent with a very rare periampullary duodenal duplication cyst communicating with the biliary system. We believe that, the therapeutic mode of

laparoscopic transduodenal deroofting of this lesion is safe and feasible technique even in small children.

T006: LAPAROSCOPIC ENUCLEATION OF TRUE PANCREATIC CONGENITAL CYST

Mariana Borges-Dias, Manuel Oliveira, José Estevão-Costa, Miguel Campos, Pediatric Surgery Department, Faculty of Medicine, Hospital São João, Porto, Portugal

INTRODUCTION: True solitary pancreatic cysts are rare entities, since 80% to 90% of benign pancreatic cysts are pseudocysts. In recent years, its incidence has increased due to the generalized use of CT and MRI and a better accuracy thereof. Most congenital pancreatic cysts are multiple and associated with diseases such as Cystic Fibrosis, the Von Hippel-Lindau Syndrome or Polycystic Kidneys.

CASE REPORT: We present a clinical case of a 7-years-old girl, asymptomatic, followed as an outpatient at a pediatric nephrologist due to repeated pyelonephritis, without other relevant history. In a routine ultrasound, a cystic lesion with about 4 cm larger diameter, in close relation with the pancreatic tail was detected. In order to better characterize the lesion an MRI was performed. The images showed a "Cystic, simple lesion of 41x40mm, centered on the tail of the pancreas, unilocular, well-circumscribed, thin-walled and regular, with no areas of contrast uptake, in intimate relation with the left renal vein (...)": The authors present in the following video a laparoscopic enucleation of the pancreatic cyst with pancreas and spleen preservation. No relevant post-op complications occurred. Histology revealed a cavitory lesion lined by cuboid and simple columnar epitheliums of ductal type, without atypia. These aspects were compatible with congenital pancreatic cyst. Nowadays she is monitored in Pediatric Surgery and Pediatric Gastroenterology consults.

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COMMENTS: This case study aims to document a rare, usually asymptomatic and incidentally diagnosed entity, that was treated successfully by laparoscopic technique, as shown in the video presentation.

T007: BIMANUAL SUTURING – A NOVEL TECHNIQUE IN LAPAROSCOPIC REPAIR OF MORGAGNI HERNIA Kanika A. Bowen, MD, Dean M. Anselmo, MD, [Nam X. Nguyen](#), Children’s Hospital Los Angeles, Los Angeles, CA

INTRODUCTION: Laparoscopic approach has become a preferred technique in Morgagni diaphragmatic hernia repair. However, laparoscopic suturing of the anterior defect is technically challenging. Many surgeons place sutures through-and-through the anterior abdominal wall in order to secure the hernia closure. This method leads to undesirable cosmetic results. We present a novel technique using “bimanual suturing” to overcome this dilemma.

METHOD: The patient is placed in a supine position at the far end of the table. The operation is performed using three 5 mm ports (one at the umbilicus and one on each side of the umbilicus along the mid-clavicular line) with the operating surgeon standing at the patient’s feet. The hernia sac is completely excised. The defect is then closed with interrupted 3.0 Ethibond® RB-1 (Ethicon, Cincinnati, OH) sutures. During the suturing, the surgeon’s left hand is pushing down on the anterior abdominal wall allowing big bites on the fascia. The needle is then passed through the edge of the diaphragm, and the knots are secured extra-corporally using a knot pusher.

RESULT: Postoperative chest X-ray shows a complete resolution of the hernia. At three month follow-up, a chest X-ray shows an intact hernia repair, and the patient has no scars other than those from the trocar incisions.

CONCLUSION: Bimanual suturing technique facilitates closure of anterior defects and provides better cosmetic outcomes.

T008: ROBOTIC CHOLEDOCHAL CYST EXCISION [Adam C Alder, MD](#), Stephen M Megison, MD, Children’s Medical Center Dallas

This video highlights the technical aspects of choledochal cyst excision using a surgical robot platform. The technique illustrated includes: confirmation of the suspected pathology, creation of a roux-en-y enteroenterostomy, isolation of the anterior wall of the choledochal cyst, opening of the duct to allow for the safe dissection of the posterior wall of the common duct, proximal and distal dissection of the abnormal common bile duct, ligation of the distal duct remnant, creation of a hepaticojejunostomy to the roux limb, cholecystectomy. The video highlights the advantages of the robotic platform: 10x magnification, 3D viewing, wristed instrumentation, natural motion with tremor dampening.

T009: THE VACUUM BELL FOR CONSERVATIVE TREATMENT OF PECTUS EXCAVATUM: ASSESSMENT OF ITS EFFICACY WITH DISTANCE AND PRESSURE SENSORS [Sergio B Sesia, MD](#), Stefan Weiss, MSc, David Hradetzky, D, Eng, Frank-Martin Haecker, MD, University Children’s Hospital of Basel, Department of Paediatric Surgery, Basel; University of Applied Sciences and Arts Northwestern Switzerland, School of Life Sciences, Institute for Medical and Analytical Technologies, MuttENZ, Switzerland

BACKGROUND: The conservative treatment of a pectus excavatum (PE) by using the vacuum bell (VB) represents a valid alternative to the surgical minimally invasive repair (MIRPE) technique by Nuss for selected patients.

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The objective assessment of its efficacy (elevation of the sternum) is still a challenge.

So far, there is no method for a quantitative measurement of the improvement of PE, nor a method to evaluate the applied pressure during the VB therapy. The aim of our study was to evaluate the reliability of a three-sensor tool to assess the improvement of the PE during the VB application.

PATIENTS & METHODS: Based on a three-point distance measurement, a device with three sensors was developed to assess the distance between the window of the VB and the sternum as well as the differential pressure in the VB. The differential pressure depending on the sternum elevation can be calculated in relation to a reference pressure. The clinical application was started after the institutional review board approval and written consent was obtained. The patient in supine position fixed the device on the top of its own VB and started to create a vacuum in order to elevate the sternum. The data were recorded continuously and send via USB-cable to a computer. The raising of the sternum as well as the pressure in the VB over the time and the pressure in relation to the raising of the sternum were assessed

RESULTS: 17 patients were included. The elevation of the sternum increases with diminishing pressure. This relation is non-linear. The elevation of the sternum continued during the application of the VB while the pressure was kept constant. The younger a patient is, less pressure is needed to reach the same elevation of the sternum.

CONCLUSION: Sensor-based measurement represents a reliable tool to assess the efficacy of the use of the VB. Statements to the flexibility of the chest and the duration of therapy become possible.

T010: OUTCOME OF LAPAROSCOPIC SUTURE RECTOPEXY IN PERSISTENT RECTAL PROLAPSE IN CHILDREN [Karim](#)

[Awad, MSc, MRCS](#), [Amr Zaki, MSc, MD](#), [Mohamed Eldebeiky, MSc, MD, MRCS](#), [Ayman Alboghdady, MSc, MD](#), [Tarak Hassan, MSc, MD, MRCS](#), [Sameh Abdelhay, MSc, MD](#), ain Shams University Hospitals

BACKGROUND: Rectal prolapse is a relatively common problem, specially in developing countries with high rates of Gastroenteritis, parasitic infestations and malnourishment. Despite absence of accurate statistical studies regarding its prevalence, yet it is frequently seen in outpatient clinic.

The majority of the cases are managed conservatively, yet intervention is mandatory in some cases.

Hundreds of approaches have been used in management of full thickness prolapse with variable degrees of success, we aim to evaluate the laparoscopic suture rectopexy (LSRP) as regards safety and recurrence rate in children with persistent full thickness rectal prolapse.

PATIENTS AND METHODS: during period from August 2011 till January 2014, patients who presented with rectal prolapse have been screened as regards history of prolapse and predisposing factors, all have been examined and investigated with stool analysis, barium enema in addition to colonoscopy and EMG as needed. Cases who failed to respond to conservative measures were corrected using (LSRP).The procedure was done under general anesthesia and completed with laparoscopic approach with fixation of the mobilized rectum to sacral promontory by multiple non absorbable sutures.

After discharge, all patients were asked to visit outpatient clinic for clinical assessment and their data were recorded.

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RESULTS: Seventy four patients presented to our outpatient clinics during this period, 47 patients were successfully managed conservatively. Twenty seven failed to respond to conservative measures and 20 of them were managed by LSRP.

Their age ranged from 2 to 11 years with mean 5.3 years, duration of conservation ranged from 6 weeks to 72 months with mean 15.3 months, operative time ranged from 25 to 150 minutes with mean of 80 minutes, no intraoperative complications were encountered other than the need for conversion to open in one case. Feeding toleration was achieved between Day 0 to Day 4. Patients were discharged home Day 0 to Day 5, all were followed up for a period ranging from 6 to 26 months with mean of 14.5 months. one patient (5%) developed recurrence requiring redo surgery and one patient suffered partial thickness prolapse (5%) which improved spontaneously on follow up.

CONCLUSION: LSRP is a minimally invasive procedure for children with full thickness rectal prolapse, it has the advantage of being safe, having low recurrence rate, short hospital stay and minimal post-operative discomfort. When expertise available, it can be done as a day case procedure. However longer follow up is needed to detect any further recurrence.

T011: SURGICAL TECHNIQUES FOR LAPAROSCOPY-ASSISTED REPAIR OF MALE IMPERFORATE ANUS WITH RECTO-BULBAR FISTULA. COMPARISON WITH RECTO-PROSTATIC FISTULA

Hiroyuki Koga, MD, [Manabu Okawada, MD](#), Takashi Doi, MD, Go Miyano, MD, Hiroki Nakamura, MD, Takanori Ochi, MD, Shogo Seo, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD, Department of Pediatric General and Urogenital Surgery, Juntendo University School of Medicine

PURPOSE: Laparoscopically assisted anorectoplasty (LAARP) is now considered to be the radical surgical treatment of choice for male imperforate anus (MIA) with recto-vesical, recto-prostatic, or absent fistula in many centers. However, only a few centers treat recto-bulbar fistula (RBF) which is the most challenging type to treat laparoscopically. We introduce our current treatment techniques including technical refinements and some novel procedures of LAARP for MIA with RBF.

SURGICAL TECHNIQUES: Scope and Trocar positions: Dissecting the rectum laparoscopically in MIA with RBF can be so difficult that surgeons are tempted to abandon dissection early, leaving the most distal part of the RBF behind with great likelihood of it becoming a posterior urethral diverticulum. To overcome such frustration with dissection, surgeons would benefit from: (1) refining trocar placement in RBF cases by placing the right and left trocars much closer to the laparoscope, compared with the trocar positions in recto-prostatic fistula (RPF) cases, so that their ends can reach the distal end of the RBF. (2) Using an adjustable scope with fixed-rod rotating lens. This device allows the laparoscope to be adjusted from 0 to 120 intraoperatively, eliminating the need to choose a type of laparoscope in advance or be limited to a fixed view. Deep exposure of the pelvis: Insertion of a suprapubic catheter into the bladder with continuous suction of urine to decompress the bladder improves exposure of the distal part of the RBF located deep in the pelvis. This catheter is not needed for the RPF. Measurement of the fistula: The RBF is dissected carefully close to the urethra and opened. A fine catheter with 10mm calibrations is inserted by the laparoscopic surgeon until it is seen to emerge into the urethra by another surgeon performing cystoscopy. The laparoscopic surgeon

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then measures the distance from the point where dissection was ceased at the rectal end to the urethral orifice. The RBF can then be dissected distally with confidence without any risk for injury to genitourinary structures for exactly the length measured, tied, and excised.

CONCLUSIONS: Our refinements during LAARP would appear to provide excellent exposure for dissecting RBF and facilitate complete excision of RBF, improving the accuracy of treatment and minimizing complications.

T012: DIAPHRAGMATIC EVENTRATION REPAIR: SHOULD WE USE A THORACOSCOPIC OR LAPAROSCOPIC APPROACH? Saidul Islam, [Kirsty Brennan](#), Rajiv Lahiri, Anies Mahomed, Department of Paediatric Surgery, Royal Alexandra Children's Hospital, Brighton, U.K.

AIMS: Minimally invasive surgery has permeated through paediatric surgery. We performed a systematic review to identify the preferred minimally invasive approach for diaphragmatic eventration repair.

METHODS: A systematic review of the online literature using Embase and Medline was performed. The initial search criteria of 'Diaphragmatic Eventration repair in children' was further narrowed down to select only thoracoscopic or laparoscopic cases. We included two cases of laparoscopic eventration repair from the author's institution. The number of patents, age at operation, type of procedure, conversion rate and laterality (right or left) were noted.

MAIN RESULTS: The initial search for diaphragmatic eventration repair in children identified 20 publications which included 236 patients. After excluding open cases and including two cases from our institution, 15 publications with 82 patients were included. Age at

operation ranged from 0.2–84 months (mean 15.7 months). A thoracoscopic approach was used in 70 patents (85 %) with four patients requiring conversion to open (co2 insufflation not tolerated, high diaphragm reducing operative field, mobile intra-thoracic kidney following previous diaphragmatic hernia repair, inadequate operative field). A laparoscopic approach was performed in 12 patents (15%) with no cases converted to open surgery. Right sided eventration was more common (48/82, 59%) and 45/48 (94%) were performed thoracoscopically. Interestingly, a laparoscopic approach was more common in left sided eventration (10/19, 53%). In 15 cases, laterality was not specified.

CONCLUSION: Case series predominate in the literature with regard to minimally invasive approaches to diaphragmatic eventration. There is a predilection towards a thoracoscopic approach in published series, especially in right sided diaphragmatic eventration. However, laparoscopic diaphragmatic eventration repair is feasible, and should be considered when operative field in chest is reduced. A randomised control trial comparing both approaches is required to delineate the possible advantages of either approach.

T013: EVOLUTION OF MINIMALLY-INVASIVE TECHNIQUES WITHIN AN ACADEMIC SURGICAL PRACTICE AT A SINGLE INSTITUTION [Shannon N Acker](#), MD, Susan Staulcup, David A Partrick, MD, Stig Somme, MD, Children's Hospital Colorado

AIM: We aimed to better understand how changes in surgical techniques are being transferred into surgical practice. We hypothesize that as the use of minimally invasive surgical techniques (MIS) have increased, the integration of these techniques into a pediatric surgical practice

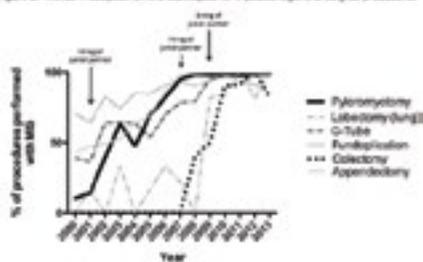
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is dependent on the hiring of junior partners with extensive training in MIS who can then transfer their knowledge to senior surgeons.

METHODS: We reviewed the operative techniques used to perform six different general pediatric surgical procedures from 1999–2013. Procedures evaluated include appendectomy (average 238/year), fundoplication (129/year), gastrostomy tube placement (102/year), pyloromyotomy (56/year), colectomy (8/year), and lobectomy – lung (7/year). Records were obtained from both the hospital’s surgical database and the department’s billing records. The percentage of cases performed with MIS was calculated for each procedure annually. Our group is comprised of 4–7 pediatric general surgeons at any time. Three surgeons completed training in the era of MIS and were hired in 2001, 2007, and 2009.

RESULTS: In 1999 a median of 16.7% of these six procedures were performed with MIS. This increased to 85.3% in 2013 ($P < 0.05$). Figure 1 depicts the changes in MIS use for each procedure over time. Three procedures: appendectomy, pyloromyotomy, and fundoplication, demonstrate early adoption and uniform use of laparoscopy (>85% laparoscopy by 2007). Gastrostomy tube placement reached 90% laparoscopy utilization in 2009. Lung lobectomy and colectomy also reached >80% use of MIS in 2009 and 2010 respectively. From 2000 to 2013, the rate of MIS use for pyloromyotomy among senior surgeons with no formal MIS training increased from 0% to 96% ($p < 0.0001$) and from 24% to 96% ($p < 0.0001$) for G-tube placement.

Figure 1. Trends in adoption of MIS techniques for 7 pediatric general surgical procedures



CONCLUSIONS: The hiring of junior surgeons with MIS training was associated with an increase in adoption of MIS techniques by the entire surgical group. Trends in procedures that were early in the MIS era demonstrate a gradual rise towards uniform adoption of MIS techniques. More advanced and recently adopted MIS techniques demonstrate a rapid rise to uniform adoption.

T014: ENDOSCOPIC CLOSURE OF PERSISTENT GASTROCUTANEOUS FISTULA IN CHILDREN [Sandra M Farach, MD](#), Paul D Danielson, MD, Daniel McClenathan, MD, Nicole M Chandler, MD, All Children’s Hospital Johns Hopkins Medicine

BACKGROUND: The literature has reported the incidence of persistent gastrocutaneous fistula (GCF) after removal of gastrostomy tubes in pediatric patients to be up to 44%. The use of endoscopy may spare the patient the potential morbidity associated with surgical approaches to this problem. The purpose of our study was to review the outcomes of GCF closure by an endoscopic technique that utilizes a combination of cautery and endoclips.

METHODS: After Institutional Review Board approval, a retrospective analysis of pediatric patients who underwent endoscopic treatment for persistent GCF following gastrostomy tube removal from January 2010 to September 2013

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was performed. This technique utilized esophagogastroduodenoscopy with cauterization of the fistula track and endoclip closure of the gastric mucosa. Demographics and outcomes recorded included age, diagnosis, duration of gastrostomy tube presence, number of interventions, and length of follow up.

RESULTS: A total of 21 patients underwent endoscopic treatment for persistent GCF following gastrostomy tube removal. Five patients had inadequate follow up and were excluded from analysis. Techniques for gastrostomy tube placement included percutaneous endoscopic gastrostomy in 75%, surgical gastrostomy in 12.5%, and unknown in 12.5%. Indications for gastrostomy tube placement included: neurological dysfunction (37.5%), mechanical feeding difficulty (25%), congenital/genetic disease (12.5%), gastrointestinal disease (12.5%), and congenital heart disease (12.5%). The mean age at the time of endoscopic treatment was 7.5 ± 5.5 (1.1-17) years. Females comprised 56% of the group. Gastrostomy tubes were in place for a mean of 5.5 ± 5.2 (0.5-14.2) years prior to removal. The average time from gastrostomy tube removal to first endoscopic clipping was 6.7 ± 9 (0.7-28.9) months. Seven patients (44%) had successful closure after their first endoclippping procedure. Six patients underwent a second endoclippping procedure, with three successful closures. A total of 4 patients (25%) required surgical closure for persistent fistulas and 2 patients (13%) have continued drainage (Figure 1). Seven (44%) patients underwent more than one intervention for treatment of a persistent GCF. Fifteen (94%) patients had the endoscopic clipping procedure performed on an outpatient basis. A total of ten patients (63%) had definitive GCF closure after endoscopic clipping alone. There were no complications associated

with endoscopy. The mean length of follow up from the first endoscopic procedure was 1.1 ± 1.1 (0.1-3.5) years.

CONCLUSIONS: Benefits of endoscopic closure of gastrocutaneous fistulas include the potential for a more minimally invasive intervention that can be performed as an outpatient procedure. While endoscopy with cautery and endoclippping proves to be a safe method for fistula closure, many patients require multiple procedures and may require eventual surgical closure. Patient selection and refinement of this technique may improve outcomes.



Figure 1

T015: INPATIENT ADMISSION IS NOT NECESSARY FOLLOWING SUCCESSFUL ENEMA REDUCTION OF INTUSSUSCEPTION IN CHILDREN

Mohamed I Mohamed, MBBS, [Stephanie F Polites, MD](#), Abdalla E Zarroug, MD, Michael B Ishitani, MD, Christopher R Moir, MD, Division of Pediatric Surgery, Mayo Clinic, Rochester, MN, USA.

BACKGROUND: Following successful enema reduction of intussusception in children, the need for admission is controversial.

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Many institutions are moving towards early discharge after brief observation in the emergency department. The concern is that intussusception may recur following early discharge. The purpose of this study was to evaluate patterns of management and recurrence at a tertiary care center over two decades.

METHODS: We performed a retrospective review of all patients ≤ 18 years who were treated for intussusception at our institution from January, 1992 to October, 2013. Patient clinical data and outcomes were analyzed with a focus on recurrence of intussusception and time to recurrence.

RESULTS: We identified 109 children with intussusception over 21 years. Patients' ages ranged from 3 months to 16 years; however, 62 % were < 2 years. The most frequent presentation was abdominal pain (87%) and the classic triad of abdominal pain, abdominal mass and rectal bleeding was only present in 6%. Abdominal radiographs (65%) and ultrasound (57%) were the primary initial diagnostic tools. Nine (8%) patients required emergent surgery and did not receive enemas. Enema reduction was attempted in 100(92%) patients, including pneumatic enemas (93%) and barium enemas(25%). In 5 (5%) patients, the enema failed to identify the intussusception and no further intervention was required. Reduction was successful in 48(44%) patients. Surgery was required in a total of 56 (51%) patients including 9 who required emergent surgery and did not have an enema, 43 (39%) who failed enema reduction, 2 who recurred immediately after enema reduction, and 2 for which the diagnosis could not be confirmed via enema. Surgery was laparoscopic in 7 patients. Meckel's diverticulum was the lead point in 7 patients. Post successful enema reduction, 22 patients were observed in the emergency department for a median

(range) duration of 3 (1–21) hours. No recurrence was observed in this group. The overall recurrence rate was 10% with a median (range) time to recurrence from 2 days (0 days- 10 months). All recurrences were successfully managed non-surgically.

CONCLUSION: Recurrence of intussusception following successful enema reduction or spontaneous reduction is infrequent and does not result in surgical management. Ambulatory monitoring of children following successful enema reduction of intussusception appears to be a safe and feasible option.

T016: EVALUATION OF ENDOSCOPIC AND TRADITIONAL OPEN APPROACHES TO LOCAL ADRENAL NEUROBLASTOMA

Wei Yao, Kuiran Dong, Kai Li, Yunli Bi, Gong Chen, Xianmin Xiao, Shan Zheng, Department of Pediatric Surgery, Children's Hospital of Fudan University, Shanghai, China

OBJECTIVE: To investigate and compare long term oncologic outcomes in children undergoing laparoscopic or open adrenalectomy for local adrenal neuroblastoma.

METHODS: A retrospective review was conducted of 43 children with local adrenal neuroblastoma treated between July 2005 and July 2013 in Children's Hospital of Fudan University. These patients met inclusion criteria for having adrenal neuroblastoma and undergoing operative resection.

RESULTS: The local adrenal neuroblastoma cases included 19 males and 14 females, aged 5 days -158 months, mean 32.44 months. Left adrenal lesions was in 14 cases, the right in 29 cases. According to INSS staging system, there were 27 cases of stage I, 10 of stage II, 6 of stage IVs. Open adrenalectomy was performed in 28 patients. Laparoscopic adrenalectomy was performed in the other 15 patients, two of whom were converted to open surgery

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because of adhesions to renal vessels and diaphragmatic rupture. There was no difference in tumor size (3.92 & 5.22cm) and operative time (141.33 & 137.68min) between laparoscopic and open surgery except blood loss ($P = 0.033$). All patients were followed up for 2–93 months, mean 34.47 months. There were two recurrence cases in open surgery, but there was no recurrence in laparoscopic surgery. The overall 5-year survival rate of open and laparoscopic surgery were 88.5 % and 100 % ($P = 0.348$).

CONCLUSIONS: Laparoscopic resection of adrenal neuroblastoma is feasible and can be performed with equivalent recurrence and mortality rates in open resection. For tumor size <6cm, absence of vascular encasement, the adrenal neuroblastoma may be preferred laparoscopic surgery.

T017: COMPARISON OF MULTI-PORT AND SINGLE-PORT LAPAROSCOPIC INGUINAL HERNIORAPHY IN SMALL BABIES

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BACKGROUND: The aim of this study was the comparison of single-port and multi-port laparoscopic methods of the treatment of inguinal hernia in children of the first 3 months of life.

MATERIALS AND METHOD: Between January 2002 and December 2012 children were performed 260 laparoscopic operation in neonates and infants with diagnosis of inguinal hernia. Surgical procedures were the single-port endoscopic hernioraphy (Group I – 180 patients) and multi-port laparoscopic hernioraphy (Group II – 80 patients). The two groups were compared for patient's demographics, operative report, early and late postoperative outcomes.

RESULTS: We didn't investigate the difference in operative time, number doses of the analgesia and duration of the hospital stay in patients of compared groups. The mean operative time (summarized duration of mono- and bilateral repair) in Group I was 16 min. In contrast, the mean duration of the operation in the Group II was 15,73 min. The number of the doses of postoperative analgesia was 1,19 and 1,22. The length of hospital stay in Group I was 8,12 hours and 8,27 hours in Group II. No differences between groups were registered in follow-up periode – recurrence (0:0) and hydrocele formation (0:1).

CONCLUSION: We must conclude similar functional results in treatment of inguinal hernia in babies of the first 3 months of the life with using single- and multi-port laparoscopy and demonstrated scarless cosmetic results in group of single-incision laparoscopic surgery.

T018: METAL-POLYMER COMPOSITE NUSS BAR FOR "MINIMALLY" INVASIVE BAR REMOVAL AFTER PECTUS EXCAVATUM TREATMENT

Leonardo Ricotti, PhD, Gastone Ciuti, PhD, Marco Ghionzoli, MD, PhD, Arianna Menciassi, PhD, Antonio Messineo, MD, 1 – The BioRobotics Institute, Scuola Superiore Sant'Anna, Pontedera (Pisa), Italy. 2 – Department of Pediatric Surgery, Children's Hospital A. Meyer, Florence, Italy.

BACKGROUND: The insertion in the chest of a metallic implant and the need to remove it after years represent the main drawback for the Nuss "mini-invasive" procedure In Pectus Excavatum (PE) patients. The idea of using an entirely reabsorbable bar was hypothesized but soon abandoned because of concerns about its mechanical stability due to the strong forces at work in the chest. Accounting these limits, we developed and patented an innovative approach for the

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treatment of PE which is based on a metal and polymer composite bar.

MATERIAL & METHODS: We designed a new configuration of bar with dimensions similar to a Nuss bar, composed by internal metals element and an external biodegradable polymeric shell in order to facilitate the removal intervention. Two different geometries for the metal elements to be embedded in the polymeric matrix were tested: in the former thin metal sheet, in the latter cylindrical metal reinforcing rods were considered. Finite element method simulations (FEM) were performed applying a force on the bar of 250 N and by varying metal sheet thickness or rod diameter for different material combinations. The maximum stresses and strains of the bar were figured out and the optimal configuration for the PE treatment was identified for a composite bar.

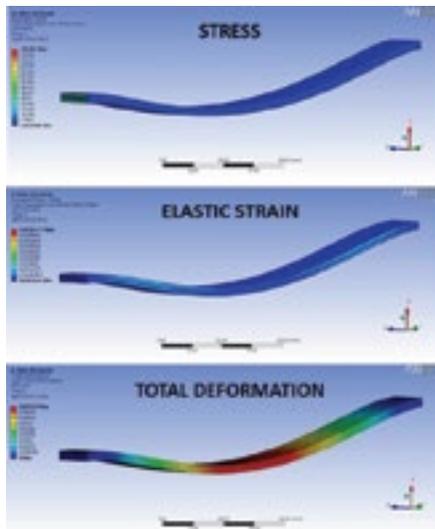


FIGURE 1: Example of FEM simulation performed on a metal-polymer composite bar. Stress distribution, elastic strain and total deformation of the composite bar are shown.

RESULTS: FEM simulations performed on the composite structures (Figure 1) revealed that metal/polymer composite bars can be developed by using a few combinations of metal and polymers. When stainless steel (AISI316L) has been considered, we discovered that only metal sheet-based bars embedded in PLLA, PHB and PBPA are mechanically stable. For titanium alloy (Ti-6Al-4V) matrices, instead, both configurations are mechanically stable (leaf or rod). Moreover, metal component can be further scaled down in comparison to stainless steel, still assuring bar integrity and mechanical stability. Similar results were obtained when Tungsten has been used as metal element.

CONCLUSIONS: FEM simulations were able to establish the adequate compound proportions to ensure bar integrity and mechanical stability. The insights herein reported should serve as guidelines for the design of advanced composite bars for the correction of chest wall deformities, as well as for the development of other load-bearing implanted and partly reabsorbable composite devices.

T019: SINGLE-INCISION THORACOSCOPIC RESECTION FOR PEDIATRIC MEDIASTINAL NEUROGENIC TUMOR USING CONVENTIONAL INSTRUMENTS IN CHILDREN [Jiangbin Liu, PhD, Professor, Department of Pediatric Surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University](#)

AIMS AND OBJECTIVES: to review the experience on the thoracoscopic resection of mediastinal neurogenic tumors using conventional instruments in children.

METHODS: 5 children with mediastinal tumors treated by single-incision with thoracoscopic resection using conventional instruments between July 2010 and October 2013.. Medical charts were

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reviewed for collection of data on age, sex, histological type of tumor, clinical manifestations, tumor size, duration of thoracic drainage, surgical complications, tumor recurrence, and mortality.

RESULTS: 3 males and 2 females were studied. Median age was 22 months (range, 18.5-85 months), 3 children had ganglioneuroma, 1 child had ganglioneuroblastoma and the another 1 had neuroblastoma. The median time of the operation was 75 minutes (range, 45-120minutes) with complete thorascopic resection in all cases and no conversion to 3 ports or opening. No children developed Horner syndrome but 1 got chylothorax postoperatively, the child recovered by TPN administration after 3 weeks. The duration of thoracic drainage was 7.5 days (range, 3.5-21.5 days), No deaths were reported, and no recurrence was noted during a median follow-up period of 21 months (range, 3-40 months)

CONCLUSIONS: Based on our experience, single-incision thorascopic resection for pediatric mediastinal neurogenic tumor using conventional instruments could be completed successfully in children. More data are needed to fully assess the benefit of this technique. The major advantages of this approach are cosmetic improvement and minimal scars.

KEY WORDS: Single-incision, thorascopic mediastinal, neurogenic, conventional instruments, children

T202: THORASCOPIC AORTOPEXY FOR TRACHEOMALACIA: DEMONSTRATING FEASIBILITY AND EFFICACY [Avraham Schlager, MD](#), [Ozlem Balci, MD](#), [Matthew T Santore, MD](#), [Mark L Wulkan, MD](#), Emory University School of Medicine/Children's Healthcare of Atlanta

BACKGROUND: Aortopexy refers to the surgical suspension of the aorta to the

sternum as a method of treatment for severe tracheomalacia. Although many approaches have been described, left anterior thoracotomy remains the most common surgical approach. Recent case reports of have demonstrated the feasibility of a thorascopic approach in selected cases. We present our experience with thorascopic aortopexy describing our technique as well as our outcomes.

METHODS: We performed a retrospective review of all patient who underwent thorascopic aortopexy for tracheomalacia at our institution. Primary outcomes included operative time, number, type and location of stitches, comparative caliber change at post-operative bronchoscopy, time until extubation, length of stay following surgery, recurrence requiring revision and long term dependence on respiratory support. Intra-operative bronchoscopy performed at the conclusion of each case was used to document the effectiveness of the procedure.

RESULTS: A total of 6 patients were identified that underwent thorascopic aortopexy. The median follow up time was 7.5 months (2 months to 72 months). Pre-operative bronchoscopy reported severe or near complete obstruction in all 6 patients. The median age and weight at the time of surgery was 5 months (3kg to 33 kg) and 5.1 kg (3.9 kg to 14.5 kg). The procedure was performed using left thorascopy in five cases and right thorascopy in one case. The median operative time was 102 minutes (82 minutes to 105 minutes). Four of the aortopexies were performed using 3 stitches into the aorta, one using 4 stitches and the final case using five stitches distributed between the pericardium and the aorta. The pexy was performed using 3-0 PDS in two of the patients, 3-0 prolene in another two and 3-0 silk

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in the remaining two. Post-operative bronchoscopy demonstrated near-complete resolution or markedly improved caliber in five patients and approximately 50 percent improvement in the final patient. The two of the six patients that were not ventilator-dependent at the time of surgery were extubated in the operating room following the case. Of the remaining four that had been ventilator-dependent prior to surgery, one patient was extubated in the PACU, one on post-operative day number 4, one patient on post-operative day number 8 and the final patient remained ventilator-dependent until he died of unrelated causes 6 months following surgery. Of the five surviving patients, the median hospital stay following surgery was 6.5 days (2 days to 72 days). One patient experienced recurrent bronchoscopic compression 2 months following surgery necessitating open aortopexy via right thoracotomy. All five of the surviving patients have been discharged home off all respiratory support.

CONCLUSION: Future studies directly comparing thoracoscopic to the open aortopexy are needed to ascertain their comparative effectiveness. In this small series, thoracoscopic aortopexy proved to be both a feasible and an effective treatment for tracheomalacia refractory to non-operative management.

T021: THORACOSCOPIC IBIS HEAD REPAIR OF CONGENITAL PARTIAL DIAPHRAGMATIC EVENTRATION. A NEW ANATOMICAL RECONSTRUCTIVE CONCEPT Mohamed M Elbarbary, MD,

Ahmed E Fares, MD, Haytham E Tantawy, MD, Ayman H Abdelsattar, MD, Mahmoud M Marei, MD, Hamed M Seleim, MD, Wissam M Mahmoud, MD, Departments of Pediatric Surgery, Cairo University, Fayoum University, Tanta University

BACKGROUND: Congenital partial diaphragmatic eventration describes an antrolateral defect in the diaphragm. The defect boundaries can be clearly defined thoracoscopically. The anterolateral edge is formed by the costal margin, whereas, the postromedial edge is formed by a relatively longer elevated “C-shaped” muscle. We hereby describe a simple tension free thoracoscopic technique for its repair.

METHODS: The Ibis is a sacred Egyptian bird with a peculiar sickle shaped peak and head. Using three 5-mm ports, several rib-anchoring stitches (plicating the fibroelastic membrane) are inserted to reorient the postromedial C-shaped diaphragmatic muscle edge into an Ibis head sickle shaped repair. This reorientation creates two limbs: one lateral between the costal margin and the muscle and the other vertical where the muscle is sutured to itself. In a five year period, 31 patients were treated using this technique.

RESULTS: The age range was from 8 months to 3 years. The side of diaphragm eventration was on left in 26 and on the right in five cases. There was no procedure-related major complications or mortality. The repair was completed in all case thoracoscopically using 2/0 Ethibond Excel® Polyester stitches. Prolonged ileus was noticed in 3 patients, reflux symptoms in 7 patients, buried stitches caused discomfort in two patients and chest deformity was reported in one patient. No recurrences were reported in any of the patients.

CONCLUSION: Thoracoscopic Ibis-head repair offers a tension free repair of late presenting antrolateral congenital diaphragmatic defects. An added benefit is the elimination of use of synthetic material.

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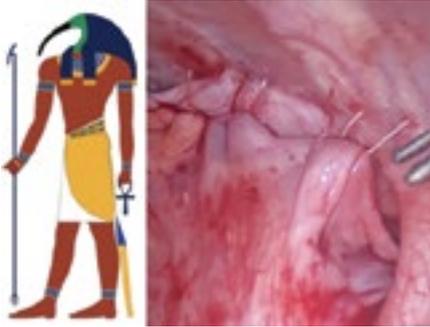


Fig shows the C-shaped diaphragmatic muscle edge after reorientation resembling the Ibis -head

T022: IS LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE FOR INGUINAL HERNIA EFFECTIVE COMPARED WITH THE OPEN METHOD? – A SINGLE INSTITUTION EXPERIENCE OF OVER 1000 CASES *Hiromu Miyake, Koji*

Fukumoto, Go Miyano, Masaya Yamoto, Hiroshi Nouse, Keiichi Morita, Masakatsu Kaneshiro, Naoto Urushihara, Shizuoka Children's Hospital

BACKGROUND: Laparoscopic percutaneous extraperitoneal closure (LPEC) for pediatric inguinal hernia has recently been gaining popularity. However, few reports have compared LPEC with traditional open repair (OR) using a certain level of cases and follow-up. The aim of this study was to compare LPEC with OR performed in a single institution.

METHODS: This was a retrospective study in one institution. Our institution started LPEC for essentially all patients with inguinal hernia in July 2008. This study compared LPEC with OR using 1050 patients who underwent OR from July 2003 to June 2008 and 1017 patients who underwent LPEC from July 2008 to June 2013. From July 2008, 29 patients underwent OR for reasons such as history of peritonitis and associated cryptorchism;

these 29 patients were excluded from this study. Mean follow-up period was 95 months with OR and 35 months with LPEC ($p<0.001$). In consideration of this difference in follow-up, log-rank testing was used to analyze long-term results.

RESULTS: Mean age at operation was 3.72 years with OR and 3.75 years with LPEC ($p=0.81$). Mean body weights were 14.73 kg and 14.72 kg, respectively ($p=0.98$). Male:female ratios were 617:433 and 561:456, respectively ($p=0.10$). Preoperative laterality of hernia (right/left/bilateral) was 546/319/113 and 534/319/92, respectively ($p=0.42$). All operations were performed under general anesthesia. With LPEC, an asymptomatic contralateral internal ring was routinely observed, and when a patent processus vaginalis (PPV) was confirmed, prophylactic surgery was performed regardless of the size of patency. In the LPEC group, of 908 patients preoperatively diagnosed as unilateral (excluding cases in which contralateral surgery had already been performed), 379 patients (41.7%) were confirmed with contralateral PPV and underwent prophylactic LPEC. Mean operative times for unilateral surgery in OR and LPEC were 28.5 min and 21.2 min, respectively ($p<0.001$). Mean operative times for bilateral surgery were 52.3 min and 25.4 min, respectively ($p<0.001$). Mean operative time was significantly shorter for bilateral LPEC than for unilateral OR ($p<0.001$). The frequency of postoperative recurrence was 0.52% in OR (6/1158 sides) and 0.27% in LPEC (3/1109 sides; $p=0.53$, log-rank test). The frequency of postoperative contralateral metachronous inguinal hernia (CMIH) was 6.48% in OR (57/879) and 0.33% in LPEC (3/908; $p<0.001$, log-rank test). No postoperative testicular atrophy, iatrogenic cryptorchism or serious complications were encountered in either group. Among the 6 patients who underwent repeated LPEC due to recurrence or CMIH, none showed

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intraabdominal adhesions during second surgery.

CONCLUSION: In our institution, both OR and LPEC obtained satisfactory results from the perspective of recurrence rate and complications. In our series, operative time was shorter for bilateral LPEC than for unilateral OR. This shows that prophylactic contralateral LPEC is useful for preventing CMIH without prolonging operative time compared with OR. Of course, some controversy remains regarding long-term effects of LPEC, including fertility. Midterm safety and efficacy of LPEC are yet to be proven, and lifelong assessment remains an outstanding issue with LPEC.

T023: DEVELOPMENT OF MINIMALLY INVASIVE SURGERY (MIS) IN A MEDIUM-VOLUME PEDIATRIC SURGICAL CENTER: A TEN YEAR EXPERIENCE OF 1387 OPERATIONS

Patrick Ho Yu Chung, MBBS, FRCS, Kenneth Kak Yuen Wong, PhD, Paul Kwong Hang Tam, MBBS, MS, Department of Surgery, Li Ka Shing Faculty of Medicine, The University of Hong Kong

OBJECTIVE: A major challenge to the development of minimally invasive surgery (MIS) in paediatric surgery is the wide spectrum of rare diseases. Here, we present our institutional experience in its development as a model for medium-volume comprehensive service and training centers.

METHODS: We reviewed our single-centered MIS program in 2003–2012. Eleven index operations were selected and categorized into I, II and III according to increasing technical demands (simple dissection/suturing to major reconstruction). Experience of surgeons ranged from trainees, young fellows to senior surgeons. Comparison between early (2003 – 2007) and late (2008–2012) developmental periods was made.

RESULTS: Results of 1387 operations were reviewed. Overall, 339 cases (24.4%) were operated by trainees. The youngest patient was operated on day 2 of life with body weight 2.2kg (thoracoscopic repair of esophageal atresia). MIS advanced remarkably in volume (n=952; 68.6%) and complexity (neonatal, thoracic) in the second 5-year period. Statistical improvement was seen in operative durations in four procedures (pyeloplasty, splenectomy, fundoplication and resection of CCAM, 25–40% reduction in operative time, p=ns) and in complication/recurrence in two procedures (hernioplasty and appendectomy, 50–75% reduction in complications or recurrences, p = ns). Proportion of trainees and young fellows performing I and II operations increased significantly in recent years.

CONCLUSIONS: MIS can be developed safely and comprehensively in a medium-volume centre. Mastering the technique of common procedures fast-tracks the development of rare, complex operations. MIS skills are transferrable across different procedures and among surgeons, and can be effectively incorporated in a surgical training program.

T024: HYBRID SIMULATION: A NOVEL CURRICULAR CHANGE FOR AN ESTABLISHED TRAINING COURSE

Katherine A Barsness, MD, MS, Deborah M Rooney, PhD, Carroll M Harmon, MD, PhD, Northwestern University Feinberg School of Medicine, University of Michigan Medical School, University of Buffalo School of Medicine

BACKGROUND: For more than 20 years, the annual minimally invasive surgery (MIS) fellows' course maintained a basic structure of morning lectures and an afternoon animate porcine laboratory skills session. In 2012, a hybrid simulation model (inanimate tissue with synthetic surround)

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for esophageal atresia was introduced. Based on data from 2012 evaluations (“more access to simulation models” and “less time with [live animals]), the 2013 course was converted from an animate porcine lab to a fully hybrid simulation laboratory session, eliminating the animate porcine laboratory. We present our subsequent evaluation results.

METHODS: IRB-exempt study. Fifty-two previously described hybrid simulation models (13 each: esophageal atresia/tracheoesophageal fistula [TEF], duodenal atresia [DA], diaphragmatic hernia [DH] and [Lobectomy]) were surgically modified/assembled. Thirty-seven pediatric surgery residents performed MIS procedures on the four hybrid models. The student to faculty member ratio was 3:1. At course conclusion, participants were asked to evaluate the course across six domains (29 items) using 5-point rating scales (1=no value, 5=extremely valuable). Ratings were evaluated using the many-Facet Rasch model, reported as observed averages (OA).

RESULTS: Table 1. The highest observed average (OA) was for Relevance to participants’ personal educational needs (OA=4.9). Didactic sessions had an overall OA of 4.7 [4.4–4.86]. Hybrid models OAs were 4.7 (DH), 4.6 (DA), 4.3 (TEF) and 4.3 (Lobectomy). The global course OA was 3.3, with 3=continue the course for pediatric surgery training as is, with slight improvements and 4=continue to use the course, no changes.

CONCLUSIONS: With the availability of high fidelity hybrid simulation models relevant to pediatric surgical training, we have successfully converted a previously exclusive animate porcine educational course to a fully simulated course. Additional validity evidence for the use of hybrid simulation models as educational tools are still required, but preliminary

evidence supports continued use of hybrid simulation during pediatric surgery training.

T025: LAPAROSCOPIC INTERRUPTED MUSCULAR ARCH REPAIR IN RECURRENT UNILATERAL INGUINAL HERNIA AMONG CHILDREN Sherif M Shehata, PhD, [Akram M ElBatarny, MD](#), Mohamed A Attia, MD, Ashraf A AlAttar, MD, AbdelGhani Shalaby, MD, Department of Pediatric Surgery, Tanta University Hospital, Tanta, Egypt

INTRODUCTION: Laparoscopy became widely used in the management of pediatric inguinal hernia (PIH) especially in recurrent cases as we approach virgin field with many advantages. In unilateral cases, many cases can be repaired by herniorrhaphy.

AIM: We present a procedure with suturing the transverse abdominal fascial arch to the ileopubic tract laparoscopically in order to repair recurrent unilateral inguinal hernia.

PATIENTS & METHODS: Twenty consecutive children with recurrent unilateral PIH were treated along 5 years period in a tertiary academic center. All cases were subjected to laparoscopic exploration followed by laparoscopic hernia repair as a day case surgery. Sutures were placed on from the fascial arch to the ileopubic tract avoiding the spermatic vessels and duct in interrupted manner using 2/0 Prolene or Vicryl sutures. In some cases, a purse string suture is added to narrow the internal ring. The knot is tied either intra corporeally or extra corporeally according to surgeon’s preference. The needle removed transabdominally. Operative findings and post operative results and complications were assessed. The patients were followed for a period ranged between 6 and 52 months.

RESULTS: We have 18 boys and two girls. Operative age ranged between 18 months and 15 years. Three or four sutures

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were placed in either case. In 4 cases, additional purse string suture was added. Operative time ranged between 35 & 70 min in unilateral cases without conversion. Scrotal edema reported in 4 cases, 2 cases of port infection were reported and treated conservatively. One case of recurrence among boys was reported and no case of testicular atrophy was reported in the follow up period. Cosmetic outcomes were excellent.

CONCLUSION: This procedure is helpful in the functional reconstruction of the inguinal canal in recurrent cases of unilateral inguinal hernia. Laparoscopic inguinal herniorrhaphy by this technique is feasible and safe. Consequently, there is lower risk of injury to the spermatic duct or vessels than the conventional herniorrhaphy. Larger studies and long-term follow up are needed to support our encouraging results.

T026: LAPAROSCOPIC TREATMENT OF LIVER HYDATID DISEASE IN CASES OF CYST RUPTURE IN CHILDREN

Sagidulla Dosmagambetov, Bulat Dzenalae, Aitzan Baimenov, [Vladimir Kotlobovskiy](#), Aslan Ergaliev, Aslbek Tusupkaliev, Ibatulla Nurgaliev, Roza Kenzalina, Kidirbek Altaev, Kuben Satibaldiev, Egor Roskidailo, Department of Laparoscopic Surgery, Regional Pediatric Hospital, Aktobe, Kazakhstan

AIM: Evaluation of efficiency of laparoscopic treatment of liver hydatid disease in cases of cyst rupture in children.

MATERIALS: Since 1993 till February 2014 375 children ranging from 4 to 14 years of age with hydatid disease underwent surgery. In 236 (62,9%) cases hydatid located in liver, in 83 (22,1%) cases – in lung, in 36 (10,9%) – in kidney, in 6 (1,6%) – in omentum, in 2 (0,5%) – in uterine tubes, in 3 (0,8%) – in spleen, in 2 (0,5%) – in

brain, in 3 (0,8%) – in retroperitoneal space, in 2 (0,5%) – in mussels, in 2 (0,5%) – in pancreas. There were 12 (5,1%) urgent cases of liver cysts rupture. In 9 (75%) cases the cyst rupture was associated with trauma. In 3 (25%) – it happened spontaneously. Abdominal ultrasonography, CT, MRI performed as a diagnostic procedures before surgery. In 11 (91,6%) patients we performed laparoscopic approach for treatment of th?se complicated cases, in 1 (8,4%) – open surgery. Four trocar (10, 6, 6, 22 mm) approach was performed. Free hydatid fluid was identified and aspirated from abdomen cavity. In 8 (72,7%) cases ruptured cysts were located in a right lobe, in 3 (27,3%) – in a left. We used 22 mm trocar for vacuum extraction of endocyst. Abdomen cavity was irrigated by saline solution. We performed betadine solution for the processing of fibrous capsule. One tube used for draining of residual cavity. One, or two – for draining of the abdominal cavity. All patients accepted 10 mg/kg of albendazolum during 6 weeks postoperatively. Operation time, conversion rate, complications rate, length of hospital stay were analyzed.

RESULTS: It was no mortality. Duration of operation time was 61.3+–13.6 min. It was 1 (8,4%) case of biliary peritonitis, associated with biliary fistula. Laparoscopic suturing of biliary fistula was performed on a third day after primary procedure. Duration of the hospital stay was 9.8+–1.5 days. It was 1 (8,4%) case of recurrence with dissemination of the process in an abdomen cavity.

CONCLUSION: Laparoscopic approach could be successfully performed for treatment of liver hydatid disease in cases of cyst rupture. It demonstrates good post-operative results, low rate of complications and recurrence, short duration of operation time and hospital stay.

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T027: OUTCOMES OF SINGLE PORT SURGERY FOR PERFORATED APPENDICITIS IN CHILDREN: SINGLE SURGEON EXPERIENCE

EXPERIENCE Adesola C Akinkuotu, MD, Paulette I Abbas, MD, Shiree Bery, MD, Ashwin Pimpalwar, MD, Texas Children's Hospital and the Division of Pediatric surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, TX.

INTRODUCTION: Advances in laparoscopic surgery have led to the use of single-incision/port laparoscopy surgery (SILS) for general surgical operations including appendectomies. At our institution, a single surgeon routinely performs SILS appendectomies for acute appendicitis. There is limited data in literature for outcome of SILS in perforated appendicitis.

PURPOSE: To report outcomes for SILS in children with acute perforated appendicitis.

METHODS: We reviewed the records of all pediatric patients who underwent SILS appendectomy for acute, perforated, appendicitis, performed by a single surgeon, between 2009 -2013. Appendectomy was performed using the single port (Olympus Triport) by single incision through center of the umbilicus (keeping within the limits of the umbilicus) completely intra-corporeally by using conventional laparoscopy equipment.

RESULTS: 72 patients underwent SILS for acute, perforated, appendicitis. Age of patients undergoing SILS was (Median of 8.7±3), length of operation was (median, 58(36-140) minutes and length of hospital stay was (Median 5.5±3.4days). Only one patient was converted to traditional laparoscopy. Post-operative complications included wound infection 9/71 (12.7%), intra-abdominal abscess formation 12/71 (16.9%), and post-operative ileus 15/72 (20.8%).

CONCLUSION: SILS for perforated appendicitis in children is safe and

effective and has comparable outcomes to traditional approaches for perforated appendicitis in historical literature.

T028: THORACOSCOPIC APPROACH OF BILATERAL CHYLOTHORAX: VIDEO

Marcelo Martinez Ferro, MD, Fernando Rabinovich, MD, Carolina Millan, MD, Horacio Bignon, MD, Gaston Bellia, MD, Luzia Toselli, MD, Mariano Albartal, MD, Private Children's Hospital of Buenos Aires, Fundación Hospitalaria, Buenos Aires, Argentina

The development of chylothorax is a relatively common complication after pediatric cardiac surgery. The resolution of this complication poses a significant challenge to surgeons and there is no consensus for the most appropriate therapeutic strategy. In this video, we shown the thoracoscopic correction of a bilateral chylothorax on a 2-month old baby.

T029: THE USE OF ROBOTIC SURGERY ALLOWS FOR IMPROVED DEXTERITY AND VISUALIZATION DURING THORACOSCOPIC THYMECTOMY

Shannon F. Rosati, MD, Dan Parrish, MD, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center

INTRODUCTION: Myasthenia gravis (MG) is an autoimmune neuromuscular disease, the effects of which can be improved or alleviated by thymectomy in young patients. However, median sternotomies or thoracotomies have a high degree of morbidity, especially when already weakened from their MG. A thoracoscopic approach allows for a minimally-invasive approach but it can be technically challenging to completely remove all of the thymic tissue in the contralateral chest and lower neck, especially in the smaller children that typically have larger glands.

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The robotic-assisted approach allows for the use of articulating instruments and 3D visualization

PATIENT: This patient is a three year old boy who had been suffering from generalized MG. Due to disease progression that was only partially controlled by medications, his neurologist referred him for thymectomy. After a lengthy conversation with his parents, the decision was made to proceed with a robotic-assisted left thoroscopic thymectomy.

TREATMENT: The patient was placed in the supine position on the operating room table. Through a transverse incision in the left axilla, a 5-mm XCEL trocar was placed in the 7th interspace, and pneumothorax was created with a pressure of 4 mmHg. One additional 5-mm robotic trocar was placed in the left mid-clavicular line in the 6th interspace, and an additional 8mm trocar was placed in the 6th interspace in the anterior axillary line. The XCEL trocar was replaced with a 5mm robotic trocar. At this point, the robot was docked, and the 8-mm camera and 30 degree scope was placed in the central trocar. Hook cautery and a Maryland grasper were used to dissect the gland off of the heart. The left lateral aspect of the thymus was lateral to the left phrenic nerve, which was identified and preserved. Dissection was continued in a caudad direction to free up the entire left lobe of the gland and carried over toward the right chest. A small hole was made in the right pleura to prevent tension pneumothorax from developing. At this point, the dissection was carried around the right lobe of the thymus with care taken to preserve the right phrenic nerve. Dissection was continued to free the gland from the heart as well as both superior horns that extended well into the lower neck. Once the organ was dissected free, it was placed into a 10-mm Endocatch bag

that had been placed through the slightly widened 8-mm trocar defect. The lungs were fully inflated prior to the fascia being closed at all port sites without placing a chest tube. No pneumothorax was seen on the postoperative chest xray. The patient tolerated the procedure well without any postoperative complications, had minimal blood loss, and was discharged home the following day.

CONCLUSION: The use of robotic-assistance in thoroscopic thymectomies with its articulating instruments and 3D visualization has allowed for this approach to be offered to younger and smaller patients despite having a larger thymus. This approach allows these patients to benefit from an earlier thymectomy while avoiding the morbidity from a sternotomy or large thoracotomy.

T030: TREATMENT OF THE CHYLOPERICARDIUM THROUGH MINIMAL INVASIVE TECHNIQUES REPORT OF A PEDIATRIC CASE [Carlos Garcia-Hernandez, MD](#), [Lourdes Carvajal-Figueroa, MD](#), [Adriana Calderon-Urreta, MD](#), [Sergio Landa-Juarez, MD](#), Hospital Star Medica Lomas Verdes. Mexico

INTRODUCTION: The chylopericardium is a rare entity in pediatrics. There are few publications about the occurrence of this disorder in children, and most of the available reports are related to cases in cardiovascular surgeries. The objective of this paper is to present the case of a child that developed chylopericardium without an apparent cause, its diagnostic, as well as its successful resolution through a ligature of the thoracic conduct and the creation of a pericardial window using approach.

CASE PRESENTATION: Male patient of 6 years of age, started with symptoms (cervical and thoracic pain) 3 weeks before admission to hospital after

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falling from his own height. The x-ray showed cardiomegaly and the echocardiogram demonstrated the existence of a pericardial effusion. After 300 mL of a white liquid were drained through pericardiocentesis, a pericardial catheter was placed. The aspirated liquid presented 1910 mg/dl of triglycerides and chylomicrons of 21.3. Treatment was initiated using NPT, octreotide and diet with mid-chain triglycerides. With magnetic resonance lymphatic anomalies were discarded. Upon failure of the medical treatment, due to an increase in expenditures, surgery was performed using a thoracoscopic approach through the right. The thoracic conduct was dissected upon entry to the thorax and linked with a 2-0 silk, the pericardia was incised to create a window ranging from the diaphragm until the union of the superior cava and the auricular, resulting in an engrossed pericardia. Oral feeding after 24 hours without increasing the pleural expenditure and catheter was removed after 72 hours; patient was discharged on the fourth day. Follow up after 6 months without complications, with normal echocardiographic and radiological control.

DISCUSSION: The chylopericardium in children occurs most of the time after cardiovascular surgery. The aforementioned case could be considered idiopathic as the traumatism was reduced and the event provoked an x-ray that marked the beginning of the study. Disregarding the volume of the accumulated liquid, as well as for an unknown reason, the patients with this disorder can have severe tamponed symptoms or otherwise be asymptomatic as in the reported case. In the idiopathic cases the physiopathology of the accumulation of the chylo in the pericardium rather than in the pleural space has yet been thoroughly studied, and

it is rather believed that such occurrence is a consequence of a leakage in the insertion of the thoracic conduct in the superior cava vein. When the medical treatment happens to fail it must be solved through surgery, as demonstrated in the above mentioned case. The best option is to perform a ligature of the conduct with the creation of a pericardial window. Performing this surgery through thoracoscopic approach results in the well-known advantages of minimum invasive procedures in terms of recovery, in addition to the magnification of images that allows us to locate and link the thoracic conduct safely, immediately controlling the chilo thorax and avoiding future complications.

T031: LAPAROSCOPIC URETEROVESICAL PLASTY FOR MEGAURETER'S

TREATMENT Sergio Landa-Juárez, MD, Ana María Castillo-Fernández MD, Angélica Alejandra Guerra-Rivas MD, Arturo Medécigo Vite MD, Hermilo De La Cruz-Yañez MD, Carlos García-Hernández MD, Hospital de Pediatría, Centro Médico Nacional Siglo XXI. IMSS

PURPOSE: The ureterovesical junction stenosis is a distal ureteral obstructive anomaly which causes megaureter. When surgical reconstruction is necessary the megaureter is traditionally detached, the stenotic segment resected and in some cases tailoring is recommended. This paper proposes an alternative laparoscopic treatment for obstructive and obstructive-refluxing megaureter sparing the uterovesical junction (UVJ).

PATIENTS AND METHODS: 7 patients with febrile urinary tract infection were studied with ultrasound, cystogram, excretory urography and MAG3 renal scan. Six were diagnosed with obstructive and one with obstructive-refluxing megaureter. The diameters varied between 8 to 10mm. Laparoscopic ureterovesical plasty

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consisted in a longitudinally incision on the anterior ureteral wall above and through the stenotic segment including vesical mucosa maintaining the ureter's posterior wall attached to the bladder (Fig. 1).



FIG. 1

Then a transverse ureter to bladder mucosa anastomosis was performed to relieve obstruction (Fig. 2).



FIG. 2

RESULTS: From a total of 7 cases, 2 were women and 5 men aged between 5 months and 3 years old. The operative time ranged from 90–120 minutes with a 48-hour hospital stay. Urethral catheter and double “pig” tail stent were used for 48 hours and six weeks respectively. Antibiotic was used in therapeutic doses for 7 days and prophylactic doses for 8 weeks. The average follow-up was 17.7 months.

One female patient developed febrile urinary tract infection a week from surgery. Thereafter she remained asymptomatic, with normal urinalysis, as did the remaining patients.

Ultrasound and excretory urography at six months from surgery demonstrated improvement in ureteral and pyelocaliceal diameters.

The patient with febrile urinary tract infection after surgery was tested with renal scan reporting improvement from preoperative to postoperative conditions.

Cystourethrogram study was done for study purposes only. Six of seven patients with no reflux reported. The remaining patient without cystourethrogram moved from country residence and the study has not been considered necessary by new physician.

CONCLUSIONS: Laparoscopic approach allows a good ureteral stenotic segment identification and combined with Lich Gregoir and Heineke-Mickulicz ureterorraphy of stenotics segments at ureterovesical junction is a novel, simple and speedy technique for megaureter treatment.

Further more, allows to calculate the need for detrusotomy extension when needed to ensure antireflux mechanisms.

T032: VIDEO ASSISTED

EXTRACORPOREAL PYELOPLASTY [Edgar Rubio Talero, MD](#), [Fernando A Escobar Rivera, MD](#), CLINICA SALUDCOOP TUNJA

Dismembered Pyeloplasty is still the “Gold Standard” in the treatment of obstructive hydronephrosis.

What has changed in recent years is the approach to perform this operation. Robotics and Laparoscopy have demonstrated to be good surgical resources to solve Uretero-Pelvic-Junction (UPJ) obstruction. Nevertheless, the complexity of robotic surgery, the unaffordable that it is to most of the patients around the world and the advanced skills that has to have a laparoscopic surgeon, working in limited space, make these techniques too demanding and not always reproducible. This makes sound the idea of combine the

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benefits of laparoscopic approach and the agility of the open surgery suturing. This is the case of VIDEO ASSISTED EXTRACORPOREAL PYELOPLASTY.

The aim of this Video presentation is to review step by step this technique, highlighting the tricks and maneuvers to get success and improve the results in the management of obstructive hydronephrosis

T033: THE USE OF A 5-MM ENDOSCOPIC STAPLER FOR RECTAL TRANSECTION DURING LAPAROSCOPIC SUBTOTAL COLECTOMY Simone Frediani, MD, Silvia Ceccanti, MD, Romina Iaconelli, MD, Falconi Ilaria, MD, Debora Morgante, MD, Denis A Cozzi, MD, Policlinico Umberto I Hospital and Sapienza University of Rome, Rome, Italy

This video depicts a 9.5-year-old boy with longstanding ulcerative colitis resistant to maximal medical therapy. Following unsuccessful split ileostomy performed elsewhere, he was then elected for laparoscopic subtotal colectomy. The procedure entailed a 12-mm transumbilical port for the camera and three 5-mm working ports. Dissection and hemostasis were achieved utilizing a single vessel sealing device throughout the procedure. The present video focuses on the transection of the rectosigmoid junction, which was carried out utilizing a newly devised 5-mm endoscopic articulating linear stapler. The specimen was easily extracted via the distal stoma site. Given the patient's poor general health status, clinical improvement was slow but progressive. Ultimate cosmetic results were excellent. We believe that the above described 5-mm endoscopic stapler has the potential for wide scope and application in pediatric minimally invasive surgery.

T034: THE CHARACTERIZATION OF PECTUS EXCAVATUM INCLUDING ITS ASYMMETRY Sergio B Sesia, MD, Margarete M Heitzelmann, Sabine Schaedelin, MSc, Olaf Magerkurth, MD, Frank-Martin Haecker, MD, University Children's Hospital of Basel, Department of Pediatric Surgery and Department of Pediatric Radiology, Spitalstrasse 33, 4056 Basel, Switzerland; University of Basel, Clinical Trial Unit, Schanzenstrasse 55, 4031 Basel, Switzerland

BACKGROUND: The Haller-Index (HI) > 3.25 by computed tomography (CT) is the main criterion to indicate surgical repair in patients with pectus excavatum (PE). However, the level along the sternum in which the HI is measured, is not standardized. Commonly, the deepest point of the sternum is considered. Additionally, the HI alone is unable to describe asymmetric deformities of the anterior chest wall.

The aim of this study was to propose an Asymmetry-Index (AI) in addition to the HI for a more objective characterization of both the depth of the PE and its asymmetry and to evaluate its impact in the surgical indication.

METHODS: After institutional review board approval, the HI of 43 PE-patients and of 33 children of the control group from the University Children's Hospital of Basel (UKBB) was measured retrospectively at three different levels (HI1, HI4, HI5). Sensitivity and specificity of the HI in these levels were compared. Furthermore, an asymmetry index was calculated at the same three levels (AI1, AI4, AI5). All the measurements were based on CT scan. Validity was assessed using McNemar and exact McNemar tests.

RESULTS: There is a moderate higher sensitivity of the HI when measured at

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level 4 instead of level 1 or 5. The AI at level 1 has a higher sensitivity than at level 4 and 5. Combining HI4 and AI1, the sensitivity significantly increases compared to HI4 alone.

CONCLUSIONS: Our study showed that HI evaluated at level 4 combined with AI at level 1 increases the accuracy of the description of the chest wall deformity compared to HI4 alone. Additionally, HI at level 4 combined with AI at level 1 increases the accuracy of the indication to surgical repair of the PE.

T035: CURRENT PRACTICE AND OUTCOMES OF THORACOSCOPIC ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA REPAIR: A MULTI-INSTITUTIONAL ANALYSIS IN JAPAN

Hiroomi Okuyama, MD, PhD, Hiroyuki Koga, MD, PhD, Tetsuya Ishimaru, MD, PhD, Hiroshi Kawashima, MD, Atsuyuki Yamataka, MD, PhD, Naoto Urushihara, MD, Osamu Segawa, MD, PhD, Hiroo Uchida, MD, PhD, Tadashi Iwanaka, MD, PhD, Dept of Pediatric Surgery, Hyogo College of Med.; Juntendo University School of Med.; The University of Tokyo Hosp.; Saitama Children's Hosp.; Shizuoka Children's Hosp.; Tokyo Women's Medical University; Nagoya University Graduate School of Med.

BACKGROUND: The optimal surgical treatment of infants with esophageal atresia and tracheoesophageal fistula (EA/TEF) remains controversial. In order to better understand the current practice and outcomes of thoracoscopic repair of EA/TEF, a multi-institutional analysis was conducted among seven Japanese institutes that perform advanced laparoscopic and thoracoscopic procedures in infants and children. All of the co-authors belong to these institutes.

MATERIALS & METHODS: A survey was sent to the seven institutes regarding the operative indications, surgical technique, postoperative management and outcomes of thoracoscopic repair of EA/TEF.

RESULTS: All institutes responded to the survey. A low birth weight (five institutes), associated anomalies (three institutes) and compromised physiologic status (three institutes) were identified as common exclusion criteria for thoracoscopic repair. The operation was uniformly performed via an intrapleural approach in the 0~45°prone position. Preoperative bronchoscopy was routinely performed in six (85.7%) institutes, and single lung ventilation was performed in two (28.6%) institutes. The TEF was occluded with suture ligature in four (57.1%) institutes and clips in the remaining three (42.9%) institutes. Anastomosis was performed using the extracorporeal knot-tying technique using 5-0 to 6-0 absorbable sutures in four institutes and the intracorporeal technique in three institutes. In order to facilitate anastomosis, stay sutures were used in three (42.9%) institutes. During surgery, chest and transanastomotic tubes were placed in all institutes. Patients were routinely left intubated and paralyzed for three to seven days postoperatively in four institutes. A total of 58 patients underwent thoracoscopic repair of EA/TEF at the seven institutes. Fifty-two (89.7%) of the patients underwent successful thoracoscopic repair. Six (10.3%) operations were converted to open thoracotomy due to a long gap (4), right aortic arch (1) and intraoperative instability (1). One operation was staged due to the patient's low birth weight. The body weight at operation ranged from 1.2 to 4.6 kg, while the age ranged from 0 to 194 days and the operative time ranged from 115 to 428 minutes. There were no major intraoperative complications. The gap distance between the proximal and

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distal esophagus for anastomosis ranged from zero to four vertebral bodies. Eleven patients (19.0%) suffered from anastomotic leakage, which healed following conservative management. Twenty-eight patients (48.3%) developed anastomotic stricture, all cases of which responded successfully to endoscopic dilatation. One patient died during the postoperative period due to an unrelated disease. Recurrent TEF developed in three infants (5.2%). Thirteen patients (22.4%) later required duplication.

CONCLUSIONS: Considerable variability was observed among the seven institutes with respect to the operative indications, surgical technique and postoperative management of thoracoscopic repair of EA/TEF, which can be safely performed with less surgical trauma by experienced endoscopic surgeons. However, postoperative stricture was common in this series, although there were no major intraoperative complications. The identification of variance in this survey is the first step to conducting future studies to identify best practices. Standardizing the surgical technique and postoperative management may reduce the incidence of complications after thoracoscopic repair for EA/TEF.

T036: SINGLE-INCISION LAPAROSCOPIC ENDORECTAL PULL-THROUGH FOR HIRSCHSPRUNG'S DISEASE WITH TROCARLESS INSTRUMENT VIA AN ANOTHER STAB INCISION [Shao-tao Tang, MD](#), Shi-wang Li, MD, Li Yang,

Department of Pediatric Surgery, Union Hospital of Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430022, China

BACKGROUND: Transanal endorectal pull-through for HD was a relatively safe and feasible procedure. However, over stretching on anal sphincter and mesentery of sigmoid colon might cause potential

risk of impaired defecation function in long term follow-up. Single-incision laparoscopic endorectal pull-through (SILEP) was technically feasible and safe in selected HD patients offering better cosmesis and less postoperative pain in comparison with conventional laparoscopic procedures. However, it is stressful for the surgeons in view of its low manipulability and poor visualization because clashing of instruments. We applied the technique of SILEP using a trocarless instrument via an another abdominal stab incision to obtain further improvement of SILEP.

METHODS: Between August 2010 and July 2013, 32 patients with HD were performed SILEP with a trocarless instrument. There were 24 males and 8 females, with a mean age of 3.6 months. Under general anesthesia, a single transumbilical vertical incision was made. Two 5.0 mm trocars were inserted into the peritoneal cavity at horizontal ends of umbilical incision. A 3.0 mm instrument was inserted through the left abdominal stab incision. After obtaining the critical view, two or three seromuscular leveling biopsies of the rectum and colon were obtained to identify the transitional zone. Rectum and colon were mobilized 5 cm proximal to the normal colon by elevating the mesentery using a 3 mm grasping forceps and dissecting it using the ultrasonic scalpel, until the colon pedicle was long enough to reach deep into the pelvis without tension. The dissection was continued to the peritoneal reflection of the rectum. Rectal mucosa dissection was performed transanally by the electrocautery technique. The aganglionic and dilated segments were resected and coloanal anastomosis was performed.

RESULTS: 10 patients with the transitional zone in the rectum, 17 patients in the sigmoid colon and 5 patients in the

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descending colon. All procedures were performed without adding another ports or conversion to open approach. The mean operative time was 116 min. There was no major intraoperative complications. In regard to early postoperative complications, mainly perianal excoriation occurred in 9 patients. No anastomotic leak occurred. Postoperative enterocolitis occurred in one patient, who was relieved by transfusion and colon irrigations requiring rehospitalization. There was no recurrent constipation. Clashing between the laparoscope and the instruments was reduced by changing the insertion site of forceps. Follow-up for 6 months to 3 years in all patients showed excellent cosmetic appearance.

CONCLUSION: Our procedure is feasible and safe for performing SILEP in selected HD patients, and the improved results are attributable to the introduction of a 3 mm forceps through the left abdominal stab incision.

T037: AUDIT OF INITIAL EXPERIENCE OF LAPAROSCOPIC PYLOROMYOTOMY Helai Habib, MBBS, BSc, Mohamed Shalaby, FRCS, Paed, Surg, Philip Hammond, FRCS, Paed, Surg, Atul Sabharwal, FRCS, Paed, Surg, Royal Hospital for Sick Children, Yorkhill, Glasgow, UK

AIM: Laparoscopic pyloromyotomy has recently been introduced at our institution. Our aim was to audit this initial experience, focusing on complications.

METHODS: Patients who had laparoscopic pyloromyotomy between 2005 and 2014 inclusive were identified retrospectively from the theatre database. These case notes were reviewed regarding demographics, presentation, operative details and post-operative course.

RESULTS: During the study period 605 pyloromyotomies were performed, 40 attempted laparoscopically (7%). For

the laparoscopic group, median age at presentation was 5 weeks (range: 2–9weeks), gender (31 male, 78%), mean weight 3.9kg (range: 2.5–5.3kg) and 3 had positive family history. Complications were noted in 5 patients (13%); 3 had duodenal perforation (site of perforation; 2 at site of grasper and 1 at site of pyloromyotomy) repaired with open conversion, 1 further patient had open conversion due to technical difficulty, 1 had open re-do pyloromyotomy 4 weeks later for inadequate pyloromyotomy, 1 had port-site infection requiring oral antibiotics, and 1 had epigastric port-site omental hernia requiring surgical repair.

CONCLUSION: Laparoscopic pyloromyotomy is a feasible treatment for pyloric stenosis although technical challenges should be appreciated. Our experience highlights the importance of gentle grasping of the duodenum for stabilisation during pyloromyotomy and ensuring clear visualization whilst spreading the pyloric muscle.

T038: OUTCOMES AFTER EARLY SPLENECTOMY FOR HEMATOLOGICAL DISORDERS Elizabeth Renaud, MD, Nirmal Gokarn, MD, Deepa Manwani, MD, Steven Borenstein, MD, Dominique Jan, MD, PhD, Montefiore Medical Center

PURPOSE: Acute splenic sequestration crisis is a potentially life threatening complication of sickle cell disease which can require prophylactic splenectomy. Historically, splenectomy before age 5 was avoided due to fear of overwhelming post-splenectomy sepsis. Recently, splenectomy has been performed as early as age 2, but the safety of this approach is unknown. This study compared outcomes of splenectomy performed in patients under 5 to those 5 years and older.

METHODS: A retrospective chart review of patients registered in a children's

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hospital hematology database was performed to examine intra-operative, post-operative, and long-term outcomes after splenectomy. Statistical data analysis included Chi-Square test and Fisher's exact tests for categorical variables and the Non-Parametric Median test for continuous variables. The Institutional Review Board approved this study.

RESULTS: From 1997 to 2013, 30 sickle cell patients underwent splenectomy. At time of surgery, 18/30 patients were under age 5 (group1) and 12/30 patients were 5 years or older (group2). Mean age at splenectomy was 34.2 months for group1 and 83.6 months for group2. Almost all procedures were laparoscopic, and there was no difference between groups in frequency of laparoscopic or open splenectomy (group1, 18 laparoscopic; group2, 9 laparoscopic and 1 open). There was no difference in the operative time, rate of conversion from laparoscopic to open procedure, or frequency of intra-operative complications. The median length of stay was 4 and 6 days for group1 and group2 respectively. Both groups had similar lengths of follow up (median of 62.5 months group1, 63 months group2). No portal vein thromboses or post-splenectomy sepsis events occurred in either group.

CONCLUSIONS: While the statistical power of this study was limited, there was no evidence that the incidence of complications was higher after splenectomy at a younger age. A large, multi-center study is needed to further evaluate the safety of this practice.

T039: BRINGING SURGEONS TOGETHER ACROSS THE WORLD: DIAGNOSIS AND MANAGEMENT OF ACUTE APPENDICITIS

Margaret Nalugo, MPH, [Todd A Ponsky, MD](#), George W Holcomb III, MD, Akron Children's Hospital, Children's Mercy Hospital

INTRODUCTION: Appendicitis is one of the most common surgical emergencies in the pediatric population. Despite this, there is still a great deal of debate among pediatric surgeons regarding the workup and treatment of this condition. The introduction of virtual broadcasts has created a forum where surgeons all over the world can discuss various controversial topics without being in one physical location. A case in point is appendicitis. While there is an immense body of literature relating to the management of appendicitis, the literature is often varied and so are common practices, especially internationally. During a live, virtual, consensus conference in September of 2013, we polled pediatric surgeons from around the world regarding their preferences in the management of appendicitis. Results are reported here.

METHODS: During the interactive broadcast session, questions about diagnosis and management of appendicitis were displayed on the screen. World-renowned faculty and pediatric surgeon audience members were then asked to respond to the poll questions.

RESULTS: Questions asked were in the form of clinical scenarios. These included: A 12-year old boy with classic history and exam for appendicitis. Is imaging needed? Majority (69.2%) reported no imaging, 26.9% - Ultrasound, none chose CT scan. When a question was asked about acute, non-ruptured appendicitis to be treated non-operatively, 7.1% said they would treat non-operatively with antibiotics whereas the majority (92.9%) said they would operate. For suspected, acute, non-ruptured appendicitis at 11pm, when would you operate? The majority (65%) reported that they would operate the next day, the rest reported that they would operate that night. Regarding

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technique the majority (56.8%) preferred standard 3- port laparoscopy for non-perforated appendicitis, 37.8% preferred single-incision appendectomy and the rest preferred open appendectomy. Regarding antibiotic doses after appendectomy for acute, non-ruptured appendicitis and length of stay, the majority (56.67%) preferred one more dose of antibiotic and discharge 24hours postoperatively, 16.67% preferred no further antibiotic and discharge 24hours postoperatively, 20% preferred no further antibiotic and discharge from recovery room or soon thereafter , while 6.67% preferred one more dose of antibiotics and discharge after the dose. Regarding return to full activity following laparoscopic appendectomy; Majority of the surgeons (33.3%) reported after two weeks, 16.67% and 16.67% reported after three and 4 weeks respectively, 20% reported after one week and 13.33% reported no restrictions.

If on postoperative day 10 the child is not clinically well and still has a low grade fever; 56.25% of the surgeons would get a CT scan, the rest would get an ultrasound and none would continue intravenous (IV) antibiotics without any studies.

CONCLUSION: The use of virtual broadcasts affords a unique opportunity for surgeons around the world to share their practice strategies with each other and gauge if they practice significantly different than the majority of others. This is especially suited for topics such as appendicitis were diagnosis and treatment can be widely varied.

T040: A NOVEL REPAIR OF A VAGINAL FORNIX LACERATION FOLLOWING INTERCOURSE Ulises Garza Serna, MD, David Bliss, MD, [Nam Nguyen, MD](#), Kasper Wang, MD, University of Southern California, Children's Hospital Los Angeles

INTRODUCTION: Vaginal and cervical avulsions after sexual intercourse are very rare in healthy female patients. The standard approach for such lacerations utilizes a tenaculum to pull the cervix out more superficially in order to facilitate repair. There is one reported case in the literature of laparoscopic intraabdominal repair of a vaginal rupture with evisceration after intercourse. Here we describe a transvaginal endoscopic repair of a deep vaginal laceration.

DESCRIPTION: An otherwise healthy 17 year-old girl presented with a one week history of heavy vaginal bleeding after her first sexual intercourse encounter. The patient described using 4 to 5 pads per day with evacuation of large blood clots. No external trauma was observed so the patient was emergently scheduled for examination under anesthesia.

The patient was placed in a lithotomy position. Using a speculum, we visualized an actively bleeding partial cervical avulsion due to a deep partial thickness laceration in the posterior vaginal fornix. Repair using standard surgical instruments was unsuccessful. Given the risk of completely avulsing the cervix if pulled outward using a tenaculum for repair, we opted to use a 5 mm, 30 degree laparoscope and laparoscopic instruments including a knot pusher to repair the laceration cervix. Hemostasis was accomplished and the patient recovered uneventfully thereafter.

CONCLUSION: We describe the successful use of laparoscopic instruments to repair a deep vaginal laceration in lieu of maneuvers to pull the cervix out superficially. This technique is simple and should be considered to avoid worsening existing tears that may occur with manipulating the anatomy.

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P001: THE INFLUENCE OF OPEN APPENDECTOMY AND LAPAROSCOPIC APPENDECTOMY ON CD14, MD-2 AND TLR4 SIGNAL PATHWAYS IN CHILDREN WITH PERFORATED APPENDICITIS [Jian Wang, MD](#), Jie Zhu, MD, Children's Hospital of Soochow University

BACKGROUND: The inflammatory process in the post-appendectomy period is not well characterized. This study aimed to compare the inflammatory response during open appendectomy (OA) and laparoscopic appendectomy (LA) and the underlying Toll-like receptor (TLR)-mediated signal transduction pathways.

MATERIAL & METHODS: We examined 17 children with perforated appendicitis undergoing OA and 19 children undergoing LA. Monocytes at different time points before and after surgery were evaluated. TLR4, CD14, and MD-2 expression, LPS-mediated inflammatory response, and TLR signaling pathways were examined.

RESULTS: The expression of TLR4 and MD-2 is increased in LA group, while there is no difference in CD14, TLR4, and MD-2 expression in OA group. LPS stimulated ex vivo production of inflammatory cytokines was not affected in LA group, but the diminished TNF- α was found after surgery in OA group. The phosphorylation of STAT3 and ERK1/2 in monocytes after LPS stimulation was also suppressed in OA group, while no difference was found in LA group.

CONCLUSIONS: LA, rather than OA, could protect monocyte-mediated inflammatory response upon LPS stimulation, which may help reduce the risk of postoperative infection in children with perforated appendicitis.

P002: LAPAROSCOPIC MANAGEMENT OF POSOPERATIVE BOWEL OBSTRUCTION IN CHILDREN [Fernando Rey, MD](#), William Murcia, MD, Andrés Pérez, MD, Nidia Vera, MD, David Díaz, MD, Clínica Infantil Colsubsidio Bogotá, Colombia

INTRODUCTION: Peritoneal adhesions are a major cause of postoperative intestinal obstruction in children, the surgical treatment is considered in cases where the non-surgical management does not work or when there are signs of intestinal ischemia. Historically, the open release of peritoneal adhesions was the conventional treatment for this pathology; in recent years, laparoscopic management has showed lower recurrence of adhesions, less postoperative pain and shorter postoperative hospitalization. The objective of this study is to describe our experience in the management of adhesive intestinal obstruction in a children's hospital.

OBJECTIVE: To describe the results of laparoscopic management of adhesions in children with postoperative intestinal obstruction.

RESULTS: 6 patients with postoperative intestinal obstruction were managed with adhesiolysis by laparoscopy, the mean age was 11.6 years (range 3-17 years), 67% female and 33 % male, all patients were studied with abdominal X-ray, evidencing signs of mechanical intestinal obstruction. They were initially managed with nasogastric tube between 1 and 5 days without improvement, so they were taken to surgery. All patients had had peritonitis secondary to perforated appendicitis, 2 patients had been operated by Rockey Davis incision, and 4 patients by median laparotomy, one of which had two previous surgeries for the same via for previous intestinal obstruction. The average operative time was 71 minutes (range 45-100 min), the procedure was

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performed by 3 ports in all patients, only 1 case required reoperation by laparoscopy for drainage of postoperative residual collection, non intestinal resection was performed. The averaged time of oral feeding was 48 hours (range 24–96). There were not intraoperative or postoperative complications, nether conversion to open surgery.

CONCLUSIONS: Laparoscopic adhesiolysis was safe in these patients; it is an alternative management that could be consider the best treatment in children with these pathology, even in the first episode of postoperative intestinal obstruction.

P003: OPTIMIZING WORKING SPACE IN LAPAROSCOPY – CT MEASUREMENT OF THE EFFECT OF NEUROMUSCULAR BLOCKADE AND ITS REVERSAL IN A PORCINE MODEL J. Vlot, MD, Pac Specht, BSc, Prof. RMH Wijnen, MD, PhD, Eg Mik, MD, PhD, Prof. NMA Bax, MD, PhD, Erasmus MC: University Medical Center Rotterdam

BACKGROUND: Conflicting results on the effect of neuromuscular blockade (NMB) on laparoscopic working space are found in literature. Studies are limited by the absence of objective assessment of working space or use surrogate outcomes. We investigated this issue in a porcine model using an objective method for evaluating working space.

METHODS: In a standardized porcine laparoscopy model, laparoscopic working-space dimensions with and without NMB were investigated in 16 animals using computed tomography at intra-abdominal pressures of 0, 5, 10 and 15 mmHg during multiple runs of abdominal insufflation.

RESULTS: No statistically significant effect of NMB on laparoscopic working-space dimensions was found. In contrast, the

effect of pre-stretching of the abdominal wall by a previous abdominal insufflation was found to be significant.

CONCLUSIONS: NMB does not influence laparoscopic working space. Studies dealing with working space during laparoscopy should take note of pre-stretching bias.

P004: LAPAROSCOPIC MANAGEMENT FOR VENTRICULAR PERITONEAL SHUNT COMPLICATION IN TWO PATIENTS WITH CEREBROSPINAL FLUID PSEUDOCYST

Fernando Rey, MD, William Murcia, MD, Andres Perez, MD, David Diaz, MD, Nidia Vera, MD, Faber Pelaez, MD, Clinica Infantil Colsubsidio Bogotá, Colombia

INTRODUCTION: Peritoneal pseudocysts of cerebrospinal fluid and intestinal obstruction due to adhesions are common complications in ventriculo peritoneal shunt in hydrocephalus. Recently, laparoscopic drainage of collections and release of peritoneal adhesions shows favorable results with less intestinal manipulation, shorter ileus and postoperative hospitalization time.

Two patients with hydrocephalus and ventricular peritoneal derivation consulted for abdominal pain, associated with signs of partial intestinal obstruction.

CASE 1: 11 Year old male with multiple ventricular peritoneal shunts for non-communicating hydrocephalus, and previous liberation of adhesions by laparotomy, consulted with abdominal distension and tense mass at palpation, abdominal pain and vomiting. The abdominal x ray showed absence of intestinal gas and round center radiopaque image. In the ultrasound and abdominal scanography a round pseudocyst was displayed in the center of the abdomen surrounded by bowels. The patient was managed by laparoscopy draining

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a pseudocyst of 1000 cc clear fluid. Peritoneal adhesions of the bowel loops to the abdominal wall were released. 12 hours after surgery the gastric tube was removed, and in the third day, the patient was released with adequate oral intake.

CASE 2: 4 Year old girl with hydrocephalus and ventricle peritoneal shunt, consulted for abdominal pain and distention, vomiting, and liquid stools. Abdominal ultrasound showed ascites without evidence of abdominal pseudocyst. At 72 hours of consultation, the abdominal pain increased in association with tense abdomen and fever, a diagnostic laparoscopy was performed, finding multiple collections of clear liquid. Collections were drained and the catheter exteriorized. Postoperative abdominal scanography showed underlying pseudocyst in the posterior aspect of the abdomen, another laparoscopy was performed after 4 days of the first surgery, with appropriated drainage of pseudocyst. The externalized catheter was removed. The patient did not require nasogastric tube and the release was at 24 hours.

CONCLUSIONS: Laparoscopic asses of abdominal pseudocyst was safe in both patients, achieving appropriated drainage of the collections and early postoperative oral intake. This approach is a useful in the treatment of ventricular peritoneal shunts complications in pediatric age.

P005: ENDOVIDEOSURGERY FOR TREATMENT OF CHOLEDOCHAL CYST IN CHILDREN [Damir Jenalaye](#)v, National Research Center for Mother and Child Health

The surgical treatment of congenital biliary disorders is one of the tough issues in pediatric surgery. Choledochal cysts are also of a current interest.

Due to development endovideosurgery it became possible to perform difficult reconstructive surgeries on the biliary tract by the aid of laparoscopy.

The main goal of our work was to compare the results of surgical treatment in two patient groups: "open surgery" and "endovideosurgery" patients.

Since 2008, 26 patients with choledochal cyst have been treated at National Research Center for Mother and Child Health. Eight of them had complaints on pain at epigastrium, three children – transitory jaundice, and six patients had no clinical symptoms. All the children passed CT and ultrasound investigation.

We applied endovideosurgery in 11 children. Roux-en-Y hepaticojejunostomy were performed after laparoscopic choledochocystectomy had been completed. First two cases were a kind of open surgery with laparoscopic assistance. Roux-en-Y hepaticojejunostomy in these patients were performed through arciform incision at umbilicus.

In remained nine cases all the stages of intervention have been completed by the aid of laparoscopic surgery. Affected choledoch was incised very close (0.5cm) to the left and right hepatic ducts conjunction. While performing Roux-en-Y hepaticojejunostomy extracorporeal ties were used.

The similar open surgery was performed in 15 patients of control group.

At postoperative period we used standard antibacterial treatment (wide spectrum antibiotics), parenteral nutrition within three days, and painkillers. No complications during the intra- and postsurgery period were noticed.

For comparative assessment of body's postagressive response to laparoscopic

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and traditional types of operations we studied: the state of stressful hormones (cortisol, prolactin) and several biochemical blood parameters, reflecting the functional state of the suprarenal glands and liver, the balance of carbohydrate and protein metabolism.

The analysis of the comparative evaluation of body's postaggressive response to laparoscopic and traditional surgeries has showed that laparoscopic surgery is less invasive, less traumatic, less durable surgical intervention which is characterized to have more favorable postoperative period.

Taking into consideration our experience of laparoscopic surgery for choledochal cysts endovideosurgery could become a method of choice for correction of external biliary ducts disorders.

PO06: PERCUTANEOUS INTERNAL RING SUTURING: MINIMALLY INVASIVE TECHNIQUE FOR INGUINAL HERNIA REPAIR IN CHILDREN

Damir Jenalayev, Omar Mamlin, Bulat Jenalayev, Dulat Mustafinov, National Research Center for Mother and Child Health

Since January 2013, 47 patients, from 1 month to 16 years old with inguinal hernia have been treated by PIRS (Percutaneous Inguinal Ring Suturing) at National Research Center for Mother and Child Health. There were 26 boys with 33 hernias (27% bilateral) and 21 girls with 30 hernias (43% bilateral). In 3 of 7 (42, 8%) boys and 6 of 9 (66, 6%) girls with bilateral hernias, the diagnosis was made preoperatively. The other children with bilateral hernias had an open contralateral inguinal canal diagnosed perioperatively that was regarded as a hidden hernia.

All apparatus introduced into the body cavity were manufactured by Karl Storz (Germany). The PIRS procedure was

performed under general endotracheal anesthesia with muscle relaxation.

The patient was in the supine position. Pneumoperitoneum was established with an open technique by introducing a 2.5- or 5-mm reusable trocar through a transverse incision at the lower part of umbilicus. Insufflation pressure was between 8-10 mm Hg, based on the patient's age. The size of the trocar depends on the size of the telescope. Two sizes of telescope diameter may be used: either 2.5-mm 5-degree, or 5-mm 5-degree or 25-degree. The whole peritoneal cavity is inspected. Any hernia is reduced manually or with the aid of the telescope tip. All needle movements are performed from outside the body cavity under camera control. To choose the location for the needle puncture, the position of the internal inguinal ring is assessed by pressing the inguinal region from the outside with the tip of a Pean the needle into the thread loop and the needle is withdrawn. Next, the thread loop is pulled out of the abdomen with the thread end caught by the loop. In this way the thread is placed around the inguinal ring under the peritoneum and both ends exit the skin through the same puncture point. The knot is tied to close the internal ring and is placed under the skin. If an open inguinal ring is found contralaterally, it is closed during the procedure, regardless of its diameter. The umbilical wound is closed with absorbable stitches and covered with pressure dressing to prevent hematoma formation. The skin puncture point in the inguinal region is left without any ressing.

There were no conversions in our series. The mean time under anesthesia for PIRS was 42 ± 12.35 minutes. The mean operative time was 17.34 ± 6.30 minutes for unilateral hernia and 25.20 ± 6.56 minutes for bilateral hernias, from the beginning of

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cleaning the operative field to dressing the umbilicus. The cosmetic results after PIRS were excellent, with no scars in the inguinal region and an almost invisible scar in the umbilicus. There were no intraoperative complications in our experience.

CONCLUSION: The PIRS method seems to be a simple and effective minimally invasive procedure with excellent cosmetic results and a complication rate comparable to other laparoscopic

techniques of inguinal hernias repair in children. According to our experience, PIRS should be taken into consideration as an alternative technique.

P007: INTERACTIVE INSTRUMENT-DRIVEN IMAGE DISPLAY IN LAPAROSCOPIC SURGERY Austin Y. Ha, Eleanor A. Fallon, MD, Derek L. Merck, PhD, Sean S. Ciullo, MD, [Francois I. Luks, MD](#), Alpert Medical School of Brown University

BACKGROUND: A significant limitation of minimally invasive surgery (MIS) is the dependence of the entire surgical team on a single endoscopic viewpoint. We have developed an individualized, instrument-driven image display system that allows all members of the surgical team to simultaneously control their view of the operative field. We tested its efficacy in vitro using a modified Fundamentals in Laparoscopic Surgery (FLS®) bead transfer task.

METHODS: An image navigation program was custom-written in Python, numpy and OpenGL to allow zooming and centering of the image window on two specific color signals, each one attached near the tip of a different laparoscopic grasper. The navigation router receives the image signal from a stationary camera via USB interface and splits it into the respective daughter windows (one monitor per user). In the modified, two-operator FLS® endotrainer

bead transfer task, 6 beads were lifted from pegs by one operator and passed to the other operator, who placed them on opposite pegs. In the experimental group, both operators controlled their own instrument-centered image. There were two controls: 1) static, wide-angle view of all the pegs, and 2) single moving camera allowing close-up and tracking of the bead as it was transferred. Each team of two operators performed every test at least once; the order in which the tests were performed was randomly assigned. Time to completion and number of bead drops were recorded.

RESULTS: Thirty-six individual sessions were performed by pairs of surgical residents in their second-through-fifth post-graduate year. Average total time for bead transfer was 127.3 ± 21.3 s in the Experimental group, 139.1 ± 27.8 s in Control 1 and 186.2 ± 18.5 s in Control 2 ($P=0.034$, ANOVA). Paired analysis (Wilcoxon Signed Rank Test) showed that the Experimental group was significantly faster than the Control 1 group ($P=0.035$) and the Control 2 group ($P=0.004$).

CONCLUSIONS: An image navigation system that allows two (or more) simultaneous, independent image displays centered on each laparoscopic instrument allows intuitive and significantly faster laparoscopic task performance than either the standard, static FLS® camera view or a single tracking close-up image of the field. Specifically, it offers higher resolution images and the possibility of multi-tasking. In addition, the instrument-driven tracking system guarantees that the close-up image is always centered on the laparoscopic target. Further development of robust prototypes will allow the transition of this in vitro system into clinical application.

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P009: THE GONZALEZ HERNIA REVISTED: USE OF THE ISCHIORECTAL FAT PAD TO AID IN THE REPAIR OF RECTOVAGINAL AND RECTOURETHRAL FISTULAE

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INTRODUCTION: During the development of the posterior sagittal approach to anorectal malformations a vital technical challenge was a precise midline dissection, which if off, allowed for the ischiorectal fat pad to bulge into the wound. This occurrence became affectionately known as a "Gonzalez hernia", after a trainee of Dr Pena's. For both traditional PSARP and the laparoscopic approach (ideal for rectobladderneck and high rectoprostatic fistulae), this technical aspect of staying precisely in the midline remains paramount. With a twist of this idea, we have put this fat pad to use, and have found that it can be an effective structure to aid in the repair of acquired rectovaginal and rectourethral fistulae.

METHODS: Patients with recurrent vaginal or urethral fistulae were selected for review. The ischiorectal fat pad was deliberately mobilized, (via a posterior sagittal or transanal approach) and used to buttress the repair of the posterior vagina or urethra.

RESULTS: The ischiorectal fat pad technique was used in 9 patients. All had an acquired fistula (6 rectovaginal fistula, 3 rectourethral fistulas). We used the posterior sagittal approach in 7 and in 2 the transanal approach. 6 patients had had at least two prior attempts at fistula repair. 6 patients had a stoma, and 3 did not. There were no recurrences in greater than six month follow-up.

DISCUSSION: The ischiorectal fat pad is easily visualized and mobilized, either via a posterior sagittal or transanal approach, providing excellent coverage with native, well-vascularized tissue, in an area that is difficult to heal. It is an excellent option for recurrent rectovaginal and rectovaginal fistulae and may have other additional creative applications. This approach when the rectum requires mobilization already, may be less invasive than a laparoscopic omental mobilization.

P010: THE INITIAL RESULTS OF LAPAROSCOPIC-ASSISTED DUHAMEL OPERATION IN TOTAL COLONIC AGANGLIONOSIS

Tri T. Tran, MD, Pediatric Hospital No 2

BACKGROUND: Total colonic aganglionosis (TCA) is the rarest type of Hirschsprung's disease. and has been traditionally managed by enterostomy and various different techniques of pull-through operation. Since Jan 2012, laparoscopic-assisted Duhamel operation has been performed in our hospital.

The aim of this study was to evaluate the initial results of laparoscopic-assisted Duhamel operation in TCA at Children's Hospital 2.

METHODS: Case series reports from Jan 2012 - June 2013.

RESULTS: There were 6 TCA children underwent the laparoscopic-assisted Duhamel operation. Mean age was 20.3 (13-36) months, mean operating time was 5.4 (3, 6-7) hours. No intraoperative complications. No conversion to open surgery. In 5 successful cases, mean time of oral feeding was 5.6 (4-8) days and the average length of hospital stay was 11.2 (10-13) days. There was one case of failure due to postoperative adhesive intestinal obstruction and anastomotic stenosis. This case was operated 8 months after first operation.

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Mean follow-up time is 9.2 months with good functional outcome. 5 of 6 cases had 3 to 6 bowel movements per day and the remaining case had 10 times per day.

CONCLUSIONS: This is a safe operation with good results, and highly aesthetic. The laparoscopic-assisted Duhamel procedure is our procedure of choice in total colonic aganglionosis.

KEYWORDS: laparoscopic-assisted Duhamel operation, total colonic aganglionosis, Hirschsprung's disease.

P011: WANDERING SPLEEN – LAPAROSCOPIC SPLENOPEXY [Sonja Kern](#), Julia Syed, P. Lux, Dr., R. T. Carbon, Prof., Dr., Pediatric Surgery Department of University Hospital Friedrich-Alexander University of Erlangen-Nuremberg

BACKGROUND: A wandering spleen is a very rare clinical condition associated with a high risk of splenic torsion along the vascular pedicle leading to splenomegaly and infarction. The incidence is about 0.2%. The suspected etiology is the lack of suspensory ligaments and laxity of the peritoneal fixation resulting from a fusion anomaly of the dorsal mesogastrium of the spleen. The predominant symptoms vary from an asymptomatic incidental finding to an abdominal mass, recurrent abdominal pain, intestinal obstruction, hemoperitoneum or in the case of infarction even the acute abdomen.

CASE REPORT: We report a case of a 17-year-old girl presenting with recurrent abdominal pain for a year and a half. Interestingly, the 13-year-old sister of our patient had a wandering spleen with total torsion and necrosis of the organ one year before with consecutive splenectomy. The blood test resulted in an increase of the pancreatic enzymes. In the first examinations the spleen was minimally enlarged and positioned in the upper

left abdominal quadrant. To confirm the suspicion of hereditary pancreatitis a biopsy was performed. But the result was not clear. One year later the ultrasound follow-up showed the spleen lying in the small pelvis above the bladder. Also a mild pancreatitis was still existent. A few months later, the patient came back to the hospital with an exacerbation of the abdominal pain. The physical examination resulted in an acute abdomen. The ultrasound examination presented a torsion of the greatly enlarged spleen (20cm) lying above the bladder surrounded by ascites. Via contrast gain, a very slow tide and two areas cutted out were detected. Immediately, an emergency laparoscopy was performed. The pedicle was twisted about 240 degrees. Now the spleen was turned back and brought into the normal position in the upper left abdominal quadrant. After a few minutes, the spleen was reperfused. Splenopexy was mandatory and was realized by gluing with fibringlue. The inferior pole was positioned into a peritoneal pouch sutured out of the peritoneum of the abdominal wall. After one week of bed rest, a planned second-look laparoscopy was performed. The spleen was found still in place with a little overturning at the top. Further fixation was applied with two stripes of vicryl-net anchored to the diaphragm and the abdominal wall.

RESULT: The postoperative course was uneventful. Mobilization and defecation were without problems. The clinical and ultrasonic follow-up showed the spleen fixed in anatomical position. Since then, no pancreatic problems appeared. A light elevation of the diaphragm was evident without breathing impairment. Laparoscopic splenopexy by forming a peritoneal pouch and inserting a vicryl-net fashioned around is feasible, less invasive and does not diminish splenic function. It is a safe and effective treatment for symptomatic wandering spleen.

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P012: LAPAROSCOPIC REPAIR OF CONGENITAL DUODENAL OBSTRUCTION

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BACKGROUND: Congenital duodenal obstruction (CDO) occurs in 1 in 6000 live births and is often associated with other anomalies including trisomy 21 and cardiac malformations. Laparoscopic repair of CDO has become popularised over the past decade, however the variable anatomy and small operating space poses a challenge for surgical repair utilising minimally invasive techniques. It has therefore been suggested that laparoscopic treatment of CDO should be restricted to a limited number of designated centres of expertise. After gaining extensive experience with intracorporeal suturing in other procedures we evaluated the feasibility of this approach in a single centre.

METHODS: Three consecutive cases of CDO were approached laparoscopically. The gestational age at operation was between 35 and 37 weeks, and the weight between 1.7 and 2.6 kg. In each case a 5 mm 30° telescope was inserted through the inferior umbilical fold, using an open Hassan technique. Pneumoperitoneum to 8 mmHg with CO₂ was established. Two 3.5 mm working ports were inserted; one in the right iliac fossa, and one in the left flank. In the first case a side to side anastomosis was performed. In the subsequent two cases, after transverse enterotomy of the dilated proximal duodenum, and longitudinal enterotomy of the collapsed distal duodenum, a diamond-shaped Kimura anastomosis with interrupted 6 - 0 Vicryl sutures was performed. A 4-0 PDS suture was placed through the abdominal wall, through the proximal duodenum, and back out the abdominal wall to display

the duodenum. The suspension stitch facilitated completion of the anastomosis with excellent visualisation and minimal manipulation of the tissues.

RESULTS: Of the three cases, one was a duodenal web, while the other two were duodenal atresias. All three cases were successfully managed by laparoscopic duodenoduodenostomy. The operative duration was between 170 and 195 mins. There were no conversions to an open procedure, no intra-operative complications and no anastomotic leaks observed. Enteral feeds were initiated on post-operative day 3, once nasogastric tube output had decreased. Full feeds were established between 10 and 14 days. Post-operatively one patient developed chylous acities, which was successfully managed conservatively with medium chain triglyceride (MCT) feed for 4 weeks.

CONCLUSIONS: Laparoscopic duodenoduodenostomy is a technically challenging procedure which involves delicate intracorporeal suturing. The published results have been reported by very experienced paediatric endoscopic surgical groups. This has led to the conclusion that laparoscopic treatment of CDO should be restricted to a few centres of expertise. This series demonstrates that laparoscopic duodenoduodenostomy can be safely and successfully performed with excellent short-term outcome. We found that suspension stitches facilitate the complex anastomosis by allowing excellent visualisation. We conclude that if experience of intracorporeal suturing has been attained in other areas that laparoscopic duodenoduodenostomy can be safely and successfully performed in small preterm neonates, even in lower volume centres.

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P013: LAPAROSCOPIC SPLENECTOMY IN CHILDREN WITH BENIGN HEMATOLOGICAL DISEASES: LEAVING NOTHING BEHIND POLICY [Mohammad Gharieb, PhD](#), Departement of Pediatric Surgery, Faculty of Medicine, Tanta University

INTRODUCTION: Laparoscopic splenectomy (LS) is considered the standard approach for the treatment of children with non malignant hematological diseases due to the advances in minimal invasive surgery over conventional splenectomy (CS). Different techniques are involved in the operation to secure the hilum. We assessed the value of bipolar sealing device (LigasureTM) as a safe, effective and less time consuming with less complication rate.

PATIENTS & METHODS: Sixty children (33 with thalassemia, 20 with ITP, and 7 with spherocytosis) were operated upon in Tanta University Hospital. These children had undergone LS using bipolar sealing devices (LigasureTM). We excluded cases with mean splenic span <16cm. We evaluated the overall operative time, total amount of blood loss and the occurrence of any other complications.

RESULTS: Sixty children (37 girls and 23 boys) with mean age 10.2 years had undregone LS using LigasureTM with mean operative time 85 minutes. There were no mortality, two cases converted to convensional open splenectomy due to difficulty to complete the procedure. Two cases had postoperative subphrenic collection resolved with conservative measures. No complications related to injury of adjacent strctures.

CONCLUSION: Laparoscopic splenectomy using bipolar vessel sealing device is techniqually safe, less time consuming with less complications compared with other techniques.

P014: ENDOSCOPIC REMOVAL OF SHARP OBJECTS IN THE UPPER GASTROINTESTINAL TRACT [Burak Tander, MD](#), [Unal Bicakci, MD](#), [Mithat Gunaydin, MD](#), [Riza Rizalar, MD](#), [Ender Ariturk, MD](#), [Ferit Bernay, MD](#), Ondokuz Mayis University, Department of Pediatric Surgery, Samsun, Turkey

AIMS: Removal of ingested sharp objects is challenging in children, when they are stuck in the upper gastrointestinal tract. We evaluated the role of flexible endoscopy and the snare as a removing instrument on patients with ingested sharp objects.

METHODS: Within the last four years, eight patients with a history of sharp object swallowing were admitted. The primary diagnostic tool was a direct X-ray of the upper body. The foreign bodies were removed by flexible esophagogastroduodenoscopy and its associated instruments.

RESULTS: Four of the foreign bodies were lodged in the esophagus, three in the stomach and one in the duodenum. There were six open safety pins and two jewels with sharp tips. Three were lodged in the esophagus one of them with the pin's open end pointed caudally; it was held with the endoscopic forceps by its tail end and removed, two of them had the open end with cranially pointed; they were pushed into stomach rotated, grasped by their blunt end and taken out. One sharp tipped jewel was in the upper esophagus and it was removed similarly. Another sharp tipped jewel was in the stomach and it was grasped by the snare used in the "percutaneous endoscopic gastrostomy". An open safety pin lodged in the distal part of duodenum was also removed by the same snare. The last foreign body was an open safety pin in the stomach. It was noticed that the object had already

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passed into the jejunum after induction of anesthesia. It left the gastrointestinal tract spontaneously within 3 days.

CONCLUSIONS: Open surgery or other invasive removal methods are mostly not necessary in children with sharp object ingestions. The best way to extract the sharp objects from the esophagus, stomach or duodenum is using a flexible endoscopic device and a powerful snare.

P016: IDIOPATHIC INTUSSUSCEPTION IN CHILDREN: EFFICACY OF LAPAROSCOPY AND ILEOPEXY Chin-Hung Wei, MD, Yu-Wei Fu, MD, Nien-Lu Wang, MD, PhD, Yi-Chen Du, MD, Mackay Memorial Hospital

PURPOSE: This study aims to compare the results of laparoscopy and open surgery for idiopathic intussusception in children as well as evaluate the efficacy of ileopexy.

METHODS AND MATERIALS: Between January 2007 and July 2013, children aged < 18 years who were operated for intussusception in our institution were reviewed. Patients were classified into two groups, laparoscopy (LAP) and open (OPEN). LAP group was further divided into two subgroups, ileopexy (IP) and non-ileopexy (NIP). Parameters investigated included age, gender, operative indication, surgical procedure, type of intussusception, level of intussusceptum, presence of spontaneously reduced intussusception and pathologic lead points, operative time (OP time), time to oral intake (PO time), length of postoperative hospital stay (LOS), surgical recurrence.

RESULTS: There were 23 and 35 cases in LAP and OPEN group respectively. No significant difference was found on age, operative indication, surgical procedure, type of intussusception, level of intussusceptum, and presence of spontaneously reduced intussusception

between both groups. In LAP group, mean OP time was significantly longer (70.4 ± 37.7 vs. 47.3 ± 15.1 mins, $p < 0.01$); mean PO time (1.57 ± 0.83 vs. 2.23 ± 0.97 days, $p < 0.01$) and LOS (3.34 ± 1.19 vs. 4.37 ± 1.59 days, $p = 0.01$) were significantly shorter. One surgical recurrence occurred in each group occurring (4.3% vs. 2.8%, $p = 0.76$). In comparison of IP ($n = 15$) and NIP ($n = 8$), there is no significant difference on recurrence rate and OP time. The overall conversion rate was 13.0% (6.8% vs. 25%, $p = 0.21$). The conversion rate was significantly higher in cases with the intussusceptum to transverse and descending colon than to ascending colon ($p < 0.05$). With the exclusion of conversion, OP time was significantly shorter in NIP ($p = 0.01$).

CONCLUSION: Laparoscopy should be considered the primary modality for radiologically irreducible idiopathic intussusception in children. Ileopexy provides no benefit on recurrence prevention but longer OP time.

P017: BILIARY-ENTERIC RECONSTRUCTION WITH HEPATICOJEJUNOSTOMY (HJ) VERSUS HEPATICODUODENOSTOMY (HD) FOLLOWING LAPAROSCOPIC EXCISION OF CHOLEDOCHAL CYST IN CHILDREN Fanny Yeung, MBBS, Patrick Chung, FRCSEd, Ivy Chan, FRCSEd, Paul K. Tam, ChM, FRCSEd, Kenneth K Wong, MD, PhD, The University of Hong Kong

BACKGROUND: With the advent of laparoscopic surgery, more choledochal cysts are excised laparoscopically. In this study, we compared the outcomes from laparoscopic hepaticojejunostomy (HJ) and hepaticoduodenostomy (HD) for biliary-enteric reconstruction performed in our early era.

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METHODS: A retrospective analysis of patients who had undergone laparoscopic choledochal cyst excision between February 2005 and May 2013 was performed. Demographic data and surgical outcomes were analysed using SPSS Statistics 21.0.

RESULTS: A total of 38 patients were identified, with initial 28 patients underwent HJ. The most recent 10 patients underwent HD. The first 8 patients of the HJ series were excluded as it was deemed to be the learning curve period. Overall, there were no significant differences in terms of demographics. Mean operative time was significantly shorter in HD group (269 vs 403 minutes, $p=0.004$) with lower conversion rate (0% vs 35%, $p=0.033$). Although postoperative enteral feeding was initiated later in HD group (5.2 vs 4.7 days, $p=0.026$), postoperative stay in intensive care unit (ICU) (0.8 vs 2.35 days, $p=0.011$) and overall hospital stay (9 vs 10 days, $p=0.248$) favoured HD group. There was no perioperative mortality. One patient in HJ group had postoperative cholangitis related to anastomotic stricture whereas no cholangitis noted in HD group. Although four patients in HD group had asymptomatic biliary reflux, none required reoperation while five patients in HJ group required second operation for complications and residual diseases.

CONCLUSIONS: Laparoscopic excision of choledochal cyst with hepaticoduodenostomy reconstruction is safe and feasible with shorter operative time, lower conversion rate and shorter ICU stay. It is not inferior to hepaticojejunostomy in terms of various postoperative outcomes.

P018: INTRAOPERATIVE ESOPHAGOGASTRODUODENOSCOPY FOR LAPAROSCOPIC-ASSISTED DUODENAL WEB RESECTION IN THE PEDIATRIC POPULATION

Paul M. Jezioreczak, MD, MPH, Jill S. Whitehouse, MD, Kevin P. Boyd, DO, Alfonso Martinez, MD, John C. Densmore, MD, Medical College of Wisconsin/ Children's Hospital of Wisconsin

PURPOSE: To demonstrate the benefit of **METHODS:** This is a 13 m.o. female with a prolonged history of intermittent vomiting of undigested food. An UGI study was concerning for a proximal small bowel stenosis or web. She was taken electively to the operating room for intraoperative EGD with laparoscopic assisted resection of her enteric obstruction.

A 1cm vertical incision was made through the umbilicus and a 5mm trocar was placed and the abdomen was insufflated. Upon inspection of the abdominal contents using a laparoscope, a very dilated duodenum was immediately observed. The normal-caliber transverse colon was draped over the duodenum. In the distal duodenum, a very clear transition point was visualized. At this point, a 2nd trocar was placed in the left mid-abdomen under direct visualization. An intraoperative EGD was performed to identify the etiology of the obstruction. A stenotic web was located directly at the point of transition, which was visualized endoscopically as well as laparoscopically. The transition point was grasped and brought out through the umbilical incision.

The bowel was opened longitudinally through the transition point where a web was found with a 3mm central opening. The web was excised and the mucosal defect was closed with a running chromic suture. The duodenum was closed transversely in a Heineke-Mikulicz fashion.

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RESULTS: She did well after surgery, no fevers, appetite is better than before surgery, no emesis, stooling 1-3 times per day-soft, back to usual activity.

CONCLUSIONS: Intraoperative endoscopic examination during laparoscopic exploratory laparotomy is useful to identify the etiology and location of proximal small bowel enteric obstructions and to rule out a windsock deformity more proximal to the transition point.

P019: LAPAROSCOPIC MANAGEMENT OF PRAESOPHAGEAL HERNIA WITH INTRATHORACIC STOMACH IN INFANT : PITFALLS IN THE TREATMENT FROM OUR 3 CASE EXPERIENCES Kan Suzuki, PhD, Akira Nishi, PhD, Hideki Yamamoto, PhD, Tetsuya Ishimaru, PhD, Tadashi Iwanaka, PhD, Gunma Children's Medical Center

PURPOSE: The aim of this report was to analyze pitfalls in the laparoscopic management of type3 paraesophageal hernia in infant.

METHODS: Between 2009 and 2013, the records of 3 infants with type3 paraesophageal hiatal hernia were retrospectively reviewed for age, presenting symptoms, operative findings and approaches, and outcomes.

RESULTS: All cases (1 male, 2 female) had right-sided type3 paraesophageal hiatal hernia. Diagnosed until neonatal period in two cases, their symptom was only intermittent vomiting and they had good weight gain. We conducted the operation before the baby food start. The other patient had clinical features of chest infection and anemia at 9 months, she underwent electively operation at 1 y/o. Surgical procedures were conducted with laparoscopy, and open conversion was not required in any case. At the operation, though the intrathoracic stomach was easily pulled

down into the abdominal cavity, pulled back into the posterior mediastinum simply when the stomach was detached. The vessel at the lesser omentum was damaged when the assistant held and pulled the stomach strained in one case. The hernia sac consisted of a thickened phrenoesophageal ligament. Resection of the sac at posterior site of the stomach is relatively difficult, and it's troublesome to dissect it from lesser omentum (hepatogastric ligament). The important procedure is to expose crura firmly, not to excise the sac. Insufficient dissection of the crura brought type2 hiatal hernia recurrence in one case. The abdominalesophagus was wrapped with the mobilized fundus in a 2- to 3-cm floppy Nissen fundoplication in all cases. An anchoring, wrapping cuff was approximated to the anterior edge of the diaphragmatic crura in all cases. Stamm gastrostomy was added to double as gastropexy in one case. Transient dysphagia was found in 2 cases after operation. The solid was got blocked in the case of 1 y/o and needed to remove. The esophageal passage was improved in all cases two months after the operation.

CONCLUSIONS: The opportunity of operation is recommended before starting the baby food. Laparoscopic intervention of hiatal hernia with intrathoracic stomach is a safe and feasible method in infantile patients. Management consists of retrieval of the intrathoracic stomach, closure of the hiatus and subsequent antireflux procedure. In our experiences, perfect excision of the sac is relatively difficult, and firm exposure of the crura and precise closure of the hiatus is the most important. The method of antireflux procedure leaves room for discussion.

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P020: LAPAROSCOPIC CORRECTION OF DUODENAL WIND-SOCK ATRESIA WITH ASSOCIATED MALROTATION Ruben

Lamas-Pinheiro, MD, Tiago Henriques-Coelho, MD, PhD, Hospital de São João, Porto, Portugal

INTRODUCTION: The most complex neonatal procedures have already been performed by minimal invasive approaches. The authors present a video of a challenging laparoscopic correction of type I duodenal atresia (Wind-sock) associated with intestinal malrotation and volvulus.

CASE: Preterm female newborn, 34 weeks gestation with prenatal diagnosis of duodenal atresia. A postnatal roentgenogram confirmed the diagnosis. The neonate was submitted to laparoscopy at D1: one 5 mm trocar was placed in the umbilicus and two 3 mm trocars were placed in both flanks. The liver was suspended using a percutaneous stitch. An intestinal volvulus was identified and reduced. Ladd bands were divided and the mesentery was widened. As there was no visible duodenal atresia, an intra-operative contrast study was performed and a Wind-sock atresia was revealed. The duodenum was incised, the membrane was partially excised and a duodenoplasty (Heineke-Mikulicztype) was performed. There were no intra- or post-operative complications. The child started enteral feeding on 6th post-operative day, suspended parenteral feeding on the 13th and was discharged on the 15th. Currently she is followed in outpatient without symptoms and with an excellent cosmetic result.

TIPS: This video presents possible difficulties during duodenal correction and ways to overcome them with safety and assertiveness: laparoscopic volvulus reduction is safe and less difficult in the absence of bowel dilatation; intraoperative

contrast fluoroscopy may help in cases of intraluminal obstruction; other procedures than diamond shaped anastomosis can be performed in the correction of this type of duodenal atresia.

P021: THE FEASIBILITY OF EMERGENCY LAPAROSCOPIC COLECTOMY FOR CHILDREN WITH ACUTE COLONIC PERFORATIONS AND FIBROPURULENT PERITONITIS Yu-Tang Chang, Jui-Ying Lee, Chi-Shu Chiu, Jaw-Yuan Wang, Kaohsiung Medical University Hospital

BACKGROUND: Several studies have demonstrated that laparoscopic surgery is safe and effective for urgent and emergent colectomy in adulthood. The aim of this study was to evaluate the feasibility of laparoscopic colectomy for children in emergent settings.

METHODS: Between March 2008 and August 2011, 10 consecutive children with acute colonic perforations and fibropurulent peritonitis secondary to infectious colitis received emergency laparoscopic colectomy. Simultaneously, we reviewed and recorded the same data of another consecutive 10 patients who underwent standard laparotomy between November 2004 and February 2008. The two groups were compared regarding operation time, length of hospital stay (LOS), and complications.

RESULTS: The gender, age, body weight, serum C-reactive protein, number of involved bowel segment, operation time and LOS were not significantly different ($P = 0.36, 0.50, 0.33, 0.62, 0.81, 0.14$ and 0.23 , respectively). Of the laparoscopy group, one patient was converted to open surgery because of extensive bowel involvement and another with solitary colonic perforation required reoperation for anastomotic leakage. However, patients receiving laparotomy had a higher

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incidence of later complications, including wound infection, incisional hernia and adhesion ileus ($P = 0.03$, 0.06 and 0.03 , respectively), and thus required more additional unplanned operations ($P = 0.05$).

CONCLUSIONS: Emergency laparoscopic surgery is technically feasible in most children with acute colonic perforations and fibropurulent peritonitis. However, extensive intestinal involvement with multiple perforations should be an indication for converting to open surgery.

P022: LAPAROSCOPIC NISSEN FUNDOPLICATION FOR GASTROESOPHAGEAL REFLUX DISEASE IN INFANTS Jessie Leung, MRCSEd, Patrick Chung, FRCSEd, Ivy Chan, FRCSEd, Eugene Lau, MRCSEd, Kenneth Wong, MD, PhD, Paul Tam, ChM, FRCSEd, Department of Hong Kong, The University of Hong Kong

INTRODUCTION: Data on laparoscopic Nissen fundoplication for gastroesophageal reflux disease (GERD) in infants remains limited. We describe our experience with this operation in children and in particular, infants younger than 12 months old.

METHODS: Medical records of all paediatric patients who had laparoscopic fundoplication done for GERD from 1998 to 2013 were reviewed. Patients were divided into two groups based on age: group I: 0 - 12 months, and group II >12 months. Data on indications, patient's demographics, operative time, blood loss, conversions, complications, recurrences and duration of hospitalization were studied.

RESULTS: A total of 86 patients were reviewed (group I = 21, group II = 65). While the mean age and body weight for group I were 8 months (range 2.6 to 12 months) and 6 kg (range: 3.6 to 11 kg), the values for group II were 84 months (range 17 to 228 months) and 18 kg (range: 6.2 to 64.5 kg)

respectively. All patients had concurrent laparoscopic gastrostomy. The average operative time was shorter in group I (157 ± 55 minutes vs 169 ± 52 minutes, $p = 0.66$). Both groups had minimal blood loss only. The surgical outcomes in both groups were comparable in terms of recurrence (0% vs 3%, $p = 0.105$) and complications (9.5% vs 6%, $p = 0.275$). The median follow up duration for group I and group II were 23 months and 40 months respectively.

CONCLUSION: Laparoscopic Nissen fundoplication can be safely performed in infants with outcomes comparable to older patients and a shorter operative duration. Should infants develop GERD, this operation should be performed early in order to avoid chronic lung disease due to recurrent aspiration pneumonia.

P023: THE USE OF LAPAROSCOPY FOR PEDIATRIC LIVER BIOPSIES: A REVIEW OF A SINGLE INSTITUTIONAL EXPERIENCE Dan Parrish, MD, Shannon F. Rosati, MD, Michael Poppe, BS, Karen Brown, BA, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center

BACKGROUND: Percutaneous liver biopsy (PLB) is an important tool for diagnosing liver diseases, especially in the pediatric population. Most PLB protocols require a period of observation following the procedure that may be extended should complications arise in addition to post-procedure blood work. While it is often performed effectively and safely, it is not without its complications. Most studies report minor complications (mild perihepatic hemorrhage, mild hemoperitoneum, pain, etc.) at rates of 6-10% and major complication (perforation, large hemoperitoneum, etc.) rates of 1-3%.

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METHODS: We retrospectively reviewed 24 of our pediatric patients who underwent laparoscopic-assisted liver biopsy between April 2006 and May 2013. This group was analyzed for length of stay, duration of operation, labs obtained, repeat biopsy rate, and complication rate. Statistical analysis was not performed due to the small sample size and the retrospective nature of the design.

RESULTS: Of the 24 patients reviewed, the average length of stay was 5.8 ± 2.95 hours, average duration of operation was 43.7 ± 10.73 minutes, no complications were observed, no repeat biopsies were needed, and no preoperative or postoperative labs were obtained.

CONCLUSIONS: Laparoscopic-assisted liver biopsy allows for patients to be discharged as soon as they have recovered from their anesthetic without the need for lab work or a prolonged period of observation. This study suggests that laparoscopic-assisted liver biopsy is a viable option for diagnosing liver disease that may be a safer and more reliable alternative to PLB and should be further studied with a prospective, randomized trial.

P024: LAPAROSCOPIC HELLER MYOTOMY WITH INTRAOPERATIVE ESOPHAGOSCOPY AND DOR FUNDOPPLICATION FOR CHILDREN WITH ESOPHAGEAL ACHALASIA [Jose Carlos Fraga, MD, PhD, FAAP](#), [Samanta S. Silva, MD](#), [Cristiane Hallal, MD](#), [Cristina T. Ferreira, MD, PhD](#), [Daltro L. Nunes, MD](#), [Helena A. Goldani, MD, PhD](#), [Paola B. Santis-Isolan, MD, PhD](#), Pediatric Surgery Service¹ and Pediatric Gastroenterology Unit², Hospital de Clinicas of Porto Alegre, Federal University of Rio Grande do Sul, Brazil.

PURPOSE: Achalasia is a functional disorder with abnormal motility of the esophageal body and incomplete relaxation of the lower sphincter. It rarely occurs in children,

with only 5% of symptomatic patients being in this age group. The aim of this study was to evaluate the efficacy and safety of laparoscopic esophagomyotomy with adjunctive intra-operative esophagoscopy to treat children with achalasia.

METHODS: Following ethical approval, we reviewed the medical charts of 10 children (7 male; 3 female) submitted to laparoscopic esophagomyotomy to treat achalasia. Median age at surgery was 12 years (9–13.8). Surgeries were performed at a single tertiary hospital between January 2001 and December 2013. Anterior myotomy was performed with five trocars under intraoperative esophagoscopy. The distal part of the myotomy was extended over the esophagogastric junction, and a Dor fundoplication was done after the end of myotomy.

RESULTS: Median operating time was 2.4 hours (2–5). Median myotomy length was 6 cm (5–8). One child had a mucosal perforation that was sutured before the Dor fundoplication. Two others had dysphagia after surgery, one of which had a redo surgery 6 months later. No conversion to open surgery was necessary, and there were no deaths. At a median follow-up of 2.4 years (7 months–11.2 years), weight had improved in all children. Seven (70%) were symptom-free, whereas 2 (20%) presented intermittent retrosternal pain, and 1 (10%) had mild dysphasia.

CONCLUSIONS: Laparoscopic esophagomyotomy associated with Dor fundoplication is a safe and effective treatment for pediatric esophageal achalasia. Myotomy should be long and extend through the esophagogastric junction. Intraoperative esophagoscopy is very important to ensure adequate myotomy and to reduce the incidence of mucosal perforation.

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P025: ILEOCECAL RESECTION IN CROHN'S DISEASE – COMBINED LAPAROSCOPIC APPROACH J. Syed,

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BACKGROUND: As the number of patients suffering from chronic inflammatory bowel disease constantly increases, operative treatment will gain more and more significance. Ileocecal resection with primary anastomosis represents the definitive management for drug – resistant Crohn's disease.

CASE REPORT: We report a case of a 14 year old boy with ileal Crohn's disease. His dad suffered from ulcerative colitis, his mum from Crohn's disease as well. Because of a clinical relevant ileal obstruction with recurrent fistula, abscess and probably perforation as well as severe growth disturbance, the indication for operation was justified. We purposed a combination of minimally invasive procedures – laparoscopic and umbilical access. The ileocecal region was mobilized by using ultrasonic device (Ultracision) and the inflamed segment has been resected by stapling device. Resected specimen was retrieved via the umbilical approach which was prepared (BIANCHI). After enlarged mobilization of the bowel the anastomosis (ileoascendostomy, single sutures) was performed extracorporeally. After the mesenteric sutures the reposition of the anastomosis succeeded without any difficulty. Peritoneal lavage and placement of a peritoneal drainage were administered. Umbilical reconstruction worked tension-free.

RESULT: Operation time was 90 minutes. The postoperative process was uneventful, defecation set in after 2 days and alimantation could be started. Time to

discharge was 7 days. The follow-up showed a normal course. The patient does not need to take medication since operation.

CONCLUSION: Minimally invasive procedures gain standard for bowel resection, and by using appropriate technology (ultrasonic devices) it is easily practicable. The combination of laparoscopy with an umbilical BIANCHI approach for retrieving specimen offers an elegant possibility. Advantages compared with open surgery are: earlier reset of digestion, shorter length of stay, earlier recovery, smaller wounds, less pain, better cosmetic results, less adhesions with less long term digestive problems, better overview during operation.

P026: COMPARISON OF INFLAMMATION VALUE AND INTRAABDOMINAL ABSCESS FORMATION AFTER LAPAROSCOPIC AND OPEN APPENDECTOMIES IN TREATMENT OF PERFORATED APPENDICITIS FOR CHILDREN Zai Song, PHD, Shan Zheng, PHD, Children's Hospital of Fudan University

AIM: Now, laparoscopic appendicetomy(LA) is an accepted alternative to the open appendicetomy(OA) in children. However, in treatment of perforated appendicitis, it has been suggested that there is a higher incidence of intraabdominal abscesses (IAAs) and increased inflammation due to carbon dioxide pneumoperitoneum. Our aim is to determine the incidence of IAAs and the level of inflammation in both techniques with perforated appendicitis.

METHODS: 62 patients and 71patients with perforated appendicitis received LA and OA respectively in out hospital from January to June, 2013. PH value and the value of blood lactate(Lac) during the operation, as well as the value of proca lct ionin(PCT) and C-reactive protein(CRP) before

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operation, during operation and 2 days after operation, were recorded. Incidence of wound infection and IAA also studied in this study.

RESULTS: During the operation, the value of PH value and value of Lac show no significant difference between LA and OA group. (PH value: 7.36 ± 0.7 VS 7.39 ± 0.5 , $p = 0.271$, > 0.05 ; value of Lac: 1.3 ± 0.4 VS 1.4 ± 0.7 , $p = 0.376 > 0.05$). The value of PCT and CRP also indicate no significant different difference between LA and OA group. In LA group, incidence of wound infection is much lower than that of OA group (4/62 6.4% VS 16/71 22.5, $p = 0.017 < 0.05$). However, comparing with OA group, LA group did not reduced the incidence of IAAs (10/62, 16.1% VS 16.9%, 12/71, $p = 0.072 > 0.05$).

CONCLUSION: In this study, we found that in treatment of perforated appendicitis in children, the technique of appendectomy does not appear to affect the incidence of IAAs and value of inflammation. Children with LA seem to have a lower incidence of wound infection.

P027: THE COMBINATION OF DOUBLE BALLOON ENTEROSCOPY WITH LAPAROSCOPIC SURGERY FOR THE GASTROINTESTINAL BLEEDING WITH NEGATIVE Tc-99m MECKEL'S DIVERTICULUM SCANNING IN CHILDREN

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AIMS AND OBJECTIVES: Double balloon enteroscopy (DBE) is widely practiced in adults but rare in children. The study aimed to review the experience on the application of double balloon enteroscopy (DBE) in children, and to combine laparoscopic

surgery for gastrointestinal bleeding with negative Tc-99m Meckel's s diverticulum scanning.

METHODS: During the period from Dec 2006 to October 2013, 13 cases with gastrointestinal bleeding and hypoalbuminemia were underwent DBE and laparoscopic surgery in the department of pediatric surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University and Children's Hospital of Fudan University. All the patients got Tc-99m Meckel's diverticulum scanning but failed to find positive spot. With the aid of a specially designed DBE, with the alternate inflation and deflation of the balloons at the tip of the endoscope, the enteroscope was advanced into small intestine under total anesthesia. If Meckel's diverticulum or other surgical disease was found, a single umbilical incision were performed and then the laparoscopic surgery such as ileoileostomy was followed at the same time.

RESULTS: 8 patients of the final clinicopathological diagnosis was Meckel's diverticulum, duplication of intestine was 4 cases and hemangiomas in 1. No complications such as aspiration pneumonia, perforation or hemorrhage occurred, and all the patients well tolerated during the procedure. No recurrence of bleeding was noted during a median follow-up period of 21 months (range, 3-60 months).

CONCLUSION: DBE is a useful and feasible procedure in the pediatric patients, especially for the gastrointestinal bleeding with negative Tc-99m Meckel's diverticulum scanning, and combination with laparoscopic surgery at the same time could make good results

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P028: LAPROSCOPIC OPERATION FOR TREATMENT OF COMPLICATIONS IN CHOLEDOCHOCYST

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OBJECTIVE: Choledochal cysts are congenital cystic dilatations of the extrahepatic or intrahepatic portion of the biliary tree. Complete excision of choledochal cysts is currently regarded as the gold standard treatment. Laparoscopic operation for choledochocyst is becoming popular. The complications may be occurred in preoperative and postoperative periods. Perforation of choledochocyst, cholangitis, pancreatitis, and malignant may occur because of delay treatment. Stenosis of biliary-intestinal anastomosis, cholelithiasis and infection of biliary tree may also occur in post-operation. Here we treated 4 patients with the complications associated with choledochocyst by laparoscopic technique.

METHODS: Total 4 children were treated in our hospital from June 2010 to June 2013. Two girls were ill with perforation of choledochocyst. Of them one girl was 3 years old and had been diagnosed with choledochocyst before. Another girl was 8 months old and was first attacked with abdominal pain, fever and abdominal distension. We found her dilated common bile duct by ultrasound exam and CT. Two boys were ill with stenosis of biliary-intestinal anastomosis. Of them one boy was 12 years-old and had been treated by open choledochal cyst excision with Roux-en-Y hepatico-jejunostomy 6 years ago. He had been ill with reoccured cholangitis and cholelithiasis for one year. Another boy was 6 years-old, he had been operated by laparoscopic choledochal cyst excision with Roux-en-Y hepatico-jejunostomy 3

months ago. He had been ill with severe cholangitis accompanied by intrahepatic bile ducts dilatation, we found stenosis of biliary-intestinal anastomosis by PTC.

RESULTS: Two girls ill with perforation of choledochocyst were treated by laparoscopic drainage and irrigation of peritoneal cavity for emergency therapy. The patients were better in 7-10 days and went home. One month later they came to hospital again for laparoscopic choledochal cyst excision with Roux-en-Y hepatico-jejunostomy and recovery. Two boys ill with stenosis of biliary-intestinal anastomosis were operated by redo laparoscopic hepatico-jejunostomy. The procedure included splitting adhesions, enlarging anastomotic stoma, and calculus removed ect. The two boys recovered well and were hospital stay for 10 and 14 days, respectively. All patients were followed 6 months to 2 years and no more complications occurred.

CONCLUSIONS: Laparoscopic operation for complication treatment of choledochocyst is suitable and not difficult. Because laparoscopic drainage and irrigation of peritoneal cavity for perforation of choledochocyst are easy, it can rinse peritoneal cavity thoroughly and the wall of perforative bile duct can heal by itself quickly. It will be convenient and safe for the subsequent laparoscopic cyst excision. For hepaticojejunostomy stricture and intrahepatic stone formation, it will be very important preoperative and operative cholangiography. It is not difficult to separate adhesion of omentum and intestine carefully. When the stoma site is recognized, hepaticojejunostomy need to redo.

KEY WORDS: Choledochocyst; Laparoscopic operation; Complications

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P029: SIGMOID VOLVULUS. VIDEOASSISTED SIGMOIDECTOMY AS AN OPTION FOR MANAGEMENT IN PEDIATRIC POPULATION

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Sigmoid volvulus is one of the most frequent causes of acute large bowel obstruction. In children, it is a rare cause of bowel obstruction with an incidence that varies from 3 to 5%.

A redundant sigmoid with a shortened mesentery (Dolichosigmoid) is necessary for the formation a volvulus. In the pediatric population the cause of a dolichosigmoid may be an abnormal fixation that causes a widened mesentery with a small base . Other causes are history of anorectal malformation , Prune Belly syndrome, intestinal malrotation and Hirschsprung Disease.

We report a series of 4 patients managed in our service with Sigmoid volvulus. Each patient was taken to endoscopic reduction of the volvulus and latterly taken to videoassisted sigmoidectomy. This case series is composed by 4 patients between 9 and 14 years. One of the patients had to be taken to a second reduction of volvulus before sigmoidectomy during hospital stay. Another patient that initially rejected sigmoidectomy, had a recurrence of the volvulus requiring a second endoscopic reduction. There were no intraoperative complications, and patients have been followed up for at least 6 months . During this time, one of the patients required reintervention ; this patient had a diagnosis of an intestinal miopathy: Inflammatory Leiomyocytis which is a predisposition for intestinal obstruction.

We consider that endoscopic devolvulation followed by an early videoassisted sigmoidectomy is the ideal technique for the management of this patients.

P030: REDUCED PORT LAPAROSCOPIC RESTRATIVE PROCTOCOLECTOMY WITH ILEAL POUCH-ANAL ANASTOMOSIS IN PEDIATRIC PATIENTS

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Restorative proctocolectomy with ileal pouch-anal anastomosis is the treatment of choice for most patients with ulcerative colitis (UC) and familial adenomatous polyposis (FAP). Technical feasibility and safety for conventional laparoscopic approaches to this procedure have been established since 1992 mostly in adult settings. Recently, not only short term but also long term benefits including reduced postoperative adhesion and increased pregnancy rate have become evident in the laparoscopic procedure compared with open surgery. Meanwhile, reduced port laparoscopic surgery including single-incision laparoscopic surgery has been developed as an option for minimally invasive laparoscopic procedures for better cosmesis in the past few years. We report four pediatric cases that underwent reduced port laparoscopic restorative proctocolectomy (RPL-RPC) with ileal pouch-anal anastomosis using single-port device in the different ways.

Three of four cases with ulcerative colitis were planned to perform 2-stage procedure and underwent RPL-RPC as the first operation. At operation, single-port device (Lap protector™ and oval shaped EZ-access, Hakko CO.,LTD., Nagano, Japan)

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was positioned through the intra-umbilical longitudinal 30 mm incision and two 5 mm ports were placed in the umbilical device. A 12 mm port was used at the site of ileostomy in the right iliac fossa. A 5 mm port was also placed at the drain insertion site in the left iliac fossa. Colonic mobilization and mesenteric division was firstly achieved antegradely from terminal ileum to splenic flexure and then retrogradely from sigmoid colon to splenic flexure. Division of the mesenteric vessels was performed using ENSEAL G2 Tissue Sealers (Ethicon Endo-Surgery, Ohio, US) without ligation. Terminal ileum was divided by endoscopic linear stapler through the 12 mm port. Colonic specimen was removed through the umbilical incision and ileal J pouch was created extracorporeally at the same site. Hand-sewn ileal pouch-anal anastomosis was performed transanally.

Remaining one case with familial adenomatous polyposis underwent 1-stage RPL-RPC without ileostomy. Same single-port device was used transumbilically and a 5 mm port was placed at the drain insertion site in the right iliac fossa. Additional 3 mm forceps for retraction was directly inserted in the left upper abdomen. Division of the terminal ileum was performed through a glove that was temporally exchanged from EZ-access.

All procedures were successfully completed without any perioperative complications. Operative time ranged 385 to 490 min. There were two long term adverse events, including one afferent limb syndrome and one acute pouchitis.

Our RPL-RPC to optimize the umbilicus and the essential incisions is technically comparable and cosmetically superior to conventional laparoscopy. This procedure can be an alternative for the pediatric patients in needs of restorative proctocolectomy.

P031: A CASE SERIES OF LAPAROSCOPIC DUODENOJEJUNOSTOMY FOR THE TREATMENT OF PEDIATRIC SUPERIOR MESENTERIC ARTERY SYNDROME

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Superior mesenteric artery (SMA) syndrome is a rare debilitating clinical condition caused by compression of the third portion of the duodenum by the SMA. It is often associated with scoliosis corrective surgery, anorexia nervosa, rapid growth, and dramatic weight loss. Prevalence rates are reported to vary between 0.01 – 0.08%. Common symptoms include intermittent postprandial abdominal pain, nausea, weight loss, bilious vomiting and obstruction. SMA syndrome is also associated with pancreatitis of unknown etiology. Here we present a case series of three patients with SMA syndrome that were treated with laparoscopic duodenojejunostomy.

Patients were female between 12–17 years old. One patient presented post-scoliosis corrective surgery, one patient with anorexia nervosa, and one patient with rapid weight loss after pneumonia. All patients underwent a successful laparoscopic duodenojejunostomy after imaging suggested SMA syndrome. Mean time to feedings after surgery was 4.00 ± 1.15 days (mean \pm SEM). Mean length of stay after surgery was 8.6 ± 2.7 days. One patient presented with pancreatitis (Lipase 4432 U/L) that resolved after surgery. One patient developed acute pancreatitis (Lipase 2220 U/L) on post-operative day 9 requiring readmission and treatment. One patient didn't develop pancreatitis.

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SMA syndrome remains a complex disease to diagnose and treat. Once suspected current therapy consists of either non-surgical or surgical intervention. Post-obstructive placement of nasojejunal feeding tubes and total parental nutrition allow for adequate nutritional intake and decompression, but often require prolonged hospitalization and increased costs. Reported hospital length of stay is between 21 days and 4 months in a small series. Surgical management mainly consists of open lysis of the ligament of Trietz or duodenojejunostomy with possible risk of complications. Here we demonstrate that laparoscopic treatment of SMA syndrome is a safe treatment option and is associated with early initiation of enteral feeds and a short hospital stay after surgery.

P032: THE DEVELOPMENT AND PRELIMINARY EVALUATION OF A NOVEL LAPAROSCOPIC DUODENAL ATRESIA REPAIR SIMULATOR

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BACKGROUND: Laparoscopic duodenal atresia (DA) repair is a relatively uncommon pediatric operation requiring advanced minimally invasive skills. Currently, there are no commercial simulators available that address surgeons' needs while refining skills associated with this procedure. The purposes of this study were 1) to create an anatomically correct, size relevant model and 2) to evaluate the content validity of the simulator.

METHODS: Review of literature and X-ray/CT images were used to create an abdominal domain, size consistent with a full-term infant. Fetal bovine tissue was used to complete the simulator. Following

IRB exempt determination, 23 participants performed the simulated laparoscopic DA repair during a national pediatric surgery conference. All participants completed a self-report, six-domain, 24-item instrument consisting of 4-point rating scales (1=Not realistic, 4=Highly realistic). Content validity was evaluated using the many-Facet Rasch model and estimating inter-rater consistency using Intra-class correlation (ICC) for items relevant to simulator characteristics.

RESULTS: The highest observed averages (OA) were for Value as a training and testing tool (both OAs = 3.9), while the lowest ratings associated with simulator characteristics were Palpation of liver, (OA = 3.3), and Realism of skin (OA = 3.2), which aligned with "adequate realism, but could be improved." The Global opinion rating was 3.2, indicating the simulator can be considered for use as is, but could be improved slightly. Validity evidence relevant to internal structure was supported by high inter-rater agreement [$ICC(1,k)\alpha=.88$].

CONCLUSIONS: We have successfully created a size appropriate, high fidelity laparoscopic DA simulator. Participants agreed that the simulator was relevant to clinical practice and valuable as a learning/testing tool, but it may require minor improvements. Comments were consistent with the Value ratings. Prior to implementing this simulator as a training tool, minor improvements should be made, with subsequent evaluation of additional validation evidence.

P033: ENDOVIDEOSURGERY FOR TREATMENT OF HIRSCHPRUNG DISEASE IN CHILDREN

Bulat Jenalayev, Damir Jenalayev, Omar Mamlin, National Research Center for Mother and Child Health

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Hirschprung disease possesses the second place (after pylorostenosis) by frequency among the disorders leading to gastrointestinal obstruction in children that require surgical treatment. There were 17 cases of Hirschprung disease treatment by the aid of laparoscopic assistance. The age of patients were between 3 and 14. The rectosigmoidal form of Hirschprung disease were revealed in all the cases while X-ray examination.

Surgeries were performed under endotracheal narcosis and consisted of the following stages:

Stage I – laparoscopic. After insertion of three troacars the left side of abdomen were visually investigated. Further, transition fold of peritoneum was dissected and rectum was mobilized circularly deep in small pelvis. In order to assess the adequacy of mobilization and the degree of tension of the mesentery a trial traction of a mobilized colon toward the anus was conducted.

Stage II – perineal. Anal orifice was extended, tack-up sutures were performed around the anus. Dissection and mobilization of rectal mucous coat was performed for 5.0 – 6.0 cm starting 0.5 cm from linea serrata.

Then, the colon was resected and brought down to perineum through demucousized channel. This step was conducted under laparoscopic visual control while the correct performance could be seen. The coloanal anastomosis was completed by separate absorbable sutures.

III stage – laparoscopic revision and sanitation of the pelvis, restoring the transitional fold of peritoneum, elimination of the “window” in the colon mesentery were performed through the abdominal cavity.

No perioperative complications were noticed. Blood loss during surgery didn't exceed 20.0–30.0 ml and didn't require transfusion. In all cases the gastrointestinal contents appeared within 12–18 days after surgery, since that moment enteral feeding has been extended. These patients were under observation of outpatient department at late postoperative period and received anal bougienage by dilators of sizes according to the age. There were no symptoms of stenosis. One of the patients had high body temperature and difficulty of defecation at 7th day after surgery. A cavern of 3.0x4.0 cm with liquid content was revealed while rectal examination and ultrasound examination. In the result of puncture through the posterior wall of the rectum about 30.0 ml of rheumatic content with fibrin was aspirated. The cavern was rinsed by insertion irrigating catheter under ultrasound scan control. After these manipulations the cavern have been closed up and infiltration nearby diminished. The patient was discharged in 15 days after the surgery. The other patients were discharged in 8–9 days after surgery. Control observation in 6 month showed good condition of all the patients. There were no complaints, abdominal distention, encopresis or obstipation.

Conclusion. Laparoscopic surgery by K. Georgson for surgical treatment of colon aganglionosis in children is considered to be both radical and minimally traumatic; following the principles of preoperative examination and treatment, following the steps and specific aspects of surgery allows to minimize the risk of intra- and perioperative complications, to achieve significant improvement the results of the treatment reducing trauma, severity or postoperative period, length of stay, providing quick recovery along with good cosmetic effect.

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P034: SINGLE-INCISION LAPAROSCOPIC-ASSISTED ANORECTOPLASTY FOR HIGH AND INTERMEDIATE ANORECTAL MALFORMATIONS: COMPARISON WITH CONVENTIONAL LAPAROSCOPIC-ASSISTED ANORECTOPLASTY AND POSTERIOR SAGITTAL ANORECTOPLASTY

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BACKGROUND: The current study aims to evaluate the safety and efficacy of single-incision laparoscopic-assisted anorectoplasty (SILAARP) for children with high and intermediate anorectal malformations (ARM).

METHODS: Children with high and intermediate ARMs who underwent SILAARP between May 2011 and December 2012 were reviewed. The ARM patients who had poor-developed pelvic muscles on magnetic resonance images were excluded. The operative time, early postoperative and follow-up results were compared with our historical controls who underwent conventional laparoscopic-assisted anorectoplasties (CLAARP) and posterior sagittal anorectoplasties (PSARP).

RESULTS: Thirty-one patients (high vs. intermediate ARM: 15/16) successfully underwent SILAARPs without conversions. Mean ages at operation were similar in 2 groups (high vs. intermediate ARM: 4.94 months vs. 5.67 months, $p=0.46$). Average operative time in intermediate ARM children was 1.94 hours, which did not differ from 1.78 hours in high ARM children ($p=0.39$). The mean operative time in high ARM group was comparable to that in our historical CLAARP group (1.62 hours, $p=0.12$), and significantly shorter than that in our historical PSARP group (2.13 hours,

$p<0.01$). All patients resumed feeding on postoperative day 1. The median follow-up period was 20 months. No injuries of vessels, urethral or vas deferens occurred in operations. No mortality or morbidities of wound infection, rectal retraction, recurrent fistula, urethral diverticulum, anal stenosis, or rectal prolapse was encountered. Overall complication rate in high ARM group was comparable to that of our historical CLAARP group (12.5%, $p=0.15$), and lower than that of our historical PSARP group (35.3%, $p<0.01$).

CONCLUSIONS: SILAARP is safe, feasible and effective for both high and intermediate ARMs. One-stage SILAARP or combined transumbilical colostomy and 3-stage SILAARP offers a viable alternative treatment for children with high and intermediate ARMs.

P035: LAPAROSCOPIC CARDIOMYOTOMY AND FUNDOPLICATION IN A 2-MONTH-OLD INFANT WITH ACHALASIA: A CASE REPORT

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INTRODUCTION: Achalasia is an uncommon condition in children. The purpose of the study is to report a case of an infant with achalasia treated with laparoscopic Heller's cardiomyotomy and Nissen's fundoplication.

CASE REPORT: Two-month-old boy presented with projectile vomiting for one month. Ultrasonographic finding was not remarkable. Upper GI study showed passage disturbance at esophagogastric junction with suspicious esophageal motility disorder and combined gastroesophageal reflux with relaxation of lower esophageal sphincter. Endoscopic findings were decreased

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oesophageal peristalsis and narrowing of esophagogastric junction with proximal esophageal dilation. Symptoms were not relieved by medical treatment of gastroesophageal reflux. He was underwent Heller's cardiomyotomy and Nissen's fundoplication laparoscopically. Using two 5mm working ports, liver retractor and 5mm endoscope, distal esophagus around the hiatus was dissected, and longitudinal esophageal myotomy was performed on the anterior side of distal esophagus about 5 cm in length. Nissen's fundoplication was done. The postoperative progress was not remarkable without complication. Feeding with adequate amount of milk became tolerable in a week without vomiting.

CONCLUSION: Laparoscopic Heller's cardiomyotomy and Nissen's fundoplication was successfully performed in 2-month-old infant with achalasia resulting complete relief of vomiting.

P036: EOSINOPHILIC OESOPHAGITIS: THE TRUTH ABOUT DILATATION

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AIM: Eosinophilic oesphagitis is a debilitating condition with significant associated morbidity. Dilatation is reserved for patients with strictures resistant to medical therapy. Strictures are commonly long and difficult to assess with radiological imaging. We aim to investigate whether endoscopy and tangential bougienage dilatation is a safe and effective treatment.

METHODS: Retrospective analysis of prospectively collected database of patients undergoing tangential

oesophageal dilatation for eosinophilic oesophagitis between 2008 and 2013 was performed. Demographics, symptom duration, medical therapies, endoscopy findings, dilatation technique, post dilation endoscopic findings and response to treatment were analysed.

RESULTS: Three patients of a cohort of circa 30 patients with eosinophilic oesophagitis underwent bougienage dilatation of an oesophageal stricture. Median age at dilatation was 16 (range 14-16). All patients presented with symptoms of dysphagia and odynophagia. Time of referral from paediatric gastroenterology to oesophageal dilatation was between 4 and 8 months. All patients had endoscopy and passage of a guidewire into the stomach followed by serial dilatation with savary-guilliard© dilators and check endoscopy. In all cases dilatation was noted to be traumatic with deep linear fractures of the oesophageal mucosa (figure 1). All patients remained well after dilatation with no evidence of perforation on chest radiograph. All patients reported immediate symptom relief and on maintenance medical treatment none has required further endoscopic evaluation or repeat dilatation.

CONCLUSIONS: Our experience suggests that the diffuse nature of the inflammation in eosinophilic oesophagitis is associated with long strictures which respond to tangential dilatation. We suspect it is the degree of mucosal inflammation with relatively normal underlying serosa that leads to impressive mucosal trauma without perforation. The presented series supports tangential bougienage dilatation for paediatric eosinophilic oesophageal stricture that fails to respond to medical therapy. savary-guilliard© Cook Medical

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FIGURE 1



Long Linear fracture in Anterior wall

P037: 2 PORT LAPAROSCOPIC COLOSTOMY FOR ANORECTAL MALFORMATIONS IN NEWBORNS Carlos

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INTRODUCTION: Standard colostomy in anorectal malformations (ARM) is a descending colostomy in separate stomas, leaving the distal stoma as a mucous fistula. Oblique laparotomy in left lower quadrant (LLQ) is needed leaving the stomas at each edge of the wound. This procedure may quite often lead to minor complications as skin infection of the surgical wound and discomfort during management of the colostomy bag immediately after the surgery. Rarely, wound infection and evisceration can occur. We describe a 2 port laparoscopic colostomy for ARM in descending colon and separate stomas without other incisions than those created to place the stomas. We emphasize the advantages of this technique.

METHODS: First port is located in LLQ equally distant from the umbilicus and iliac crest, where proximal stoma should be. This incision is circular and ballooned trocar is needed. Inspection of internal genitalia is then achieved. Supra-pubic 5 mm trocar is placed next in the midline where we would like the mucous fistula to be. Camera is introduced in this port

and descending colon is grasped and exteriorized identifying the attachments to left retroperitoneum and his progression distally to Douglas. Division of the colon is performed outside and the distal colon is displaced to the port in the midline. Both stomas are then fixed without wound in between, being the distal intentionally small (mucous fistula).

RESULTS: Two patients with ARM were operated this way. No complications were seen during and after the procedure. Oral intake was achieved before the first 24 hours. Colostomy bag was placed immediately after surgery. In one case, an anomaly of internal genitalia was identified and recorded. Time of procedure was less than 1 hour.

DISCUSSION: This technique allows rigorous inspection of internal genitalia, eliminates the wound infection possibility because there are no scars, colostomy bag is easily and painlessly managed immediately after surgery, twisted colostomy is less probable because it is checked during surgery, the procedure is not technically demanding and better cosmetic results are achieved by transversal scars in colostomy closure.

P038: THE DOGMA OF ARTERIO-VENOUS FISTULA AFTER SPLENECTOMY: STILL RELEVANT WITH LAPAROSCOPIC JOINT SEALING OF SEGMENTAL SPLENIC ARTERY AND VEIN? Sara Silvaroli, MD,

Marianne De Montalembert, MD, Valentine Brousse, MD, Sabine Irtan, MD, PhD, Department of pediatric surgery, Necker Hospital, Paris, France.

BACKGROUND: Splenectomy in children is nowadays widely performed by laparoscopy. Either by anterior or lateral approach, the splenic vessels are separately dissected and divided at the left upper part of the pancreas before their division in the splenic hilum according to

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the princeps technique aiming to prevent arterio-venous fistula.

AIM: We hereby describe a new technique of vascular control in splenectomy thanks to the development of new laparoscopic coagulation devices.

MATERIALS AND METHODS: The laparoscopic splenectomy was performed by a lateral approach with the left side of the patient elevated 30 to 45 degrees thanks to a small roll under the back. The 10-mm optic port was placed in the umbilicus via an open approach for a 0° laparoscope. Two 5-mm working ports were placed in the left lower quadrant and in the right upper part of the abdomen near the midline. An additional port was placed in the epigastrium to ease the dissection if needed or in case of cholecystectomy. All the procedure was performed with the LigaSure (Valleylab, Tyco Healthcare Group, Boulder, CO). The dissection began at the lower pole of the spleen with the division of the splenocolic ligament. Short gastric vessels were divided allowing access to the splenic hilum. Each segmental splenic vessel was dissected at the lower, middle and upper part of the spleen. They were then divided without individualizing the artery from the vein. Progressing from bottom to top, the splenophrenic ligament was sectioned allowing complete mobilisation of the spleen. The specimen was exteriorized through an enlarged umbilical incision after finger fragmentation in a retrieval pouch.

RESULTS: Thirty patients aged 6.36 years (2-15.6) have been operated on in our institution from 2009 to 2013. The indications of splenectomy were sickle cell anemia (n=18), hereditary spherocytosis (n=9), hemolytic anemia (n=1), idiopathic thrombocytopenic purpura (n=1) and hystiocytosis (n=1). An additional

cholecystectomy was performed in 12 children. A fourth port was added in 7 patients. The mean operative time was 115 mn (49-240). No operative bleeding or conversion was noticed. The postoperative course was uneventful, except for one female patient presented an isolated fever 2 days after the procedure treated by IV antibiotics in fear of occult infection. The mean postoperative hospital stay was 2,25 days (2-8). No venous thrombosis or arterio-venous fistulas were found at postoperative ultrasound scan with a mean follow-up of 15,5 months (8-42,5).

CONCLUSION: With the introduction of new technology, the joint sealing of segmental splenic artery and vein appeared safe and efficient in laparoscopic splenectomy, without any increased risk of operative bleeding or postoperative arterio-venous fistula.

P039: LAPAROSCOPIC MANAGEMENT OF CHOLEDOCHAL CYST – OUR EXPERIENCE OF 62 CASES Ravindra Ramadwar, Dr., Nidhi Khandelwal, Dr., Bombay Hospital, Mumbai, India

INTRODUCTION: Laparoscopic excision of choledochal cyst with hepaticodochenterostomy is an alternative to open operation in children. The aim of the study was to evaluate our experience of laparoscopic management of choledochal cyst and assess the medium term results.

METHOD: We reviewed 62 patients who had undergone laparoscopic surgery for choledochal cyst since January 2003 to January 2014. The data were analysed for operative approach, intraoperative problems, postoperative complications and postoperative follow up.

RESULTS: Since January 2003, 62 patients have undergone laparoscopic surgery for choledochal cyst. Mean age was 6

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years (6 weeks – 18 years), mean weight was 12 kg (3.5 kg – 52 kg). 57 patients had type I and 5 patients had type IV A choledochal cyst. In 39 patients the cyst diameter was more than 5 cms. In 3 patients the posterior segmental duct was opening directly into the cyst. Preoperative ERCP and stenting was done in 2 patients. Mean operative time was 175 minutes (115 – 290 minutes). Mean intraoperative blood loss was 25 ml (10 – 45 ml). Lilly's technique of mucosectomy was performed in 41 patients. 44 patients underwent Roux-en-y hepaticodochojejunostomy and 18 patients had hepaticodochoduodenostomy. The mean time taken for intra-corporeal hepaticodochoduodenostomy was 60 minutes (45-100 minutes). Conversion to open surgery was required in 1 patient with recurrent pancreatitis. Bile leak was seen in 4 patients, three were treated conservatively and one patient required percutaneous placement of stent. Mean hospitalisation was 6 days (4 – 14 days). At mean follow-up of 4 years (6 months – 11 years) one patient had recurrent sub-acute obstruction and 2 patients had cholangitis. 60 patients have normal liver function tests and ultrasonography. 2 patients with recurrent cholangitis had abnormal liver function tests during cholangitis which reverted to normal after antibiotic therapy. HIDA scan in these patients show good drainage with no stasis.

CONCLUSION: Laparoscopic excision of choledochal cyst with hepaticodochoduodenostomy is a safe alternative to open surgery and has satisfactory results.

P040: LAPAROSCOPIC NEAR TOTAL PANCREATECTOMY FOR PERSISTENT HYPERINSULENEMIC HYPOLYCEMIA OF INFANCY Ravindra Ramadwar, Dr., Vrajesh Udani, Dr., Soonu Udani, Dr., Hinduja Hospital, Mumbai

INTRODUCTION: Persistent hyperinsulinemic hypoglycemia of infancy (PHHI) is one of the most common cause of persistent neonatal hypoglycemia. Management of PHHI involves use of medical agents and its failure is an indication for surgical intervention. PHHI in infants requiring surgery is rare and traditionally an open pancreatectomy was the gold standard surgical approach. But recently trend has shifted towards use of laparoscopy. We describe a case of PHHI managed by laparoscopic spleen preserving near total pancreatectomy in a 2month old infant.

METHODS: A 2 month old male child diagnosed with PHHI with failure of medical therapy. A laparoscopic near total spleen preserving pancreatectomy was done. Laparoscopic pancreatectomy was performed using a 5-mm cannula at the umbilicus, one 5mm and two additional 3mm cannula sites. The stomach was retracted and lesser sac opened. The entire pancreas was exposed. The pancreas was resected from the splenic hilum to the mesenteric vessels. The splenic vein was dissected from the under surface of the pancreas using harmonic scalpel, and the spleen was easily preserved. Leaving behind a small rim of pancreatic head along the C- loop of duodenum, a near total pancreatectomy was done by using Ligasure. Surgery time was 90 min, and minimal blood loss occurred. The specimen was extracted in a bag. Drains were kept in pancreatic bed and pelvis. The patient tolerated the procedure well and the post operative recovery was uneventfull. Histopathology showed evidence of islet cell adenoma with the background of nesidioblastosis in the entire pancreas.

RESULT: The patient has remained euglycemic for ten months now after the procedure and currently is not on any

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medication. The extent of pancreatectomy was 95%. No postoperative complications were noted.

CONCLUSION: The magnification afforded by laparoscopic vision allows for safe dissection of pancreas. Laparoscopic near total pancreatectomy is safe and feasible approach for infants with PHHI with failure of medical management with minimal blood loss and lesser wound morbidity.

P042: EVALUATION OF ROLE OF MINIMAL ACCESS SURGERY IN TREATMENT OF HYDATID DISEASE IN CHILDREN

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PURPOSE: Hydatid disease is not so common in children even in endemic areas but has serious complications if not treated properly. There are various methods for treatment of this disease both medically and surgically. The aim of this prospective study is to present our experience in the management of hydatid disease in children by minimal access surgery and its efficacy.

MATERIAL & METHODS: Over a 3-year period (2010 - 2013), 24 children with abdominal and pulmonary hydatid disease (ECHINOCOCCUS) were treated at our department of paediatric surgery. The anatomical location of the parasite was as follows: liver 17, lungs 4 spleen 2, and mesentery 1 case. Medical treatment with oral antihelminthic agents was given to all patients for two weeks before taking up for surgery so as to make them less infective. Only medical management was used for 2 cases of liver hydatid cysts less than 5cms and in one case of deep seated liver hydatid cyst while rest of the 21 cases(87.5 %) underwent minimal access surgery (laparoscopic or thoracoscopic procedure).

RESULTS: Medical treatment was effective in 2 patients with liver hydatid cysts less than 4cms. The deep seated liver cyst responded well to ultrasound guided aspiration of cyst fluid and instillation of scolicalid agent(hypertonic saline 3%). Rest of the 21 cases(87.5%) with cyst size more than 5cms underwent minimal access surgery. None of these patients had postoperative complications (including recurrence) requiring reoperation. The overall long-term results were good.

CONCLUSIONS: Hydatid cysts with sizes exceeding 5cm in diameter should be treated surgically and minimal access surgery seems to be more effective and has almost nil complications with less morbidity to the patient. Also use of antihelmenthic agents for 2weeks prior to surgery may decrease recurrence.

P043: LAPAROSCOPIC-ASSISTED PANCREATICODUODENECTOMY IN A CHILD WITH A GASTRINOMA

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BACKGROUND: Zollinger-Ellison syndrome is very rare in children. Ninety percent of gastrinomas are located in the pancreaticoduodenal region referred to as the gastrinoma triangle. Prompt and complete removal of the gastrinoma is necessary in patients with Zollinger-Ellison syndrome, even in patients with negative imaging findings, because a long delay in surgery may cause liver metastases and disease-related deaths. We performed laparoscopic-assisted

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pancreaticoduodenectomy (LAPD) in a child with a biochemical diagnosis of gastrinoma but negative imaging findings. Although LAPD has not been reported in a child until now, we believe it is safe and feasible in children.

CASE: A 9-year-old boy with Down syndrome presented at an outpatient clinic complaining of weight loss and vomiting. Upper gastrointestinal images and endoscopy showed severe stenosis of the duodenal bulb because of a semicircular ulcer. His symptoms did not improve following treatment with a proton pump inhibitor. His gastrin level was very high (834 pg/ml; normal range: 37–137 pg/ml). A peripheral vein calcium injection test was positive for gastrinoma. However, imaging studies did not reveal a gastrinoma. Injection of a selective arterial secretagogue revealed a tumor within the gastroduodenal arterial zone. The clinical course of the patient was poor as he intermittently felt well and nauseous intermittently. The patient and his parents opted for surgery at 11 years of age.

OPERATIVE PROCEDURE & POSTOPERATIVE COURSE: The patient was placed in a supine position with his legs apart. The surgeon stood between the patient's legs. A 12 mm camera port was introduced via the umbilicus while 12 and 5 mm ports were inserted into the left and right abdomen. A 4 cm incision was made directly above the pancreatic stump to remove the resected tissue. After minilaparotomy, which was covered by a wound retractor and a sealed cap, LAPD was performed with child Roux-en-Y reconstruction. Pancreaticojejunostomy and gastrojejunostomy were done under direct vision, while hepaticojejunostomy was done laparoscopically. The operative time was 694 minutes. Oral intake was started on postoperative day 3. The surgical procedure conservatively

treated a grade A pancreatic fistula. He was discharged in a healthy condition 20 days after surgery and biochemical tests confirmed the absence of gastrinoma 1 year after surgery.

DISCUSSION: The optimal surgical procedure for resecting a gastrinoma is unclear, but aggressive resection following its accurate localization with a selective arterial secretagogue injection test with calcium was biochemically curative. The complications associated with a pancreatic fistula mean that laparoscopic PD is technically challenging for pediatric surgeons. Our LAPD approach should enable pediatric surgeons to perform pancreaticojejunostomy as confidently as open PD because it can be performed under direct vision through a small laparotomy. LAPD is a minimally invasive and reproducible procedure.

P044: LAPAROSCOPIC SURGERY FOR HIATAL HERNIA ASSOCIATED WITH MICROGASTRIA IN ASPLENIA SYNDROME

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INTRODUCTION: Hiatal hernia associated with microgastria in asplenia syndrome is a rare but well-described congenital anomaly. Surgical treatment is technically difficult due to associated anatomical and cardiovascular anomalies.

METHODS: Four out of 22 infants with asplenia syndrome had had hiatal hernia and microgastria for the last 10 years. One infant underwent open hiatal repair due to associated severe cardiorespiratory failure. Another infant had VATS, which resulted in residual gastric herniation. The 2 remaining infants underwent laparoscopic repair of the hiatal hernia and anti-reflux with microgastria in asplenia syndrome. Herein,

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we review these 2 latter infants and discuss the role of laparoscopic procedures.

RESULTS: Case 1: A 3-month-old male infant who had underwent PA banding for SASV showed melena due to herniation of the microgastria and colon through the esophageal hiatus near the left-sided IVC. Laparoscopic surgery confirmed a preduodenal portal vein and large esophageal hiatus located in the deep cranial portion of the subhepatic recessus. He underwent crural repair after reduction of the herniated stomach, pancreas, and colon. However, he still showed GERD with failed anti-reflux surgery due to severe microgastria.

CASE 2: A four-month-old female infant received an antenatal diagnosis of hiatal hernia with asplenia syndrome. After placing an arterial-pulmonary shunt for PA stenosis and SASV, she received laparoscopic surgery at 2 months of age. Laparoscopy revealed a preduodenal portal vein and large esophageal hiatus located in the deep cranial portion of the subhepatic recessus. She underwent hiatal repair and partial fundoplication.

CONCLUSION: Accurate preoperative evaluation of cardiovascular and anatomical anomalies is extremely important in asplenia syndrome. MIS is warranted for hiatal repair; however, complications resulting from microgastria and cardiovascular abnormalities still remain.

P045: DETERMINATION OF PERCUTANEOUS ENDOSCOPIC GASTROSTOMY COMPLICATION RATES IN CHILDREN [Gonul Kucuk, MD](#), Gulnur Gollu, MD, Meltem Bingol-Kologlu, Prof., Aydin Yagmurlu, Prof., Murat Cakmak, Prof., Tanju Aktug, Prof., Huseyin Dindar, Prof, Ankara University School of Medicine Department of Pediatric Surgery

BACKGROUND: Percutaneous endoscopic-gastrostomy (PEG) is widely accepted as the preferred procedure to establish long-term enteral feeding in children. Surprisingly, various published series suggest conflicting morbidity rates differing from 5–33% associated with PEG procedure in children. Therefore, we reviewed our experience with children who underwent PEG placement to find out the complication rates and long-term outcomes of this procedure.

METHODS: The records of the patients who underwent PEG placement between January 2008 and December 2012 were reviewed. The patients were called to evaluate their latest situation. The procedure was performed with the standard pull technique under general anesthesia. Prophylactic antimicrobial drugs were not used. Tube feeding was begun 12 hours after the PEG placement. The patients were visited regularly by an experienced nurse in their homes and evaluated in terms of potential complications.

RESULTS: A total of 40 pediatric patients (22 males and 18 females), with a mean age of 5.6 ± 4.1 years (17 day old to 14 years), underwent 41 PEG placement. The mean weight of the patients during the procedure was 13.7 ± 10.2 kg. The underlying diseases of the patients were neurological dysfunction ($n=34$), metabolic disorders ($n=4$), total intestinal aganglionosis ($n=1$) and cleft palate ($n=1$). There was no early complication. Mean follow-up time of the patients was 2 ± 1.2 years. The late complications were stoma infection which was managed conservatively in three children (7.5%), buried bumper in one (2.5%) and gastroesophageal reflux disease which required laparoscopic Nissen fundoplication in one (2.5%). Three patients died because of their underlying

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disease The PEG tube was removed permanently in four patients because they resumed an adequate oral intake.

CONCLUSION: PEG is a minimal invasive, easy, safe and reusable route for long term enteral feeding. Rates of PEG complications observed in this study are low and are generally minor. Observed rates of PEG-specific complications are lower than previous reports. Therefore it should be first preferred choice of procedure in children who require long term enteral feeding.

P046: PATIENT COMFORT DOES NOT ALWAYS GET BETTER WITH SURGICAL INTERVENTION IN ACHALASIA

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PURPOSE: Achalasia, an esophageal motility disease which is characterized with absence of relaxation of lower esophageal sphincter. Dilatation, botox injection, and for the last chance, surgical intervention are among treatment choices. The dysmotilities of patients who had surgical operations because of achalasia is aimed to evaluate.

METHODS: Patients who had been operated between 2006- 2012 and who had swallowing disorder reviewed retrospectively. Three girls and two boys were brought to the hospital with swallow trouble.

RESULTS: Videofluoroscopy was performed five children for having troubles of swallowing firm food." Bird beak" deformity at the lower esophagus and dilatation of upper segments had seen. Upper gastrointestinal tract endoscopy was

performed and lower esophageal sphincter was seen firm even with air insufflations and did not opened. Endoscopic balloon dilatation was performed all 5 patients and botox injection was performed to one. They did not get benefit, and Heller myotomy and fundoplication to prevent reflux were performed. Postoperative third week videofluoroscopy was performed and no reflux or stricture were seen. In 7-24 months follow ups, (median 10 months) especially fluid need of swallowing firm food was detected and videofluoroscopy was performed. Increased esophagus calibration, no strictures of lower esophageal sphincter and tertiary contractions were seen all of the patients.

CONCLUSION: Achalasia, a rare motor disease of esophagus. Esophagus that diagnosed late and dilated or tortiosed, surgical interventions may not be able to prevent dysphagia even there was no lower esophageal sphincter stricture.

P047: LAPAROSCOPIC MANAGEMENT IN ACUTE DUODENAL PERFORATION IN AN ADOLESCENT GIRL

Gulnur Gollu, MD, Gonul Kucuk, MD, Bilge Turedi, MD, Nil Y. Tastekin, MD, Aydin Yagmurlu, Prof, Ankara University School of Medicine Department of Pediatric Surgery

Duodenalulcerperforationis an uncommon entity in pediatric age group and it is not usually considered in the differential diagnosis of acute abdomen in these patients. A thirteen-year old who had abdominal pain and vomiting had prominent abdominal tenderness. Abdominal X-ray revealed free gas under diaphragm. She had a history of non-steroidal anti-inflammatory drug ingestion four days ago because of tooth pain. After fluid resuscitation, laparoscopy revealed free bilious fluid in the abdomen. A discrete perforation was found on the anterior wall of the first part of duodenum. Simple

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closure was performed laparoscopically. The aim of this video presentation is to show the technical details of this minimal invasive surgery.

P048: LAPAROSCOPIC GASTRODUODENOSTOMY IN A NEWBORN WITH PYLORIC ATRESIA Gulnur Gollu, MD, [Gonul Kucuk, MD](#), Bilge Turedi, MD, Hakan Tuzlali, MD, Aydin Yagmurlu, Prof, Ankara University School of Medicine Department of Pediatric Surgery

Pyloric atresia is a very rare condition with an incidence of 1:100000 newborns. A 2500g boy who had non-projectile and non-bilious vomiting had single gastric bubble with no air in distal segments in abdominal X-ray. He had no associated anomalies. Laparoscopic gastroduodenostomy was performed. The aim is to present technical details by showing video of the surgery.

P049: LAPAROSCOPIC PROCEDURE FOR NEONATAL DUODENAL OBSTRUCTION IN 25 CASES : A RETROSPECTIVE ANALYSIS IN A SINGLE CENTER [Jinfa Tou, PhD](#), Qixing Xiong, MD, Zhigang Gao, MD, Jinhu Wang, PHD, Shoujiang Huang, PHD, Qiang Shu, PHD, The Children's hospital Zhejiang University School of Medicine, Hangzhou, China.

BACKGROUND: Laparoscopic (LP) surgery for neonatal congenital duodenal obstruction have been reported recently. To summarize the experiences and advantages of laparoscopic surgery for neonatal duodenal obstruction, here we report a series of 25 cases in our single center.

METHODS: Twenty-five neonates with congenital duodenal obstruction were treated with LP procedure in Children's hospital Zhejiang University School of Medicine between Jan 2012 and Dec 2013. The clinical data were retrospectively analyzed.

RESULTS: Among all patients, 16 were male, 9 were female. Age at admission ranged from 2 h to 1 d. Ten patients were preterm (gestational age 34w~37w) and 12 were low birth weight (1580g~2450g). The duodenal obstruction was due to malrotation (n=11), atresia (n=4), web (n=5), and annular pancreas (n=5). Laparoscopic procedure was performed in all the cases by 3 to 4 trocars. During operation, 2 to 3 sutures for lifting were performed in the cases who needed anastomosis (atresia, web and annular pancreas), and abdominal drainage was performed in these cases. The operation time was 60-180 min (mean, 85min). Twenty-three cases were accomplished by LP surgery, two cases with malrotation shifted to open procedure due to volvulus more than 720°. One case suffered anastomotic leakage and recurred 2w later with conservative treatment of fasting and drainage. For the other 24 patients, full feeding started on postoperative day 4-11 (mean, 6.2), and discharged from hospital on the postoperative day 7-21 (mean, 12). The follow-up ranged from 1 to 24 months, all cases grew up healthily.

CONCLUSION: In treatment of neonatal duodenal obstruction, laparoscopic procedure performed by skilled surgeon is a safely and effective technique with satisfactory outcomes.

P050: USE OF FULLY COVERED SELF-EXPANDABLE METAL STENTS FOR BENIGN OESOPHAGEAL DISORDERS IN CHILDREN [Bettina Lange, MD](#), Rainer Kubiak, MD, Lucas M Wessel, MD, Georg Kähler, MD, Department of Paediatric Surgery, Central Interdisciplinary Endoscopy

BACKGROUND: There is a lack of experience with fully covered self-expandable metal stents (SEMSs) for benign oesophageal disorders in children.

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PATIENTS AND METHODS: Eleven children (6M, 5F) with a median age of 30.5 months (range, 1 month - 11 years), who underwent treatment with a SEMS for a benign oesophageal condition between February 2006 - January 2014 were recruited to this retrospective study. Aetiologies included: oesophageal atresia with postoperative stricture (n=5) and/or recurrent fistula (n=1), anastomotic leakage (n=1); iatrogenic perforation of the oesophagus following endoscopy (n=3) or laparoscopic fundoplication (n=1). As part of an interdisciplinary approach patients were jointly managed from the Department of Paediatric Surgery and Central Interdisciplinary Endoscopy at our institution.

RESULTS: Median duration of individual stenting was 29 days (range, 17-91 days). In 4 cases up to four different SEMSs were placed over time. There were no complications noted on stent placement or removal. Follow-up showed successful treatment in 6 patients (55%). Minor stent-related complications occurred in 5 cases, mainly attributed to mild gastro-oesophageal reflux and silent stent displacement. In two children each (18%) one single dilatation was performed after stent removal. Three patients (27%) did not improve following stenting and required further surgery.

CONCLUSION: SEMS placement for benign oesophageal disorders in children can be used safe and effective either as an emergency procedure or as an additive treatment further to endoscopy or previous surgery. Establishment of a standardized approach in the paediatric population is mandatory.

P051: LAPAROSCOPIC HEPATIC PORTOJEJUNOSTOMY FOR FETALLY DIAGNOSED CYSTIC BILIARY ATRESIA

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PURPOSE: To present a case of hepatic portojejunosomy performed laparoscopically (LapPE) for fetally diagnosed cystic biliary atresia (cystic BA).

CASE: Cystic BA was initially suspected on routine fetal ultrasonography and was confirmed after birth by clinical signs, diagnostic imaging, and blood biochemistry. LapPE was performed on day 37 of life; weight was 3.6kg. On examination of the abdominal cavity after insertion of the initial trocar, the gall bladder was found to be small but not atrophied, the liver was mildly cirrhotic, and the bile duct was cystic-in shape and 1.5 x 1.5cm in size. Intraoperative cholangiography confirmed cystic BA type III. The gall bladder, cystic duct, and the thickened fibrous cystic-shaped common bile duct were dissected and the common bile duct transected distal to the point of confluence with the cystic duct. Next, full-thickness dissection of the duodenal side of the cyst was commenced but about a third of the way through, an elliptical area of luminal mucosa within the cyst separated spontaneously together with the mucosa from the lower two thirds of the cyst. This elliptical area appeared like waxed paper macroscopically and on histopathology was found to be composed entirely of fibrous tissue with no mucosal epithelial structure. Because of this spontaneous separation, there was no mucosa left on the duodenal side of the cyst to dissect; i.e., there was no need to proceed further

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with dissection on the duodenal side. Thus, full-thickness dissection of the portal side was commenced. Once the fibrotic biliary remnant was exposed adequately on the portal side it was transected. After transecting the fibrotic biliary remnant at the porta hepatis a 3mm diameter hepatic duct was identified almost in the center of the transected biliary remnant which meant that LapPE could be executed by placing 2 sutures to the center of the posterior wall of the common hepatic duct, one suture to the center of the anterior wall, and other sutures superficially to the liver parenchyma and connective tissue around the transected biliary remnant at the porta hepatis. A drain was placed in the Pouch of Winslow and the trocar site was closed. Operating time was 8 hours 38 minutes. From the 3rd postoperative day bile colored feces began to be passed, and jaundice clearance was achieved on the 33rd postoperative day after 3 courses of corticosteroids. At follow-up of 6 months, she remains jaundice-free, current total bilirubin is 0.5mg/dL, and there have been no episodes of cholangitis. The classification of BA was reviewed to be II-(cystic)- α .

CONCLUSION: Fetally diagnosed cystic BA should be included as an indication for LapPE.

P052: PERCUTANEOUS ENDOSCOPIC GASTROSTOMY IN CHILDREN. A POPULATION BASED STUDY FROM ICELAND 1999-2010 Margret Brands

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PURPOSE: Percutaneous endoscopic gastrostomy (PEG) is a commonly used technique for establishing enteral feeding. Many complications of the procedure are known, especially in children. The aim of this study was to review the indications and the results of the PEG procedure in Icelandic children.

METHODS: A retrospective review of all children (0-18 years) who received PEG at Landspítali University Hospital of Iceland in the years 1999-2010. Their medical records were reviewed with regards to indication for the procedure, age, pre-operative use of nasogastric tube, the result of operation, complications (major and minor) one year from insertion of PEG, length of hospital stay and weight gain after the procedure.

RESULTS: 98 children (51 girls and 47 boys) received PEG during the study period. 72% received enteral feeding through nasogastric tube prior to the operation. The median age was 2 years (range 1 mo -17 y). The most common indication for PEG insertion was failure to thrive due to neurological disease (56%). Median length of stay after PEG insertion was 4 days (range 1 - 189 days). None of the extended length of stay was in relation with the PEG procedure.

Median body mass index (BMI) before surgery was 14,5 (range 9,8 - 20,8) and median BMI-for-age z-score was -1,4 (range -5,9 - 3,0). Median BMI one year after surgery was 15,3 (range 11,2 - 22,1) and median BMI-for-age z-score was -0,5 (range -5,1 - 3,8). The median weight increased significantly in one year by 1,0 SD ($P < 0,0001$, 95% CI -1.4820 to -0.7387). Height and weight 12 months after PEG procedure was documented for 54 children.

166 complications were registered in 65 children of which 96% were minor.

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The most common complications were granuloma formation (19%) and superficial skin infection (25%). The incidence of infection was not statistically different between those who received pre-operative antibiotics vs. no antibiotics. Major complications were 4% and included three children with peritonitis due to gastric leak from the gastrostomy site, one child with esophageal tear, one child with buried bumper and in one case malposition of the gastrostomy tube. Median follow up time was 47 months (range 1-152). 14 children died (1 mo - 3 y) after PEG insertion and none of the deaths were related to PEG insertion. 27 children were without gastrostomy at follow up.

CONCLUSION: According to our results the PEG procedure is a safe technique for establishing enteral feeding in children. Gastrostomy is sometimes temporary. Complication rate is high but the majority of complications are minor or easily treatable. Enteral feeding through PEG in children causes significant weight gain in one year.

P053: THE ROLE OF MITOMYCIN-C IN THE MANAGEMENT OF OESOPHAGEAL STRICTURES SECONDARY TO OESOPHAGEAL ATRESIA E. Achimugu, Miss. M. Thompson, MBChB, DCH, FRCP, FRCPCH, MD, R. M. Lindley, Mr., The Children's Hospital Sheffield

Local application of the anti-fibroblastic agent Mitomycin-C, has been reported as an alternative treatment of refractory oesophageal strictures in children. We to our knowledge, present the largest case series assessing efficacy of Mitomycin c in refractory oesophageal strictures secondary to oesophageal atresia.

METHOD: All patients prescribed Mitomycin-C for Oesophageal Strictures at our centre were identified. Of this

group 5 had an underlying diagnosis of oesophageal atresia. 0.5mg/ml of Mitomycin-C was endoscopically applied under direct vision to the stricture following balloon dilatation. The rate and need for subsequent stricture dilatation were assessed. Out comes for this group were compared with oesophageal atresia patients who did not receive adjuncts/ Mitomycin-C for management of post operative strictures at our institution.

RESULTS & CONCLUSION: There were no complications following application of Mitomycin C in any of our patients. Demonstrated reduction in frequency of stricture dilatation were statistically compared. The rate of post-operative oesophageal stricture are affected by meticulous technique, aggressive acid suppression and tension at time of anastomosis. The use of Mitomycin C may be helpful in selective patients for management of refractory oesophageal strictures.

P054: LAPAROSCOPIC SURGERY FOR PEDIATRIC ESOPHAGEAL HIATUS HERNIA Lishuang Ma, MD, Ning Dong, BA, Capital institute of Pediatrics

BACKGROUND AND PURPOSE: Esophageal hiatus hernia mostly need surgical procedure. As the development of laparoscope surgery, esophageal hiatus hernia repair and fundoplication under laparoscope have become the leading treatment of esophageal hiatus hernia. We herewith explore the safety and effectivity of laparoscopic surgery for esophageal hiatus hernia.

MATERIALS & METHODS: We treated 29 cases with esophageal hiatus hernia by laparoscopic esophageal hiatus hernia repair between Sept. 2007 and Oct. 2012. Of the patients, 21 were male and 8 were female. They were aged 7 days to 5.5

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years(average,1.2 years) . Of the patients, 9 were neonates. 25 cases presented with intermittent vomiting, among which one case was accompanied by haematemesis and melena, and 6 accompanied by noticeable malnutrition and delayed growth. 4 cases presented with cough and dyspnea. According to Barrett typing standard, 6 cases belonged to type I (sliding hernia), which still suffered from recurrent vomiting after conservative treatment for 3 months~1 year; 18 were type II and 5 type III. All patients underwent LP esophageal hiatus hernia repair and Nissen fundoplication. The Surgical procedures carried out as follow: ? Exposure of esophageal hiatus, ? Incision of hernia sac. ? Dissociation of esophagus. ? Contraction of esophageal hiatus. ? Fundoplication.

RESULTS: One of 29 patients, 2 patients was transferred to open surgery due to severe abdominal adhesion. 27 patients completed laparoscopic repair of esophageal hiatus and Nissen fundoplication successfully. The average time of surgery was 147min (90~390min); intraoperative bleeding was 5mL on average (1~10mL); All cases began to drink water 24~48h later after surgery, and backed to preoperative diet on the 4th~5thday; hospital stay lasted for 4~12 days after surgery, 6.5 days on average. 25 cases were followed up for 1 month to 5 years. The 1-year follow-up after surgery showed no evidence of recurrence.

CONCLUSIONS: Laparoscopic surgery for pediatric esophageal hiatus hernia had more advantages than traditional opening surgery, such as minor injury, rapid recovery. The procedure is safety and efficiency, and the clinical effect was satisfactory.

P055: THE PRETZELFLEX™, A KINDER LIVER RETRACTOR FOR CHILDREN D. Dass, Mr., K. Elmalik, Mr., J. Rae, Dr., R. Sahay, Miss, S. Marven, Mr., Sheffield Children's Hospital

Laparoscopic liver retractors in children are hazardous. Nathanson liver retractor has steadily supplanted others for use in fundoplication in all ages. Association with liver ischaemia and parenchymal injury is well recognised; the retractors are typically inserted via stab incision which may result in contemporaneous bleeding and gas leakage. The smallest Nathanson retractor (5mm) has a hook height of almost 70mm making the device arduous to deploy in small children.

AIM: To evaluate the use of 3mm re-useable organ and tissue retractor, PretzelFlex™ (Surgical Innovations), during laparoscopic fundoplication.

METHODS: Fundoplication was performed in four children using 3mm laparoscopic instruments.

The 3mm PretzelFlex retractor device was inserted via stab incision using a 69 blade (Swann-Morton Ltd) in one patient.

A 3mm YelloPort+plus™ (Surgical Innovations) was used in the latter three patients; the first placed in the right upper quadrant (RUQ) and the latter two in the infra-Xiphisternal position.

The retractor was stabilised using Fast Clamp™ (Surgical Innovations).

RESULTS: At procedure, patients weighed 5 kg, 12 kg, 14.7 kg and 18kg. Deployment of PretzelFlex within the abdomen was prompt and uncomplicated. Whilst key in providing optimal view of the hiatus, no evidence of liver injury was noted. The breadth of retraction likely reduced transfer of pressure across the large retractor-tissue interface.

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Use without a port caused bending of the retractor. Some external clashing of instruments was noted when placed in the RUQ position.

CONCLUSIONS: Used with YelloPort+plus, the 3mm PretzelFlex offers the following potentials:

- reduced liver trauma
- improved view
- less bleeding
- minimal gas leak
- improved cosmesis

Though our early paediatric experience has shown PretzelFlex is safe and may present a new standard in laparoscopic liver retraction for infants and toddlers, further experience is warranted to qualify this.

P056: GASTROINTESTINAL ENDOSCOPE COMBINES LAPAROSCOPY FOR OBSCURE MASSIVE GASTROINTESTINAL BLEEDING IN CHILDREN

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BACKGROUND: Gastrointestinal (GI) bleeding is a common medical problem associated with significant morbidity and mortality in children. Although most patients stop bleeding spontaneously without intervention and most do not re-bleed, a small number have obscure massive gastrointestinal bleeding (OMGI) that may require acute surgical intervention to prevent shock and coagulopathy. Many choices are available in managing such patients. The clinician faces decisions regarding the timing and nature of investigations and treatment options. The aim of this study is to analyse the impact of a protocol to improve clinical practice in this area.

METHODS: A retrospective review of 11 patients who underwent surgery in laparoscopy combines gastrointestinal

endoscope –“one stop” for obscure massive gastrointestinal bleeding from Jan 2011 to December 2013 was performed.

RESULTS: In our series, a total of 11 patients with obscure massive gastrointestinal bleeding were included. There were 7 males and 4 females with a median age of 3.5 years, the most common etiologies of obscure massive gastrointestinal bleeding were Meckel’s Diverticulum (MD; 72.7%), perforation of duodenal ulcer (DU; 18.2%) and unknown cause (UC; 9.1%). All of Meckel’s Diverticulum were successfully treated, including 8 cases (72.7%) of laparoscopic Meckels diverticulectomy and enteroenterostomy. The other two of perforation of duodenal ulcer were successfully treated by Subtotal Gastrectomy (Billroth 2 Method). One child died for failing to treat in time in early stage (ten months old boy, failed to timely diagnosis).

CONCLUSION: Though rare, massive hemorrhage of gastrointestinal tract can present with several lifethreatening complications that mandates immediate surgery. While the surgical procedure may be technically simple, achieving the accurate preoperative diagnosis is often fraught with challenges. The implementation of “one stop” to manage patients with obscure massive gastrointestinal bleeding will evidently shorten the patients rescuing time.

KEYWORDS: Children Gastrointestinal bleeding Gastrointestinal endoscope Laparoscopy

P057: LAPAROSCOPIC PROCEDURE FOR CHILDREN WITH CYSTIC LESION IN ABDOMEN

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BACKGROUND AND PURPOSE: Cystic lesion in abdomen mostly require surgical excision for histological

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diagnosis, symptom relief, and to prevent complications, preferably before the onset of complication. It has become feasible to accomplish the excision Laparoscopically in children. We herewith reviewed our experience of laparoscopic procedure for children with cystic lesion in abdomen.

To summarize the effectiveness and principles of laparoscopic procedure for cystic lesion in abdomen. Materials and Methods: 160 patients, 91 girls and 56 boys, suffered cystic lesion were involved in this group, from 2002 to 2013. Their ages ranged from 3 months to 16 years (average, 8 ± 3.5 y). The average diameter of lesions were 5.5 cm (ranged, from 3 to 17 cm). Three trocars were utilized with 3 to 5mm instruments. Under laparoscopic guidance a transfixion pin was prick into cyst. Then the fluid in the cyst was aspiration through the pin. The bulk of the cyst contracted. Then decompression procedure, internal drainage procedure, resection or dissection procedure were applied according cystic character.

RESULTS: Average duration of operation was 1.5 hours (range, from 0.6 to 3.2 hours) without intraoperative complications, intraoperative bleeding was 5 to 10 ml without necessity for blood transfusion. Return of oral food intake postoperative was 12 hours (range, from 6 to 48 hours). The postoperative course was uneventful in all patients with hospital stay 6.8 days (range, from 1 to 9 days) after the operation. There was no postoperative complication during followed-up visits.

CONCLUSIONS: Laparoscopic procedure for children with cystic lesion in abdomen is safe and effective.

P058: ENDOSCOPIC GASTROSTOMY BUTTON PLACEMENT WITH TRANSCUTANEOUS LASSO U-STITCH

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PURPOSE: To find a cost effective, safe, and easy alternative for primary retrograde gastrostomy button placement.

METHODS: Gastroscopy is performed with the Olympus flexible endoscope. After transillumination and digital indentation an 18-French spinal tap needle with a #0 polydioxanone loop is transcutaneously advanced into the stomach. A second needle is introduced 1.5cm more distally. Through the second needle, a #0 polydioxanone is advanced through the previously introduced polydioxanone loop. The loop snares the single polydioxanone strand and is pulled out. This creates a U-stitch. Another U-stitch is placed using identical technique, medially to the first one. Mild traction is applied to the U-stitches apposing the gastric wall to the peritoneum. In between the U-stitches, an incision is made and a 16-French needle is directed into the stomach; a guide-wire is advanced through the needle. Dilations to 22-French are performed over the guide-wire. The abdominal wall thickness is measured and a gastrostomy button placed. Correct placement is confirmed by endoscopy. The previously placed U-stitches are tied around the G-tube and left in place for one week.

RESULTS: N=10. Age 3 months to 21 years old. 40% Females (n=4), 60% males (n=6). Mean weight $22.01 \text{kg} \pm 6.31$, BMI 17.08 ± 1.31 . Mean operative time 22 ± 3.49 min. Two cases were performed in a combined procedure. No intra- or postoperative complications. 4 patients experienced irritation around sutures. Tubes sizes 12-14 Fr, ranging from 1.2 to 3 cm length.

CONCLUSION: This endoscopic technique is a save and cost effective alternative for primary retrograde gastrostomy button placement with high patient satisfaction - without the need for placement of more expensive T fasteners or blind needle

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sweeps. The PDS sutures are absorbable and there is no risk for potential gastric erosion/abscess formation from retained foreign bodies from T-fasteners. Endoscopy allows proper intraluminal placement confirmation.

P059: GOOGLE GLASS IN PEDIATRIC SURGERY: TESTING ITS APPLICABILITY

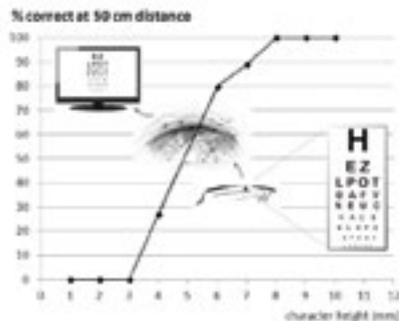
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INTRODUCTION: Personal portable information technology is advancing at a breathtaking speed. Google has recently introduced Glass, a device that is worn like conventional glasses, but that combines a computerized central processing unit, touch pad, display screen, high-definition camera, microphone, bone-conduction transducer, and wireless connectivity. We have obtained a Glass device through Google's Explorer program and have tested its applicability in our daily pediatric surgical practice and in relevant experimental settings.

METHODS: Glass was worn daily for 4 consecutive weeks in a University Children's Hospital. A daily log was kept, and activities with a potential applicability were identified. Performance of Glass was evaluated for such activities. In-vitro experiments were conducted where further testing was indicated, including, for example, a standard Snellen vision test using Glass over a transatlantic internet connection, with the Glass camera positioned 50 cm away from the letter chart. Glass was also tested as a training tool for teaching intubation, and for evaluating radiographic images in real-time.

RESULTS: Wearing Glass throughout the day for the study interval was well tolerated. Colleagues, staff, families and patients overwhelmingly had a positive response to Glass. Useful applications for Glass was hands-free photo-/videodocumentation, making hands-free telephone calls, looking up billing codes, and internet searches for unfamiliar medical terms or syndromes. Drawbacks encountered with the current equipment were low battery endurance, data protection issues, poor overall audio quality, as well as long transmission latency combined with interruptions and cut-offs during internet videoconferencing. In the transatlantic vision test, all characters 8mm or larger were correctly identified. None of the characters 3 mm or smaller were legible via the transatlantic link (see figure below). Glass is an excellent tool for teaching complex tasks such as endotracheal intubation, and has some applicability to show the user realtime radiographic information during procedures.

CONCLUSION: Glass has the some clear utility in the clinical setting. However, before it can be recommended universally for physicians and surgeons, substantial improvements to the hardware are required, issues of data protection must be solved, and specialized medical applications (apps) need to be developed.



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P060: FIRST REPORT OF THORACOSCOPIC LEFT UPPER PULMONARY LOBECTOMY USING FISSURELESS TECHNIQUE IN A SMALL CHILD

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BACKGROUND: Pulmonary lobectomy involves ligating branches of the pulmonary artery, the pulmonary vein, and bronchus. The pulmonary artery is exposed at a fissure by dividing the lung parenchyma overlying the artery using electrocautery or sharp/blunt dissection that causes air/fluid leakage that prolongs chest tube drainage and hospitalization. Recently, vessel/tissue sealing devices (Ligasure, Harmonic scalpel, Enseal) are being used to seal lung parenchyma and fissure surfaces, especially during thoracoscopic lobectomy. However, in cases where a fissure is fused so tightly that it cannot be identified, air leakage can occur even with sealing devices. We used fissureless lobectomy, a novel technique for preventing parenchymal injury to the lung during thoracoscopic lobectomy in children for the first time.

CASE: Thoracoscopic left upper lobe (LUL) lobectomy was performed on a 2-year-old girl with prenatally diagnosed congenital pulmonary airway malformation (CPAM) of the LUL. She was positioned in the right lateral decubitus position under general anesthesia with single lung ventilation. The surgeon and scopist stand in front of the patient and view a monitor behind the

patient. An initial 5mm optical trocar was placed 1cm below the angle of the scapula in the posterior axillary line (AL) using a closed technique. Four other trocars were placed. 1. Fourth intercostal space (IS) slightly posterior to the anterior axillary line (AAL) for the telescope; 2. Third IS in the AAL for the surgeon's left hand; 3. Sixth IS in the AAL for the surgeon's right hand; 4. Eighth IS in the mid AL for a retractor or stapler. On examination, the major fissure was tightly fused. Firstly, the LUL was retracted posteriorly and superiorly to expose the hilum, allowing the apical/anterior/posterior branches (A1+2, A3) and mediastinal lingular branches (A4, A5) of the left pulmonary artery to be divided using hemo-clips and Ligasure. Then, the pulmonary veins to the LUL (V1-3, V4, V5) were encircled, clipped, and divided, exposing the LUL bronchus which was then divided using an endo-stapler and the cut-end retracted superiorly and posteriorly to expose the left pulmonary artery trunk clearly. Branches of the pulmonary artery (A6, A8) to the left lower lobe (LLL) were identified and left intact, and branches to the lingular lobe (interlobar A4, A5) of the LUL were identified and divided. A stapler was then inserted and used to grasp the lung parenchyma gently while retracting the LUL superiorly, inferiorly, posteriorly, and anteriorly to confirm that the stapler did not include arterial branches to the LLL and that alignment with the proposed major fissure was "correct". The stapler was then fired and the LUL divided and separated. Blood loss was 1mg. There was no air leak from the chest tube postoperatively and minimal fluid leakage. The chest tube was removed the next day after surgery. She is currently symptomless and well after follow-up of 10 months.

CONCLUSION: Thoracoscopic fissureless lobectomy is safe and feasible even in small children.

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P061: COMBINED LAPAROSCOPICALLY ASSISTED AND ANTERIOR SAGITTAL ANORECTOPLASTY FOR IMPERFORATE ANUS WITH RECTOBLUBAR URETHRAL FISTULA

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BACKGROUND: Laparoscopically assisted anorectoplasty (LAARP) was introduced in 2000, and the number of hospitals adopting it for the treatment of high-type anorectal malformation (rectovesical or rectoprostatic fistula) is increasing. However, the application of LAARP for rectobulbar urethral fistula is controversial, because precise division of the fistula in the deep pelvic cavity is difficult and there is a potential risk of posterior urethral diverticulum. We herein introduce a novel procedure for an imperforate anus with a rectobulbar fistula involving precise ligation of the fistula and appropriate placement of the rectum in the center of the sphincter using combined laparoscopically assisted and anterior sagittal approaches.

CASE REPORT: A boy weighing 2,220 g was born at a gestational age of 37 weeks, and diagnosed with a imperforate anus immediately after birth. No associated malformations, including neurological abnormalities and sacral deformities, were noted. Initially, a loop colostomy was placed at the right transverse colon. Distal colostography and urethrography showed a rectobulbar urethral fistula. Anorectoplasty was performed at the age of 4 months (5.8 kg)

PROCEDURE: Rectal dissection was performed laparoscopically, and the fistula was ligated and resected at a short

distance from the urethra. A minimal anterior sagittal incision was made, and a ligature passer was inserted from the center of the external anal sphincter to the center of the puborectalis under laparoscopic vision. The ligature was pulled out from the abdominal cavity, and a pull-through route was formed by cutting the midline of the external sphincter muscle and vertical fibers along the thread using a muscle stimulator. The fistula was identified from the perineum by pulling the thread, and resected close to the urethra. The rectum was pulled through and anchored to the muscle fibers. The muscles were closed to surround the rectum and anocutaneous anastomosis was performed. The post-operative course was uneventful. The stoma was closed one month after the anorectoplasty. MRI performed at one year after the anorectoplasty showed the rectum at the center of the sphincter muscle and no residual fistula. Although he is still administered a daily enema, a couple of voluntary bowel movements are seen every day.

CONCLUSIONS: Combined laparoscopically assisted and anterior sagittal anorectoplasty for an imperforate anus with a rectobulbar urethral fistula was feasible and advantageous for the precise division of the fistula.

P062: PERCUTANEOUS SUTURING TECHNIQUE AND SINGLE SITE UMBILICAL LAPAROSCOPIC REPAIR OF A MORGAGNI HERNIA: REVIEW OF 3 CASES

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INTRODUCTION: Morgagni hernias are uncommon and account to only 1-5 % of all congenital diaphragmatic hernia.

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Although most are asymptomatic, surgical treatment is recommended to prevent possible future complication. Minimal invasive surgery is today the gold standards treatment. We present our technique using percutaneous suturing technique and single site umbilical laparoscopic repair of Morgagni hernias in 3 children.

PATIENTS & METHODS: In 2013 three boys' ages nine, sixteen and eighteen month respectively were referred to our institution for repair of their Morgagni hernia.

A 2- cm longitudinal incision was made in the umbilicus. A homemade single-port device with a wound retractor and surgical gloves was introduced. A 5-mm 0 angle scope was used. The herniated bowel was easily reduced into the abdomen using a grasper. The posterior diaphragmatic rim was clearly visualized. The defect was repaired using entirely 2-0 prolene percutaneous sutures.

RESULTS: The total operative time was respectively 100, 60 and 50 minutes. Recovery was uneventful in all 3 patients. There were no recurrence and the chest radiograph stayed normal during the postoperative follow-up.

CONCLUSION: Percutaneous suturing technique and single site umbilical laparoscopic repair of a Morgagni hernia is an easy and effective alternative to the standard laparoscopic repair.

P063: THE UTILITY OF INTRAOPERATIVE HYDROSTATIC ENEMA DURING PEDIATRIC LAPAROSCOPIC INTUSSUSCEPTION REDUCTION Cristina N. Budde, MD, Thomas Sims, MD, [Andrew Zigman, MD](#), Oregon Health and Science University & Kaiser Permanente Northwest

BACKGROUND/PURPOSE: Intussusception is the most common cause of bowel obstruction in children 3 months to 3

years of age. In the absence of peritonitis, initial treatment is either hydrostatic or pneumatic reduction. If these measures fail, operative intervention is required. In non-reducible cases, we propose the use of intraoperative hydrostatic enema to achieve or confirm reduction.

METHODS: We performed intraoperative hydrostatic enema reduction in seven children ages 4 months to 2 years. All patients had ileocolic intussusception that failed initial reduction by radiographic enema. Under general anesthesia, saline enema was facilitated by direct laparoscopic visualization.

RESULTS: In two of the seven cases, intussusception reduction was visually confirmed in real time. In these two cases only a laparoscopic camera port was required. In one case, the bowel was extensively dilated requiring mini-laparotomy for visualization; however, the enema reduced the intussusception without any need for bowel manipulation. In the remaining four cases, minimal laparoscopic manipulation was required, and enema confirmed reduction. No child required bowel resection.

CONCLUSIONS: Intraoperative hydrostatic enema is a safe and valuable addition to laparoscopic reduction of intussusception. This technique gives the advantage of little or no bowel manipulation and can be accomplished via a single port.

P064: LAPAROSCOPICALLY ASSISTED REPAIR FOR FEMALE LOW TYPE IMPERFORATE ANUS [Manabu Okawada, MD](#), Takashi Doi, MD, Hiroyuki Koga, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD, Juntendo University School of Medicine

OBJECTIVE: In recent years, laparoscopic intersphincteric resection for low rectal cancer has been offered and performed

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successfully in adult patients, indicating that laparoscopic manipulation can now reach deep into the pelvic cavity, in other words, as far as the perineum. Because this revolutionary procedure would also improve chances of external sphincter preservation, the authors were persuaded to perform laparoscopically-assisted repair of female low-type imperforate anus using this technique.

SURGICAL TECHNIQUE: A 12-month-old 8.1kg girl was diagnosed with ano-vestibular fistula at birth. She was prepared for laparoscopically assisted repair (LAR) according to our standard bowel preparation protocol involving colonic irrigation, probiotics and insertion of a central venous catheter the day before surgery. The principles of LAR are dissection of the fistula laparoscopically as distally as possible up to the perineum using four ports, division of the fistula laparoscopically, followed by mucosectomy of the approximately only 4–5mm long residual fistula from the perineum. For laparoscopic dissection of the fistula, a newly developed 10-mm fixed-rod rotating scope was used, which allows the direction of view to be adjusted from 0° to 120° as required. This scope was introduced through an umbilical trocar, and three additional 3 or 5mm trocars were inserted as working ports. All 3 additional trocars were placed medial to the rectus abdominis, similar to single incision laparoscopy, in contrast to conventional trocar placement for imperforate anus repair in males with recto-prostatic or recto-vesical fistula where the tips of the endoscopic instruments do not need to reach deep into the pelvis that is narrow. Using these trocar positions, the rectum and ano-vestibular fistula were dissected from the vaginal wall easily, and dissection of the ano-vestibular fistula progressed to the level of the perineum. The fistula was then divided and the tiny residual

distal fistula, 3–5 mm in length, was ligated with an endoloop suture. At this stage, the surgeon moved to the perineum site to perform mucosectomy of the residual fistula and close it with interrupted sutures. Electrostimulation was used to define the center of the anal dimple, and a 10mm skin incision was made. Minimal blunt dissection of the perineum using a pair of mosquito forceps with transillumination from the laparoscope as a guide was commenced to create a pull-through canal. Once an adequate route for the pull-through canal was established, dilatation was commenced by passing a series of dilators. The rectum with proximal ano-vestibular fistula was then pulled-through, its distal end biopsied to confirm normoganglionosis and the coloanal anastomosis completed. If the distal end was not normoganglionotic, it was cut back and rebiopsied until it was normoganglionotic to prevent intractable postoperative constipation. Operating time was 175 minutes. The postoperative course was uneventful.

CONCLUSION: Minimally invasive surgery can now be considered actively for treating female low-type imperforate anus following our successful application of LAR. Long-term follow-up is required to evaluate fecal continence.

P065: A COMPARISON OF TWO TECHNIQUES FOR THE DELIVERY AND FIXATION OF EXTRACORPOREAL KNOTS DURING LAPAROSCOPY: KNOT-PUSHER WITH INTEGRATED CUTTER VERSUS CONVENTIONAL SUTURING [Carolina Millan, MD](#), Guillermo Dominguez, MD, Luzia Toselli, MD, Yolanda Martinez, MD, Fernando Rabinovich, MD, Horacio Bignon, MD, Gaston Bellia, MD, Albertal Mariano, MD, PhD, Marcelo Martinez Ferro, MD, Private Children's Hospital of Buenos Aires, Fundación Hospitalaria, Buenos Aires, Argentina

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INTRODUCTION: the use of knot-pusher (KP) with integrated cutter simplifies the delivery and fixation of extracorporeal knots to an intracorporeal surface and constitutes a technical alternative to conventional knot sliding suturing technique (CS). This study test the hypothesis that KP shortens the time require for tying and cutting a knot compare to CS.

METHODS: Three surgeons (one expert, one semi-expert and one fourth-year pediatric surgeon resident) performed 10 knots each (five with KP and five with CS) using a laparoscopic abdominal trainer with its own visual output. Surgical tools used were as follows: 1) 10-mm 30°laparoscope and 5-mm conventional surgical tools (Meryland, scissors). 2) KP with 5-mm integrated cutter.3) 2 trocars (11-mm and 5-mm). 4) 0, 40 mm Nylon (length 75 cm). 5) 0.5-mm Nelaton catheters (length 7cm). All bows (10 per operator) were tight into the Nelaton catheters at the bottom of the simulator and both free ends exteriorizedthrough the 5-mm trocar. In this manner, all sutures had the same length prior to tying and cutting the knot. In order control for differences in skills regarding knot design, only one operator designed all 30 knots. We evaluated the time required to deliver and fix the knot into the Nelaton catheter (from outside the simulator up its fixation and cut inside the trainer).

RESULTS: Overall task time was lower with KP than with CS (20.9±5.5 versus 39.39±5.9 seconds, $p < 0, 01$), which translated into an absolute difference of 18.4±6 seconds (88.2% reduction). This reduction in task time was observed across all operators (table). Improvement in task time from first to the fifth knot was larger with KP than with CS, but only in less experienced operators (table).

CONCLUSION: the use of KP reduced tasktime required for tying and cutting the knot compared to CS and it was associated with a short learning curve, mainly in less experienced operators.

*p<0.05 versus CS. All time values are shown in seconds.

	KP-Time	Time Difference-KP	CS-Time	Time Difference-CS	KP Minus CS
		First to Fifth Knot		First to Fifth Knot	
Expert	20±4.3*	2 (12%)	34.0±4.3	4.1 (13.4%)	14.0±4.4 (32.3%)
Semi-expert	16.3±4.2*	8.8 (59%)	38.0±5.5	6.2 (16.3%)	22.0±5.3 (58.4%)
Resident	26.2±5.1*	3.9 (13.4)	45±2.4	-2.1 (-4.5%)	18.8±2.6 (71.6%)

P066: INTRAABDOMINAL PARTITIONING OF THE LAPAROSCOPIC SLEEVE GASTRECTOMY REMNANT OPTIMIZES THE SPECIMEN EXTRACTION ERGONOMICS AND POSTOPERATIVE PAIN AND IS AN ATTRACTIVE TECHNIQUE IN TEENAGE PATIENTS Piotr Gorecki,

MD, Josue Chery, MD, Jennifer Lee, Anthony Tortolani, Wojciech Gorecki, MD, Department of Surgery, New York Methodist Hospital, Brooklyn, NY, USA

INTRODUCTION: Laparoscopic Sleeve Gastrectomy (LSG) becomes increasingly popular bariatric procedure worldwide. The high failure rate of adjustable gastric band and the magnitude of the gastric bypass make this option even more appealing when adapted to pediatric patient population. The fear of complications and the postoperative pain and recovery remain the significant factors when considering wider application of surgery in the treatment of morbid obesity in pediatric patients.

CASE REPORT: A 16 year old girl with the weight of 359 Lbs and BMI of 55 kg/m² suffering from severe metabolic syndrome, type II diabetes, hypertension and fatty liver disease underwent uneventful laparoscopic sleeve gastrectomy and liver biopsy. The procedure time was 65 min (specimen extraction time was 7 min). Her recovery was uneventful and

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she was discharged home on a second postoperative day. Her mean in hospital visual analog pain scores with the utilization of standard PCA pump were 3.2 on a day of surgery, 1.7 on postoperative day 1 and 0 on a postoperative day 2. After the discharge from the hospital, she did not require any postoperative analgesics and returned to normal activities in 7 days. On a 1, 3 and 6-month follow up she has shown all the benefits of weight loss and associated improvement in metabolic parameters and quality of life as determined by the laboratory tests (Hb A1C 6.5% preoperatively vs 4.7% at three months after surgery, off hypoglycemic agents) and SF-36 questionnaire (bodily pain score 45 preoperatively vs 67 at 1 month after surgery). At 1, 3 and 6 month after surgery her weight loss was 30, 49 and 99 Lbs respectively. The patient and her family were also very satisfied with the decision to undergo the bariatric procedure.

EXTRACTION TECHNIQUE: A sleeve gastrostomy specimen containing gastric body and fundus and containing approximately 80 % of the stomach volume has been partitioned longitudinally intracorporeally with endoshears, which allowed its extraction in one partitioned fragment via a 15-mm port site without the need for increasing the length of the incision, stretching of the fascia opening, need for closure of the fascia or utilization of the Endocatch device. This technique resulted in minimizing postoperative pain, reducing the operative costs and minimizing the likelihood of wound infection.

CONCLUSION: General application and the selection of the type of bariatric procedure in pediatric patient populations remains a controversial and widely discussed topic. The hope for improved outcomes

with conservative therapies for morbidly obese patients and further improvement in the safety and perioperative morbidity remain the main factors determining the future growth of bariatric surgery. In this abstract we describe the novel technique that may contribute to further reduction of perioperative morbidity and therefore contribute to wider acceptance of LSG. Detailed technique and the photographs will be presented in the poster. Prospective comparison study will be designed to further evaluate the benefits of this extraction technique.

P067: LEFT THORACOSCOPIC ESOPHAGEAL ATRESIA REPAIR: TIPS FOR SUCCESS Drew A. Rideout, MD, Avraham Schlager, MD, Amina M. Bhatia, MD, MS, Children's Healthcare of Atlanta/Emory University, Atlanta, Georgia; All Children's Hospital/Johns Hopkins Medicine, St. Petersburg, Florida

INTRODUCTION: Right aortic arch (RAA) is present in 5% of patients with esophageal atresia with or without tracheoesophageal fistula (EA/TEF). Repair of EA/TEF in the newborn with RAA adds technical challenges and hence the surgical approach has been controversial. We present a newborn with the prenatal diagnosis of congenital heart disease, who underwent a repair of EA/TEF through a left thoracoscopic approach.

CASE PRESENTATION: The patient was born by elective C-section at 38 weeks gestation, weighing 3.5 kg and with the prenatal diagnosis of congenital heart disease. An orogastric tube was placed and found to be curled in the proximal esophagus, consistent with the diagnosis of EA/TEF. Postnatal ECHO showed double outlet right ventricle with VSD, ASD, and RAA with mirror image branching. Vertebral anomalies were also present, consistent with the diagnosis of VACTERL association.

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FISH analysis for the 22q deletion was normal. Because of the presence of RAA, a left thoracoscopic approach was chosen. On the first day of life he underwent left thoracoscopy with repair of a type C EA/TEF utilizing high frequency oscillator ventilation. A suspension suture between the bulbous proximal pouch and small distal esophagus was used to elevate the esophagus out of the posterior thorax and facilitate construction of the anastomosis. Because of the left-sided approach and size discrepancy between the proximal pouch and distal esophagus, left-handed suturing proved advantageous. An esophagram on postoperative day 6 showed a persistent size discrepancy between the proximal and distal esophagus but no leak or anastomotic stricture.

CONCLUSION: Left thoracoscopy is a feasible approach in the newborn with EA/TEF, congenital heart disease, and RAA. Technical pearls include use of oscillator ventilation for optimal exposure, a suspension suture to facilitate the anastomosis, and left-handed suturing.

P068: INNOVATIVE SELF-ADHERENT (VELCRO) PROLINE MESH FOR LAPAROSCOPIC INGUINAL HERNIOPLASTY IN ADOLESCENT CHILDREN

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INTRODUCTION: Laparoscopic hernia repair with mesh has been reported in adolescent children. The mesh generally requires suturing or tacking on the abdominal wall to secure it in place. Tacking or suturing in the groin area has been reported to cause chronic pain. An innovative self-adherent mesh has been used as an alternative with good results in the adult population,

but no such study has been published in children. We report our experience with laparoscopic self-adherent mesh hernioplasty in adolescent children.

RESULTS: Six patients who underwent laparoscopic hernioplasty with self-adherent mesh by a single surgeon at our institution during one year were included. All patients were males with a median age of 15.4 years (14 - 16 years) and median BMI of 24.9 (19.8-32.6). Five patients presented with complaints of unilateral painless "groin bulge" while one had intermittent severe pain, but no patient had obstructive symptoms or signs of incarceration. One patient presented with a recurrent hernia while the remaining five patients had no previous hernia repairs. Patients were taken electively to the operating room. Five patients had unilateral inguinal hernias and one patient was found to have bilateral inguinal hernias intra-operatively. All patients had the self adherent mesh placed without difficulty and without injury to bowel or conversion to open. Median operative time was 97 minutes (63 - 146 min). All patients tolerated the procedure well and were discharged on the same day. Five patients had postoperative follow up. Three patients were seen in clinic 149 days, 24 days, and 29 days after the operation; one patient had a telephone follow up 314 days after the operation. At time of follow up, no patient had signs of recurrence, surgical site infection, or chronic post-operative pain. The last patient was seen in the ED for concern of scrotal swelling and pain and was ultimately diagnosed with a scrotal hematoma; he was instructed to return to clinic and has since been lost to follow up.

CONCLUSION: Laparoscopic hernioplasty with the innovative self-adherent mesh is feasible and safe with good short to mid term results. None of our patients

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had chronic postoperative pain previously reported with mesh tacking technique. Our series is small and larger numbers would be needed to confirm our results.

P069: SINGLE-SITE LAPAROSCOPIC PERCUTANEOUS TOTALLY EXTRAPERITONEAL CLOSURE FOR

HERNIA IN CHILDREN Li GuiBin, Qiu Yun,
The 5th Central Hospital of Tianjin China

BACKGROUND: Single site laparoscopic percutaneous extraperitoneal closure for hernia is accepted by pediatric surgeons for its reliable effect, simple procedure, cosmetic result. However there is an issue about this method is that the knot was left in the subcutaneous tissue, and cause the postoperation pain at the puncture location, occasionally suture reaction occurred. We modified the procedure of the operation as totally extraperitoneal closure (TEC) : Firstly, puncture epidural needle and free half of processus vaginali. Secondly, put the guide line and silk into peritoneal through the needle. Thirdly, remove the needle. Following putting the needle to peritoneal at the same place we had reached before, and accomplished totally extraperitoneal closure.

METHODS: 115 patients who accepted the single-site laparoscopic percutaneous extraperitoneal closure procedure in our hospital between July 2011 and January 2014 were analyzed retrospectively. Postoperation pain of puncture location and suture reaction were targeted to compare.

RESULTS: 65 patients who underwent traditional single-site laparoscopic percutaneous extraperitoneal closure(TSSLPEC),50 patients were given TEC operation. Postoperation pain of puncture location after operation was 10 (15.4%,TSSLPEC) to 3(6.0%,TEC). Suture reaction was 1(TSSLPEC) to 0(TEC). There is no recurrence in either group.

CONCLUSIONS: TSSLPEC and TEC are both reliable in treatment of hernia in children, TEC procedure are trending more acceptable by patients because less postoperation pain at the puncture location and more satisfied with the operation.

P070: OUTCOME AFTER NUSS PROCEDURE WITH DIAGONAL BAR PLACEMENT: AN UPDATE ON TECHNIQUE

Bethany J. Slater, MD, Sara C. Fallon, MD, Jed G. Nuchtern, MD, Darrell L. Cass, MD, Mark V. Mazziotti, MD, Texas Children's Hospital, Division of Pediatric Surgery, Baylor College of Medicine, Houston, TX

BACKGROUND: The correction of pectus excavatum in pediatric patients allows for improvement of both lung physiology and significant aesthetic concerns that can affect patient quality of life. At our institution, since 2003 we have routinely used the minimally invasive Nuss procedure for surgical correction with excellent results. However, some patients' deformities do not lend themselves to adequate correction with this procedure, during which the pectus bar is placed at a horizontal angle and secured to the same rib space bilaterally. Recently, we have begun to employ a technical modification of the traditional Nuss procedure for these difficult anatomical deformities by placing the pectus bar at an angle, securing the bar bilaterally at different rib spaces. The goal of this study was to evaluate the surgical outcomes of these patients with challenging anatomic deformities who underwent the modified Nuss procedure with a diagonal bar, as opposed to the traditional horizontal bar, and determine if this modification is an effective operative technique.

METHODS: After institutional review board approval, a retrospective review of patients who underwent a modified Nuss procedure

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at Texas Children's Hospital was performed from Dec 2010 to May 2012. Patients were identified through the surgical record, and the post-procedure chest radiographs of all patients who underwent a Nuss procedure by the three surgeons (JGN, DLC, MVM) who use this technical modification were reviewed for diagonal bar placement. Patients with the traditional placement were excluded from further review. Patient data including Haller index, patient demographics, bar-related complications, and cosmetic outcome were systematically extracted from the medical record.

RESULTS: We identified 12 patients who underwent the Nuss procedure with a diagonal bar. The median length of follow-up was 10 months (range from 1 mo to 28 months). Two patients did not have stabilizers placed at the time of operation; despite an increased risk for bar migration, neither of these patients has experienced a complication. All patients reported satisfaction with their post-operative cosmetic outcome to date. One patient with pyoderma gangrenosum developed a wound dehiscence that required re-operation for debridement and closure.

CONCLUSIONS: Our data demonstrate that positioning the pectus bar diagonally during the minimally invasive Nuss procedure is feasible and leads to good cosmetic outcomes with a minimal early complication profile; however, long-term outcomes until after bar removal occurs remain unknown in this series. Diagonal bar placement should be considered in patients with asymmetric defects, where placing the bar in different interspaces allows for proper sternal alignment.

P071: ENDOSCOPIC MANAGEMENT OF RECURRENT TRACHEOESOPHAGEAL FISTULA WITH TRICHLOROACETIC ACID CHEMOCAUTERIZATION: A PRELIMINARY REPORT Manuel Lopez, MD, Eduardo Perez-Etchepare, MD, François Varlet, MD, PhD, Department of Pediatric Surgery, University Hospital of Saint Etienne

OBJECTIVE: Open repair with a second thoracotomy is technically challenging and has a high risk of complications for the treatment of recurrent tracheoesophageal fistula (RTEF). Therefore, less invasive endoscopic techniques have been developed. We report our initial experience with trichloroacetic acid chemocauterization for recurrent trachea-esophageal fistula by endoscopy.

METHODS: Two patients who had an open repair with thoracotomy for congenital tracheoesophageal fistula and were diagnosed with large RTEF were included in this study. Rigid ventilating bronchoscopy with telescopic magnification was used to evaluate and manage the RTEF. After identification of the fistula opening, a 50% TCA-soaked small cotton ball was applied in the opening 3 times during each session, in day surgery.

RESULTS: The mean number of procedures was 3, and the fistulae were closed in both cases. Closure of the fistula was confirmed by esophagogram and/or bronchoscopy. There were no postoperative complications.

CONCLUSION: The results of this study showed that chemocauterization with TCA can be safe and effective for the management of RTEF.

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P072: RETROGRADE DILATATION VIA GASTROSTOMY OF AN ANASTOMOTIC STRICTURE IN A NEONATE WITH RETROGRADE OESOPHAGEAL ATRESIA Brian MacCormack, Jimmy Lam, Fraser Munro, Royal Hospital For Sick Children Edinburgh

Anastomotic stricture is the most common complication following repair of oesophageal atresia, occurring in 18% – 50% of patients. Balloon dilatations remain the treatment of choice for symptomatic oesophageal strictures. If this fails re-operation is needed. Combined oesophagoscopy and transgastrostomy gastroscopy is a well established method of dilating post-radiotherapy oesophageal strictures in adults. The retrograde approach to dilate oesophageal strictures in neonates is not well described. This report highlights the efficacy of this technique in dilating an anastomotic stricture at the time of gastrostomy placement and therefore avoiding potentially difficult re-do surgery.

A male infant, born at term with a birth weight of 3kg, presented with oesophageal atresia and a distal tracheo-oesophageal fistula. On day 2 of life, the fistula was ligated throacoscopically. The procedure was converted to open due to poor view and the repair of oesophageal atresia completed without difficulty. The patient was discharged home at 1 week post-operatively, following a normal contrast study. He was tolerating full oral feeds, and on maximal anti-reflux therapy.

At 2 weeks post-operatively the patient was re-admitted with intolerance to feeds. A contrast study confirmed a near-complete anastomotic stricture. This was unable to be traversed using a guide-wire despite multiple attempts. The decision was therefore made to allow the oedema to settle and re-attempt dilatation. 5 days later oesophagoscopy confirmed a

complete anastomotic stricture and the stricture was unable to be traversed using a guide wire.

Further attempts were abandoned and a Stamm gastrostomy was created and retrograde dilatation through the gastrostomy was performed. A guide wire was passed through the gastrostomy and by repeated probing through the stricture and into the proximal oesophagus in a retrograde direction. The wire was then retrieved from the mouth and a 5.5Fr Accustick dilator passed down the wire, allowing the stricture to be dilated using a 4mm balloon. A nasogastric tube was then passed over the wire and left in-situ.

The gastrostomy was removed at 3 months. The patient required one subsequent balloon dilatation following this procedure, and has had no recurrence of the stricture since.

This report highlights that retrograde dilatation should be considered when performing a gastrostomy following failure of traditional antegrade methods. Traversing a stricture in a retrograde direction appears to be easier, due to the progressive narrowing of the stricture. This has been previously noted in both adults with post-radiotherapy strictures and in children following fundoplication. Our case report demonstrates that retrograde dilatation is possible in neonates and should be considered when performing a gastrostomy so as to avoid potentially difficult re-do surgery.

P073: ESOPHAGO-BRONCHIAL FISTULA (EBF) AFTER PREVIOUS TEF (TRACHEO-ESOPHAGEAL FISTULA) REPAIR: REPAIR USING A THORACOSCOPIC APPROACH Ashwin Pimpalwar, Dr., Texas Children's Hospital¹ and the Division of Pediatric surgery, Michael E. DeBakey Department of Surgery, Baylor College of Medicine, Houston, TX

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AIM: To report the thoracoscopic technique for repair of esophago-bronchial fistula.

MATERIAL & METHODS: The chart of a 4 year old girl who presented with EBF was retrospectively reviewed.

CASE: A 4 year old female presented with chronic coughing during feeding and failure to thrive. She had a past history of TEF repair at an outside hospital. Esophagogram revealed an esophago-bronchial fistula (between a right sided peripheral bronchus and esophagus). Esophagoscopy cauterization of the fistula and fibrin glue injection was successful in occluding the fistula but was followed by recurrence at 3 months which was managed by thoracoscopic repair.

TECHNIQUE: The child was laid in supine position and a guide wire was passed through the fistula using the flexible Pentax pediatric esophagoscope and taped to the mouth. The child was turned into a semi-prone position with the right side elevated. The first 5mm STEP port was introduced 1 cm below the angle of scapula. The second port was introduced 3-4 rib spaces below in the mid-axillary line. Placement of the third port required extensive adhesiolysis. It was placed in the axilla, 2 rib spaces above the first port, in the mid-axillary line. Using a hook diathermy, adhesions between the chest wall, esophagus and the lung were taken down.

The esophagus was dissected above and below the site of the fistula and a sling was placed around the lower esophagus to help dissection. The fistula was identified by the previously placed guide wire, divided and the bronchial and esophageal ends were closed with interrupted Vicryl sutures. A pleural patch was designed from the lateral chest wall and laid on the esophageal anastomosis to separate the

two suture lines. A chest tube was placed, ports were withdrawn under vision and port sites were closed with sutures and glue.

RESULTS: The child recovered well from the procedure and underwent a contrast esophagogram on the 5th postoperative day which did not show a leak. The chest tube was removed and the child was allowed to feed orally. She was discharged on the 6th postoperative day on full regular diet. At 3 weeks follow-up the child was asymptomatic and was tolerating diet well with no coughing.

CONCLUSION: The thoracoscopic technique is a minimally invasive approach that could be successfully used in the management of esophago-bronchial fistula following previous repair of TEF in children.

P074: PIGGY-BACK (PARALLEL TO PORT) NEEDLE INSERTION FOR ENDO-SUTURING Ketan P. Parikh, Dr., Tara Neo-Surg Hospital, Jaslok Hospital, L H Hiranandani Hospital, Seven Hills Hospital.

Endosuturing has become an integral part of advanced laparoscopic surgeries. Laparoscopic surgeries in small children or mini-laparoscopic procedures in older children are performed using thin cannulae (2-3mm in diameter) to minimise the trauma related to ports. Every puncture on the abdominal wall is independently capable of producing pain in the post-operative period (including a puncture of a surgical needle).

Needle insertion for the purpose of endosuturing is traditionally achieved either by straightening a curved surgical needle (converting to ski needle) and insertion through these thin ports or direct insertion through the abdominal wall. The former is likely to lead to a mild distortion of the needle making it more unsuitable for suturing tissues where an

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appropriate curve of the needle would be preferred and at times even make the needle more prone for rotation within the needle-holder. In the latter method, 2 needle pricks (entry and exit) are made for every insertion, thus adding to the potential post-operative pain and at times a significant extra time for this manoeuvre.

Over the past 15 years, we have been following a simple manoeuvre for needle-insertion (and even retrieval) by which surgical needles of any size, diameter, length, shape and cross-section (cutting/round-bodied) can be inserted into the abdominal or chest cavity parallel to an existing trocar (without making any additional punctures). We feel that this technique is easily reproducible and laparoscopic surgeons should add this to their technical skills for appropriate use with an added advantage of preserving the shape of the needle and not increasing the potential of post-operative pain.

P075: TRAUMATIC ABDOMINAL WALL HERNIA FROM HANDLEBAR INJURY, LAPAROSCOPIC REPAIR – REPORT OF TWO CASES [Santiago Correa, MD](#), [Juan Valero, MD](#), [Jorge Beltran, MD](#), [Fundación Hospital de la Misericordia](#), [Univerdad Nacional de Colombia](#).

Although rare, traumatic abdominal wall hernia associated with handlebar injury is a well-described entity in the pediatric population with about 40 cases and only one laparoscopic repair reported in children. We present two cases of male patients who were 9 and 13 years old, evaluated in our emergency room after blunt abdominal trauma associated with handlebar injury. Both patients presented with the handlebar sign in the abdominal wall, one had a painful mass, and the other one had intermittent pain in the area of trauma without palpable mass. None of the patients were hemodynamically

unstable or have peritoneal signs. Ultrasound and CT scans were performed in both patients with identification of abdominal wall hernias containing bowel in the absence of other injuries. Laparoscopic repair were performed uneventfully in both patients with interrupted nonabsorbable multifilament suture with 2 and 3 ports respectively. Oral intake was initiated one day after surgery and both patients were discharged home the second day after surgery. In the follow-up visit patients were asymptomatic and no signs of abdominal wall hernias were found.

Laparoscopic repair of blunt traumatic abdominal wall hernias is safe and technically possible in children, and should be considered as the standard initial approach in the stable patient.

P076: LAPAROSCOPIC SUBTOTAL PANCREATIC RESECTION IN INFANTS WITH CONGENITAL HYPERINSULINEMIA? COMPLICATIONS AND TREATMENT [Kuiran Dong, MD](#), [Gong Chen, MD](#), [Wei Yao, MD](#), [Xianming Xiao, Prof](#), [Gongbao Liu, MD](#), [Children’s Hospital of Fudan University](#)

PURPOSE: To report the experience of laparoscopic subtotal pancreatic resection in infants with congenital hyperinsulinemia (CHI) in our hospital, the laparoscopic technic, resection range, the complication and treatment is discussed.

METHOD: Retrospective clinical data of 9 cases of laparoscopic subtotal pancreatic resection in infant congenital hyperinsulinemia which operated in Mar 2001~Jun 2013.

RESULTS: Preoperative: The age of 9 cases was from 17 days to 6 months. There were 6 males and 3 females. The diagnosis of persistent hyperinsulinemic hypoglycemia were made by our endocrinology team. Their fasting plasma glucose were 0.5~5.1 mmol/L, insulin levels of the

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fasting test were 4.1~50.1u IU/ml. All these patients were failed in the Diazoxide medical therapy. Glucagon treatment and continuous hypertonic intravenous glucose treatment were needed all the time. CT and MRI showed normal pancreatics. Since 2013, three cases of CHI underwent genetic testing, two of them prompted KATP channel gene mutations (ABCC8 and KCNJ11).

SURGICAL APPROACH: Three holes laparoscopic technique were used in the procedure. The pancreatic tail was the first mobilized from the spleen hila, and sent for the frozen pathology. When the focal lesion was excluded, the pancreas was mobilized from the tail to the head, when the right edge of the superior mesenteric vein was reached, then pull out the uncinat part and separated it from the back of SMV. Along the left edge of the biliary duct, the subtotal resection was performed by the harmonica, the total amount of the resection was 95%.

COMPLICATIONS AND TREATMENT: All 9 patients were completed surgery, no operative mortality. Intra and postoperation complication happened in 2 cases(22.2%). One case has spleen vein injury during operation, the hemolocker has to be used for hemostasis. After six months follow-up, the child developed splenomegaly but no esophageal and gastric varices or gastrointestinal bleeding. Another case appeared jaundice and liver function damage at 3 month postoperatively; MRI showed the biliary was unobstructed but a choledochal cyst. The hepatic duct jejunal Roux-Y operation was then performed, and the liver function returned to normal 1 month postoperatively.

PATHOLOGY: The pancreases of all 9 cases have no atrophy; 2 cases have islet hyperplasia, 5 cases have partial islet cell

hyperplasia. There are 2 cases were normal morphology.

FOLLOW UP: Patients were followed up for 6~10 months. The fasting plasma glucose were 2.2~12mmol/L. Two patients still had symptoms of hypoglycemia required steroid therapy. Three cases have low fasting blood glucose, but can turn to normal after eating. The other 4 cases have well controlled blood glucose.

DISCUSSION: The main type of the CHI in infant is diffuse type. The genomics detect may take place of PET-CT. The uncinat part resection is an important step to reach the 95% range during the laparoscopic operation. Complication rate of laparoscopic pancreatic resection is 22%. The pancreatic short vessels is the main reason of spleen vein damage and bleeding. Although bile duct injury is one of the complications of this operation; the chlochol cyst is a rare event.

P077: LAPAROSCOPIC TREATMENT OF FALLOPIAN TUBE TORSION SECONDARY TO HYDATIDS OF MORGAGNI [Claudia M. Mueller, PhD, MD](#), Sandra Tomita, MD, Stanford University School of Medicine, New York University School of Medicine

PURPOSE: Hydatids of Morgagni, which are pedunculated cystic structures arising from the fimbriated end of the fallopian tubes, are embryologic remnants of the mullerian duct. Torsion of the fallopian tube involving hydatids of Morgagni, is a rare cause of acute pelvic pain in young girls and can pose significant risks to future fertility. In addition, it may present as a diagnostic dilemma since the ovary itself usually appears normal on ultrasound, and the cystic hydatid may be incorrectly recognized as a simple ovarian cyst. Thus, surgical intervention can be delayed which may lead to worsening necrosis and result in the need for resection of the affected

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tube. Laparoscopy is an effective way to both diagnose and treat this unusual condition in a rapid fashion.

METHODS: We review two cases of fallopian tube torsion associated with large hydatids of Morgagni in adolescent females.

RESULTS: Both patients were perimenarchal (ages 10 and 13) and presented with acute pelvic pain. Ultrasound showed a normal ovary with a paratubal cyst in both cases. Both patients underwent diagnostic laparoscopy and were found to have adnexal torsion with large hydatids of Morgagni. In both cases, the fallopian tube was detorsed laparoscopically and preserved. The cyst was excised in one case and marsupialized in the other.

CONCLUSIONS: Prompt recognition and operative management of this relatively uncommon disease entity may prevent unnecessary tubal resection and improve long-term fertility in young women. Minimally-invasive surgical procedures can be used to safely and efficiently diagnose and treat this gynecologic emergency.

P078: LAPAROSCOPIC TOTAL HISTERO-SALPHYNGO-OOFERO-VAGINECTOMY

Unal Bicakci, MD, Ferit Bernay, MD, Dilek Demirel, MD, Beytullah Yagiz, MD, Burak Tander, MD, Selim Nural, MD, Cengiz Kara, MD, Riza Rizalar, MD, Ondokuz Mayıs University, Department of Pediatric Surgery, Radiology, Endocrinology Samsun, Turkey

We present here a laparoscopic total histero-salphyngo-oofero-vaginectomy in a patient with intersex.

Fourteen years old phenotypic male patient was admitted with hematuria. Physical examination revealed 8 cm long phallus, normal positioned urethral

meatus. Both testes were non-palpabl. There was scrotal hyperpigmentation. USC did not detect any testicular tissue. MRI revealed no testicles. A retrovesically located uterus of 48x22x15 mm, bilateral ovaries and a 10 mm wide and 5 cm long vagina extending to the posterior urethra were present. The karyotype was 46XX. Psychosexual evaluation revealed male dominancy and endocrinologic studies a virilizing congenital adrenal hyperplasia due to 21-OHase deficiency. Committee on "Sexually Development Disorders" evaluated the patients as a male. After approval of the parents, the patient underwent a total histero-salphyngo-oofero-vaginectomy. No surgical complication has been detected. There were no postoperative hematuria no voiding problems. The patient discharged at postoperative 5th day.

CONCLUSION: Laparoscopy is a safe and effective procedure for the removal of internal genitalia in phenotypic male patients with intersex.

P079: LAPAROSCOPIC TOUPET FUNDOPPLICATION IN A 1.8KG INFANT USING AIR SEAL INTELLIGENT FLOW SYSTEM AND ANCHOR PORT. A TECHNICAL REPORT.

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AIM: Laparoscopic fundoplication has been refined because of the development of improved instruments and equipment. We report the case of a 1.8kg infant who had laparoscopic Toupet fundoplication (LTF) for severe gastroesophageal reflux (GER) using the Air Seal Intelligent Flow System (ASIFS) and Anchor Port (AP).

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CASE REPORT: Our case had GER in association with genetic and cardiac anomalies, and despite continuous feeding, persistent vomiting caused failure to thrive. At 4 months of age our case weighed 1.8kg and LTF was performed using 4 trocars and 3mm instruments. The ASIFS is a novel laparoscopic CO₂ insufflation system composed of the Air Seal IFS control, the Air Seal valveless trocar and the Air Seal Mode Evacuation Tri-lumen Filter Tube Set that decreases camera smudging, improves the visual field by constant evacuation of smoke, and provides a more stable pneumoperitoneum. In addition, the AP is a recently developed elastomeric low profile cannula that is stretchable thus allowing its laparoscopic footprint to be minimized both inside and outside the body. A 5mm AP was inserted subumbilically using the blunt obturator supplied with the scope. After sufficient insufflation to establish pneumoperitoneum, a second and third 5mm AP were inserted in the right and left upper abdomen as the surgeon's working ports, a 5mm Air Seal trocar was inserted in the left lower abdomen for the assistant, and a Nathanson retractor was also placed in the mid epigastrium. The gastrosplenic ligament was dissected free and the intraabdominal esophagus was prepared by thorough dissection of the hiatus mediastinal paraesophageal ligament. A posterior hiatoplasty using two 4-0 non-absorbable sutures was performed to repair the large hiatus hernia that was present before the tension-free 270 degree fundoplication was performed by fixing the anterior wall of the esophagus to the crus of the diaphragm with two sutures followed by two sutures each to fix the right and left wraps to the esophagus. All eight sutures were tied extracorporeally. Pneumoperitoneum was maintained stably throughout the whole

LTF procedure, with optimum operative field. Total operating time for LTF was 90 minutes. During pneumoperitoneum, body temperature dropped from 37.4 to 35.7, but recovered immediately after cessation of pneumoperitoneum. Postoperative progress was uneventful, and an upper gastrointestinal study on postoperative day 2 showed no residual GER.

CONCLUSIONS: The AFIFS and AP contributed to the successful outcome of LTF in a 1.8kg infant. However, there would appear to be a risk for hypothermia in neonates and small infants during insufflation for laparoscopic or thoracoscopic procedures that requires constant vigilant monitoring.

P080: A SAFE AND EASY TECHNIQUE TO POSITION A GASTROSTOMY TUBE AFTER LAPAROSCOPIC FUNDOPLICATION

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INTRODUCTION: Severely handicapped children with gastroesophageal reflux disease commonly undergo gastrostomy with fundoplication. Although there are many procedures, an optimal method is awaited. Conventionally, we sutured the stomach to peritoneum under direct vision by port hole expansion. The expanded wound was closed after gastrostomy tube insertion.

However, with a 3-cm wound, infection and external leakage risks were high. In 2011, we devised a new technique not requiring a 3-cm wound. We report this technique.

METHOD: In fundoplication, we use 3 ports: one is placed in the umbilicus as a camera port, and the two other are in the left and right flanks as working ports. We use 2

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port-less forceps (PLF) (3-mm) for liver elevation and stomach traction. One PLF insertion site is used for the gastrostomy tube.

After fundoplication, the anterior stomach wall is grasped by PLF. Three 3-0 vicryl sutures are placed around it at the seromuscular layer laparoscopically. Ends of sutures are pulled through the abdominal wall using a laparoscopic percutaneous extraperitoneal closure (LPEC) needle. The LPEC needle is percutaneously inserted from the same point and takes different routes subcutaneously to catch the ends of sutures.

The LPEC needle pierces the peritoneum at intervals equivalent to the distance of the stitch. This is repeated for each stitch.

A triangle is made with three sutures. Its center is the gastrostomy, and the three sides are formed by the sutures.

We remove PLF at the site of gastrostomy, and insert the electrocautery needle from the same site to penetrate the stomach wall under laparoscopic vision.

We flatten the cutting area by holding the two nearest points of the triangle and pulling the opposite suture. Then, a balloon-type gastrostomy tube is inserted.

After insufflation, the 3 stitches are pulled toward the abdominal wall and tied extracorporeally. The LPEC needle pierces the same skin surface for each stitch, so the knot goes under the skin.

RESULTS: We compared complications between the new procedure (NP) group from January 2011 to January 2014 (n=36; 20 males, 16 females) and conventional procedure (CP) group from January 2008 to December 2010 (n=37; 26 males, 11 females).

NP group: Age ranged from 3 months to 23 years (median: 42.5 months); bodyweight ranged from 3.7 to 42 kg (median: 11.75). Age and bodyweight of the groups did not differ (P=0.88 & 0.98, respectively).

NP group complications were rare: 2 cases of external leakage around the gastrostomy, 1 of internal leakage, and no infection. Infection was significantly lower in the NP compared to CP group (n=0 vs. n=4, respectively; p=0.04). External leakage was lower in the NP compared to CP group (n=2 vs. n=5, respectively; p=0.24), with no other significant differences.

DISCUSSION: Effective fixation is possible by triangular suturing of the stomach and abdominal wall. Since the PLF hole is used, no additional incision is necessary. This procedure is applicable even for small infants. Since this technique is simple with less infection, we recommend it for gastrostomy after laparoscopic fundoplication

P081: MINIMALLY INVASIVE REPAIR OF MORGAGNI HERNIA – A MULTICENTRIC NATIONAL STUDY R. Lamas-Pinheiro, MD, J. Pereira, MD, F. Carvalho, MD, P. Horta, MD, A. Ochoa, MD, M. Knoblich, MD, J. Henriques, MD, T Henriques-Coelho, MD, PhD, J. Correia-Pinto, MD, PhD, P. Casella, MD, J. Estevas-Costa, MD, PhD, Pediatric Surgery Departments of: Hospital Sao Joao, Porto; Centro Hospitalar do Porto; Hospital Pediátrico de Coimbra; Hospital Dona Estefania, Lisboa, Portugal

INTRODUCTION: Morgagni hernia (MH) is extremely rare, representing less than 6% of all congenital diaphragmatic defects repaired at pediatric age. Children may benefit from the application of minimally invasive surgery (MIS) in the correction of these defects, but larger studies are needed to evaluate such potentiality.

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The present study aims to evaluate the outcomes of the MIS through a national multicentric study.

MATERIAL & METHODS: All national institutions that used MIS in the treatment of MH were included in a retrospective transversal study. Demographic data, comorbidities, clinical presentation, operative details and follow-up were analyzed.

RESULTS: Between December 2006 and June 2013, thirteen patients (6 males) were submitted to correction of MH by MIS (using similar percutaneous stitches technique), in 4 tertiary centers. The children were operated at a mean age of 21.6 months (4.8-56.5 months). Six patients had chromosomopathies (46.2%), including five children with Down syndrome (38.5%). The most common presentation was respiratory symptoms (53.8%) and 5 patients (38.5%) had previous admissions for different causes. The procedure last, in mean, 95 ± 23 minutes (range 40-120). There were no intra-operative complications; in none of the patients the hernia sac was removed; prosthesis was never used. In the immediate post-operative period, 4 patients (36%) were admitted to intensive care unit due to co-morbidities (all presented Down syndrome); the remaining patients started enteral feeding within the first 24 hours. With a mean follow-up of 17.5 months, there have been two recurrences (18%) on the same institution; one of the recurrences was the only case in which an absorbable suture was used.

CONCLUSION: The application of MIS in the MH repair is effective even in the presence of comorbidities such as Down syndrome; the latter influenced only the immediate postoperative recovery. Removal of hernia sac is not necessary. The use of absorbable suture is not recommended.

P082: TWO-PORT LAPAROSCOPIC HERNIOTOMY: A NOVEL WAY TO PROVIDE BETTER COSMETIC RESULTS WITHOUT INCREASING THE TECHNICAL DIFFICULTY IN PEDIATRIC INGUINAL HERNIA

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BACKGROUND: We previously have reported that laparoscopic hernia sac transection and intracorporeal ligation can be a safe alternative for conventional pediatric herniotomy. We modified our previous technique and used reduced number of ports (two-port) to produce better cosmetic results with less technical difficulty. The aim of this study was to evaluate the outcome of this two-port technique compared to the previous three-port technique.

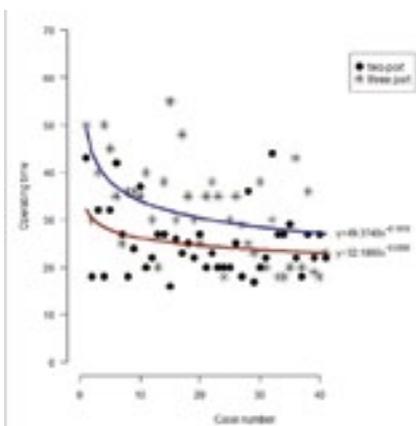
METHODS: Between 2008 and 2013, 410 records of children with inguinal hernia treated by laparoscopy were reviewed. Of them, 63 patients were treated by two-port laparoscopic herniotomy and 347 patients were treated by three-port laparoscopic herniotomy. For two-port laparoscopic herniotomy, we introduced one globe port through the umbilicus and inserted a 3mm assistant port at the suprapubic area. We calculated the learning rate of the two-port technique and compared this to the result of the three-port method to evaluate technical difficulty.

RESULTS: There was no significant difference in operation time between the two-port group and three-port group (25.2 ± 7.0 minutes vs. 24.8 ± 9.6 minutes; $p=0.75$). Learning rate analysis showed that there was no difference between the two-port and three-port technique (6.02 % vs. 10.60 %: $p=0.23$). No intra- or postoperative complications were found in two-port group. In the three-port group,

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we had two cases of recurrence (0.58 %) and one metachronous hernia (0.28 %) during the follow-up period (mean 28.5 months).

CONCLUSION: The two-port laparoscopic herniotomy can be used as a safe treatment option providing better cosmetic results without increasing the technical difficulty of the operation.



P083: LAPAROSCOPIC INFANT INGUINAL HERNIA REPAIR: 5 YEAR EXPERIENCE IN A SINGLE CENTRE

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AIM: Laparoscopic inguinal hernia repair in infancy is still a contentious issue. The purpose of this study was to look at the outcomes of laparoscopic inguinal hernia repair in children under one year of age in terms of demographics, detection of contralateral patent processus vaginalis (PPV), length of post operative stay, post operative complications and rate of recurrence.

METHODS: A retrospective case note review of 150 patients under the age of 12 months who underwent a laparoscopic hernia repair at our institution between November 2008 and November 2013 was conducted. Mean time to first follow up was 3 months. Median follow up was 6 months (0 – 24 months).

RESULTS: All operations were completed laparoscopically. There were 118 (79%) hernia repairs in males and 32 (21%) in females. Mean Post conceptual age was 51.6 weeks. Mean weight at operation was 5.2 Kg. The rate of detection of contralateral PPV was 40%.

Median length of stay was 1 day (range 0–10 days). There were 3 patients who required prolonged post operative oxygenation and oral antibiotics for lower respiratory tract infections.

There were 6 recurrences (4%) in the time period, of these 4 had presented originally as an emergency. Mean time to recurrence was 8.5 months, median time to recurrence was 2 ½ months (2 days – 24 months).

There were no instances of testicular atrophy. 3 patients developed testicular ascent requiring orchidopexy.

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No patients developed metachronous hernias during the study period.

CONCLUSION: Laparoscopic infant hernia repair is safe and our recurrence rate is within the reported range. Repair of inguinal hernia laparoscopically allows inspection of both internal rings and avoids readmission for repair of a metachronous hernia.

P084: A POTENTIALLY MORE DURABLE MIS REPAIR FOR PEDIATRIC INGUINAL HERNIA

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BACKGROUND: Certain advantages of MIS techniques for the inguinal hernia repair (IHR) in children have been demonstrated. However, the fact of higher recurrence rates following the MIS repair vs the conventional open procedure points to the desirability for further development. To enhance the potential durability of the laparoscopic repair we have modified the technique of transperitoneal closure of the hernia defect, following the principles of mass and tension free/reduced suturing.

OBJECTIVE: This study represents a preliminary report of the proposed transperitoneal mass, tension free/reduced technique (TMTF/RT) for pediatric IHR.

PROCEDURE & PATIENTS: The key elements of the TMTF/RT entailed closure of the hernia defect while using differentially, depending on the defect size, combinations of various types of suturing that incorporated parts of the

full-thickness neck of the hernia and the inguinal ligament and at the same time minimized the suture line tension. The technique was used for IHR in 72 selected patients aged from 12 months to 14 years. All procedures were carried out in the minilaparoscopy mode. The total number of IHR's, including the contralateral metachronous hernias was 96. The patient outcomes were followed up at intervals of one, three, six months, 1 and 1.5 years. The patient data were summarized.

RESULTS: All procedures were successfully completed without any complication encountered. The operative time ranged between 10 – 35 minutes for the unilateral hernias and 25 – 45 minutes for the bilateral. All patients made prompt uneventful recovery with only minimal requirement for analgesia. No evidence of hernia recurrence was found at the follow-up intervals. Patient/parent satisfaction with the treatment was stated in all cases.

CONCLUSION: IHR with the use of TMTF/RT appears to be effective in preventing/minimizing risk of hernia recurrence. For the further evaluation a randomized comparative study of the TMTF/RT vs the open technique will be warranted.

P085: LAPAROSCOPIC PARTIAL SPLENECTOMY AND EXTROPERITONEAL SPLENOPEXY FOR TORSION OF WANDERING SPLEEN

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BACKGROUND: Wandering spleen is a rare condition in which the spleen lacks its usual peritoneal attachments and supporting ligaments, thus its vascular pedicle can twist resulting in ischemia and infarction. Although splenectomy has traditionally been used for this

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condition, splenopexy is increasingly used in the pediatric population to anchor the spleen and preserve splenic function. We describe a laparoscopic partial splenectomy and extroperitoneal splenopexy of the remaining spleen for torsion of a wandering spleen in a child.

CASE REPORT: The patient was a 3-year-old girl with a month history of intermittent abdominal pain. Abdominal ultrasonography and axial computed tomography demonstrated a wandering spleen with partial infarction in the left mid-abdomin and the whirl appearance of the splenic vessels. On laparoscopic exploration the spleen was found to lack its normal attachments and had made 3 complete clockwise rotations around its mesentery and there were signs of vascular occlusions and infarction of the spleen. The spleen was detorsed around its mesentery and then the partial splenectomy and extroperitoneal pocket splenopexy of the remaining spleen were performed. The postoperative course was uneventful and the well-perfused remaining spleen had maintained its position during a 2-year follow-up period.

CONCLUSION: Wandering spleen should be considered in cases of acute abdominal pain, and laparoscopic partial splenectomy with splenopexy is technically feasible and safe, based on the well-known advantages that the minimally invasive approach offers, and should be considered the treatment of choice for this rare condition, with the goal of preservation of the organ whenever possible.

P086: KNOTLESS REPAIR OF GASTROTOMY USING UNIDIRECTIONAL BARBED SUTURE FOLLOWING EXCISION OF GASTRIC LEIOMYOMA [Ravindra K. Vegunta, MBBS](#), Cardon Children's Medical Center, Mesa, AZ and University of Arizona College of Medicine, Phoenix, AZ

This is a video presentation of laparoscopic resection of posterior gastric wall tumor in a 12 year old boy. He was found to have a transmural tumor of the gastric wall, extending into the lesser sac. The tumor was excised laparoscopically. The resulting gastrotomy was repaired using continuous full-thickness single layer suture using 2-0 absorbable, glycolic acid, barbed suture device.

Unidirectional barbed sutures like V-Loc (Covidien, Mansfield, MA) allow easier placement of continuous sutures during open and minimally invasive procedures. This does not require knots at the beginning or at the completion of the suture. Neither does it need maintenance of tension on the material while suturing.

Use of this device allowed for expeditious and secure closure of the gastric defect. The child recovered well without complications and remained asymptomatic six months after the procedure.

P087: FIRST CASE REPORT OF PERCUTANEOUS TRANS-ESOPHAGEAL GASTRO-TUBING PERFORMED IN A CHILD [Hideto Oishi, MD](#), [Katsunori Kouchi, MD](#), [Fumi Maeda, MD](#), [Takeshi Ishita, MD](#), [Masayuki Ishii, MD](#), [Takuya Satou, MD](#), [Takayuki Iino, MD](#), [Hidekazu Kuramuchi, MD](#), [Shunsuke Onizawa, MD](#), [Eiichi Hirai, MD](#), [Mie Hamano, MD](#), [Tutomu Nakamura, MD](#), [Tatsuo Araida, MD](#), [Shingo Kameoka, MD](#), Division of Gastroenterological Surgery, Division of Pediatric Surgery, Dept of Surgery, Yachiyo Med Ctr, Tokyo Women's Med Univ

OBJECTIVE: We report the first percutaneous trans-esophageal gastro-tubing (PTEG) procedure performed in a child. We developed PTEG in 1994 for patients in whom percutaneous endoscopic gastrostomy (PEG) would be difficult. In 1997, we invented a rupture-

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free balloon (RFB) to aid the PTEG procedure. In Japan, PTEG is usually used for gastrointestinal decompression and, like PEG, for enteral nutrition. It has proven to be as useful as PEG. Of the 16,000 PTEG procedures performed in Japan to date, 285 were performed by us. However, all patients were adults; the procedure was not performed in children. We recently performed the PTEG procedure in a child and report our experience herein.

MATERIALS & METHODS: The patient was a 9-year-old girl with cerebral palsy who required enteral nutrition. Transperitoneal dialysis was anticipated in this case; thus, PEG was not possible. PTEG was selected and carried out under general anesthesia. The PTEG procedure was performed in two steps. The first step was esophagostomy, which was accomplished by direct puncture under ultrasonographic guidance. We began by inserting an RFB into the cervical esophagus via the nose, and we inflated the RFB to keep the esophageal lumen open for puncture. The second step was tube placement via the esophagostomy under fluoroscopic guidance. An indwelling PTEG button catheter, 15 Fr x 90 cm, was placed in the patient's jejunum via the cervical fistula.

RESULT: We encountered no technical complication. Surgical antibiotic prophylaxis prevented infection. Enteral nutrition was begun on postoperative day 1, and the patient was discharged on postoperative day 2.

EXPECTATION: With the effectiveness of PTEG already confirmed in adults, we were able to show that it is likely to be feasible and safe in children. PTEG might be broadly applicable in pediatric cases for which PEG would be difficult or is contraindicated.

P088: MULTI-MODAL ASSESSMENT STRATEGY FOR ADVANCED MINIMAL ACCESS PAEDIATRIC SURGEON

SELECTION Simon Clarke, Mr., Munther Haddad, Mr., Giuseppe Retrosi, Tom Cundy, Chelsea and Westminster Hospital NHS Foundation Trust ; Imperial College London

The selection process for appointment of consultant paediatric surgeons is a highly competitive process. In an effort to improve transparency and objectiveness of this process for an advanced minimal access post, a multi-modal assessment approach was designed utilizing the resources of an established paediatric surgery simulation laboratory.

AIMS: to assess the process and outcome for two sets of consultant interviews using validated and non-validated surgical skill tests.

METHODS: Consultant selection took place on two separate occasions. 10 prospective candidates took part and were rotated through three assessment stations consisting of 1) validated Pediatric Laparoscopic Surgery (PLS) simulator peg transfer task, 2) neonatal box trainer intracorporal suture task, and 3) structured interview with senior faculty. An independent observer moderated the technical skills task stations. This observer was assigned to mitigate candidates being distracted in their task performance and to avoid uncontrolled bias. Candidates consented to live video and audio being transmitted to an adjoining room where faculty were able to observe the assessment stations via tele-feed. Results for each assessment station were scored and then pooled for an aggregate candidate score. Results were fed back to the appointments committee after their preferred candidates had been named.

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RESULTS: All candidates completed all tasks. The median unnormalized PLS peg transfer score was 125 (range 76 – 62). The validated task coincided with all three preferred candidates. The non-validated task scores coincided with 2 of 3 preferred candidates. Feedback from candidates was variable and most felt the task did not demonstrate their ability on the day.

CONCLUSION: Pre selection is increasingly being used at interview in medical specialties. We found those who performed well at interview correlated well with task performance. Further validation studies are planned to enable this to be used with more confidence at future appointments panels.

P089: ULTRASOUND GUIDED PERCUTANEOUS CENTRAL VENOUS ACCESS IN INFANTS Seth Goldstein, MD, Howard Pryor, MD, Dylan Stewart, MD, Fizan Abdullah, MD, PhD, Paul Colombani, MD, Jeffrey Lukish, MD, Johns Hopkins University

PURPOSE: The insertion of tunneled central venous access catheters (CVC) in infants can be challenging. The use of the ultrasound guided approach (UG) to CVC placement has been reported in adults and children but there is minimal information regarding these techniques in infants.

METHODS: From August 2012 to November 2013, retrospective analyses were carried out on the charts of infants that were 3 kilograms or less who underwent attempted UG CVC placement. Data retrieval included infant weight, vascular access site, diameter of cannulated vein in mm, and complications.

RESULTS: All infants underwent UG CVC placement utilizing a standard 4.2 Fr or 3.0 Fr CVC system. (Bard Access Systems, INC., Salt Lake City, Utah). UG was performed on all infants with the SonoSite M-Turbo®

(SonoSite, Inc., Bothell, Washington). The packaged 0.025 inch diameter (ID) J wire within the set was used in all infants weighing greater than 2.5 kg. A 0.018 ID angled glidewire (Radiofocus® glidewire, Boston Scientific Inc., Natick, MA) was used in infants less than 2.5 kg. The average size of the internal jugular vein was 4.0 mm (range of 3.5 to 5.0 mm). Twenty infants underwent 21 UG CVC placements (mean weight 2.45 kg., range 1.4 to 3.4 kg.). Vascular CVC placement occurred at the following access sites: 16 infants underwent 17 placements via the right internal jugular (RIJ) vein, 3 infants via the left internal jugular vein (LIJ). One infant had inadvertent removal of the UG CVC in the RIJ on post operative day 7. This infant returned to the OR and underwent a successful UG CVC in the same RIJ. (infant weight 2.8 kg). There were no other complications in the group.

CONCLUSIONS: The UG CVC approach is a safe and efficient approach to central venous access in infants as small as 1.4 kg. Our experience support the use of an ultrasound guided percutaneous technique as the initial approach in infants who require central venous access.

P090: HOW TO IMPACT DELIVERY OF PEDIATRIC SURGICAL CARE IN A DEVELOPING COUNTRY—START A FELLOWSHIP TRAINING PROGRAM

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INTRODUCTION: Providing pediatric surgical care in Sudan is difficult due to a shortage of surgeons and facilities. As of 2010, it is believed that only 7 pediatric surgeons practiced in Sudan and South Sudan (Sudan) and no studies have been

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published regarding manpower in Sudan. To address the manpower issue, a 2 year pediatric surgery fellowship program was started. The first participants graduated in January, 2012. The purpose of this study was to establish current workforce issues and evaluate the impact of the training program on delivery of pediatric surgical care in Sudan.

METHODS: In February, 2013, all practicing pediatric surgeons (7 surgeons before the fellowship and 7 surgeons after the fellowship) in Sudan received a previously published modified questionnaire about training and delivery of pediatric surgical care. Results were analyzed in aggregate.

RESULTS: Surveys were returned by 9 of 14 (64%) surgeons. Most participating surgeons received training in Africa (78%), while one trained in Europe and one in Asia. Previous general surgery training was variable, as 3 participants reported 3 years of training, 3 reported 4 years, and 3 reported >4 years. The majority (78%) reported practicing in a city with a population of 1,000,000–10,000,000. The median (range) of pediatric surgeons at participants' hospitals was 2 (1–3). The most common pediatric surgical service offered was urology (100%), followed by general pediatric surgery, oncology, neurosurgery (all 89%), trauma (78%), orthopedics and minimally invasive surgery (both 22%). A patient age limit of < 13 years was reported by 3 (33%) surgeons and 6 (67%) reported an age limit of <16 years. All (100%) participants reported inadequate pediatric surgery facilities, manpower, support facilities, and anesthesia as problems impacting care. Only 4 (44%) reported having access to pediatric anesthesiology services. Five (56%) of the 9 participants reported involvement in training future pediatric surgeons. When asked about the impact of the fellowship training program,

the median reported wait time for patients decreased from >9 months to 6–9 months. Three participants (33%) were worried about graduating surgeons taking business from their practice and 6 (67%) were not worried. All participants felt the fellowship was important for children in Sudan and that additional pediatric surgeons were needed, with 6 (67%) who felt that 4–10 more were needed.

CONCLUSIONS: A 2 year pediatric surgery training program has been positively received in Sudan and has doubled the number of surgeons, resulting in increased access to care as evidenced by a decreased wait time for children. We believe this can serve as a model for others to have a long-term impact on the care of children in developing countries by training local physicians in their environment. Pediatric surgeons in developed nations should support such fruitful efforts.

P091: A ROBOTIC-ASSISTED APPROACH TO SLEEVE GASTRECTOMY IN A MORBIDLY OBESE ADOLESCENT POPULATION

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Nationwide Children's Hospital

PURPOSE: While minimally invasive surgery is an expanding field within pediatric surgery, robotic techniques have not been widely applied within this population. Robotic techniques for adult bariatric surgery have been explored by many investigators. Our purpose was to demonstrate a robotic-assisted approach to a sleeve gastrectomy within the adolescent population.

METHODS/RESULTS: The procedure is initiated by insertion of a 5-mm Visiport in the left lateral abdomen, which is later exchanged for an 8-mm robotic port. A 12-mm camera port is inserted at the

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umbilicus, while a 15-mm assistant port is inserted in the right upper quadrant. An 8-mm port is inserted in the lateral right upper quadrant, while a second 8-mm port is inserted in the left upper quadrant. After docking the robot, the procedure is initiated by measuring a 6 cm distance proximal to the pylorus. The greater curvature of the stomach is freed by division of the gastrocolic ligament. This dissection is continued up to the hiatus. Once the greater curvature is freed, the stomach is divided with a reinforced endostapler along a 34 French Bougie, creating the gastric sleeve. The gastric sleeve is insufflated endoscopically to inspect for any leak, which also allows inspection of the suture line intraluminally. The gastric remnant is then removed and the procedure is completed with closure of the port sites.

CONCLUSION: Robotic-assisted laparoscopic sleeve gastrectomy is safe in the adolescent population, and demonstrates many advantages over traditional laparoscopic surgery, including enhanced visualization, increased articulation and mobility of the instruments, and increased operator control.

P092: TOTAL LAPAROSCOPIC PARTIAL SPLENECTOMY AND SPLENOPEXY AS A MANAGEMENT OF AN EXTREMELY LARGE SPLENIC CYST Ulises Garza Serna, MD, Shin Miyata, MD, Aaron Jensen, MD, Michael Zobel, BS, [Nam Nguyen, MD](#), Children's Hospital Los Angeles, University of Southern California

INTRODUCTION: This is a 15 year old girl, who had a left flank mass found on routine physical exam by pediatrician. The patient was unable to lose weight and the abdominal girth increased over several months.

Blood tests and tumor markers were unremarkable.

MRI demonstrated a 20 cm large cyst at the abdominal left upper quadrant.

The patient was then scheduled for resection.

SURGICAL TECHNIQUE:

Four throcarcs were used, 3 of 5 mm and one of 12mm at the umbilical site using a 5 mm 30 degree laparoscope.

Evidence of the 20 cm cyst arising from the spleen was done on the first inspection.

Aspiration of the cyst was done using and endoscopic needle aspirator obtaining around 11 liters of cyst fluid.

Splenophrenic ligament was taken down and then the short gastric vessels were taken down using a combination of monopolar cautery and a vessel sealing instrument.

Once freed, the spleen poles were demarcated for resection and divided using multiple endoscopic staplers.

Splenopecty was done from the splenocolic ligament to the lower pole of the spleen using interrupted vycril sutures.

The cyst was extracted using a 15 mm endocatchbag and morcerated.

Patient was sent home two days after surgery.

Final path showed a benign epithelial cyst.

P093: COMPARING THE KINECT™ AND MOUSE AS INTERACTION DEVICES FOR MANIPULATING TISSUE DENSITY IN VOLUME-RENDERED MEDICAL IMAGES

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Volume-rendered medical images have changed the way medical professionals diagnose and treat patients. These three-dimensional (3D) representations enable non-invasive viewing inside a patient from any angle. Volume-rendering technologies are being integrated into every step of the healthcare process from classrooms to patient's rooms, including operating rooms (OR) where sterility is critical. To maintain OR sterility, commercial off-the-shelf (COTS) devices like Microsoft's Kinect™ are being used to provide computer interaction without the need for physical contact. It is important to research what benefits or drawbacks are associated with using the Kinect™ for manipulating volume-rendered medical images especially in terms of the usability of the device and the accuracy associated with using it for medical diagnoses.

This research builds upon a previous study attempting to quantify the differences in using a Kinect™ versus a tradition computer mouse for changing tissue densities (windowing) of a medical image. The results of the first study were not positive for the Kinect™ with participants indicating that they did not enjoy the device and felt self-conscious while using it. The participant's performance with the Kinect™ showed inefficiencies with precision manipulations.

A new study was conducted to further explore the previous study's results. Specifically, the study was designed to evaluate the user's experience when using the Kinect™ as well as their performance compared with a traditional mouse. 32 participants with a median age of 28 volunteered for this study. Most were in their first or second year of medical school at Touro University. Participants used either the Kinect™ or a traditional mouse to manipulate the tissue density for the

entire study. Ten tasks were selected by an anatomy professor to ensure participant knowledge. Each participant performed five of the tasks then repeated those tasks with a short break in-between. The participant was then given the other five tasks, a break, and then repeated those same five tasks. Tasks and interaction devices were randomized to prevent bias. Participants were given a pre and post study survey to obtain relevant demographic and personal experience information as well as qualitative data about their experience during the study.

The qualitative results showed participants enjoyed using the Kinect™ more than the mouse, which was opposite from the first study. This may be attributed to the novelty of the device; something commented on by multiple participants. While the results confirmed the Kinect™ still had issues with window width precision, this did not appear to impact performance. Both the mouse and the Kinect™ results showed no statistical difference in accuracy with approximately 75% accuracy for both devices. The big difference was the task completion time where the Kinect™ held a 2 minute advantage over the mouse which was statistically significant to a 99% confidence. The results of the participant's general experience and performance indicate that the Kinect™ has the potential for effectively manipulating medical data.

P094: ENDOSCOPIC TREATMENT OF AIRWAY MASSES AND OTHER LESIONS IN A DEVELOPING COUNTRY Satish K.

Aggarwal, Professor, Shandip K. Sinha, Dr., Simmi K Ratan, Dr., G. R. Sethi, Professor, Anju Bhalotra, Professor, anaesthesiology, Maulana Azad Medical College New Delhi, India.

AIM: To Assess the role of Bronchoscopy for treatment of tracheobronchial masses and acquired stenotic lesions in children.

Poster Abstracts CONTINUED

MATERIAL & METHODS: Records of cases that underwent bronchoscopic treatment of tracheobronchial masses and acquired stenotic lesions over 3 years (2011–2013) at a tertiary care Paediatric Surgery department were retrospectively reviewed with reference to demographics, clinical presentation, pre op work up and surgical management. Innovations in techniques and instrumentation were recorded.

RESULTS: Twelve patients (M: F–9:3) with median age of 6 years (range: 3 months– 18 years) underwent therapeutic bronchoscopy for excision of mass lesions (7), dilatation of foreign body (FB) induced bronchial stenosis (4), and for excision of post tracheoplasty suture granuloma and dilatation of a recurrent stenosis (1). Mass lesions included Histiocytosis X (1), foreign body granuloma following TEF repair (1), Endobronchial tubercular granuloma (3), subglottic hemangioma (1), and Endobronchial cyst (1). Diagnostic evaluation was done with flexible bronchoscopy. Rigid bronchoscopy (using Storz operating bronchoscope) was used for therapeutic intervention. All procedures were performed under general anaesthesia using either conventional or jet ventilation. Energy sources used were Electro cautery and Lasers. Salient features in technique were:

- Using ureteric catheter with metallic obturator, and Bugabee electrode for cautery.
- Using 3mm laparoscopy dithery hook for cauterising granuloma in an older child.
- Using MLS (Micro Laryngeal surgery) set up for direct access to the lesion.
- Using Ureteric Balloon Dilators (Bard) for bronchial dilatation
- Improving an optical forceps by introducing telescope and an ordinary forceps together through the sheath.

Polyp and granulomas were removed using a combination of cautery, Pulse Diode Laser, and physical retrieval by forceps. Hemangioma was partially ablated by Holmium Laser. Dilatation was performed by using Balloon dilator on a guide wire under direct vision. The endobronchial retention cyst was de-roofed with cautery. Patients with endobronchial TB were already on ATT when they presented with obstructive symptoms. Endoscopic removal of granuloma was successful in relieving obstructive symptoms.

All mass lesions were completely excised in the first attempt except the subglottic hemangioma.

COMPLICATIONS: Recurrent Histiocytosis which was also excised. It recurred again twice and excised twice. In the Hemangioma case a gauge piece which was used to protect the tracheostomy tube was dislodged distal to tracheostomy and required retrieval. Transient collapse of lung was seen in 4 cases. One case with bronchial stenosis required re dilatation after 6 weeks. One case in which dilatation was successful but the lung had chronic collapse and did not inflate. She required pneumonectomy later.

CONCLUSION: Endoscopic management of mass lesion is feasible in children with acceptable morbidity. Innovative use of urological equipment comes handy. Team approach with input from Paediatric pulmonologist and anaesthesiologist is necessary.

P095: COMPLICATIONS OF LONG STANDING FOREIGN BODY IN THE AIRWAY AND THEIR OUTCOMES AFTER ENDOSCOPIC MANAGEMENT: AN EXPERIENCE OF 20 CASES [Satish K. Aggarwal](#),

Shandip K Sinha, Dr., G. R. Sethi, Director, Professor, of, Paediatrics, Anjan Dhua, Dr., Simmi Ratan, Dr., Nitin Pant, Dr., Maulana Azad Medical College New Delhi, India.

Poster Abstracts CONTINUED

AIM: To study the complications of long standing foreign body in the airway and the outcomes after their endoscopic management.

MATERIAL & METHODS: Records of cases that underwent treatment of chronic foreign body bronchus over 6 years 2008–2013 at a tertiary care Paediatric Surgery department were retrospectively reviewed with reference to demographics, clinical presentation, pre op work up and management. The techniques for management and tips and tricks to prevent complications are presented through this paper. Outcomes were assessed in terms of removal of FB, expansion of lung, need for further treatment and resolution of symptoms.

RESULTS: Twenty patients (M: F–16:4) with mean age of 7 years (range: 10 months–12 years) who underwent therapeutic bronchoscopy and or thoracotomy for management of problem related to chronic foreign body in the airway. Most cases initially presented to the Paediatric pulmonologist (GRS) as referrals for evaluation of chronic respiratory symptoms. Diagnostic work up included flexible bronchoscopy. If a FB was suspected on flexible bronchoscopy the case was sent to Paediatric Surgery for rigid bronchoscopy and removal.

The diagnosis was made on flexible bronchoscopy in 14 whereas in 6 it was evident from a radio opaque FB on chest X-ray. Chest CT scan was done in 6 cases for evaluation of lung parenchyma. Rigid bronchoscopy (Storz) was performed in all cases under GA with conventional or jet ventilation. In 16 the FB could be retrieved successfully (tracheotomy required in 2). In 2 cases there was a tracheo oesophageal fistula resulting from eroding FB in the oesophagus – both these cases required open surgery for removal of FB and repair of oesophagus and trachea. Of the remaining two cases one required pneumonectomy

for chronic erosion of bronchial wall by a battery, and the other died during bronchoscopy because of dislodgement of FB into the opposite normal bronchus.

Of the 16 who had successful retrieval, 11 recovered completely with full lung expansion after mean duration of three months. Four had persistent collapse due to residual granulation and / or bronchial stenosis as diagnosed on flexible bronchoscopy. They underwent rigid bronchoscopy again and the granulations were cauterised and stenoses dilated using balloon dilators. All of them recovered on follow up with full lung expansion. One patient required a pneumonectomy because of persistent collapse despite removal of FB and dilatation.

In summary of the 20 cases, 11 recovered completely after first removal of FB. Four needed follow up procedure for dilatation or removal of granulation – and recovered. Two required pneumonectomy and one patient died.

CONCLUSION: Long standing FB in airway should be suspected if there are chronic respiratory symptoms even if there is no definite history and flexible bronchoscopy should be offered for diagnosis. Bronchoscopic removal leads to reversal of lung changes in most cases. Tracheotomy should be considered while removing large impacted FBs with chronic lung damage.

P096: PARAESOPHAGEAL HERNIA IN

2.7 KG INFANT Aaron Garrison, MD, Todd Ponsky, MD, Robert L. Parry, MD, Akron Children's Hospital

A 2.7kg infant was evaluated for significant gastroesophageal reflux. Pre-operative fluoroscopy showed reflux to the thoracic inlet along with a small hiatal hernia. At operation for a Nissen fundoplication, a large paraesophageal hernia was noted and repaired.

Poster Abstracts CONTINUED

P097: LAPAROSCOPIC INGUINAL HERNIOTOMY – MIMICKING THE PRINCIPLES OF OPEN INGUINAL HERNIOTOMY FOR COMPARABLE RESULTS *Ketan Parikh, MD*, Jaslok hospital, L H Hiranandani Memorial Hospital, Tara Neo-Surg hospital.

Laparoscopy has been well accepted as a superior modality for most surgical procedures in children. In contrast, laparoscopic herniotomy in children continues to be a controversial issue. One of the main objections to the herniotomy by the laparoscopic approach has been the relatively higher incidence of recurrences by the laparoscopic method. Whereas the surgical technique for inguinal herniotomy has been fairly well standardised, laparoscopic herniotomy has the dubious distinction of being performed by perhaps the largest variety of methods described in literature.

We feel that since the ‘open’ (inguinal) herniotomy has been so fairly standardised with minimal complication rate and recurrences, its evolved (laparoscopic) counterpart should mimic the steps of the ‘open’ procedure as closely as possible to aim at comparable results. Basic principles of the dynamics of inguinal canal function also need to be remembered and respected. The intactness and the integrity of the posterior wall of the inguinal canal, the maintenance of the shutter mechanism of the inguinal canal and the maintenance of the mobility of the spermatic cord within the inguinal canal are integral to the physiology of the inguinal canal which are well preserved during the procedure of inguinal herniotomy. The laparoscopic benefits of visualisation of the contralateral deep inguinal ring and the superior visualisation of the vas and vessels during their dissection can only be fully justified if the recurrence rates do not betray the final outcome.

We have been performing laparoscopic herniotomy since the past 15 years. The essential therapeutic steps of the open (inguinal) herniotomy involve dissecting away the processus vaginalis protrusion from the vas and vessels especially at the neck of the hernia sac and effective disconnection of the herniated processus vaginalis from the parietal peritoneum (principles of high ligation of sac). Over these years, we have evolved a technique which closely mimics the inguinal herniotomy in all its principles and employs the principles of MAS. In contrast to our earlier surgical techniques, we have achieved effective adherence to these principles in our laparoscopic procedure over the past 10 years and attribute our near-zero recurrence rate for laparoscopic herniotomy in children.

P100: TRANSUMBILICAL ONE-PORT LAPAROSCOPIC- ASSISTED TECHNIQUE FOR INGUINAL HERNIA REPAIR IN CHILDREN *Shiwang Li, MD, PhD*, Shuai Li, Guoqing Cao, Yong Wang, Yongzhong Mao, Shaotao Tang, Department of pediatric surgery, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, 430022

BACKGROUND AND PURPOSE: Since laparoscopic hernia repair was reported a few decades ago, many techniques have been developed. Single-port endoscopic-assisted percutaneous extraperitoneal closure of inguinal hernia with variable devices is a novel technique in minimal-access surgery for pediatric inguinal hernias. In this study, we introduced a new method, Transumbilical one-port laparoscopic- assisted technique (TOPLAT), and evaluated the safety and feasibility of this method.

PATIENTS & METHODS: One hundred and sixty-eight patients who accepted the TOPLAT procedure in our hospital

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from November 2009 to October 2013 were analyzed retrospectively. During the TOPLAT procedure, a laparoscope was placed through a Transumbilical incision. Epidural puncture needle and Non-absorbable 2-0 Prolene sutures (Ethicon products) were used to close the hernia extraperitoneally.

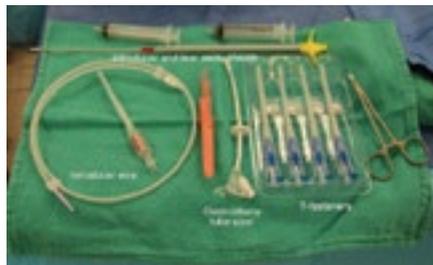
RESULTS: A total of 210 inguinal repairs were performed in 168 children (age range, 3 months to 12 years; median, 6.8 years; 145 boys, 23 girls). All operations were completed successfully by TOPLAT. The mean operating time was 18 minutes (range, 10–25 minutes). In this group of patients no postoperative bleeding, hydrocele, or scrotal edema was found, no known cases of postoperative testicular atrophy or hypotrophy nor hernia recurrence on the symptomatic side. Five months after the operation, most patients had no obvious signs of a previous operation.

CONCLUSIONS: The preliminary results showed satisfactory outcomes with TOPLAT in the treatment of inguinal hernia in children, which enclose the hernia defect without upper subcutaneous tissues. This technique appeared to be safe, effective, reliable, and had excellent cosmetic results and aid in the achievement of a near-zero recurrence rate.

P101: LAPAROSCOPIC-ASSISTED PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (LAPEG) IN CHILDREN: INSERTION OF A SKIN-LEVEL DEVICE IN A SINGLE PROCEDURE [Michael H. Livingston, MD](#), Daniel Pepe, BMSc, Andreana Bütter, MD, FRCS, Neil H. Merritt, MD, FRCS, Children's Hospital of Western Ontario, London Health Sciences Centre, London, Ontario, Canada

BACKGROUND: Gastrostomy tube insertion in children can be accomplished via open surgery, laparoscopy, endoscopy, or fluoroscopy. Clinicians should use an approach that is safe, minimally invasive, provides adequate visualization, and does not require tube exchanges post-operatively. This study describes our experience with a recently developed technique for the placement of skin-level device (Mic-Key) in a single procedure.

METHODS: We identified 92 children and young adults who underwent laparoscopic-assisted percutaneous endoscopic gastrostomy (LAPEG) tube insertion by one of three surgeons between October 2009 and June 2013. The steps of this procedure include upper endoscopy, followed by single-port laparoscopy, gastropexy via percutaneous T-fasteners, and percutaneous endoscopic Mic-Key placement using an introducer and tear-away sheath.



RESULTS: Mean age was 3.7 years (range 3 weeks to 25 years) and mean weight was

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11.2 kilograms (range 2.8 to 54 kilograms). Median procedural time was 20 minutes (range 12 to 76 minutes). Total operative time for the most recent 25 procedures (median 62 minutes) was lower compared to the first 25 procedures (median 79 minutes) ($p=0.004$). Significant complications were observed in 4 patients (4.3%). These included one intra-abdominal abscess and one leak that required surgical repair, one retained T-fastener that was assessed via upper endoscopy, and one dislodged tube that required replacement by interventional radiology. No major complications have been observed in the most recent 50 procedures.

CONCLUSIONS: LAPEG tube insertion is a viable option for infants and children of all ages. This approach allows for immediate use of a Mic-Key without the need for additional upsizing. The complication rate and operative time with LAPEG are low and appear to improve with increased experience. This technique provides excellent visualization and no visceral injuries have been observed.

P102: PEDIATRIC HOMEMADE TRANSUBILICAL PORT: INITIAL EXPERIENCE WITH 90 CASES

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BACKGROUND: Single-port laparoscopic surgery is a new surgical technique. Some initial studies on adults have already been published all over the world.

This paper describes our initial pediatric experience with an innovated transumbilical port for 90 cases.

MATERIALS & METHODS: Between January 2013 and December 2013, we performed consecutive laparoendoscopic single

site surgeries (LESS). All procedures were performed by a homemade single-port device with a wound retractor and surgical gloves. A prospective study was performed to evaluate the outcomes.

RESULTS: Our study includes 15 girls and 75 boys; their ages range from 4 to 14 years. We used LESS on 78 appendectomies, one unilateral impalpable testis, one inguinal hernia, three varicocelelectomy and four Morgagni-Larrey hernia. A conversion to open surgery was necessary in three patients. The time required to assemble the transumbilical glove port was 4 minutes. The mean operative time was 55 minutes. The average hospital stay was 3 days. The cosmetic results were excellent with no post-operative complications.

CONCLUSIONS: This homemade transumbilical port offers a safe, reliable, flexible, and cost-effective access for LESS procedure. This technique may be an alternative for current specialized port systems.

P103: EARLY EXPERIENCE WITH A NEW 3 MM TISSUE AND VESSEL SEALING DEVICE

Steven S. Rothenberg, MD, FACS, FAAP, Sandra M. Kay, MD, Kristin Shipman, MD, William Middlesworth, MD, Angela Kadenhe-chiweshe, MD, Bethany Slater, MD, Stephen Oh, MD, Rocky Mountain Hospital For Children, Columbia University College of Physicians and Surgeons

PURPOSE: To evaluate the functionality of a new 3mm vessel and tissue sealing device in neonates and children.

METHODS: Over a 4 week divided test period 23 patients underwent laparoscopic and thoracoscopic procedures using a new 3 mm tissue sealing device. The device is a 3mm instrument with a 1 cm Maryland style grasper/dissector capable of sealing vessels up to 5mm in diameter. The generator uses low bipolar RF output, which limits collateral

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tissue damage. Ages ranged from 7 days to nine years and weight from 1.1 kg to 30kg. Procedures included Thoracoscopic lobectomy (7), Fundoplication (4), Thoracic Duct ligation (2), Lap assisted pull-thru (2), Choledochocyst excision (1), Malrotation (1), PDA ligation (2), Colectomy for NEC stricture (1), Splenectomy (1), TEF repair (1), Appendectomy (1).

RESULTS: All procedures were completed successfully endoscopically. The device was used in all cases for tissue grasping, dissection, and to seal all blood vessels taken during the procedure. The number of seals performed ranged from 10 to 140 seals. There were no failed vessel seals when the device cycled properly. In one case the device was exchanged after 80 seals because of a fault in the device. The second device performed properly. The device was easily inserted through a 3mm re-usable trocar.

CONCLUSION: A new 3mm vessel and tissue sealer using a lower more efficient energy profile and RF bipolar technology, works safely and effectively in a wide range of cases. The 3mm shaft and 1 cm jaw design allow for excellent tissue manipulation and dissection in even small premature infants, and allows entry through a 3mm trocar limiting the number of larger ports needed. The design limits the number of instrument changes as all dissection and tissue sealing can be done with a single instrument. Further evaluation is necessary to determine the full range and application of the device

P104: TRANSUBILICAL ONE-PORT LAPAROSCOPIC- ASSISTED TECHNIQUE FOR INGUINAL HERNIA REPAIR IN

CHILDREN Shiwang Li, MD, PhD, Department of pediatric surgery, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, 430022

One hundred and sixty-eight patients who accepted the Transumbilical one-port laparoscopic- assisted technique (TOPLAT) procedure in our hospital from November 2009 to October 2013. During the TOPLAT procedure, a laparoscope was placed through a Transumbilical incision. Epidural puncture needle and Non-absorbable 2-0 Prolene sutures (Ethicon products) were used to close the hernia extraperitoneally. A total of 210 inguinal repairs were performed in 168 children (age range, 3 months to 12 years; median, 6.8 years; 145 boys, 23 girls). All operations were completed successfully by TOPLAT. The mean operating time was 18 minutes (range, 10-25 minutes). In this group of patients no postoperative bleeding, hydrocele, or scrotal edema was found, no known cases of postoperative testicular atrophy or hypotrophy nor hernia recurrence on the symptomatic side. Five months after the operation, most patients had no obvious signs of a previous operation.

P105: SINGLE SITE VERSUS MULTIPOINT LAPAROSCOPIC SURGERY FOR PEDIATRIC COMPLICATED AND NON-COMPLICATED APPENDICITIS: IS ONE BETTER?

Charles J. Arahamian, MD, Nerina M. DiSomma, BA, Edmund Y. Yang, MD, Carl V. Asche, PhD, Jinma Ren, PhD, Angela M. Kao, BS, Jeremy S. McGarvey, MS, Sharon A. Kauzlarich, MA, Richard H. Pearl, MD, Division of Pediatric Surgery, Children's Hospital of Illinois, University of Illinois College of Medicine at Peoria

BACKGROUND: Current literature supports that single incision laparoscopy (S-LA) and conventional multiport laparoscopic (M-LA) techniques have comparable outcomes for treatment of appendicitis, although some reports express concern that S-LA causes more pain postoperatively. This study evaluates the outcomes and cost of

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S-LA as compared to M-LA for treatment of both complicated and non-complicated appendicitis in a single institution over a concurrent time frame.

METHODS: An Institutional Review Board-approved retrospective chart review was performed for all laparoscopic appendectomies with a preoperative diagnosis of appendicitis at the Children's Hospital of Illinois from September 2010 through December 2013. Interval appendectomies were excluded. Patient demographics, type of laparoscopic appendectomy, intraoperative complications, duration of surgery, hospital stay, pain score, antibiotic use, narcotic use, postoperative complications, and direct cost were collected and compared by statistical analysis for the S-LA and M-LA populations. The M-LA group was defined by patients who had appendectomy using 3 disposable trocars placed in different locations in the abdomen. For the S-LA group, patients who had an appendectomy through a single umbilical incision were grouped together. These were either performed with individual trocars or proprietary multiport device. Direct hospital costs were computed from hospital charges using a cost to charge ratio (total annual direct costs divided by total annual charges) and converted to 2013 dollar costs using data from the Consumer Price Index.

RESULTS: A total of 341 patients underwent laparoscopic appendectomies at our institution: S-LA (n=175) and M-LA (n=166). Type of procedure was determined by surgeon preference. According to the surgeon's diagnosis, 22% of patients had complicated appendicitis and 76% non-complicated. There were no statistical differences in appendicitis type, intraoperative complications, hospital stay, narcotic use, antibiotic use, pain score (3.4 vs. 2.9, $p=0.08$), wound infection (7% vs.

5%, $p=0.42$), or abscess rates (8% vs. 7%, $p=0.63$) between S-LA and M-LA groups. Procedure time was significantly shorter in S-LA as compared to M-LA (30 vs. 40 minutes, $p<0.001$). Direct cost of hospital stay for S-LA was significantly less than M-LA (\$3736 vs. \$5486, $p<0.001$).

CONCLUSION: Our data demonstrates comparable clinical outcomes between S-LA and M-LA, regardless of type of appendicitis. However, S-LA has shorter procedure time and a lower cost when compared to M-LA in both acute and complicated appendicitis. Therefore the use of S-LA is supported for surgeons comfortable with this technique.

P106: COMPARATIVE STUDY BETWEEN SINGLE-INCISION LAPAROSCOPIC INGUINAL HERNIA REPAIR AND CONVENTIONAL INGUINAL HERNIA REPAIR IN CHILDREN Li GuiBin, Wang Li, The 5th Central Hospital of Tianjin China

OBJECTIVE: To discuss the clinical application value of single-incision laparoscopic inguinal hernia repair and conventional inguinal hernia repair in the treatment of children's inguinal hernia.

METHODS: From Mon.2012 to Oct.2013, the clinical data of 110 children with inguinal hernia who underwent processus vaginalis high ligation were analyzed retrospectively. Among them, there were 50 cases of single-incision laparoscopic inguinal hernia repair, 60 cases of conventional inguinal hernia repair.

RESULTS: All the operations were successful. There is no significant difference in mean operative time, intraoperative blood loss, the duration of hospital stay, hospital total cost between both groups, and no intraoperative or postoperative complications are observed in both groups. Postoperative cosmetic outcome of laparoscopic group is better.

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Conclusions:The present study shows that single-incision laparoscopic inguinal hernia repair is feasible, safe, and more aesthetically pleasing than conventional operation.

P107: TRANSUBILICAL SINGLE-SITE LAPAROSCOPIC INGUINAL HERNIA INVERSION AND LIGATION IN GIRLS

Hongwei xl, Shanxi Children's Hospital, Taiyuan, Shanxi, China

Objectives:Transumbilical single-site laparoscopic inguinal hernia inversion and ligation is a new approach for girls.We have done 13cases in our hospital since May 2013.

Methods:13 girls with inguinal hernia, aged from 6 months to 10years old(mean 3.92±2.60 years) ,were performed with transumbilical single-incision laparoscopy.

Operation steps: Endotracheal anesthesia was conducted in all cases in trendelenburg position. A 5-mm incision was made on the right side of the umbilicus and laparoscope (0° or 30° Storz Germany)was introduced through the incision after pneumoperitoneum (pressure 9-12mm Hg) established. A 3mm or 5mm incision was made on the left side of the umbilicus for regular needle holder. Under the direction of the laparoscope, it could be checked whether both internal rings have been closed. Then the bottom of the hernia sac was twisted and inverted into the peritoneal cavity and hung by the suture from the skin projection of the internal ring. The final portion of the operation is the ligation and resection of the hernia sac.The hernia sac was removed from the Trocar on the right side of the umbilicus.The suture was cut off after the needle penetrated out of the abdominal. The pneumoperitoneum and trocar were removed. The umbilical incision was subcuticularly sutured with 5-0 absorbable thread and adhered with medical adhesive.

RESULTS: None of the patients were underwent conversion from single-site laparoscopy to open approach or conventional laparoscopic surgery.The operation time was 35.15±6.68 minutes. 23%of the unilateral inguinal hernia was found contralateral inguinal hernia.The patients were discharged the day after operation.Follow-up with all cases in 7 months showed no recurrence and no incision complication.

CONCLUSION: Transumbilical single-site laparoscopic inguinal hernia inversion and ligation is a reliable, safe, and cosmetic herniorrhaphy for girls with inguinal hernia.

P108: TO REMOVE ABDOMINAL BENIGN TUMOR BY LAPAROSCOPIC OPERATION

Zhaozhu Li, MD, Dapeng Jiang, MD, Shengyang Guan, MD, Mowen Yang, Master, Bo Xu, PhD, Department of Pediatric Surgery, the 2nd Affiliated Hospital of Harbin Medical University

OBJECTIVES: Common abdominal benign mass include: ovarian cysts or teratoma, cyst of mesentery and omentum majus, enlarged mesenteric lymph node, adrenal gland neoplasms, retroperitoneal lymphangioma. To summarize the advantage, experience, technique of laparoscopic operations (LO).

METHODS: We analyzed the clinical findings, histologic diagnosis, and surgical outcomes in children. Before operation the patient who was suspect of abdominal mass had been examined by ultrasound, CT or MRI. We also exam tumor immunity marker and selected the mass wasn't shown malignant for LO. The patients had been general anaesthesia, and first trocar was inserted through umbilicus. After found the mass, we select one or three trocar technique to remove the tumor.

RESULTS: From January 2010 to June 2013, 24 cases (10 girls, 14 boys) were treated.

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Age was 3 months to 12 years old. Of them, Eight mass were found in ovarian(6 cystic tumor , 2 teratoma); Intra-abdominal cystic masses were found 3 in greater omentum, 4 in mesentery, and in retroperitoneum, 2 in cystic duplication of intestine, 2 in mega-cyst of hydrocele; Other mass were 2 enlarged mesenteric lymph node and 1 bilatera adrenal gland neoplasms. All patients had been removed tumor or mass by LO and recovery. Operation time was 0.5-3h. less blood lost. Follow up for 3-6 months, no complications occurred.

CONCLUSIONS: LO for removing abdominal benign tumor has more advantage, especially for cystic tumor. Complete excision was possible in almost all cases despite the size, bringing a favorable outcome.

1111: REPAIR OF CLOACAL MALFORMATION USING SINGLE-INCISION PEDIATRIC ENDOSURGERY AND TOTAL UROGENITAL MOBILIZATION IN A PATIENT WITH VATER SYNDROME

Allison Sweny, MD, Ariella Friedman, MD, Joseph J. Lopez, MD, Matthew E. Bronstein, MD, Richard N. Schluskel, Oliver J. Muensterer, MD, PhD, Divisions of Pediatric Surgery and Pediatric Urology, New York Medical College, Maria Fareri Children's Hospital

BACKGROUND: Single-incision pediatric endosurgery (SIPES) is usually performed for routine operations such as appendectomy or nephrectomy. The approach is less often used for complex procedures requiring interdisciplinary reconstructive surgery. To our knowledge, a SIPES-assisted cloacal repair has not been reported previously.

OBJECTIVE: To present the first cloacal repair in a patient with VATER syndrome using a SIPES-assisted pullthrough and urogenital mobilization technique.

CASE: The patient was born with esophageal atresia and distal tracheoesophageal fistula (EA/TEF), cloacal malformation, cross-fused right renal ectopia, as well as vertebral anomalies. She underwent thoracoscopic EA/TEF repair on day of life 1, along with a proximal sigmoid colostomy. At 10 months of age, we addressed the cloacal malformation by performing a total urogenital mobilization in combination with a SIPES-assisted pull-through of the rectum with anorectoplasty. One of the challenges of the case was the dissection of the presacral tissue creating sufficient space for the pull-through without injuring the newly reconstructed vagina (figure A, below). The rectum was pulled down to the anus using a large Foley catheter to gently guide the structures into place (figure B), facilitating a coloanal anastomosis separate from the urogenital incision (figure C).

RESULTS: The patient was discharged home on postoperative day 3 and started a dilation program of the neorectum and vagina 2 weeks later. The colostomy was taken down at 6 weeks, at which time her perineum had healed nicely (Figure D). She continued to do well with spontaneous bowel movements 3-5x a day. At 2 months follow up, the dilation program had been weaned to once a week, and the patient had excellent functional as well as cosmetic results.

CONCLUSION: Children with complex syndromes including VATER and cloacal malformation can be managed with advanced minimalinvasive techniques, including single-incision endosurgery. When combining SIPES imperforate anus repair with urogenital reconstruction in the setting of cloacal malformation, care must be taken not to injure the neovagina during the presacral dissection

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and the pull-through maneuver. Using an interdisciplinary approach, excellent outcome can be achieved despite the complexity of the malformation.



P112: SINGLE PORT LAPAROSCOPIC CRYPTORCHIDECTOMY IN DOGS AND CATS: A MULTICENTER ANALYSIS OF 25 CASES (2009–2014)

Jeffrey J Runge, DVM, DACVS, Philipp D Mayhew, BVMS, , DACVS, J. Brad Case, DVM, MS, DACVS, Ameet Singh, DVM, DACVS, Kelli N Mayhew, VMD, DACVS, William T Culp, VMD, DACVS, University of Pennsylvania, School of Veterinary Medicine, University of California at Davis, School of Veterinary Medicine, College of Veterinary Medicine, University of Florida, Gainesville, FL. Ontario Veterinary College, University of Guelph, Guelph

OBJECTIVE: To describe the operative technique and evaluate the clinical outcome for dogs and cats that underwent single port laparoscopic cryptorchidectomy (SPLC)

DESIGN: Retrospective case series

ANIMALS: 25 client-owned dogs & cats

METHODS: Dogs and cats that underwent a SPLC using 3 different commercially available single port devices were retrospectively identified. A single port device was placed through a 1.5–3.0 cm abdominal incision at either the region of the umbilicus or a 2–3 cm incision caudal

to the right 13th rib. The cryptorchidectomy was performed using graspers, a bipolar vessel sealing device and a 300 telescope.

RESULTS: 22 dogs and 3 cats that had a SPLC with a SILS port (15), TriPort (8) or Endocone (2) were included in the study. Median patient age was 365 days (range, 166–3285 days). Median weight was 18.9kg (range, 1.3–70kg). Median surgical time was 38 minutes (range, 15–70 minutes). Thirty-two testicles were removed (12 left, 6 right, and 7 bilateral). Four patients had one other abdominal surgical procedure performed concurrently during the SPLC. No intra-operative or post-operative complications were encountered in any of the patients.

CONCLUSIONS AND CLINICAL RELEVANCE:

SPLC is a safe, feasible procedure that can be performed on a wide range of patient sizes and can be combined concurrently with other elective surgical procedures. This technique provides an efficient, low morbidity and potentially less invasive alternative to the traditional open and multi-port laparoscopic techniques described for the treatment canine and feline cryptorchidism.

P113: SINGLE-INCISION LAPAROSCOPIC INGUINAL HERNIOPLASTY IN GIRLS

Mario Mendoza-Sagaon, MD, Flurim Hamitaga, MD, Natalia M Voumard, MD, Ospedale Regionale di Bellinzona e Valli

INTRODUCTION: Several laparoscopic procedures continue to evolve to achieve minimal tissular damage, less post-operative pain and discomfort, and better esthetics. 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 technique of single-incision laparoscopic hernioplasty in girls and analyze the results.

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METHODS: The files of all girls operated by single-incision laparoscopic hernioplasty in our institution were reviewed. Surgical technique: Briefly, a vertical transumbilical incision was performed. An 8 mmHg CO₂ pneumoperitoneum was achieved using a small catheter with a stopcock valve. A 5-mm 30o telescope and 3-mm instruments were used for the procedure. The patent processus vaginalis (PPV) was grasped and twisted with a 3mm Babcock clamp and ligated with a 00-PDS Endo-loop. Finally the tip of the sac was cauterized with a monopolar hook.

RESULTS: Since 2010, we have operated 48 PPV in 29 girls, range of age was from 11 months to 12 years (median 4-5 years). Pre-operatively, 19 patients presented clinically right inguinal hernia, 8 a left inguinal hernia and in 2 patients was bilateral. Per-operatively, 17 girls with a pre-operative unilateral inguinal hernia, presented a contralateral PPV associated. Duration of surgery was initially 40 minutes for a single PPV and after the first 10 cases decreased to 10 to 15 minutes. All patients were treated in the out-patient unit. No per-operative complications were recorded. There was 1 recurrence in the 5th patient operated for an unilateral right inguinal hernia and 6 months after surgery she was re-operated using the same technique with an excellent outcome. In the majority of the cases return to normal physical activity was achieved around the 2nd to 4th post-operative day and analgesic therapy was necessary only in the first two postoperative days. Patients and parents were very satisfied with post-operative esthetics. Follow up is from 3 months to 3.5 years. To date, all patients are doing very good and no late recurrences have been reported.

CONCLUSION: Single-incision laparoscopic inguinal herniotomy in girls is a feasible and safe technique with an excellent post-operative outcome and esthetics. Moreover, it allows to diagnose and to treat an asymptomatic contralateral patent processus vaginalis (incidence of 58% in this study) through a small umbilical single-incision.

P114: SINGLE-PORT LAPAROSCOPIC ANORECTAL PULL-THROUGH Alejandra Parilli, MD, Gregory Contreras, MD, José Gregorio Mejías, MD, Lisbeth Medina, MD, Hospital de Clínicas Caracas

This is 21 month old male infant, referred from another center, with anorectal malformation and rectourethral fistula, carrying two mouths colostomy and 10kg weight. At physical examination intergluteal cleft are evident, had a good anal fovea and coccyx is palpable. In the distal colostogram, the distance between the rectum and anus is 2,7 cm approx. Was undergoing to single-port laparoscopic anorectal pull-through, using the Mini Gelpoint to umbilical level and an accessory port level 3mm left upper quadrant. Dissection of the distal part and section of the fistula with a white cartridge Echelon 45mm and 10mm Hemolock was performed because this was at the level of the membranous urethra, 5mm trocar was placed at the level of the fovea anal and rectum decreased. The surgery last about 3 hours and the patient was discharged on the third hospital day, progressing satisfactorily. The single-port laparoscopic anorectal pull-through seems to be an efficient method that allows adequate visualization and tissue manipulation in these patients.

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P115: SINGLE-PORT ACCESS LAPAROSCOPIC APPENDECTOMY IN PEDIATRIC PATIENTS: A COMPARISON STUDY WITH CONVENTIONAL LAPAROSCOPIC APPENDECTOMY Tae A. Kim, Jung Rae Cho, Won Me Kang, Soo Min Ahn, Pediatric Surgery Clinic, Hallym University Sacred Heart Hospital, Hallym University College of Medicine

INTRODUCTION: Currently single-port laparoscopic appendectomy became popular in adult population. We sought to investigate the essential prerequisites for applying single-port access laparoscopic appendectomy (SLA) to children.

MATERIALS & METHODS: Prospective non-randomized consecutive data collection was performed in children who had undergone SLA or conventional laparoscopic appendectomy (CLA) from September 2009 to June 2013. Preoperative diagnosis was confirmed by ultrasonography for all patients. The preoperative patient characteristics and surgical outcomes were compared between the groups in terms of age, sex, BMI, leukocytosis, CRP, operation time, hospital stay, frequency of postoperative intravenous painkiller usage, and perioperative complications.

RESULTS: SLA and CLA were completed in total of 120 patients; 60 patients in both groups irrespectively. Both group showed no difference of demographics and disease severity. Overall anesthesia time was longer in SLA ($m \pm sd$, 88.7 ± 21.5 min vs. 101.4 ± 27.4 min; $p = 0.005$) compared to CLA, whereas there was no differences in operation time between groups (60.8 ± 22.0 min vs. 68.4 ± 28.3 min; $p = 0.098$). There were no differences in postoperative hospital stay (3.1 ± 1.4 vs. 2.7 ± 1.4 day; $p = 0.114$), pain killer usage (2.7 ± 2.2 vs. 2.4 ± 1.7 ; $p = 0.404$) and medical cost ($p > 0.05$) between the groups. No

major complications were encountered in the two groups.

CONCLUSION: Postoperative outcome of SLA doesn't seem to be superior to that of CLA in pediatric populations. Safety and feasibility of SLA in pediatric population, however, are comparable with CLA.

P116: LAPAROSCOPIC AND ROBOTIC-ASSISTED GASTROESOPHAGEAL DISSOCIATION FOR RECURRENT GASTROESOPHAGEAL REFLUX DISEASE Dan Parrish, MD, Shannon F. Rosati, MD, Claudio Oiticica, MD, Patricia Lange, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center

INTRODUCTION: Laparoscopic Nissen fundoplication has become a very important tool for controlling severe gastroesophageal reflux disease (GERD) in the pediatric population. However, some patients, especially those that are neurologically-impaired, may develop recurrent GERD that is refractory to continued medical management.

BACKGROUND: This is a 3 year old child with Cornelia de Lange syndrome and severe developmental delay who underwent a laparoscopic Nissen fundoplication at 1 year of age. After initially doing well, he began to have repeated episodes of aspiration pneumonia and severe reflux symptoms. While his fundoplication was intact, it had migrated into his mediastinum.

METHODS: The case began laparoscopically with placement of a 12-mm trocar in the umbilicus, and 8-mm robotic trocars were placed in the right and left mid-abdomen using his old surgical scars. An additional 8-mm robotic trocar was placed just medial to the gastrostomy tube site for the robotic camera. Lysis of adhesions and repair

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of the hiatal hernia were performed with preservation of the gastrostomy tube site, anterior and posterior vagus nerves, as well as a large replaced left hepatic artery. Once the hiatus was closed, the jejunum was measured about 30-cm distal to the ligament of Treitz and was brought out through the umbilical defect. It was marked in a way to delineate orientation then divided with the Endo-GIA stapler. A side-to-side jejunojejunostomy was created 30-cm distal to the tip of the Roux limb with an Endo-GIA stapler. The bowel was then returned to the abdomen with the Roux limb passed in a retrocolic position toward the hiatus. The Petersen defect was reapproximated with multiple interrupted 4-0 polyglactin sutures. An Endo-GIA stapler was fired across the GE junction just above the fundoplication, again preserving the vagus nerves. At this point, the da Vinci robot was docked and the esophagojejunostomy was performed with multiple 4-0 polyglactin sutures in a single-layered anastomosis in an end to side manner after the esophageal staple line was excised. The esophagojejunostomy was confirmed to be airtight via a nasoenteric tube that was left in place postoperatively as well as a 10-mm Jackson-Pratt drain near this anastomosis.

RESULTS: The patient returned to the pediatric intensive care unit and on postoperative day two, he underwent contrast studies through the gastrostomy and nasoenteric tubes, which demonstrated both anastomoses to be intact. His tube feeds were gradually advanced and he was discharged on postoperative day 6 tolerating gastrostomy feeds at goal. On follow up, his reflux symptoms have resolved and his respiratory has improved.

CONCLUSIONS: For neurologically-impaired patients with recurrent reflux symptoms following fundoplication, especially those that take most of their feeds via a feeding tube, gastroesophageal dissociation may be a reasonable alternative to performing multiple funduplications. By utilizing the da Vinci surgical robot with its articulating instruments and 3D visualization to perform the esophagojejunostomy, we were able to ensure precise placement of sutures while preserving the vagus nerves, avoiding the need for a pyloroplasty, maintaining the replaced hepatic artery, as well as the gastrostomy site.

P117: ROBOTIC-ASSISTED RESECTION OF A LARGE POSTERIOR MEDIASTINAL MASS Dan Parrish, MD, Shannon F.

Rosati, MD, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University Medical Center

INTRODUCTION: Ganglioneuromas are rare, typically benign, tumors that arise from tissues that have a neural crest cell origin. They typically occur in patients ranging in age from 10 to 40 years and are classically found in the adrenal glands. Ganglioneuromas are frequently asymptomatic and discovered incidentally while another condition is being investigated.

BACKGROUND: An 18 year old woman who was being followed for scoliosis was found to have a large left chest mass on a chest x-ray. A chest CT scan revealed a 10 x 7.5 x 6.5-cm mass in the left upper chest, consistent with a bronchogenic cyst. She had no reports of fever, shortness of breath or chest pain, although she did endorse frequent feelings of left chest/shoulder tightness. In an attempt to avoid a large thoracotomy or sternotomy, we proceeded with a robotic-assisted resection of the large mass.

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METHODS: The patient was laid supine with the left chest slightly elevated and her left arm extended above her head. She was intubated with a Carlens tube for single lung ventilation. With the left lung deflated, an 8-mm robotic trocar was placed in the left midaxillary line, just below the axilla, and two 8-mm robotic trocars were placed in left anterior axillary line and left midclavicular line, all in the left inframammary fold. An additional 5-mm step trocar was placed as an assistant port, lower left midchest in the midaxillary line. Using hook cautery and graspers with bipolar cautery, the tumor was dissected free from the surrounding tissues and the blood vessels cauterized. The mass seemed to arise from the left sympathetic ganglia chain, which had to be sacrificed for tumor removal. The tumor extended into the apex of the left chest and into the lower part of the left neck just behind the head of the clavicle. Once the tumor was dissected free from the surrounding structures, an additional 2 x 2-cm mass was noted between the first and second rib and removed. The anterior axillary line trocar was removed and widened to approximately 5 cm to allow specimen removal in an endocatch bag and a 28-French chest tube was placed. Final pathology revealed a ganglioneuroma.

RESULTS: She was admitted to the step down unit postoperatively with PCA pain control. She was transitioned to PO pain medicine with a general diet on postoperative day one. Her chest tube was removed and she was discharged on postoperative day two. She was seen in clinic the following month with some left arm numbness and slight symptoms of Horner's syndrome (left eye ptosis when tired and left eye miosis). Eight months later her Horner's syndrome had significantly improved.

CONCLUSIONS: Robotic-assisted thoracic surgery provides great 3D visualization and articulating instruments that can be used to dissect large intrathoracic tumors and possibly avoid a large thoracotomy or sternotomy.

P118: ESSENTIAL ELEMENTS IN PLANNING AND IMPLEMENTING A MULTI-SPECIALTY PEDIATRIC ROBOT ASSISTED SURGERY PROGRAM AT A LARGE CHILDREN'S HOSPITAL [Daniel](#)

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PURPOSE: Robotic assisted surgery (RAS) is growing tremendously in pediatric surgery and urology. Program success, sustainability, and safety are dependent on infrastructure. Currently there is a paucity of specific information about how to establish and maintain a safe and efficient multi-specialty pediatric robotic surgery program. We discuss what we consider are key factors for building a safe and successful multi-specialty pediatric RAS program.

METHODS: In the fall of 2012, the purchase of a robotic surgical system was approved by a steering committee consisting of nursing, surgery, and finance hospital leadership. By December 2012, a robotic surgery director and nursing coordinator were named, and a dedicated team was identified and trained. Where appropriate, children considered candidates for minimally invasive surgery were referred to a RAS program surgeon. Multi-specialty proctoring and credentialing guidelines were established. All nursing team members were trained in circulating, scrub, and bedside assistant roles. Specific emergency and communication protocols were established. A multifactorial strategy

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with surgical training and simulation, resident/fellow integration, pre-surgery case-specific practical training, pre-operative huddles, robot-specific time out, intra-operative video and time stamp recording, post-operative case review and mentoring, weekly team meetings to discuss quality improvement was employed. A longitudinal robotic database is recorded. Case-by-Case review of reusable and disposable robotic equipment with quarterly cost data is reviewed for comparative effectiveness to identical open or purely laparoscopic procedures.

RESULTS: From January to December 2013, 136 robot assisted laparoscopic surgeries were performed. 135 were technically successful with 1 open conversion. Ninety-Two operations were performed by 2 pediatric urologists, and Forty-Two by 3 pediatric surgeons. At the outset, one pediatric urologist proctored and credentialed the 4 other robotic surgeons. Surgery types were: Dismembered Pyeloplasty, Ureteroneocystostomy with and without ureteral tapering, ipsilateral Ureteroureterostomy, Nephrectomy/Heminephrectomy, Partial Nephrectomy, Continent Urinary Diversion, Bladder Neck Reconstruction with and without Bladder Neck Slings, Gastric Sleeve, Cholecystectomy, Nissen Fundoplication, and Ileocecectomy/Colectomy. No major robot-specific complications were recorded. Four (3.7%) surgical complications were managed successfully. Two near miss events identified during the robot-specific time out were recorded. An average increase of 12% in the charges associated with the use of the robot was recorded over a 12 month period.

CONCLUSION: A multispecialty pediatric RAS program at large children's hospital can be successful, safe, and sustainable

by premeditated implementation of the above key essential elements. There is a modest initial cost increase associated with use of the robot.

P119: THE USE OF ROBOTIC SURGERY IN THORACIC SURGERY: PATIENT SATISFACTION IN CHILDREN AND ADULT POPULATIONS IN A SINGLE INSTITUTION EXPERIENCE

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BACKGROUND: Many thoracic surgeries are maximally invasive procedures, requiring thoracotomies or median sternotomies to remove large thymomas, or mediastinal masses. Due to the associated morbidity of these procedures, the use of robotic surgery in both the pediatric and adult thoracic surgery populations is being increasingly utilized. Due to the rarity of pediatric thoracic tumors, the use of robotic thoracic surgery, performed in conjunction with adult thoracic surgeons, allows for additional experience and collaboration. We review our experience in robotic thoracic surgery, which we have performed in both adults and children over the past five years, and reviewed the satisfaction of both the patients and the parents of children who have undergone robotic thoracic surgery.

METHODS: We conducted a retrospective review of our adult and pediatric thoracic robotic surgery cases over the past five years. Additionally, we conducted telephone interviews with the patients and the parents of the pediatric patients to ascertain their experience with robotic surgery. After obtaining verbal consent over the phone, we inquired about their overall satisfaction with robotic surgery,

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their post operative pain, if they were satisfied with the cosmetic appearance of their scars, and if they would undergo robotic surgery again.

RESULTS: Forty-two patients have undergone robotic thoracic surgery, 27 adults and 15 children. Only one of these procedures was unsuccessful and required an additional operation. None of the remaining 41 operations had to be converted to open procedures. Twenty-three patients had thymectomies (8 children, 15 adults), 14 had mediastinal masses or cysts (4 children, 10 adults), 1 pediatric patient had a left upper lobectomy, 1 pediatric patient had a resection of a diaphragm tumor, 1 patient had the insertion of a LV lead, and 1 patient had a LIMA takedown. 23 patients and parents could be contacted. All 23 patients stated they were pleased with the cosmetic appearance of their incisions or their child's incisions. Also, 22/23 responded that they would undergo robotic surgery again, or have their child undergo robotic surgery again. Satisfaction with their overall experience or their child's overall experience on a numbered scale from 1-10, with 10 being the most satisfied ranged from 4-10, with an average of 8.3. Patients rated their post operative pain or the post operative pain of their child on a scale from 1-10 with 10 being the worst pain ranged from 0-9, with an average of 6.2.

CONCLUSIONS: Robotic surgery performed in both adults and children allows for increased control and mobility when performing operations in small, confined spaces, as is the case for thymectomy and mediastinal mass resection. Patients appear to be satisfied with their overall outcomes. Robotic surgery represents an alternative to VATS or open procedures in the adult and pediatric populations. Lastly, having pediatric and adult thoracic

surgeons work together on these cases can increase their robotic experience and complement both programs.

P120: ROBOTIC-ASSISTED SINGLE-INCISION LAPAROSCOPIC CHOLECYSTECTOMY IN A PEDIATRIC PATIENT; FROM MULTI-PORT TO SINGLE-PORT WITH INCREASED CONFIDENCE

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PURPOSE: Single-port laparoscopic cholecystectomy has been reported in both the pediatric and adult surgical populations. However, its widespread adoption has been limited in part by a steep learning curve due to well-described technical limitations. These limitations include instrument collision, poor visualization, a loss of ability to triangulate, and paradoxical instrument control due to crossing of instruments as they traverse the single incision. We demonstrate a robotic-assisted single incision laparoscopic cholecystectomy in a pediatric patient performed in the absence of these technical limitations. The increasing availability of robotic-assistance may lead to increased adoption of robotic-assisted single-incision pediatric endosurgery (R-SIPES).

METHODS: A four-port robotic-assisted laparoscopic (R-L/S) cholecystectomy was performed using two 5mm, one 8 mm, and one 12 mm ports. An R-SIPES cholecystectomy was performed using a single multi-lumen port placed through a 2.5 cm umbilical incision. Video of the intra-abdominal portions of each surgery was recorded and are presented for visual comparison. The placement and removal of the multi-lumen port used in the R-SIPES case was also recorded and is presented.

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RESULTS: Side-by-side comparison demonstrates that both robotic-assisted surgical techniques allow the surgeon to have nearly equivalent triangulation ability and anatomic visualization. Advances in robotic instrumentation and software have also eliminated the technical limitations of instrument collision as well as the paradoxical and counter-intuitive hand-instrument movements that are often associated with single incision laparoscopic surgery.

CONCLUSION: Using cholecystectomy, we demonstrate that the application of robotic-assistance to SIPES eliminates many of the limitations associated with laparoscopic single incision surgery, which may result in increased utilization of single incision laparoscopic surgeries in the future.

P121: BRONCHOSCOPIC REMOVAL OF FOREIGN BODIES: FACTORS AFFECTING THE MANAGEMENT

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AIM: In children, foreign body aspiration (FBA) is common. It is not clear yet, which demographic and clinic factors are more prominent in the FBA and indication for bronchoscopy.

METHODS: In children with FBA; gender, age, symptoms, type of residence (urban vs rural), localization and type of foreign body, the radiologic appearance, outcome were evaluated. In all cases, a rigid bronchoscopy was performed and all foreign bodies were removed with an optic or regular bronchoscopic forceps. Descriptive tests and ANOVA were made to analyze the determining factors on foreign body ingestion.

RESULTS: 201 children underwent a rigid bronchoscopy for a suspected FBA (133 M, 68 F). The mean age was 2.83 years (1-17). 64 patients had a FB in right main bronchus, 62 in left main bronchus and 18 in the trachea. Remaining 57 patients with bronchoscopy had no FB. The main symptom was cough. The aspirated FBs are organic materials (nuts, seeds, other food material) in 123 and inorganic subjects (jewels, toy parts etc) in 21 cases. The main symptoms were cyanosis in 26, stridor in 47, dyspnea in 59, fever in 6 and cough in 67 patients. Cyanosis and dyspnea were significantly more in patients with tracheal FBA. Organic FBs causes significantly more dyspnea and cough than the inorganics. The mean age of the patients with organic FBA is significantly less than those with inorganic FBA (2.3 vs 6.7). 63 patients with bronchoscopy resided (49 with FBA) in urban, 67 in suburban (43 with FBA) and 63 in rural (49 with FBA) areas. Only one patient needed a re-bronchoscopy for failed FB removal (0.4%).

CONCLUSION: Rigid bronchoscopy is the method of choice for both diagnosis and treatment of patients with suspected FBA. The failure rate of removal is extremely low. The radiologic images are frequently non-informative. Therefore, in case of doubt, bronchoscopic examination is necessary. Residence of the patients seems to have no effect on likelihood of FBA. Younger children are more likely to aspirate organic FBs.

P122: THORACOSCOPIC ESOPHAGEAL RESECTION AND ANASTOMOSIS IN AN INFANT WITH CONGENITAL ESOPHAGEAL STENOSIS

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AIM: We report a 1 year old infant with congenital esophageal stenosis treated by a thoracoscopic esophageal resection and end-to-end anastomosis.

CASE REPORT: One year male infant was admitted with emesis and failure to thrive to the Department of Pediatric Gastroenterology. His upper gastrointestinal contrast study revealed a 2.5 cm stenosis at the distal portion of the esophagus. At thoracoscopy, the stenosis was identified at the distal part. The stenotic segment was resected. The two ends of the esophagus was dissected and freed. An end-to-end anastomosis was performed with interrupted sutures by means of intracorporeal suture tying and extracorporeal knot-pushing techniques. No complication was encountered. The postoperative course was uneventful and the patient was discharged at 12th postoperative day. The patient is doing well three years after surgery with normal growth up and no swallowing difficulty.

CONCLUSION: Thoracoscopic esophageal resection and anastomosis is safe and effective in infants with congenital esophageal stenosis.

P123: THORACOSCOPIC DIAPHRAGMATIC PPLICATION FOR DIAPHRAGMATIC EVENTRATION AFTER SURGERY FOR CONGENITAL HEART DISEASE IN CHILDREN

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OBJECTIVE: Diaphragmatic eventration caused by phrenic nerve palsy is a rare but serious complication after surgery for congenital heart disease (CHD) in

children. The safety and effectiveness of thoracoscopic diaphragmatic plication for diaphragmatic eventration in such patients remain unclear because of possible concerns about serious complication such as intraoperative circulatory or respiratory failure and air embolism caused by right to left shunt. The aim of the study was to clarify the role of thoracoscopic diaphragmatic plication for diaphragmatic eventration after surgery for CHD in children.

PATIENTS & METHODS: Retrospective chart review was conducted in pediatric patients who underwent thoracoscopic diaphragmatic plication for diaphragmatic eventration after surgery for CHD from 2008 to 2013 at our department.

RESULTS: Five patients, 4 boys and 1 girl, were identified during the study period. Median age and body weight of the patients at thoracoscopic diaphragmatic plication were 7.6 (1.8-17.9) months and 6.6 (3.0-7.1) kg. All patients had left side diaphragmatic eventration. Associated CHDs are pulmonary artery atresia in 3 patient, and truncus arteriosus and double outlet right ventricle in 1 patient, respectively. Two patients received previous ipsilateral thoracotomy for Blalock-Taussig shunt. Three patients had right to left shunt after Glenn operation at thoracoscopic diaphragmatic plication. Four of 5 patients needed mechanical respiratory supports before thoracoscopic diaphragmatic plication. Median duration between previous CHD operation and thoracoscopic diaphragmatic plication were 56 (15-169) days. At thoracoscopic diaphragmatic plication, 3 of 5 patients attempted one-lung ventilation using bronchial blocker and all received CO₂insufflation (4 mmHg) for ipsilateral lung collapse. Thoracoscopic diaphragmatic plication

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was performed using 3 or 4 ports. Sufficient operative field was kept by CO₂insufflation in all patients regardless of one-lung ventilation, and no patients were converted to open operation. Intraoperative arterial blood pH and PCO₂were 7.29 (7.22–7.39) and 51 (44.5–67) mmHg. In one patient, dislodgement of bronchial blocker resulted in severe respiratory and circulatory failure just before starting the operation. While this patient needed intraoperative NO inhalation, the patient also underwent thoracoscopic diaphragmatic plication after stabilization. Postoperatively, one patient was extubated at the operating room, 2 were on the day of operation, and 2 were on 1 and 2 postoperative days, respectively. One patient experienced minor pneumothorax and pleural effusion, which resolved spontaneously without drainage. Air embolism was not observed in any patient. No recurrence of diaphragmatic eventration was experienced in these 5 patients after the thoracoscopic plication.

CONCLUSIONS: Our results show that thoracoscopic diaphragmatic plication is safe and effective procedure for diaphragmatic eventration after surgery for CHD in children. Considering the serious complication of bronchial blocker dislodgement and the sufficient operative field kept by CO₂insufflation without one-lung ventilation, bronchial blocker is unnecessary for this procedure. With safety and good outcome of the procedure, early thoracoscopic diaphragmatic plication is a good option for pediatric patients with symptomatic diaphragmatic eventration after surgery for CHD.

P124: THORACOSCOPIC RESECTION OF A VERY RARE EXTRA-LOBAR PULMONARY SEQUESTRATION IN A 2-YEAR-OLD BOY

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AIM: We report the thoracoscopic resection of a very rare case of right extra-lobar pulmonary sequestration.

CASE REPORT: A solid mass was identified in the right mediastinum of a male fetus at 30 weeks' gestation on fetal magnetic resonance imaging (MRI). At 2 months old, a right pulmonary sequestration comprising a hypervascular racemous angiomatous arterial-venous malformation (RAVM) with a feeding artery coming from the thoracic aorta was diagnosed on enhanced computed tomography (CT). The sequestration was initially considered to be intra-lobar since it drained into the inferior right basal pulmonary vein rather than the inferior vena cava or azygos vein as extra-lobar sequestrations usually do. When referred for further management, he was well and asymptomatic, however, his cardiothoracic ratio (CTR) on chest radiography was elevated as a result of systemic drainage from the RAVM in the sequestration overloading the left atrium. Thoracoscopic resection was performed when 2 years old. Briefly, conventional thoracoscopy under general anesthesia with single lung ventilation was performed with the patient placed laterally. The sequestration was confirmed to be extra-lobar, was located in the right inferior mediastinum between

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the right diaphragm and the inferior lobe and was found to drain into the inferior right basal pulmonary vein, as shown on preoperative CT. The sequestration was retracted gently posteriorly and elevated with endoscopic peanut swabs without the use of endoscopic Kelly retractors as they may potentially cause injury to the lung parenchyma and cause hemorrhage, which would be impossible to control. The feeding artery from the thoracic aorta and the drainage vein were very close but with great caution, were successfully separated, hemo-clipped and divided. The sequestration was extracted through one of the trocar sites. No chest tube was inserted. Postoperatively, CTR improved from a preoperative 53% to 47%. Histopathology showed that the sequestration comprised increased abnormal thick and thin walled arteries and veins.

CONCLUSION: This is the first report of an extra-lobar sequestration with hypervascularity due to an increase of abnormal vessels being excised safely using thoracoscopy. Postoperative recovery was uneventful and cardiac load was decreased.

P125: THORACOSCOPIC MANAGEMENT OF ABERRANT RIGHT SUBCLAVIAN ARTERY: CASE REPORT I. Molina, MD, F. Fierro, MD, S. Castañeda, MD, P. Jaimés, MD, Universidad Nacional de Colombia, Fundación Hospital de la Misericordia

Aberrant retroesophageal subclavian artery (ARSA) is a type of vascular ring that rarely produces symptoms, the majority of cases reported in the literature present with dysphagia and vomiting due to esophageal compression. Other symptoms may include apnea, cyanosis, and syncope.

We present the case of an 8-year-old girl that presented with a 2 month

history of vomiting, regurgitation, dysphagia, and weight loss. Studies included, esophagoscopy, barium esophagogram, contrast tomography with subclavian reconstruction. An Aberrant retroesophageal subclavian artery was diagnosed. Patient was taken to thoracoscopic ligation of the artery without complications. After the procedure, the patient was completely relieved from symptoms, tolerated oral alimentation without obstructive symptoms, and right arm perfusion was preserved.

Surgical management of ARSA includes ligation of the artery with or without reimplantation through thoracotomy or sternotomy. Thoracoscopic ligation of the ARSA can show similar results compared with the open approach.

P126: THORACOSCOPIC RESECTION OF A DISTAL OESOPHAGEAL DUPLICATION CYST IN A 10-MONTH-OLD INFANT Leel Nellihela, Mr., M. Agrawal, Ms., D. Drake, Mr., N. Bouhadiba, Mr., Evelina London Children's Hospital, Guy's and St Thomas' NHS Foundation Trust, UK

AIM: Literature related to thoracoscopic excision of oesophageal duplication cyst (ODC) are rare and so far not being reported in the UK. We are reporting the successful a full thoracoscopic resection ODC in a ten month old infant.

METHOD: A baby boy weighing 2.8Kg was born at 38 week gestation. Prenatal ultrasonography had shown an intra-thoracic cystic lesion. The ultrasonography on day 2 of life suggest a possible bronchogenic duplication cyst. Upper GI contrast at 3 month of age showed an extrinsic indentation of the distal oesophagus by the cyst but no communication with the oesophageal lumen. MRI scan at the age of 6 month confirm an ODC.

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At 10 month, under general anaesthesia thoracoscopy was performed with 5mm three-port system. A camera was inserted via a 5-mm trocar at the sixth intercostal space, between mid-axillary to posterior axillary line. The other two 5-mm trocars were positioned at the fifth and seventh intercostal spaces, in the mid axillary line. Cystic mass was found at the distal oesophagus to right side of the oesophagus. Complete resection of the cyst was carried out without damaging the oesophagus using hook and scissors. The vagus nerve were clearly identified and preserved, the cyst was excised completely and intact, muscular defect was closed with 4 0 vicryl continuous stich. Cystic fluid was aspirated to allow retrieval. 10Fr chest drain inserted and connected to an underwater seal.

RESULTS: The patient was discharged on the third postoperative day without complications. The pathology confirmed the diagnosis of foregut duplication cyst with no evidence of neoplasia. The video film is presented.

CONCLUSION: We recommend thoracoscopic approach to resect ODC. It provides a good access, better visualisation of the cyst by magnification. Patient have a shorter hospital with good cosmetic outcome.

P128: FIRST EXPERIENCE WITH MINIMALLY INVASIVE NUSS REPAIR OF PECTUM EXCAVATUM IN CHILDREN

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Pectus excavatum - is the most common defect in development of the chest and is more than 90% of all deformities of the chest.

We would like to introduce our first experience of pectus excavatum treatment applying minimal invasive Nuss procedure.

Patients with pectum excavatum that underwent thoracoscope-assisted Nuss procedures in our department from January 2013 were analyzed retrospectively. Surgical technique, operation duration and blood loss were analyzed. Postoperative complication, hospital stay length and recovery were evaluated.

There were 32 cases, 17 boys and 15 girls, from 4 to 16 years old. With the guidance of thoracoscope, all procedures were completed smoothly without occurrence of pericardium, heart, great vessels or lung injury. All patients were kept stable vital sings during operation. The operative times ranged from 45 to 75 minutes and 5 ml to 15 ml blood loss were recorder. The postoperative pain was most severe on the first postoperative day and alleviated as the time passed. On the third postoperative day, the pain alleviated significantly. No postoperative pneumonia, pleural effusion or other complication occurred. Patients discharged from hospital 4 to 6 days after operation. All patients did well in the short term follow-up with obvious improvement in chest shape.

CONCLUSIONS: Thoracoscopy-assisted Nuss operation has many advantages including small and masked incision, short operative time, minimal blood loss, fast recovery, less trauma, and satisfactory outcomes of repair. Nuss is a safe and reliable technique for repair of pectus excavatum.

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P129: THORACOSCOPIC CHEST WALL MASS EXCISION IN A FORMER PREMATURE

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INTRODUCTION: Mesenchymal hamartoma (MH) of the chest wall in the newborn is a rare tumor of infancy notable for distinct radiographic findings. MH is usually benign but may cause respiratory compromise due to extension into the pleural cavity. Surgical excision is standard therapy for MH.

METHODS: On routine ultrasound a child in utero was noted to have a left intrathoracic mass. MRI suggested mass was arising from rib tissue. The child was delivered at 27 weeks gestation after her mother suffered premature rupture of membranes. CPAP was administered for mild respiratory distress. CXR confirmed the mass, arising from the left 6th rib posteriorly. Surgery was deferred to allow the baby to grow. A thoracoscopic approach was planned.

PROCEDURE: At age 4 months the patient underwent thoracoscopic resection of the left posterior chest wall mass. 3 ports were used (4mm x 2, 5mm x 1). Frozen section biopsy confirmed the diagnosis. The mass was resected with a limited section of rib. The mass was morcellated from within a 10mm retrieval bag and removed. The free rib laterally was fixed to the chest wall. A 12Fr chest tube was left in the pleural space.

RESULTS: All gross hamartoma was resected, along with a limited segment of rib. The hospital course was uneventful and the patient was discharged to home on POD #4. She developed RSV 3 weeks post-op and was hospitalized for 48hrs but is well 3 months post op.

CONCLUSION: Minimally invasive resection of a benign chest wall mass is a safe technique that allows limited rib resection to minimize chest wall instability and may reduce risk for respiratory compromise and spinal deformity post-op.

P130: THORACOSCOPIC SEGMENTECTOMY OF INTRALOBAR SEQUESTRATIONS THROUGH DYE DELIMITATION

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PURPOSE: The surgical resection of congenital lung lesions has evolved with the minimal invasive and the parenchyma-preserving techniques. Although these lesions are usually small and its limits can be suspected by direct vision or palpation, there is not a clear anatomic landmark to resect them. We present a new technique that helps to define the limits of intralobar sequestrations (ILS) leading to a safe and anatomic segmentectomy thoracoscopically.

PATIENTS & METHODS: We have retrospectively reviewed this segmentectomy technique on four cases (two boys and two girls) the last two years. Three cases had a mean age of 10 months and the last one was 15 years-old. Preoperative diagnosis were ILS in three and an hybrid lesion in one. After dissecting the aberrant arterial vessel, a dye was injected through it to stain the sequestration. Then it was marked with monopolar cautery and resected with an endostapler.

RESULTS: In three cases we obtained a good delimitation of the ILS so the procedure was carried out as described. In one case the artery was so thin that we could not inject through it properly. All cases were completed thoracoscopically, with a mean operative time of 120'. Mean

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thoracic drainage time was 2,5 days and mean discharge day was the 3rd POD. There were no intraoperative or postoperative complications and with a mean follow-up time of 16 months they are all asymptomatic and control CT scans 1 year postoperatively show no residual disease.

CONCLUSIONS: In our experience dyeing of ILS is a safe and effective technique to define the limits of intralobar sequestrations leading to an anatomic resection thoracoscopically.

P131: THE VACUUM BELL FOR CONSERVATIVE TREATMENT OF PECTUS EXCAVATUM: ASSESSMENT OF ITS EFFICACY BY THREE-DIMENSIONAL PHOTOGRAPHY

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BACKGROUND: The conservative treatment of pectus excavatum (PE) using the vacuum bell represents a valid alternative to surgical minimally invasive repair (MIRPE) technique by Nuss for selected patients. The objective assessment of its efficacy (elevation of the sternum) is still a challenge. Until today, accurate measurement of the degree of PE is only ensured by a computer tomography of the chest. This study was performed to evaluate the reliability and quality of the three-dimensional (3D) photography to assess the improvement of the funnel chest under the vacuum bell therapy.

PATIENTS & METHODS: After institutional review board approval and written consent, the chest of six children with pectus excavatum was analysed by 3D photography before and 6 months after

starting the conservative treatment using the vacuum bell. The device was used for 30 minutes twice a day.

RESULTS: 6 patients were included. The 3D-photography enabled an objective assessment of the elevation of the sternum, which was improved in the median up to 16,8 mm.

CONCLUSION: 3D photography represents a valuable alternative to thoracic CT-scan to assess the degree of PE. It is a radiation-free, reliable and a high qualitative tool to track the clinical course of the conservative treatment of PE by the vacuum bell.

P132: MANAGEMENT OF PEDIATRIC PRIMARY SPONTANEOUS PNEUMOTHORAX IN A TERTIARY CENTER

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INTRODUCTION: Treatment of Pediatric Primary Spontaneous Pneumothorax (PSP) can be achieved conservatively, through oxygen therapy, chest tube drainage or thoracocentesis, or surgically, by using video-assisted thoracic surgery (VATS). The best therapeutic algorithm for PSP continues to be sought, as well as the role of thoracic Computed Tomography (CT) in its management. The aim of this study was to review the approach to pediatric patients with PSP in a tertiary center.

MATERIAL & METHODS: Observational Study, with retrospective analysis of 25 pediatric patients with a diagnosis of PSP, admitted in the first episode and treated in a third level care Hospital, between January 1st 2006 and December 31st 2012. Data was obtained from clinical processes of the selected patients and were analyzed

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by demographic, diagnosis, treatment and follow-up perspective.

RESULTS: PSP occurred mainly in the male gender at the left hemithorax. Initial episodes were treated with oxygenotherapy alone (n=8), chest tube drainage (n=12) and VATS (n=5). Chest drainage had a failure rate of 25% in the first episode and 100% in the recurrence group. The method that presented higher therapeutic success was VATS (100%). Patients with blebs in CT were those that significantly recurred more frequently. Apical resection with mechanical pleurodesis was the preferred surgical technique.

CONCLUSION: The best treatment for first PSP in pediatric patients seems to be non-surgical, namely thoracocentesis or chest drainage. VAST is the best option for the recurrent episodes. The role of CT in the management of these patients appears to be crucial in identifying patients with blebs. The using of VATS in asymptomatic patients with blebs in CT is still a matter of debate.

P133: THORACOSCOPIC ESOPHAGECTOMY FOR CHILDREN'S CONGENITAL TRACHEOBRONCHIAL CARTILAGE REMNANTS OF ESOPHAGUS [Shuli Liu](#),

[KaoPing Guan](#), [Long Li](#), Capital Institute of Pediatrics,

OBJECTIVE: To investigate the clinical manifestation, diagnostic characteristics and to evaluate the thoracoscopic esophagectomy for congenital tracheobronchial cartilage remnants of esophagus .

METHODS: A retrospective study of 8 cases between 1.1 to 4 years old with congenital tracheobronchial cartilage remnants of esophagus were collected in our department since Mar, 2008 to september, 2013. Preoperative imaging or endoscopy

were carried out before surgery, and then followed with thoracoscopic resection of esophageal stricture, esophageal anastomosis without conversion to laparotomy .

RESULTS: All 8 patients performed typical symptoms with repeated sickness without gastric juice and bile, especially with complementary feeding. Patients began to appear typical clinical symptoms on average 6 months after birth and generally affect healthy development. With Barium meal examination, 3 among 8 patients showed a typical "pendulum sign " performance, 2 showed thin line change between the esophagus and cardia , and others suspected achalasia 3 cases were performed esophagoscopy examinations in surgeries, all showed a sudden expansion of esophageal stenosis and without passing the stenosis segment. Patients take the left side of the prone position during the operations, a rigid and inflexible mass in the narrow section were detected on the esophageal wall, which located lower esophagus away from the cardia about 2.0 ~ 4.0cm. The narrow section is about 0.5 ~ 1.0cm in length, and about 0.2 ~ 0.4cm in diameter. Diameter of the esophagus near terminal expansion is about 2.0 ~ 3.0cm, distal esophageal diameter is 1.0 ~ 1.2cm. We resected stenosis segment, interrupted full-thickness esophageal anastomosis with 5-0 PDS and reserve an indwelling gastric tube 10. Among them, 4 patients appeared dysphagia after 1 month surgery, esophageal graphy showed the lower esophageal stricture, and symptoms were mitigated after esophageal balloon dilatation.

CONCLUSIONS: Vomiting history while complementary feeding and pendulum symptoms and thread-like changes between the esophagus and cardia by barium meal examination could be

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regarded as preoperative diagnosis of congenital tracheobronchial cartilage remnants of esophagus. Esophagoscopy examination would help the diagnosis. Surgery is the only reliable way for treatment, and the patient nutrition condition should be adjusted before surgery. Thoracoscopic resection of esophageal stricture could get a clear surgical field, less bleeding, light chest wall injury, little effect on the lungs and reducing the chance of postoperative pneumonia. The children would get a quickly recovery after the thoracoscopic surgery for less trauma in both consciousness and chest.

P134: 3D RECONSTRUCTION AIDED THORACOSCOPIC MULTISEGMENTECTOMY AS A LUNG-SPARING PROCEDURE IN A CASE OF MULTILOBAR PULMONARY CCAM Paul

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Congenital Pulmonary Malformations are the most common reason for pulmonary resection in children. If most of them have been treated by lobectomies, there is a trend toward limited resections such as anatomical segmentectomies. We present a case of antenatally diagnosed cystic adenomatoid malformation involving both the upper and lower lobes of the right lung, for which a bilobectomy would have sacrificed a huge amount of normal lung tissue, thus enforcing the indication of a multisegmentectomy. In order to assess the anatomy of the malformation and define the various segments involved, a three dimensional reconstruction using a specific software was used. The reconstruction showed that segments S1 and S2 in the

upper lobe, the middle lobe as well as segments S7 and S10 in the lower lobe were free of disease.

The child was operated at the age of 4 months, with a weight of 5.3 kg. A thoracoscopy, under lung exclusion and CO2 pneumothorax, was performed with a 5mm telescope and three 5 mm instruments ports. The greater fissure was incomplete and the malformation clearly seen bridging S6 and S3, whose segmental artery arose from A6. Using the 3D reconstruction as a map, the various segmental arteries and corresponding bronchi were dissected and divided respectively with a tissue sealing device and clips, thus allowing the resection of S3 from the upper lobe, S6,8 and 9 from the lower, using the tissue sealing device to divide the parenchyma. S3, S6 and the basal segments were divided individually to facilitate exposure of the next segments, and extracted at the end of the procedure through an enlarged port-site. A good reexpansion of the remaining segments S1, 2 and 7 and middle lobe was documented, S10 (postero-lateral segment) being non functional. This extensive procedure lasted 5 hours. Blood loss was moderate during the dissection, and the child received a 10cc/kg transfusion. The post-operative course was uneventful, with no air leak allowing for chest tube could removal on POD 2 and the child discharged on POD 4. She has been asymptomatic since. A CT scan at 6 months confirms the completeness of the resection and the viability of the preserved segments. Pathology confirmed a Stocker type 1 CCAM.

3D rendering provided a clear anatomical delineation of the anomaly and the lung segments, allowing the planning of a lung-sparing procedure. Multiple segmentectomies are possible with

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meticulous thoracoscopic dissection of the hilar elements. The delineation of the anomaly was not easy to identify macroscopically, and the knowledge of the 3 dimensional expected limits proved very important to ensure complete resection as well as maximum lung preservation. Progresses in our ability to finely dissect the anatomy minimally invasively and improved imaging might improve our ability to preserve functional lung tissue while assuring the completeness of the resection.

P136: ROOM TO MOVE: HOW TO CREATE ADEQUATE WORKING SPACE IN THORACOSCOPIC SURGERY FOR LUNG RESECTION AND EMPYEMA *Spencer W. Beasley, MD, Mark D. Stringer, MD, Nadeem Haider, MD, Kiki Maoate, MD, Department of Paediatric Surgery, Christchurch Hospital, and University of Otago*

INTRODUCTION: One of the limitations of thoracoscopy in small children requiring lung resection or debridement of empyema is the surgical exposure and the working space that can be achieved.

METHODOLOGY: A review, including video analysis, of 113 thoracoscopic procedures (including 37 for empyema) in children aged 2 months to 17 years, to evaluate the potential advantages and limitations of various techniques to improve the exposure and operative working space.

RESULTS: Measures that can improve vision and enhance the working space include: selective bronchial intubation, the use of bronchial blockers, determination of the best location for working ports to facilitate exposure and optimize ergonomics, adjustment of insufflation pressure, "popping" major cysts in CCAMs and deflating CLEs, selective use of an additional working port, and the technique

of sweeping the lung free from the chest wall in empyema.

CONCLUSION: attention to how best to modify the type of ventilation, selection of the best location for the working ports, and decompression of hyperinflated lung lesions, facilitates the ease and safety of thoracoscopic surgery in infants and children

P137: ENDOSCOPIC DIAPHRAGMATIC HERNIA REPAIR BY USING MESH FIXED WITH TITANIUM SPIRAL TACKS *Gulnur Gollu, MD, Gonul Kucuk, MD, Meltem Bingol-Kologlu, Prof, Aydin Yagmurlu, Prof, Huseyin Dindar, Prof, Ankara University School of Medicine Department of Pediatric Surgery*

Primary closure is not always possible in thoracoscopic or laparoscopic diaphragmatic hernia repair. It is difficult to use sutures in approximating the mesh especially near chest wall – rib / sternum.

The aim is to present three cases of Bochdalek and one case of Morgagni hernia whose defects were large and not suitable for primary closure. Dura mesh was used in all of the three patients. Diaphragmatic rims were approximated to mesh by using extracorporeal sutures. Since the diaphragmatic rims were too narrow at sternum and anterior chest wall, titanium spiral tacks were used to stabilize mesh. There wasn't any complication during the operations however one of the children died because of pulmonary hypertension. Remaining patients recovered well and are doing well in two-year follow-up.

Titanium spiral tacks which are more routinely used in adults in incisional and inguinal hernia repairs can also be used in Pediatric Surgery by confirming with larger further reports.

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P138: THORACOSCOPIC REPAIR OF DIAPHRAGMATIC HERNIA IN NEONATES AND CHILDREN: A NEW SIMPLIFIED AND CHILDREN: A NEW SIMPLIFIED TECHNIQUE WITH SYRINGE NEEDLE [Bing Li](#), [Bing W. Chen](#), [Qing S. Wang](#), [Huai'an](#)

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PURPOSE: New techniques with minor modifications are evolving every day. The objective of this study was to describe and assess our initial experience by using a new simplified technique with syringe needle in thoracoscopic repair of diaphragmatic hernia in neonates and children.

METHODS: A retrospective review of a new simplified technique with syringe needle in thoracoscopic repair of diaphragmatic hernia in 6 cases from March 2013 to December 2013 was performed. The three neonates that underwent thoracoscopic repair were physiologically stable with minimal to moderate ventilatory support.

In the procedure of elective thoracoscopic repair, a syringe needle with nonabsorbable 2-0 sutures was used to insert between the edges of the posterolateral defects. The technique will be described in detail.

RESULTS: A total of 6 neonates and children with CDH were repaired successfully using this new technique. There were 4 males and 2 females with a mean age of 4.94 months (range, 2 days-17 months). All the cases were left-sided. The mean operative time was 85 min (range, 65-125 min) for each CDH repair. No cases required closure with a synthetic patch and conversion to open surgery, blood loss was minimal. The 6 cases were followed up for 2-11 months (mean, 6.2 months), with no deaths, and no single case of recurrence.

CONCLUSION: The new technique with syringe needle had all the advantages of thoracoscopy in children combined with the advantages of reduced

operating time, simplicity and feasibility. It may be preferable to intracorporeal suturing and knot tying for the repair of the posterolateral defects and worth introduced.

P139: EARLY EXPERIENCE WITH PEDIATRIC THORACOSCOPIC LOBECTOMY / SEGMENTECTOMY IN ISRAEL [Dragan Kravarusic](#), [MD](#), [Steven Rothenberg](#), [MD](#), [Enrique Freud](#), [MD](#), [Schneider Children's Medical Center of Israel](#), [Tel Aviv](#), [Israel](#)

OBJECTIVE: In our community for symptomatic congenital lung malformations open surgery is a common practice. For asymptomatic cystic adenomatoid malformations / pulmonary sequestrations, discovered on routine pre / postnatal imaging, management is controversial. This report evaluates the safety and efficacy of thoracoscopic lung resections in pediatric patients.

METHODS: During the 2013, eleven patients underwent thoracoscopic lobectomy / segmentectomy. Patients ages ranged from 8 months to 7 years. Preoperative diagnosis included congenital cystic adenomatoid malformation (n = 4), pulmonary sequestration (n = 5), bronchogenic cyst (n = 1) and complex bronchiectasis (n = 1). Four patients were symptomatic with previous lung infections and seven others were asymptomatic. Single lung ventilation was desired but not accomplished in 3 patients. Three ports 3-5 mm were used with controlled pressure pneumothorax. A ligasure sealing device was the mode for tissue dissection / vessel ligation and bronchi were closed either by stapling device or by interrupted sutures.

RESULTS: All the procedures were completed thoracoscopically. Operating times ranged from 70 to 200 min (remarkable longer in patients with previous infections). We performed

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seven lobectomies and four segmental lung resections. We had no intraoperative complications, chest tubes were left for one day in all but two cases of extralobar sequestration. Hospital stay ranged from 1 to 3 days and only one patient required ICU admission post operatively.

CONCLUSIONS: Supervised mentorship in thoroscopic approached surgeries for congenital lung malformations changed our paradigm of practice. Thoroscopic lobectomy / segmentectomy in selected patients is feasible and safe technique. There is a clear difference in dissection complexity in patients with previous infectious complications. Decreased postoperative pain, shorter hospital stay and better cosmetic results are definite advantages.

P141: SINGLE-SITE INTRACORPOREAL PURSE-SUTURING VERSUS SINGLE-PORT EXTRACORPOREAL KNOTTING LAPAROSCOPIC HERNIORRHAPHY: A COMPARATIVE EVALUATION [Suolin Li, MD](#), Lin Liu, MD, Meng Li, MD, The Second Hospital of Hebei Medical University, Shijiazhuang, China

BACKGROUND: Laparo-endoscopic single-site or single-port surgery (LESS) is a rapidly evolving field, which offers cosmetic advantage over standard multiple-access laparoscopic surgery. The objective of this study was to compare the surgical and functional outcomes of single-site (transumbilical two-port) intracorporeal purse-suturing (IP) and single-port extracorporeal knotting (EK) for pediatric inguinal hernia (PIH) repair.

METHODS: Between May 2008 and December 2011, the medical records of 176 children undergoing laparoscopic inguinal herniorrhaphy by a single pediatric surgeon were retrospectively reviewed. Of them, 76 patients were treated by single-

site intracorporeal purse string suture using a needle-holder (IP group), and 100 patients by single-port extracorporeal knotting using an epidural needle with preperitoneal hydrodissection (EK group). Technical difficulties, operation time, intra- and postoperative complications, and recurrence rate were studied.

RESULTS: All patients could be completed successfully without any serious complications. The operation time was significantly longer in the IP group than in the EK group (unilateral: 23.7 vs. 15.4 minutes; bilateral: 38.1 vs. 21.2 min; $P < 0.01$). There were two recurrences (2.63%) in the IP group while none in the EK group. The postoperative pain, functional recovery, hospital stay and satisfaction were similar. There was no obvious scarring visible in any patients after treatment.

CONCLUSIONS: Both IP and EK are safe and feasible LESS. Accompanied by the method of preperitoneal hydrodissection, single-port laparoscopic EK herniorrhaphy would be superior to single-site IP repair with regard to prevention of recurrence. It is easy to perfect and to perform and therefore is a worthy choice for PIH.

P142: INTRODUCING NEW LAPAROSCOPIC TECHNIQUES - THE FIRST TWENTY CASES MATTER [Christian Lorenz, Prof., Dr.](#), Carsten Driller, Dr., Department of Pediatric Surgery and Urology, Klinikum Bremen-Mitte, Bremen

BACKGROUND AND OBJECTIVES: Minimally invasive laparoscopic techniques (MILT) replace well established open procedures. Practical aspects of this trend are best resembled by the learning curve, a term undergoing a change of meaning - away from sole feasibility of a procedure to the point, that a major team of surgeons will be enabled to practice MILT comparably.

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PATIENTS & METHODS: We retrospectively compared three groups (G) of patients in whom the first 20 MILT were performed for inguinal hernia in girls (G1/2006–2007: herniorrhaphy), dysplastic upper pole and megareter in duplex kidneys (G2/2008–2013: heminephroureterectomy), and pyloric stenosis (G3/2012–2013: pyloromyotomy). The various operations were performed by just 3 experienced pediatric surgeons. We questioned if basic surgical parameters, complications, and outcome in short term are in such a way consistent, that a wider circle of surgeons may get involved in processing these operations under close supervision.

RESULTS: G1: mean age at surgery 43 months (range 5–79), mean operation time 33 minutes (range 15–65, bilaterally in 3 patients), postoperative stay in hospital 6–24 hours, observations/complications: 3/3 events. G2: 5/15 patients (boys/girls), mean age at surgery 33 months (9–216), mean operation time 144 minutes (80–240, bilaterally in one), mean postoperative stay in hospital 4,6 days (3–7), observations/complications: 7/0. G3: 17/3 (boys/girls), mean age at surgery 5,6 months (range 3–9), mean postoperative stay in hospital 3,8 days (2–8), observations/complications: 1/2.

Operative time in all groups converges to that in open surgery (G1/G3) or values reported in recent literature (G2), Events (6/7/3 – 30/35/15%) and true complications among them (3/0/3 – 17,6/0/10%) occurred in the first 3 quarters of these periods with an overall rate of 10% (6/60). Some of them could be solved easily by changing suture material to prevent recurrent hernia(G1) or by administering antibiotics postoperatively in light of the risk of fever (G2). Awareness of the risk of mucosal perforation or incomplete myotomy in G3 makes this

procedure the most challenging one to teach since it needs skilled and cautious preparation in a short operative time frame.

CONCLUSIONS: Introducing MILT for standard pediatric surgical conditions needs a limited group of skilled surgeons and close follow-up at least for the first 20 cases. On the basis of these data performing the procedure may be spread among either skilled specialists or doctors in advanced training. Again, close supervision is needed to keep or improve the results of the first series.

P143: THE LIMITS OF LAPAROSCOPY: INFLAMMATORY MYOFIBROBLASTIC TUMOR OF THE SMALL BOWEL MESENTERY MASQUERADING AS PERFORATED APPENDICITIS

Christopher D. Hughes, MD, MPH, Ioanna Mazotas, MD, Anthony Tsai, MD, Abby Theriaque, APRN, Richard G. Weiss, MD, Department of Surgery, University of Connecticut School of Medicine; Department of Surgery, Connecticut Children's Medical Center

INTRODUCTION: Inflammatory pseudotumor, or inflammatory myofibroblastic tumor (IMT), is a rare lesion among pediatric patients. It is a unique pathologic entity that is histologically benign, but it can behave like a malignant tumor, with local invasion and even metastasis. Symptoms vary depending on the tumor's location, and diagnosis can often prove challenging. Traditional laparoscopic approaches may prove to be inadequate for effective surgical treatment.

METHOD(S): We present a unique case study of a three-year-old girl who presented with abdominal pain and symptoms consistent with perforated appendicitis.

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RESULTS: The patient was brought to the operating room for a laparoscopic appendectomy. Upon inspection with the operating laparoscope, we discovered hemoperitoneum and a necrotic segment of small intestine that suggested a more complex pathology (Figure 1). We then converted to laparotomy where we discovered a large, dense mass at the base the patient's small bowel mesentery that had separated from the edge of the bowel wall resulting in a necrotic segment of proximal jejunum (Figure 2). After resection, the patient was reanastomosed, and she subsequently recovered following an uneventful postoperative hospital course. Pathology revealed the lesion to be an inflammatory pseudotumor (Figure 3).

CONCLUSION(S): The diagnosis of IMT can be challenging secondary to its rarity and its variable presentation. Our report of an IMT presenting as perforated appendicitis is unique in the small body of literature on these tumors. Laparoscopy was helpful in the diagnostic process as well as determining where to place the laparotomy incision. Knowing when to change course during an operation remains critical.

P144: EARLY DISLODGEMENT OF LAPAROSCOPIC GASTROSTOMY IN A PATIENT WHO REQUIRED NON-INVASIVE MASK VENTILATION DURING EARLY POSTOPERATIVE PERIOD [Ergun](#)

[Ergun](#)¹, MD, [Gulnur Gollu](#)¹, MD, [Farid Khanmammadov](#)¹, MD, [Gonul Kucuk](#)¹, MD, [Tanil Kendirli](#)², Prof., [Meltem Bingol-Kologlu](#)¹, Prof., ¹Ankara University School of Medicine, Department of Pediatric Surgery, ²Pediatric Intensive Care Unit

The aim of this case report is to present an unusual complication of laparoscopic gastrostomy in a patient who was treated by Laparoscopic Nissen Fundoplication and gastrostomy and required non-invasive

ventilation support with BPAP (Bilevel Positive Airway Pressure) during early postoperative period.

Eight years- old male patient with cerebral palsy and oxygen dependency was admitted for frequent lower respiratory tract infections and severe growth deficiency (<3% percentile) Upper gastrointestinal tract fluoroscopy and 24 hours pH monitorization had revealed gastroesophageal reflux. Laparoscopic Nissen Fundoplication and feeding gastrostomy was decided and performed without complications. The patient required non invasive mask ventilation- BPAP during early postoperative period because respiration problems. Enteral feedings were started from gastrostomy tube on postoperative day 3. Gastrostomy site cellulitis and subcutaneous crepitations of the abdominal wall became evident on postoperative day 6. X-Ray imaging of abdomen revealed disseminated subcutaneous emphysema, dilated stomach and the spread of the opaque given from gastrostomy tube to the abdominal wall. Laparotomy was done and a leak between the stomach and abdominal wall was found. Gastrostomy site of the stomach was enlarged. Gastrostomy revision was done and the patient discharged after an uneventful postoperative course. In 18 months of follow up, there were no problems.

Fundoplication and gastrostomy are life saving options for children with neurological disorders. But unexpected complications can be seen if positive pressure applied to the gastrointestinal tract. In patients who underwent gastrostomy procedure and require non-invasive mask ventilation, feeding from gastrostomy tube should be delayed and gastric decompression should be done during early postoperative period.

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P145: THORACOSCOPIC TRACTION SUTURES FOR LONG-GAP OESOPHAGEAL ATRESIA MAY CAUSE SEVERE COMPLICATIONS [Martin L. van Niekerk](#), Prof., University of Pretoria

INTRODUCTION: Long-gap oesophagus atresia is a challenging problem for surgeons. Thoracoscopically placed traction sutures is one of the recent approaches to manage this problem. One of the reasons preventing the wide spread acceptance of this approach is the problem of sutures cutting through tissue. We present two patients with isolated oesophagus atresia who developed severe complications following this procedure.

PATIENTS & METHOD: Thoracoscopic traction sutures were placed in two babies with long gap oesophageal atresia, weighing 3.2 and 2.8 kg respectively. The first patient was operated primarily at our institution. The other patient was referred from another institution after traction sutures resulted in a leak. Both patients developed a leak of the distal poach, 9 and 5 days respectively after placement of traction sutures. Both patients underwent two further operations to manage this problem. Currently these babies are doing well, and are awaiting oesophageal replacement procedures.

CONCLUSION: Thoracoscopically placed traction sutures may lead to severe complications.

Thoracoscopic placement of sutures in the thin wall of the smaller distal poach is a surgical challenge.

This procedure is not recommended for small babies.

P146: A CASE REPORT :LAPAROSCOPIC NEPHRON-SPARING SURGERY ON SOLITARY KIDNEY OF A 2 YEARS-OLD GIRL [Hua Xie](#), Yichen Huang, Yiqing Lv, Fang Chen, Shanghai Children's Hospital , Shanghai Jiao Tong University

A 2 years-old girl, who was admitted to our hospital because a mass was discovered on the mid polar of her right kidney by ultrasonography. The girl was diagnosed with Willm's Tumor on her left kidney one year ago. She underwent nephrectomy and half year of chemotherapy. She was followed up by ultrasonography and a year later, a mass was discovered on the mid polar of her right kidney. Further CT indicated a enhanced tumor on the ventral part of left kidney(Fig1). Laparoscopic nephron-sparing surgery was performed. Three 5mm trocar were used, one beneath the umbilicus, the other two on the lateral margin of the rectus of right abdomen. The tumor is 2*2*2cm with a clear margin. The operation took 90 min. Pathology indicated clear cell carcinoma. The girl was discharged from hospital 3 days after surgery. She was followed up every 2 months for half a year by ultrasonography and no recurrence of the tumor has been discovered yet.

P147: LAPAROSCOPIC PERITONEAL DIALYSIS CATHETER IMPLANTATION IN CHILDREN: A PRIMARY EXPERIENCE

Yichen Huang, [Yiqing Lv](#), Fang Chen, Hua Xie, Shanghai Children's Hospital , Shanghai Jiao Tong University

OBJECTIVES: To assess the feasibility and complications of laparoscopic placement of peritoneal dialysis catheters in pediatric patients.

METHODS: A total of 3 patients underwent laparoscopic peritoneal dialysis catheter insertion in our institution in 2013.They were all males, with the age of 7, 8 and 8

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years old respectively. 2-cuff Tenckhoff catheters with arc bend in the intercuff segment were used. The operation started with three 5-mm trocars placed beneath the umbilicus and on the lateral margin of the rectus sheath on each side. Partial Omentectomy was performed till the omentum couldn't reach the pelvic cavity. The catheter was inserted through the left incision with the deep cuff placed within a peritoneal tunnel underneath the left rectus muscle and the superficial cuff upon the muscle. The catheter tip was positioned in the left iliac fossa with the exit site oriented downward.

RESULTS: The median operating time was 43 min. Peritoneal dialysis could be performed just after the surgery. The patients were followed up for 3, 5 and 6 months respectively. Complications such as infection, leakage, dislodgement or obstruction were not observed.

CONCLUSIONS: Laparoscopic peritoneal dialysis catheter implantation is feasible and safe in children. Laparoscopic procedure allows for careful assessment of the abdominal cavity, recognition and treatment of intra-abdominal diseases such as inguinal hernias, accurate partial omentectomy which is important to prevent catheter obstruction, and precise placement of catheter in the pelvic cavity.

P148: LAPAROSCOPIC URETEROPYELOANASTOMOSIS IN THE TREATMENT OF URETEROPELVIC JUNCTION OBSTRUCTION IN LOWER MOIETY OF DUPLEX KIDNEY Rongde Wu, Prof, Wei Liu, PhD, Department of Pediatric Surgery, Provincial Hospital Affiliated to Shandong University, Jinan, China

BACKGROUND: Duplex kidney is one of the most common congenital anomalies of the urinary tract. Anatomical and clinical presentation determines its treatment.

The upper moiety is frequently dilated or dysplastic, while ureteropelvic junction obstruction (UPJO) in lower unit of duplex kidney is rare and preservation is recommended when it is not significantly impaired. Laparoscopic reconstruction with lower pole preservation is presented as an alternative treatment.

PATIENTS & METHODS: Three patients with UPJO in lower unit of duplex kidney, two presenting with abdominal pain and the other with no symptoms, were treated by laparoscopic ureteropyeloanastomosis. Patients' records were analyzed retrospectively for operative details and postoperative complications.

RESULTS: Severe hydronephrosis, thin parenchyma and the presence of UPJO in lower moiety could be shown on CT urography. The upper moiety had normal function without hydronephrosis. The ureters were fused in a "Y" shape to form a single ureteral orifice without any dilation. According to the length between the fused ureter and UPJO, patients were classified to group 1 (1 case, ≤ 3 cm) and group 2 (2 cases, > 3 cm). In group 1, surgical procedure involved laparoscopic end-to-side ureteropyeloanastomosis of the lower pelvis to the fused ureter. The two patients in group 2 underwent laparoscopic pyeloplasty of lower moiety. Surgical time varied from 100 to 150 minutes, with minimal blood loss in all cases. Follow-up varied from 6 months to 2 years, with resolution of the clinical symptoms and preservation of the lower moiety function.

CONCLUSION: Laparoscopic ureteropyeloanastomosis is a feasible and safe minimally invasive option in the treatment of duplex kidneys associated to a functioning lower moiety with UPJO.

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P149: LAPAROSCOPIC RADICAL NEPHRECTOMY OF WILMS' TUMOR AND RENAL CANCER IN CHILDREN: PRELIMINARY EXPERIENCE FROM TWO-CENTERS STUDY IN EAST CHINA

Jiangbin Liu, PhD, Professor, Department of Pediatric Surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University¹ and Department of Pediatric Surgery, Children's Hospital of Fudan University²

OBJECTIVE: To review the preliminary experience from two-centers study and to evaluate the laparoscopic radical nephrectomy in children with wilms' tumor and renal cancer.

MATERIAL & METHODS: From January 2010 to October 2013, medical recordings on 7 cases who underwent a laparoscopic radical nephrectomy for wilm's tumor and renal cancer in the department of pediatric surgery, Shanghai Children's Hospital, Shanghai Jiao Tong University and Children's Hospital of Fudan University were included in this study.

RESULTS: Three underwent chemotherapy before operation according the COG (Children's Oncological Group) protocol and all could be treated by laparoscopy; the biggest tumoral size was 10cm without crossing the lateral edge of the vertebra. The median hospital stay was 8.5 days (6-11). The pathologic investigation showed 5 Wilms' tumors, 1 rhabdoid tumor and 1 renal cell carcinoma. With a median follow-up of 26 months (range 3 and 48 months) after laparoscopic radical nephrectomy, all the children had no oncological complications (port site recurrence, pulmonary metastasis) and without intraoperative tumoral rupture, except the patients with rhabdoid tumor had a local recurrence

CONCLUSIONS: From our own preliminary experience, the radical nephrectomy

in children for Wilms' tumor or renal cancer can be safely performed laparoscopically. For trained laparoscopic surgeons, by small tumors under about 10cm in diameter, especially without crossing the lateral edge of the vertebra on the CT scan at the time of surgery.

KEY WORDS: Laparoscopic, nephrectomy, wilms' tumor, renal cancer, children

P150: TRANSVESICAL ENDOSCOPIC EXCISION OF REDUNDANT URETERAL STUMP

Baran Tokar, MD, Surhan Arda, MD, Umut Alici, MD, Eskisehir OGU Medical School, Department of Pediatric Surgery, Section of Pediatric Urology, Eskisehir, Turkey

In children, transvesical endoscopic approach was described mainly for vesicoureteral reflux and diverticulum. This video shows the surgical technique of pneumovesicoscopic resection of a long and refluxing distal redundant ureteral stump in a nephrectomized patient.

Video presentation: 10 years old boy was admitted to our clinic with a history right nephrectomy performed in another hospital. The patient had frequent urinary tract infections (UTI) in his postoperative follow up. We showed a refluxing stump with a 4 mm stone in it preoperatively and performed cystoscopy. During cystoscopy, a 5 cm long distal redundant ureteral stump with 1 cm diameter was determined on the right side. Debris of suture and stone in the stump was removed. He did not have UTI following the removal of the debris and excision of the stump was planned for the future. Transvesical excision of the stump was done by pneumovesicoscopy 6 months later. A 5 mm port was introduced from the bladder dome, and 2 three mm ports were inserted into the lateral sides of the bladder. With a 12 mmHg insufflation pressure,

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refluxing distal redundant ureteral stump was removed by transvesical endoscopic technique. Muscular and mucosa defect was repaired by 5/0 monofilament suture. The patient was discharged on postoperative 2nd day.

CONCLUSION: Pneumovesicoscopy could be considered as one of the options for intravesical ureteral surgery in children.

P151: LAPAROSCOPY- ASSISTED EXCISION OF RENAL MATURE CYSTIC TERATOMA

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Extragenital teratoma predominantly appears along the midline of the body. Renal teratoma is very rare pathology. In this video, laparoscopic assisted excision of a renal teratoma is presented.

VIDEO PRESENTATION: An 11 year-old female patient was admitted with a right abdominal mass. Radiological investigation showed a 13 cm cystic mass on the right upper quadrant just under the liver and above the right kidney. A mass related to the upper pole of the right kidney was found by laparoscopic exploration. The mass was totally excised with laparoscopy-assisted technique. The histopathology showed that the mass was a mature cystic teratoma.

CONCLUSION: Differential diagnosis, dissection and excision of an intraabdominal large cystic mass could be performed by laparoscopy-assisted techniques. Teratoid Wilms' tumor and other renal cystic lesions should be considered in the differential diagnosis in that location.

P152: POSTERIOR URETHRAL VALVE:

OUR EXPERIENCE IN VIET NAM Van Thao Tran, MD, Ngoc Thach Pham, MD, Duc Tri Nguyen, MD, Children hospital number 2 in Ho Chi Minh city

PURPOSE: to evaluate the results of endoscopic valve ablation at Children hospital No 2 in Viet Nam.

METHODS: We retrospectively reviewed the records of 25 consecutive patients with posterior urethral valves from January 2008 to December 2012. On the basis of the initial renal function and radiologic findings, patients were divided into three groups: group 1, normal renal function and radiologically normal upper tracts; group 2, normal renal function with hydronephrosis and/or reflux; and group 3, azotemia with hydronephrosis or reflux.

RESULTS: All 11 patients in group 1 were treated with valve ablation. After a mean follow-up of 32 months, these children had normal renal function and no evidence of upper tract deterioration. All 6 patients in group 2 were also treated with valve ablation. The radiologic abnormalities (hydronephrosis, reflux) resolved in 50% of cases, with an average follow-up of 28 months. Of the 8 patients in group 3, 5 underwent valve ablation after catheterism and 3 underwent urinary diversion. Urinary diversion was performed in patients with renal deterioration and severe hydronephrosis and/or high-grade reflux. Renal function returned to normal in all patients who underwent valve ablation except one; renal function returned to normal in only 1 of 3 patients who underwent urinary diversion. Radiologically, the severity of the hydronephrosis and reflux was downgraded in patients who underwent valve ablation but not in the diverted group.

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CONCLUSIONS: endoscopic valve ablation is the mainstay of treatment for patients with posterior urethral valves.

P155: COMPARISON DIFFERENT DRAINAGES IN LAPAROSCOPIC

PYELOPLASTY Xing Liu, MD, Dawei He, Zedong Bian, De-ying Zhang, Tao Lin, Children's Hospital of Chongqing Medical University, Chongqing, China

OBJECTIVE: To evaluate the benefits, drawbacks and indication of different pelvis urine drainages after laparoscopic pyeloplasty.

METHODS: A total of 105 patients (112 sides) who had undergone laparoscopic pyeloplasty between January 2010 and October 2013 were divided into nephrostomy external drainage group (66 sides), long-term double J catheter internal drainage group (29 sides) and short-term double J catheter internal drainage group (17 sides).

RESULTS: The incidence of postoperative gross hematuria in nephrostomy external drainage group was lower than long-term double J catheter internal drainage group ($P < 0.01$) and short-term double J catheter internal drainage group ($P < 0.05$). The total incidence of postoperative complications in nephrostomy external drainage group was lower than long-term double J catheter internal drainage group and short-term double J catheter internal drainage group ($P < 0.01$). The incidence of urinary infection in nephrostomy external drainage group was lower than long-term double J catheter internal drainage group ($P < 0.05$). The incidence of drainage tube blockage and omentum prolapsus in nephrostomy external drainage group was lower than short-term double J catheter internal drainage group ($P < 0.05$). And there was no significant difference of anastomosis obstruction incidence and postoperative successful rate in three groups ($P > 0.05$).

CONCLUSIONS: Nephrostomy external drainage was associated with lowest rates of postoperative complications after laparoscopic pyeloplasty. However, three urine drainages have their own indication. The most suitable urine drainages could be selected by actual situation.

P156: OUR EXPERIENCE OF THE SURGICAL TREATMENT OF CRIPTORCHISM IN CHILDREN

Damir Jenalayev, Esmurat Nartbayev, Ardak Ainakulov, National Research Center for Mother and Child Health

The purpose of this study was a comparative evaluation the results of treatment of children with cryptorchism, operated by "open" and endovideosurgical ways.

Since August 2007, 61 patients with various forms of cryptorchism have been treated in the urology department of National Research Center of Mother and Child Health.

Age of patients ranged from one year to 14 years. Endovideosurgery has been applied in the treatment of 43 patients (study group). The operation consisted of the following steps: diagnostic laparoscopy in order to clarify the level of retention, visual evaluation of the testis, its blood vessels and the fixing apparatus, the intersection Gunter's cord, the mobilization of the vascular bundle and ductus deferens, forming a channel from the abdomen into the scrotum, bringing down the testis and fixation it in the scrotum.

The "open" brining down and fixation of the testis by Petrivalskij-Schumaker has been performed in 18 patients (control group).

For comparative assessment of body's postaggressive response to laparoscopic and traditional types of operations for cryptorchism we studied: the state of

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simpatico-adrenal system (in circadian excretion of adrenaline and noradrenaline) and several biochemical blood parameters, reflecting the functional state of the suprarenal glands and liver, the balance of carbohydrate and protein metabolism. To assess the state of the testis we conducted ultrasound and Doppler exams of gonads in the preoperative period, on the 3rd and 6th month of postoperative period. There were no complications in the immediate and late postoperative period.

The analysis of the comparative evaluation of body's postaggressive response to laparoscopic and traditional operations has showed that laparoscopic surgery is less invasive, less traumatic, less durable surgical intervention, which is characterized to have more favorable postoperative period.

More expressive positive dynamics, concluded in the growth of gonads and the normalization of blood flow parameters while ultrasound and Doppler study, has been in patients undergone endovideosurgical interventions.

Thus, this study shows clear advantages of endovideosurgical treatment of cryptorchism in children and calls for their widespread introduction into clinical practice.

P157: HOW MANY LYMPHATIC VESSELS NEED TO BE PRESERVED IN DYE-ASSISTED LYMPHATIC-SPARING LAPAROSCOPIC PALOMO VARICOLECTOMY IN CHILDREN? Hiroki Ishibashi, MD, PhD, Hiroki Mori, MD, PhD, Keigo Yada, MD, Mitsuo Shimada, MD, PhD, FACS, Department of Pediatric Surgery and Pediatric Endoscopic Surgery, Tokushima University Hospital

BACKGROUND: The ideal method for varicolectomy in children remains controversial. The Palomo method of retroperitoneal mass ligation of the

spermatic vessels offers a low recurrence rate but with the risk of postoperative hydrocele in 10% short term and up to 30% with extended follow-up. We present our experience with dye-assisted lymphatic-sparing laparoscopic varicolectomy (LSLV) to prevent postoperative hydrocele in children. We contribute novel insights regarding the number of lymphatic vessels which need to be preserved.

MATERIALS & METHODS: Five consecutive LSLVs were performed over a period of three years on children with a mean age of twelve years. The varicocele grade was three in one case and grade 2 in four cases, respectively. Indications of operation were testicular volume asymmetry of greater than 20% in one patient (a grade 3 varicocele), scrotal pain or discomfort in three patients and family preference in one patient. A left subdartos injection of 2ml of Indigo carmine dye was done using a 25-gauge needle at ten minutes before an operation. Stained lymphatics were easily seen running alongside the spermatic artery and vein. We intentionally spared one or two lymphatics and the rest of the spermatic vessels were clipped and divided

RESULTS: Lymphatic-sparing was accomplished in all cases. No peri-operative complication was noted. We spared one lymphatic channel in one patient (20%) and two channels in four patients (80%). There were no cases of hydrocele or residual varicocele. No testicular atrophy was observed at follow-up. Three patients who presented with scrotal pain or discomfort achieved complete resolution of their symptoms.

CONCLUSION: Dye-assisted LSLV is easily accomplished with an excellent surgical outcome and preserving one or two lymphatics appears to be sufficient to avoid secondary hydrocele.

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P158: RETROPERITONEOSCOPIC REDO PYELOPLASTY AFTER AN UNSUCCESSFUL OPEN PROCEDURE Manabu Okawada, MD,

Hiroyuki Koga, MD, Takashi Doi, MD, Go Miyano, MD, Kazuto Suda, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD, Juntendo University School of Medicine

PURPOSE: Laparoscopic pyeloplasty (LP) and retroperitoneoscopic pyeloplasty (RP) have become widely accepted for treating ureteropelvic junction obstruction (UPJO) using minimally invasive surgery (MIS). However, for re-do procedures, extensive adhesions can make LP or RP technically challenging. Here we report the use of RP for re-do pyeloplasty.

CASE: A 16-year-old girl with left UPJO was referred following unsuccessful open surgery elsewhere. Other than the ureter being noted to be narrow and the narrow portion being excised and the ureter re-anastomosed, no further details were available. However, a double J stent had been inserted in the left ureter 2 years earlier to treat recurrent urinary tract infections and episodes of left flank pain. Both the patient and her mother requested the old scar be used for open re-do and if not possible, MIS re-do. However, the old scar was so low that we doubted whether the UPJO could be visualized adequately so RP was recommended for re-do as our MIS procedure of choice.

RP: A 5mm optical trocar was used to reach the left retroperitoneal space. As we were anxious about adhesions around the scar from previous open surgery being dense, we placed the first port 2cm inferior to its conventional position at the costovertebral angle. Although there were adhesions between the scar and the retroperitoneal space, blunt dissection was possible initially using the tip of the scope, whereupon two additional ports (one at the costovertebral angle and the other above the iliac crest)

were placed along the line of the erector spinae muscle to free adhesions and create an adequate working space. A fourth port was placed in the mid-axillary line for peritoneal retraction and assistance during the pyeloplasty procedure. After releasing dense adhesions of the left ureter and area where the UPJO was suspected to be, we found the ureter was being kinked by an aberrant artery to the inferior pole of the kidney that was located in front of the ureter, causing UPJO. Adhesions between the ureter and the aberrant artery were dissected carefully and the ureter transected at the site of kinking. The ureter was thickened and extremely fragile because of chronic inflammation associated with prolonged insertion of the double J stent and recurrent urinary tract infections and was re-anastomosed in front of the aberrant artery using 5/0 absorbable interrupted sutures over the double J stent. Thus, the aberrant artery came to lie behind the anastomosis, in a position that would not compress the ureteropelvic junction. The anastomosis was complicated by suturing under tension and tissue fragility. Postoperative recovery was uneventful. She was discharged 3 days after surgery. The stent was removed 6 weeks postoperatively, and she is currently well after follow-up of 2 years with no urinary symptoms or recurrence of UPJO.

CONCLUSIONS: This case demonstrates that our RP technique is safe and effective even in cases complicated by severe retroperitoneal adhesions due to previous surgery.

P159: LAPAROSCOPIC PERCUTANEOUS INTERNAL RING SUTURING FOR INGUINAL HERNIA REPAIR IN CHILDREN OF DIFFERENT AGES Oleg Godik, MD,

Vasil Prytula, MD, Valerie Soroutchan, MD, Igor Mirochnik, MD, Roman Zhezhera, MD, National Specialized Childrens' Hospital "OHMATDET"

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BACKGROUND: laparoscopic treatment of inguinal hernias is a popular procedures in pediatric surgery. Many techniques are used in laparoscopic inguinal hernia repair in children. We present PIRS (Percutaneous Internal Ring Suturing) technique that was introduced by a polish surgeon Dariusz Patkowski. The aim of this study was to evaluate the efficacy of PIRS for inguinal hernia repair in children of different ages.

MATERIALS AND METHODS: A review of all PIRS procedures in children from 28 days- 18 years, with a time period from March 2010 to December 2013. The procedures were performed under general endotracheal anesthesia. For the PIRS method we used a 5 mm camera through a transumbilical port, a curved 18 gauge injection needle with a non- absorbable filament inside the barrel of the needle. With the injection needle we made a puncture through the abdominal wall in the place of the internal inguinal ring. By moving the needle the thread passed under the peritoneum around the entrance into the hernia sac. Two semi- circular sutures were made around the ring and the knot was tightened form the outside and placed into the subcutaneous region.

RESULTS: Over the above years 254 children with 329 hernias underwent the PIRS procedure, 86 (33.9%) of them were girls and 168 (66.1%) were boys. The average age of the children was 3 years 7 months. There were 179 (70.5%) unilateral hernias and 75 (29.5%) cases presented with bilateral inguinal hernias. Unilateral hernias consisted of 132 (73.7) right sided hernias and 47 (26.3%) left sided hernias. Out of the bilateral hernias in 65 (25.6%) cases a contralateral processus vaginalis was diagnosed during the operation, and only in 10 (3.9%) cases were the bilateral hernias diagnosed prior to the operation. Incarcerated hernias appeared in 27

(10.6%) patients. In 6 (2.4%) cases the inguinal hernias were diagnosed during simultaneous operations (3 laparoscopic appendectomies, 1 laparoscopic cholecystectomy, 1 varicocelelectomy, 1 pieloplastics in a PUJ obstruction). The average time of the operation was 15±5 minutes for unilateral hernias, and 25±5 minutes for bilateral hernias. The average hospital stay was from 6 hours to 1 day. There were 4 (1.6%) cases with an intraoperative complication, in which the iliac vessels were accidentally punctured during the ring suturing process, and required no treatment. There were such post operative complications: 9 (3.5%) patients experienced mild pain in the place of the puncture for up to 2-3 months that stopped with no treatment, 3 (1.2%) hydrocele that also required no treatment, and 6 (2.4%)hernia recurrences that were all reoperated with the PIRS method.

CONCLUSION: The PIRS method showed to be a safe, effective, and reliable for inguinal hernia repair in children. The PIRS method showed that it can be used in different child ages from 28 days to 18 year. There was a low recurrence rate and great cosmetic result.

P161: IMPORTANCE OF 'ADEQUATE AND PROPER MATERIAL SUBSTANCE FOR THE ENDOSCOPIC TREATMENT OF REFLUX. OUR EXPERIENCE IN THE LAST FIVE YEARS Luciano Sangiorgio, MD, Claudio Carlini, MD, Franco Rotundi, MD, Rossella Arnoldi, MD, Pediatric Urology, * Pediatric Surgery. A.O. "SS: Antonio e Biagio e C. Arrigo" Alessandria Italy.

INTRODUCTION & OBJECTIVES: the aim of this paper is to emphasize the 'importance of a' proper substance and a proper material for the endoscopic treatment of reflux, in order to obtain a good success.

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MATERIALS & METHODS: in the last five years, we observed 232 patients with VUR (354 units refluxing ureters). Twenty-one cases were suffering from urinary double district (unilateral or bilateral). One hundred twenty-six (54.31%) were male and one hundred and six (45.68%) females. We evaluated the radiological grade of reflux, the presence in the past of episodes of acute pyelonephritis, the scars on the static renal scintigraphy. Forty-two patients were undergoing surgery according to the technique of Cohen, one hundred and ninety performed the endoscopic treatment of reflux. The treatment consisted of the endoscopic injection, below the ureteral meatus, using and comparing two different co - polymer of the same substance: dextranomer and hyaluronic acid (Deflux and Dexell), using the same technique by needle drive, lifting the bladder mucosa with the needle itself, so as to favor the detachment and thus the elongation of the junction uretero - bladder and the creation of an appropriate niche for the wheal of organic material - compatible. (Nicola Capozza Technique), however, always using two sub ureteral meatal injections amounts being of a material of between 0.7 ml and 1 ml. for injection. Were detected six cases of persistent reflux to the second injection (two treated with Deflux and all patients treated with Dexell). Those treated with Deflux had urinary district, but there was persistence of the wheal which was not sufficient to ensure a good valvular effect, instead those treated with Dexell were suffering from reflux of single district and there was no trace of the wheal at the level of the ureteral meatus, in addition, during the injection of the second substance, occurred in a case, breakage of the plunger of the syringe and in another case the needle was not properly milled for which were present in the tip of the metallic

impurities that could be included in the thickness of bladder wall, the latter have found healing from VUR through a third injection of the polymer, using Deflux again. The remaining two patients with recurrent VUR and suffering from urinary double district were subjected to surgery.

CONCLUSIONS: it is stressed that the endoscopic treatment with a stable co - polymer dextranomer and hyaluronic acid (Deflux) offers the same chance of recovery from VUR compared to surgical treatment, definitely the choice of a substance stable and valid material ensures a great eventually find.

P162: TRANSPERITONEAL LAPAROSCOPIC HEMINEPHRECTOMY FOR DUPLEX KIDNEYS IN INFANTS AND CHILDREN

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OBJECTIVE: To study the feasibility, safety, and results of transperitoneal laparoscopic heminephrectomy (TLHN) for non-functional moiety in duplex kidneys.

MATERIAL AND METHOD: Between 2008 and January 2013, 34 TLHN were performed in 33 patients (18 girls, 15 boys), median age was 20 months (range 7-107). Twenty-six upper poles were removed and eight lower pole. The mean follow up was 11 months (range 2-32). In a subgroup of 19 patients, pre and post operative nuclear investigations were compared to correlate the predicted and the real loss of function.

RESULTS: TPLHN was feasible in all patients without any conversion. The median operating time was 130 min (range 75 - 210 min) and the median hospital stay was four days (range 3-29). No major blood

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loss was observed. Two complications were observed: a persistent secreting moiety and a ureteral injury requiring open surgical repair. The subgroup with post operative nuclear studies showed a loss of function corresponding to the predictive value of the preoperative isotopic renographies with a median difference of 2% (mean 3.17%, range 0–8%).

CONCLUSION & DISCUSSION: LHN using a transperitoneal approach for a duplex kidney is feasible, safe, and effective. Laparoscopic retroperitoneal heminephrectomies has long been favoured as it reproduced the classical retroperitoneal approach used in open surgery. Our clinical experience suggests that laparoscopic heminephrectomy using a transperitoneal approach for duplex kidneys is a safe and efficient procedure leading to a low rate of complication. Fears regarding potential intra-abdominal organ injury appear to be hypothetical. Furthermore, transperitoneal approach seems to be easier to perform due to a larger working space and a direct vision on vascular pedicles.

P163: LOW (RE-) RECURRENCE RATE AFTER LAPAROSCOPIC REPAIR OF RECURRENT INGUINAL HERNIA [Salmair Turial, MD](#), Ralph Hornung, Department of pediatric surgery, university medical center Mainz, Germany

PURPOSE: The aim of this study is to identify the incidence of (re-) recurrence after laparoscopic repair of recurrent inguinal hernias after initial laparoscopic or open repair.

METHODS AND PATIENTS: We performed a retrospective analysis of the surgical charts of children who underwent inguinal hernia repair at our department. All children, who underwent laparoscopic repair of a recurrent inguinal hernia,

were selected, either after initial open or laparoscopic repair. A phone interview was conducted with the parents of identified patients. All patients with recurrences had clinical follow-up. In boys, testicular volume and echogenic texture were evaluated by ultrasound.

RESULTS: Between December 2003 and December 2011, 1187 children underwent inguinal hernia repair, 1087 in a minimally invasive fashion and 100 children by traditional groin exploration. From a total of 1547 laparoscopic inguinal hernia repairs, 71 laparoscopic evaluations were performed for suspected inguinal hernia recurrences. In 11 children, a suspected recurrence was not confirmed and the procedure was completed. 60 children (43 boys and 17 girls) underwent 67 laparoscopic inguinal hernia repairs for recurrences (53 unilateral and 7 bilateral recurrences). Of all recurrences, 35 children (58.3%) had laparoscopic repairs and 25 (41.7%) had traditional open herniotomies. Of those 25 patients, five underwent multiple groin explorations (two explorations (3) and three explorations (2), respectively) prior to the final laparoscopic repair. Of those, three patients had direct (2) and femoral (1) hernias. The overall recurrence rate in children after initial laparoscopic hernia repair in this cohort was 1.3%. A second recurrence was noted in one patient (0.06%).

The median follow-up was 3.4 years. No testicular atrophy was noted in patients after repair of a recurrent inguinal hernia.

CONCLUSION: The risk of (re-) recurrence remains low after laparoscopic herniorrhaphy for recurrent inguinal hernias. Laparoscopic evaluation of the groin can reveal previously unrecognized inguinal hernias as well as unusual cases of presumed hernias. Open redo groin explorations can be prevented in cases

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where a closed processus vaginalis is laparoscopically found. From a technical perspective, the laparoscopic approach for recurrent inguinal hernias seems to be less demanding, especially in cases after multiple previous groin explorations.

P164: IS A POSTOPERATIVE VOIDING CYSTURETHROGRAM STILL INDICATED AFTER ENDOSCOPIC TREATMENT OF VUR? Frank-Martin Haecker, MD, Martina Frech, MD, Sergio Sesia, MD, Christoph Rudin, MD, Department of Pediatric Surgery, University Children's Hospital

BACKGROUND: The management of follow-up for patients who underwent endoscopic treatment (ET) using Dx/HA for primary vesicoureteral reflux (VUR), is controversially discussed. Recent studies reveal different opinions concerning the necessity of a postoperative voiding cysturethrogram (VCUG). Additionally, Stenberg and Läckgren reported in 2007 on the experience of patients and the perception of parents with regard to different diagnostic and treatment modalities, with VCUG mentioned as the worst intervention. We sought to determine whether a postoperative VCUG is still necessary.

METHODS: A retrospective study evaluating 164 patients who underwent ET from 2002 to present was performed. In a subgroup of 51 patients, one week after ET, prophylactic antibiotics were discontinued and patients were followed up clinically including periodical urinalysis and renal ultrasound. Patients did not undergo further VCUGs unless febrile UTI or recurrent non-febrile UTIs developed.

RESULTS: 51 children with a total of 95 ureters underwent ET. Additional malformations were: duplex ureters (15 patients), posterior urethral valves (1 patient) and dicerciculum (1 patient). VUR

grade was I in 4, II in 24, III in 26, IV in 18 and V in 2 ureters. Within a follow-up of 48 months (1-66 months), 49 patients had no postoperative VCUG, and none of them showed febrile UTI or recurrent non-febrile UTIs. 1 boy with bilateral VUR grade IV and 1 girl with VUR III in a duplex ureter had a febrile UTI 6 months and 36 months, resp., after ET. Further VCUG revealed recurrent VUR, and both patients underwent a second ET.

CONCLUSION: In this series, we could confirm our follow-up protocol that postoperative VCUG is considered only for selected patients. A larger prospective study is necessary to evaluate this approach.

P165: PAPPILARY UROTHELIAL NEOPLASM OF LOW MALIGNANT POTENTIAL (PUNLMP) IN A 13 YEAR-OLD PATIENT: CASE REPORT AND REVIEW OF THE LITERATURE Frank-Martin Haecker, MD, Elisabeth Bruder, MD, Sergio Sesia, MD, Johannes Mayr, MD, Department of Pediatric Surgery, University Children's Hospital, Basel, Switzerland

PURPOSE: Urothelial carcinoma of the bladder occurs rarely in the first two decades of life. We report a case of a 13 year-old boy who presented with urothelial neoplasm of low malignant potential (PUNLMP).

METHODS: We describe clinical presentation and diagnostic procedures as well as treatment and follow-up of our patient. A review of the literature was performed to analyze recommendations concerning diagnostic staging, treatment and follow-up examinations as well as surveillance of urothelial carcinoma in the pediatric population.

RESULTS: Urothelial tumors in the first two decades of life are distinctly unusual, with most described in case reports and small

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series. Most of the small series describe these tumors as being characteristically superficial and low grade. As in our patient, silent macrohematuria is the predominant clinical symptom. Abdominal ultrasound revealed a papillary mass measuring 1.5cm, and abdominal CT scan showed no evidence of additional tumor manifestations. Therapy included cystoscopy and transurethral resection of the tumor. Histologic examination confirmed the diagnosis of a PUNLMP. Three months later, control cystoscopy including fluoroscopy demonstrated no residual tumor in the bladder. Within the next 36 months, the clinical course was uneventful.

CONCLUSIONS: Urothelial tumors in the first two decades of life are unusual, with most described in case reports. Regarding the tumor characteristics, transurethral local resection is the therapy of choice, followed by control cystoscopy including fluoroscopy. General treatment protocols including recommendations for staging, tumor markers, and follow-up examinations are not available for this tumor entity.

P166: COMPARATIVE STUDY OF PNEUMOCYSTOSCOPIC COHEN URETERIC REIMPLANTATION AND OPEN SURGERY FOR MALFORMATION OF URETEROVESICAL JUNCTION IN CHILDREN: EXPERIENCE AT A SINGLE

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OBJECTIVE: To compare the results of open and pneumocystoscopic Cohen ureteric reimplantation for malformation of ureterovesical junction in children and review the experience of pneumocystoscopic Cohen ureteric reimplantation .

METHODS: We made a retrospective analysis of 28 patients with malformation of ureterovesical junction from January 2009 to November 2013. 9 cases were male and other 19 cases were female. Their average age was 3.3y(4Mo-10.4y). All cases accepted examination such as Ultrasound, MRU, MCU, etc, and hydronephrosis with ureteral dilatation were found in all of them. Of which 17 patients were obstruction of ureterovesical junction, 11 patients were believed to have VUR with grade IV-V. These patients were divided into two groups. In group A, from January 2009 to October 2011, 18 cases were operated by open procedure. Of which 6 cases were male, 12 cases were female. Their average age was 3.7y(4Mo-10.4y). In group B, from November 2011 to November 2013, 10 cases were operated by pneumocystoscopic Cohen ureteric reimplantation. Of which 3 cases were male, 7 cases were female. Their average age was 3.1y(5Mo-9.2y). Operative time, blood loss, postoperative hospital stay, complications and therapeutic efficacy were analysed.

RESULTS: 10 cases were performed pneumocystoscopic Cohen ureteric reimplantation, of which 1 case gave up laparoscopic procedure because the trocar was out of work and the gas leaked into the abdominal cavity .The remaining 9 cases were accepted successful surgery. The mean operative time was (177.3±47.5 minutes) longer than open procedure(114.3±24.2minutes),(P<0.05). The mean blood loss was (4.4±1.1 ml) lower than open procedure (12.8±4.3 ml), (P<0.05). The average postoperative hospital stay was (9.2±2.4 d) lower than open procedure(14.6±3.7 d), (P<0.05). Postoperative follow-up was 2 ~ 38 months. In group A , 5 cases with UTI were cured after antibiotic therapy. 1 patient got cut-infection and 1 patient

Poster Abstracts CONTINUED

got extravasation of urine. In group B, 3 cases got UTI, 1 case of a female children complained abdominal pain two months later after operation. Ultrasonic examination showed: ureteral calculi. The stone disappeared after spasmolysis, alkalinize urine and abdominal pain relief. Postoperative ultrasonic examination of all cases showed hydronephrosis with ureteral dilatation were better than before. The therapeutic efficacy of two groups was coincident.

CONCLUSIONS: Pneumocystoscopic Cohen ureteric reimplantation as a well minimally invasive surgery with a small incision, less bleeding, small trauma, rapid recovery, unobvious scar was safe and reliable. It could achieve good clinical effects like open surgery. It could take the place of open surgery if surgeon had proficient laparoscopic technique.

P167: LAPAROSCOPIC MANAGEMENT OF TRANSVERSE TESTICULAR ECTOPIA IN CONJUNCTION WITH BILATERAL INGUINAL HERNIAS, PERSISTENT MULLERIAN DUCT SYNDROME AND A COMMON VAS DEFERENS

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Transverse testicular ectopia is a rare congenital anomaly in which both testicles descend into the same inguinal canal. This condition has been associated with contra-lateral inguinal hernias, persistent Mullerian duct syndrome, common vas deferens, seminal vesicle cysts, seminomas and renal anomalies. We present the case of an 11-month-old male infant with a left inguinal hernia and a right non-palpable testicle. Clinical examination and ultrasound located the right and left testes within the left inguinal canal. Laparoscopy was instrumental in confirming the presence of transverse testicular

ectopia with bilateral inguinal hernias, and identifying the remnant Mullerian structures and a common vas deferens. Under laparoscopic guidance both testicles were brought into the left internal ring and a trans-septal orchidopexy was performed followed by bilateral laparoscopic inguinal hernia repairs. To our knowledge this is the first reported case of complete laparoscopic management of transverse testicular ectopia in conjunction with a common vas deferens, persistent Mullerian duct syndrome, and bilateral inguinal hernias. Challenges encountered included clear identification of the vas deferens as it merged at the base of the uterine remnant, the decision to leave the remnant Mullerian duct structures, and the approach to correction of the inguinal hernias. Based on this experience, we advocate a laparoscopic approach in the treatment of transverse testicular ectopia as it enables clear identification of testicular anatomy and associated anomalies, thereby minimizing unnecessary dissection and diagnostic uncertainty, while facilitating management.

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