

# IPEG's 24<sup>th</sup> Annual Congress *for Endosurgery in Children*



*Held in Conjunction with the Society of American  
Gastrointestinal and Endoscopic Surgeons (SAGES)*

**April 14–18, 2015**

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## Welcome Message



Dear Colleagues,

Welcome to the **24<sup>th</sup> Congress of the International Pediatric Endosurgery Group!** This year's meeting is jointly held with SAGES in historic Nashville, Tennessee. We are looking forward to an exciting program highlighting innovations, research, and education in pediatric minimally invasive surgery.

For those of you new to IPEG, welcome to the family! IPEG is a fantastic organization that fosters new ideas, innovation, and education in pediatric minimally invasive surgery. There is something for everyone from the novice to the expert. IPEG and its leaders are committed to the concept that every pediatric surgery patient, wherever in the world they live, deserves the best minimally invasive techniques available in their environment. Another aspect of IPEG that is not apparent in the program are the opportunities to network and interact with colleagues and experts from around the world. There are also plenty of opportunities for you to participate in IPEG by submitting your work or serving on a committee. IPEG welcomes all of its members to participate in the organization and the annual congress.

This year's program and education committees have planned a fantastic program featuring innovative hands-on simulation courses, expert panel discussions, debates with our SAGES colleagues, videos, and exciting scientific sessions. I would like to give a special thanks to Kathy Barsness, Pablo Laje, Georges Azzie, Go Miyano, and Matt Clifton who, along with many others, have worked tirelessly on your program. I would also like to thank Jacqueline Narváez, IPEG Executive Director, and the team at BSC Management Inc., without whom, this would not be possible.

I look forward to seeing you in Nashville!

Sincerely yours,

Mark L. Wulkan, MD  
2015 IPEG President



# IPEG's 24<sup>th</sup> Annual Congress for Endosurgery in Children

*Held in Conjunction with the Society of American Gastrointestinal and Endoscopic Surgeons*

**April 14–18, 2015**

Gaylord Opryland Hotel & Convention Center  
2800 Opryland Dr., Nashville, TN 37214, USA  
T: **+1 615.458.2820**

**International Pediatric Endosurgery Group (IPEG)**

11300 W. Olympic Blvd, Ste. 600  
Los Angeles, CA 90064  
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E: **[registration@ipeg.org](mailto:registration@ipeg.org)**

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# 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 24<sup>th</sup> Annual Congress of the International Pediatric Endosurgery Group (IPEG) has 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.

## 2015 Meeting Objectives

The objectives of the activity are to educate pediatric surgeons and urologists about developing techniques, to discuss the evidence supporting adoption of 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.

## MEETING HOURS

### Registration Hours

Tuesday, April 14, 2015	12:00 pm – 5:00 pm
Wednesday, April 15, 2015	6:30 am – 6:00 pm
Thursday, April 16, 2015	6:30 am – 6:30 pm
Friday, April 17, 2015	6:30 am – 5:30 pm
Saturday, April 18, 2015	7:00 am – 12:00 pm

## 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](http://www.ipeg.org/member/memberapplication).

## Event Dress Code

Please note that the dress code for the entire conference is business casual.

### Exhibit Dates & Times

Wednesday, April 15, 2015	12:00 pm – 3:30 pm
IPEG/SAGES Welcome Reception	5:30 pm – 7:30 pm
Thursday, April 16, 2015	9:30 am – 4:00 pm
Friday, April 17, 2015	9:30 am – 4:00 pm

*Ryman Exhibit Hall C*

## Accreditation

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) and IPEG. SAGES is accredited by the ACCME to provide continuing medical education for physicians.

The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) designates this live activity for a maximum of **23 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Date	Total Credits
Tuesday, April 14, 2015	4
Thursday, April 16, 2015	8
Friday, April 17, 2015	8.5
Saturday, April 18, 2015	2.5

## 2015 Program Chairs

PROGRAM CHAIR: Katherine A. Barsness, MD

CO-CHAIR: Pablo Laje, MD

CO-CHAIR: Go Miyano, MD

### Katherine A. Barsness, MD

*Program 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 went on to join the faculty at Northwestern University Feinberg School of Medicine, where she currently holds a joint appointment as an Associate Professor in the Departments of Surgery and Medical Education. Dr. Barsness has received numerous teaching awards throughout her career, and is a recognized leader in pediatric surgical education, both in the US and abroad. Dr. Barsness is the Director of Surgical Simulation for Ann & Robert H Lurie Children's Hospital of Chicago, and also serves as Associate Director of Clinical and Translational Research for the Stanley

Manne Children's Research Center at Lurie Children's Hospital. She sits on the curriculum committee for GME simulation-based education, and serves as the Director of External Relations for Northwestern Simulation in the Department of Medical Education at Northwestern University Feinberg School of Medicine. Dr. Barsness' research interests include validated measures of surgical skills, curriculum design, and 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.

## IPEG 2015 CORPORATE SUPPORTERS

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## 2015 Program Chairs CONTINUED

### 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.

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

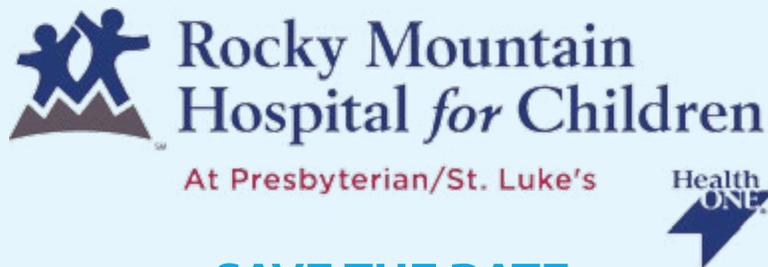
Juntendo University School of Medicine, Tokyo, Japan



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.



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## 2015 CME Chairs

### Celeste Hollands, MD

*Pediatric Surgeon*

*Lehigh Valley Hospital in Allentown, PA, USA*



Dr. Hollands is currently a Pediatric Surgeon at Lehigh Valley Hospital in Allentown, Pennsylvania 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 Pediatric 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. 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 continuing 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.

## Award Winners

### IPEG COOLEST TRICKS WINNER

#### Carolina Millan, MD



Born in Luján, Buenos Aires, Argentina and graduated from the Faculty of Medicine (UBA) in 2002. She completed his residency in pediatric surgery at Children's Hospital Ricardo Gutiérrez in 2007. She joined the Fundación Hospitalaria Children's Hospital in 2008 as a Fellow and specialized in minimally invasive surgery. In 2009 she started a research in magnetic devices becoming the first woman surgeon specialized in child surgeries transumbilical tracks with magnets. Since 2013 she's been a member of the medical Staff of the Fundación Hospitalaria Children's Hospital, a coordinator of operating room and academic committee.

### IPEG IRCAD AWARD WINNER

#### Katherine A. Barsness, MD

*Ann and 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 went on to join the faculty at Northwestern University Feinberg School of Medicine, where she currently holds a joint appointment as an Associate Professor in the Departments of Surgery and Medical Education. Dr. Barsness has received numerous teaching awards throughout her career, and is a recognized leader in pediatric surgical education, both in the US and abroad. Dr. Barsness is the Director of Surgical Simulation for Ann & Robert H Lurie Children's Hospital of Chicago, and also serves as Associate Director of Clinical and Translational Research for the Stanley Manne Children's Research

Center at Lurie Children's Hospital. She sits on the curriculum committee for GME simulation-based education, and serves as the Director of External Relations for Northwestern Simulation in the Department of Medical Education at Northwestern University Feinberg School of Medicine. Dr. Barsness' research interests include validated measures of surgical skills, curriculum design, and 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.

### IPEG BEST BASIC SCIENCE WINNER

#### Lisanne Stolwijk, MD



Dr. Lisanne Stolwijk is a PhD student at the Wilhelmina Children's Hospital/University Medical Center in Utrecht, The Netherlands. She recently received the 2014 IPEG Best Basic Science Award for her experimental animal study on the effects of thoracic CO<sub>2</sub>-insufflation on the cerebral oxygenation in newborn piglets.

Dr. Stolwijk's research project in Utrecht focuses on the effects of neonatal surgery for non-cardiac congenital anomalies on the neonate and the neonatal brain in particular. Her interest in pediatric medicine was born during medical school, when she participated in a research project with a neonatologist and a pediatric surgeon, designing a predictive model for neonates with necrotizing enterocolitis and subsequently during a clinical elective at the Anesthesiology in the Great Ormond Street Hospital in London,

UK. The impact of the primary anomaly on the neonate and the hemodynamic changes during anesthetics and surgery are very intriguing to her. Dr. Stolwijk and her team's aim is to identify risk factors for cerebral damage by monitoring the brain intensively with non-invasive techniques (aEEG; NIRS; MRI, cerebral ultrasound) and to help improve neurodevelopmental outcome in these patients.

This research project is a strong collaboration between the Department of Pediatric Surgery, the Department of Neonatology and the Department of Anesthesiology, and it has been her privilege to work with and learn from these different specialists. The Department of Pediatric Surgery is a center of excellence for thoracoscopic neonatal surgery, specifically focusing on patients with esophageal atresia. The Department of Neonatology has extensive experience in the field of neonatal brain imaging and neuromonitoring, focusing on cerebral oxygenation and hemodynamics.

## 2015 Meeting Leaders

### PROGRAM COMMITTEE

Aayed R. Al-Qahtani, MD  
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 Katherine A. Barsness, MD  
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 Pablo Laje, MD

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 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

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 1<sup>st</sup> VICE PRESIDENT: David C. van der Zee, MD, PhD  
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 SECRETARY: Todd A. Ponsky, MD  
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 EDITOR: Daniel J. Ostlie, MD

AMERICAS REPRESENTATIVE: Timothy D. Kane, MD  
 EUROPE REPRESENTATIVE: Holger Till, MD, PhD  
 WORLD-AT-LARGE REPRESENTATIVE: Miguel Guelfand, MD  
 WORLD-AT-LARGE REPRESENTATIVE: Long Li, MD  
 CME CHAIR: Celeste Hollands, MD  
 PAST PRESIDENT: Benno Ure, MD, PhD

### PAST PRESIDENTS

Benno Ure, MD, PhD (2014)  
 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)\*  
 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*

## 2015 IPEG Faculty

Suad Abul, MD – Sabah Al- Saleem, Kuwait

Georges Azzie, MD – Toronto, Canada

Maria Marcela Bailez, MD – Buenos Aires, Argentina

Katherine A. Barsness, MD – Chicago, IL, USA

Barbara D. Boyan, PhD – Richmond, VA, USA

Mike K. Chen, MD – Birmingham, AL, USA

Simon Clarke, MD – London, United Kingdom

Matthew S. Clifton, MD – Atlanta, GA, USA

Karen A. Diefenbach, MD – Columbus, OH, USA

Alexander Dzakovic – Maywood, IL, USA

Peter Esslinger – Luzern, Switzerland

Paula Flores – Buenos Aires, Argentina

James D. Geiger, MD – Ann Arbor, MI, USA

Keith E. Georgeson, MD – Spokane, WA, USA

Justin T. Gerstle, MD – Toronto, Canada

Stephan Gfroerer- Frankfurt, Germany

Miguel Guelfand, MD – Santiago, Chile

Munther J. Haddad, MD – London, United Kingdom

Carroll M. Harmon, MD, PhD – Buffalo, NY, USA

Celeste Hollands, MD – Allentown, PA, USA

Santiago Horgan, MD – San Diego, CA, USA (SAGES)

Satoshi Ieiri, MD – Fukuoka, Japan

Joseph A. Iocono, MD – Lexington, KY, USA

Saleem Islam, MD – Gainesville, FL, USA

Gretchen Purcell Jackson, MD – Nashville, TN, USA (SAGES)

Marcus D. Jarboe, MD – Ann Arbor, MI, USA

Timothy D. Kane, MD – Washington, DC, USA

Pablo Laje, MD – Philadelphia, PA, USA

Andreas Leutner – Dortmund, Germany

Marc A. Levitt, MD – Columbus, OH, USA

Charles M. Leys, MD – Madison, WI, USA

Manual Lopez, MD – Saint Etienne, Loire, France

Maximiliano Maricic – Buenos Aires, Argentina

Marcelo Martinez Ferro, MD – Buenos Aires, Argentina

Milissa McKee, MD – Branford, CT, USA

Martin L. Metzelder, MD – Vienna, Austria

Carolina Millan – Buenos Aires, Argentina

Go Miyano, MD – Tokyo, Japan

Oliver J. Muensterer, MD – New York, NY, USA

Nam Xuan Nguyen, MD – Los Angeles, CA, USA

Allan Okrainec, MD – Toronto, Canada (SAGES)

Pablo Esteban Omelanczuk, MD – Villa Nueva, Argentina (SAGES)

Matthijs W. N. Oomen, MD – Amsterdam, The Netherlands

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Steven Rothenberg, MD – Denver, CO, USA

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Holger Till, MD, PhD – Graz, Austria

Benno Ure, MD, PhD – Hannover, Germany

Reza Vahdad – Cologne, Germany

David C. van der Zee, MD – Utrecht, The Netherlands

Kenneth K. Wong, MD – Hong Kong, China

Mark L. Wulkan, MD – Atlanta, GA, USA

Atsuyuki Yamataka, MD – Tokyo, Japan

CK Yeung, MD – Hong Kong, China

Abdallah Zarroug, MD – Rochester, MN, USA

# Disclosures

The following presenters, 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.) Unless indicated below, the planners, reviewers, staff or faculty for this CME Activity do not have any financial relationships to disclose relating to the content of this activity (i.e., relevant financial relationships).

\* Denotes Program Committee

\*\* Denotes Executive Committee

## FACULTY DISCLOSURES

NAME	COMMERCIAL INTEREST	WHAT WAS RECEIVED	ROLE
Barbara Boyan, PhD	Institut Straumann AG	Research Grant	Dental Implant Design
	Carticept Medical Inc	Stock Options	Board Member
	Cartiva Inc	Stock Options	Board Member
	SpherIngenics Inc	Stock	Co-Founder
	Titan Spine LLC	Consulting Fee	Consultant
James D. Geiger, MD *	FlexDex Surgical	Ownership Interest	Board Member
George W. Holcomb III, MD *	JustRight Surgical	Ownership Interest	Advisory Committee
	JustRight Surgical	Ownership Interest	Consultant
Santiago Horgan, MD	Ethicon Endo Surgery	Consulting Fee	Speaking/Teaching
	USGI	Stock	Stock Holder
	Apollo	Stock	Stock Holder
	Stryker	Consulting Fee	Speaking/Teaching
	Olympus	Consulting Fee	Speaking/Teaching
	Gore	Honoraria	Speaking/Teaching
	Valentx	Stock	Stock Holder
Fortimedix	Honoraria	Consultant	
Allan E. Okrainec, MD	Covidien	Honoraria	Speaking/Teaching
Daniel J. Ostlie, MD **	JustRight Surgical	Ownership Interest	Part owner
Samir R. Pandya, MD	Carefusion	Consulting Fee	Advisory Committee
Todd A. Ponsky, MD	Globalcast	Ownership Interest	Owner
Steven Rothenberg, MD **	Justright Surgical	Ownership Interest	Consultant
Benno Ure, MD **	Braun Aesculap	Honoraria	Consultant

## PRESENTER DISCLOSURES

NAME	COMMERCIAL INTEREST	WHAT WAS RECEIVED	ROLE
Stephanie Chao, MD	Stryker	Consulting Fee	Consultant
	Johnson & Johnson	Consulting Fee	Consultant
	Cardica, Inc	Consulting Fee	Consultant
	InSite Medical	IP Rights	Advisory Committee
Steven Rothenberg, MD	Justright Surgical	Ownership Interest	Consultant
Nicole Nadlonek, MD	Storz	Honoraria	Speaking/Teaching
	Covidien	Honoraria	Speaking/Teaching
Nicholas E. Bruns, MD	GlobalCastMD	Ownership Interest	Owner
	Justright Surgical	Ownership Interest	Management Position
Dariusz Patkowski, MD, PhD	BBraun Aesculap	Honoraria	Speaking/Teaching

# CME Worksheet

TIME	ACTIVITY	Credits Available	Hours Attended
<b>TUESDAY, APRIL 14, 2015</b>			
4:00 pm – 8:00 pm	POSTGRADUATE LECTURE: MIS in Infants and Neonates	4	
<b>Total credits available for Tuesday</b>		<b>4</b>	
<b>WEDNESDAY, APRIL 15, 2015</b>			
8:00 am – 11:30 am	HANDS ON LAB: Critical Technical Skills for Neonatal and Infant Minimally Invasive Surgery <small>NON CME</small>	0	0
8:00 am – 11:30 am	HANDS ON LAB: High Fidelity Neonatal Course for the Advanced Learner <small>NON CME</small>	0	0
1:00 pm – 4:30 pm	HANDS ON LAB: Innovations in Simulation Based Education for Pediatric Surgeons <small>NON CME</small>	0	0
5:00 pm – 7:30 pm	Joint IPEG/SAGES Opening Ceremony/Welcome Reception <small>NON CME</small>	0	0
<b>Total credits available for Wednesday</b>		<b>0</b>	<b>0</b>
<b>THURSDAY, APRIL 16, 2015</b>			
7:30 am – 8:30 am	MORNING SCIENTIFIC VIDEO SESSION I: Coolest Tricks, Extraordinary Procedures	1	
8:30 am – 8:35 am	Welcome Address <small>NON CME</small>	0	0
8:35 am – 9:30 am	SCIENTIFIC SESSION: Gastrointestinal	1	
9:30 am – 10:00 am	PRESIDENTIAL ADDRESS & LECTURE: The Next Generation	0.5	
10:30 am – 12:00 pm	EXPERT PANEL: Bridging the Education Gap with New Innovations	1.5	
12:25 pm – 1:00 pm	Poster Presentation of Top 1-10 Posters of Distinction	0.5	
1:00 pm – 2:00 pm	SCIENTIFIC SESSION: Urogenital and Single Site Surgery	1	
2:00 pm – 3:00 pm	SCIENTIFIC SESSION: Basic Science and Innovations	1	
3:30 pm – 5:00 pm	Joint Session SAGES/IPEG Adolescent Bariatrics	1.5	
5:15 pm – 5:45 pm	Karl Storz Lecture <small>NON CME</small>	0	0
5:45 pm – 6:15 pm	Innovations Session <small>NON CME</small>	0	0
<b>Total credits available for Thursday</b>		<b>8</b>	
<b>FRIDAY, APRIL 17 2015</b>			
7:30 am – 8:30 am	JOINT SESSION IPEG/SAGES: Adolescent Achalasia: The Great Debate	1	
8:30 am – 9:30 am	SCIENTIFIC VIDEO SESSION II	1	
10:00 am – 11:00 am	SCIENTIFIC SESSION: Miscellaneous Abdominal Session	1	
11:00 am – 12:30 pm	SCIENTIFIC SESSION: Colorectal & Hepatobiliary II	1.5	
12:55 pm – 1:30 pm	Poster Presentation of Top 11-20 Posters of Distinction	0.5	
1:30 pm – 2:00 pm	Keynote Lecture	0.5	
2:00 pm – 3:00 pm	EXPERT PANEL: The Art, Science, and Ethics of Innovation	1	
3:30 pm – 4:30 pm	EXPERT PANEL: What's New in Pediatric MIS?	1	
4:30 pm – 5:30 pm	SCIENTIFIC SESSION: Thorax	1	
<b>Total credits available for Friday</b>		<b>8.5</b>	
<b>SATURDAY, APRIL 18, 2015</b>			
8:00 am – 9:30 am	MISCELLANEOUS: Short Oral Papers	1.5	
9:30 am – 10:15 am	GENERAL ASSEMBLY: Presentation of the IPEG 2016 President <small>NON CME</small>	0	0
10:15 am – 10:30 am	2014 Research Award Winner Presentation <small>NON CME</small>	0	0
10:30 am – 10:45 am	AWARDS: Coolest Tricks, Basic Science/Innovation, and IRCAD <small>NON CME</small>	0	0
10:45 am – 11:45 am	VIDEO SESSION WITH EXPERT PANEL DISCUSSION: "My Worst Nightmare" - The Management of Unusual Complications, and Strategies for Future Avoidance	1	
11:15 am	Box Lunch and Closing Remarks <small>NON CME</small>	0	0
<b>Total credits available for Saturday</b>		<b>2.5</b>	
<b>TOTAL POSSIBLE CREDITS</b>		<b>23</b>	

To receive a **CME Certificate** for this meeting:

- Complete a CME Request Form and turn it in at the registration desk prior to the end of the meeting ~OR~
- Mail the complete form to be received by IPEG no later than **May 31, 2015** to:  
Attention: IPEG – CME Department  
11300 W. Olympic Blvd. Suite 600, Los Angeles, CA, 90064  
EMAIL: [nicolevh@ipeg.org](mailto:nicolevh@ipeg.org)

*An additional charge of US\$25.00 will be assessed for requests received after May 31, 2015.*

# IPEG Policy on Conflict of Interest

## A. IDENTIFYING CONFLICTS OF INTEREST

IPEG has implemented the following approach towards identifying potential conflicts of interest.

1. Members of Program Committees involved in the planning of CME activities, including the Executive Committee, must provide a financial disclosure. These disclosures are sent to the committee in advance of each committee meeting. Attendees are reminded about the disclosure policy at each committee meeting, and any committee member with a conflict is asked to recuse him or herself from the discussion of any CME activities.
2. Course Directors for CME activities must provide their financial disclosures along with their suggested course outline and faculty. This information is forwarded to the IPEG appointed CME Chair, who then determines whether or not a potential conflict exists and makes suggested edits, before forwarding for final review to IPEG CME provider.
3. Invited faculty for CME activities must provide their financial disclosures upon invitation to serve as faculty.
4. For abstract submissions for the scientific session, the presenting and senior authors must provide disclosures. Abstracts are peer reviewed in a blinded fashion by multiple reviewers and are selected for presentation based on scientific merit. All disclosures are provided to the Program Committee and CME Chair, to review before “Putting the Program Together” during which the final abstracts are selected for presentation.
5. All speakers at IPEG CME activities must display a list of financial disclosures on the first slide of their presentation.

## B. MANAGING POTENTIAL CONFLICTS OF INTEREST

1. IPEG has implemented several mechanisms to manage conflicts of interest prior to an educational activity.
2. Self-management, such as the committee member recusing him or herself from discussion of CME activities.
3. The IPEG CME Chair reviews all Course Director’s disclosures, proposed course outlines and faculty lists. He or she will make edits to the course outline or faculty list if necessary. The IPEG disclosure form requires faculty to provide management suggestions if there is a relationship with a commercial entity. This information is forwarded to the IPEG CME Chair and Education Committee, who are then responsible for determining whether or not a conflict exists and if so, how to manage this conflict.
4. If a conflict is determined, then a letter is sent to the faculty member, requiring them to adhere to the management technique or else recuse him or herself from the presentation.
5. During the session, the Course Director are instructed to observe the presentations and makes note of commercial bias. If any is perceived, this is immediately reported to the staff.
6. All attendees of CME activities are requested to make note of perceived commercial bias in activity evaluations and bias report forms. The Education Committee and/or the IPEG CME Chair will investigate substantive concerns.

# Commercial Bias Reporting Form

You are encouraged to...

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)

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

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

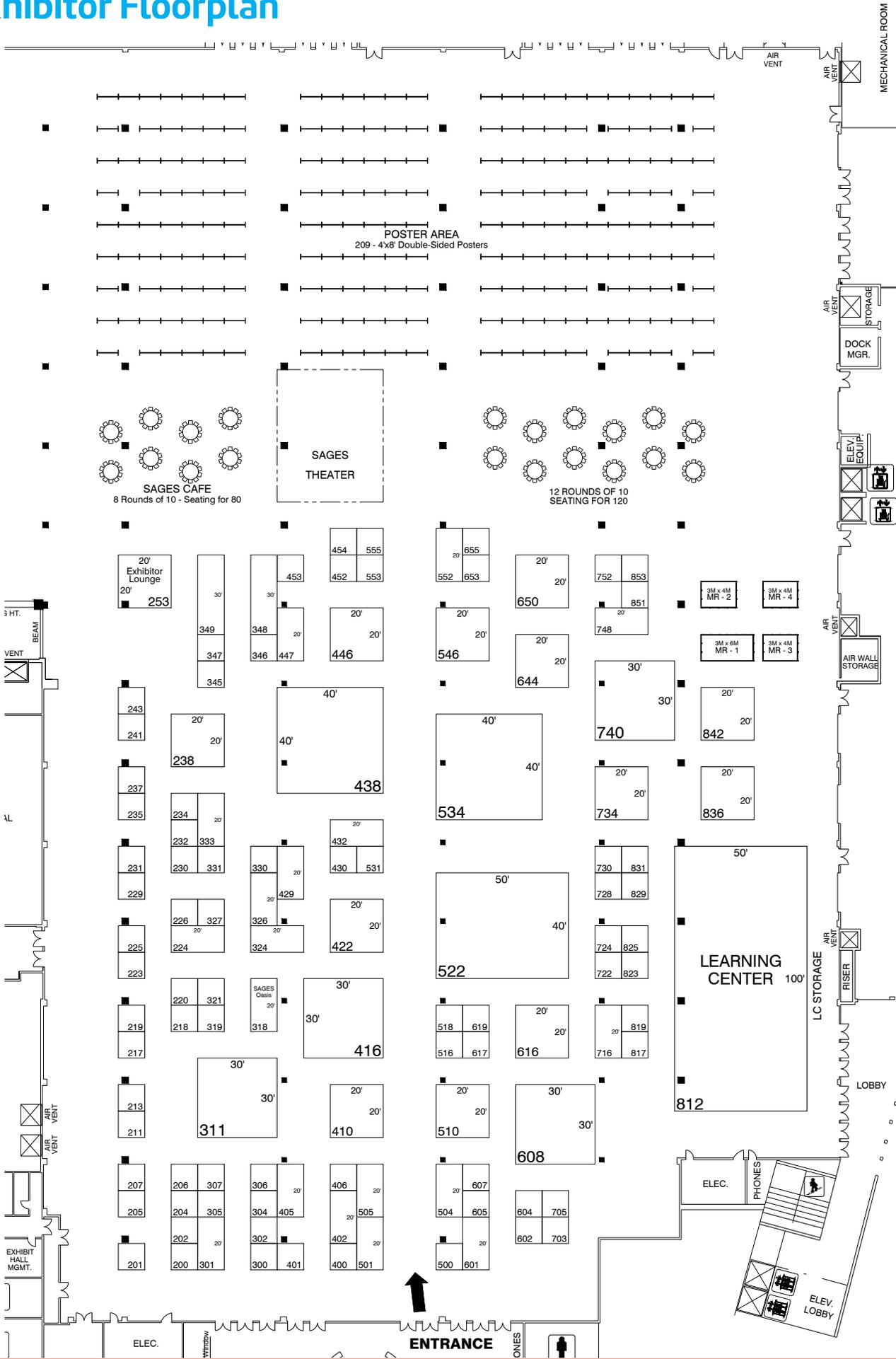
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**Commercial Bias about:** (check all that apply)

- 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 Nicole Von Husen at [nicolevh@ipeg.org](mailto:nicolevh@ipeg.org) or fax to +1 310.437.0585.

# Exhibitor Floorplan



## Exhibitor Profiles

### 3D SYSTEMS, SIMBIONIX PRODUCTS

#432

7100 Euclid Avenue, Suite 180, Cleveland, OH 44103  
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Leader in 3D medical modeling, simulation training and 3D printing of personalized medicine. Featuring the LAP Mentor™ III, GI-BRONCH Mentor™ and the new RobotiX Mentor, all with advanced training for skills and clinical procedures. Symbionix and SAGES developed a hands-on FES endoscopy skills exam on the GI Mentor.

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#728

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 FAX: 937-746-5071  
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3-Dmed is the surgeon's choice for high-quality laparoscopic training systems. They are complete, portable and affordable, and intended for education and instrument demonstrations. Our T5 Series is a versatile tool for FLS skill development and beyond. Visit us for a demonstration or to discuss your specific needs, including custom solutions.

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#205

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 FAX: 610-791-6886  
 WEBSITE: [www.aesculapusa.com](http://www.aesculapusa.com)

Aesculap offers laparoscopic instruments that improve surgical performance and patient care during minimally invasive and open surgery. The portfolio of products includes reusable and reposable gastrointestinal and endoscopic instruments such as needleholders, graspers, scissors, and forceps. Aesculap's portfolio, also, includes unique advanced energy devices for general and bariatric procedures. Visit our booth to learn about Aesculap's best-in-class products.

### APOLLO ENDOSURGERY, INC.

#510

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 Austin, TX 78746  
 PHONE: 512-279-5100  
 FAX: 512-279-5105  
 WEBSITE: [www.apolloendo.com](http://www.apolloendo.com)

### APOLLO SURGICAL INDUSTRIES, INC.

#553

741 Teaneck Road, Suite C, Teaneck, NJ 07666  
 PHONE: 800-749-4699  
 FAX: 877-749-4699  
 WEBSITE: [www.apollosurgical.com](http://www.apollosurgical.com)

Apollo Surgical was started in 1997 by general surgeon Dr. George Christoudias to offer innovative laparoscopic surgical devices conceived from the surgeons' perspective. With Dr. Christoudias at the helm, Apollo Surgical now designs, develops, and distributes proprietary laparoscopic products worldwide with over 15 surgical patents in its portfolio.

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#546

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 PHONE: 949-713-8000  
 WEBSITE: [www.appliedmedical.com](http://www.appliedmedical.com)

Applied Medical is dedicated to developing and providing technologies that enhance advanced surgical procedures and optimize patient outcomes. It is our mission to achieve this while also reducing healthcare costs and offering unrestricted choice. Applied is committed to advancing minimally invasive surgery by offering clinical solutions and sophisticated training, including workshops, symposia and our Simsei® laparoscopic trainer.

### ARTHREX, INC.

#650

1370 Creekside Blvd., Naples, FL 34108  
 PHONE: 800-933-7001  
 WEBSITE: [www.arthrex.com](http://www.arthrex.com)

Arthrex is a global imaging leader with the first autoclavable UHD 4K camera and image management system with 4x the resolution of traditional HD. SynergyUHD4 revolutionizes endoscopic viewing with 4x the color range for more precise color reproduction and 4x the number of pixels as 1080p for increased depth perception.

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#453

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 PHONE: 610-590-1577  
 FAX: 610-279-1546  
 WEBSITE: [www.aspirebariatrics.com](http://www.aspirebariatrics.com)

The AspireAssist® is an endoscopic, reversible device to treat obesity. Lifestyle therapy provided in conjunction with the device helps patients to make lasting changes for long-term weight control. The AspireAssist® has been used in hundreds of patients worldwide, and is currently completing a randomized, multicenter pivotal trial in the USA.

### AUTOMATED MEDICAL PRODUCTS

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 FAX: 732-602-7706  
 WEBSITE: [www.ironintern.com](http://www.ironintern.com)

Automated Medical Products Corp offers the Iron Intern® Available for use in laparoscopic and open surgery. The Iron Intern® Stieber Rib Grip Kit provides superior exposure in the abdomen and serves liver transplants. Find out more about these products at [www.ironintern.com](http://www.ironintern.com).

# Exhibitor Profiles

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## **BARIATRIC TIMES, PUBLISHED BY MATRIX MEDICAL COMMUNICATIONS**

#452

1595 Paoli Pike, Suite 201, West Chester, PA 19380  
 PHONE: 866-325-9907  
 FAX: 484-266-0726  
 WEBSITE: [www.bariatrictimes.com](http://www.bariatrictimes.com)

Bariatric Times and Bariatric Times International are leading peer-reviewed, monthly journals providing articles on clinical developments and metabolic insights in total bariatric patient care. Please stop by our booth #452 to sign up for a free subscription and learn more about our educational offerings. You can download the Bariatric Times APP for free in iTunes or Android Marketplace.

## **BAXTER HEALTHCARE**

#406

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As a global, diversified healthcare company, Baxter International, Inc. applies a unique combination of expertise in medical devices, pharmaceuticals and biotechnology to create products that advance patient care worldwide.

## **BEVMD, LLC**

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#501

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 PHONE: 508-683-4000  
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### **About Boston Scientific**

Boston Scientific transforms lives through innovative medical solutions that improve the health of patients around the world. As a global medical technology leader for more than 30 years, we advance science for life by providing a broad range of high performance solutions that address unmet patient needs and reduce the cost of healthcare. For more information, visit [www.bostonscientific.com](http://www.bostonscientific.com) and connect on Twitter at [twitter.com/bostonsci](https://twitter.com/bostonsci) and Facebook at [www.facebook.com/bostonscientific](https://www.facebook.com/bostonscientific).

## **BSC MANAGEMENT**

#653

11300 West Olympic Blvd., Suite 600, Los Angeles, CA 90064  
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# Exhibitor Profiles

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## CAREFUSION

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 PHONE: 888-876-4287  
 WEBSITE: [www.carefusion.com](http://www.carefusion.com)

#842

## CINÉ-MED INC.

127 Main Street North, Woodbury, CT 06798  
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 FAX: 203-263-4839  
 WEBSITE: [cine-med.com](http://cine-med.com)

#405

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9500 Euclid Avenue, E32, Cleveland, OH 44195  
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 FAX: 216-636-3313  
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#605

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#518

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#608

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 PHONE: 760-931-4801  
 FAX: 760-931-4804  
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#705

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## C-SATS, INC.

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 WEBSITE: [www.csats.com](http://www.csats.com)

#724

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#504

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## DELTEX MEDICAL

330 E. Coffee Street, Greenville, SC 29601  
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 FAX: 864-527-5914  
 WEBSITE: [www.deltexmedical.com](http://www.deltexmedical.com)

#454

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# Exhibitor Profiles CONTINUED

## DGMR/GLOBAL INTERCEPTS

#304

145 White Beeches Drive, Dumont, NJ 07628  
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 FAX: 201-338-4426  
 WEBSITE: [www.dgmresearch.net](http://www.dgmresearch.net)

DGMRIGlobal Intercepts specializes in providing market research services at healthcare conventions. Whether you are exploring the feasibility of entering a new market, assessing the relaunch environment of tracking your brand following launch, Our team is able to design and execute tailor made research projects to meet your research goals.

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#346

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 FAX: 801-924-4951  
 Web: [www.domainsurgical.com](http://www.domainsurgical.com)

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YOU can reduce preventable post-surgical complications (anastomotic leaks, AKI, SSI, UTI) and associated costs. Explore individualized hemodynamic optimization through Perioperative Goal-Directed Therapy (PGDT) to help reduce complications in your moderate to high-risk surgery patients. PGDT can be implemented in conjunction with ERAS or NSQIP initiatives. Visit [Edwards.com/ESR](http://Edwards.com/ESR).

## ELSEVIER

#200

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 FAX: 215-239-3990  
 WEBSITE: [www.elsevierhealth.com](http://www.elsevierhealth.com)

ELSEVIER is a leading publisher of health science publications, advancing medicine by delivering superior reference information and decision support tools to doctors, nurses, health practitioners and students. With an extensive media spectrum – print, online and handheld, we are able to supply the information you need in the most convenient format.

## ENCISION

#330

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 FAX: 303-444-2693  
 WEBSITE: [www.encision.com](http://www.encision.com)

## ENDOCHOICE

#716

11810 Wills Rd., Alpharetta, GA 30009  
 PHONE: 888-682-3636  
 FAX: 866-567-8218  
 WEBSITE: [www.endochoice.com](http://www.endochoice.com)

Based in Atlanta GA, EndoChoice® is a medtech company focused on the manufacturing and commercialization of platform technologies including devices, diagnostics, infection control and endoscopic imaging. The Company was founded in 2008 and has rapidly developed a proprietary product portfolio, which includes the revolutionary Full Spectrum Endoscopy® System (Fuse®).

## ENDOGASTRIC SOLUTIONS

#324

1900 O'Farrell Street, #325, San Mateo, CA 94403  
 PHONE: 650-578-5100  
 FAX: 650-578-5101  
 WEBSITE: [www.endogastricsolutions.com](http://www.endogastricsolutions.com)

EndoGastric Solutions' EsophyX® device is inserted through the patients' mouth with visual guidance from an endoscope. The EsophyX device is used to reconstruct the gastroesophageal valve (GEV) in order to restore its function as a barrier to prevent stomach acids from washing back up into the esophagus.

## ENTEROMEDICS / vBLOC NEUROMETABOLIC THERAPY

#347

2800 Patton Road, St. Paul, MN 55113  
 PHONE: 651-634-3003  
 WEBSITE: [www.enteromedics.com](http://www.enteromedics.com)

## ERBE USA

#516

2225 Northwest Parkway, Marietta, GA 30067  
 PHONE: 770-955-4400  
 FAX: 770-955-2577  
 WEBSITE: [www.erbe-usa.com](http://www.erbe-usa.com)

ERBE USA offers the next generation ESU with Power Dosing Technology and APC™ workstation, VIO®/APC™ 2, with multiple possibilities for open, laparoscopic and endoscopic procedures featuring ENDO CUT® and proprietary PRECISE™, PULSED™ and FORCED™ APC – Argon enhanced tissue effects. In addition, ERBE brings you ERBEJET® 2 Hydrodissection Technology.

## ETHICON US, LLC

#311

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 PHONE: 1-877-ETHICON (384-4266)  
 WEBSITE: [www.ethicon.com](http://www.ethicon.com)

Ethicon US LLC, a Johnson & Johnson company, commercializes a broad range of innovative surgical products, solutions and technologies used to treat some of today's most prevalent medical issues, such as: colorectal and thoracic conditions, women's health conditions, hernias, cancer and obesity. Learn more at [www.ethicon.com](http://www.ethicon.com), or follow us on Twitter @Ethicon.

# Exhibitor Profiles

CONTINUED

**FLORIDA HOSPITAL INSTITUTE FOR SURGICAL ADVANCEMENT** #327  
 2415 North Orange Avenue, Suite 401, Orlando, FL 32804  
 PHONE: 407-303-3234  
 FAX: 407-303-2936  
 WEBSITE: [www.FloridaHospitalISA.com](http://www.FloridaHospitalISA.com)

The Institute for Surgical Advancement was developed to facilitate the success of physicians who have the desires to innovate academically through procedural and instrumentation development, research, and hands-on symposiums. Through our various resources, we facilitate and assess the needs of our physicians to help develop advancements for patient care and innovate new surgical approaches.

**FORTIMEDIX SURGICAL B.V.** #224  
 Daelderweg 20, Nuth 6361 HK, The Netherlands  
 PHONE: +31 (0)45 544 95 20  
 FAX: +31 (0)45 544 95 25  
 WEBSITE: [www.fortimedix.com](http://www.fortimedix.com)

Fortimedix Surgical is committed to continuing the evolution of laparoscopic surgery by creating novel devices that capture the claimed benefits of single-incision surgery. The company's FMX314 surgical platform achieves triangulation through a single, standard 15mm trocar, is easy to use, and enables a procedural approach closely mimicking traditional laparoscopy.

**FREEHOLD SURGICAL, INC.** #302  
 150 Union Square Drive, New Hope, PA 18938  
 PHONE: 646-200-7005  
 FAX: 866-542-7597  
 WEBSITE: [www.freeholdsurgical.com](http://www.freeholdsurgical.com)

FreeHold Surgical, Inc. is a privately held medical device company that is focused on developing and commercializing innovative technologies to advance laparoscopic and robotic procedures.

**GENERAL SURGERY NEWS** #607  
 545 W. 45th Street, 8th Floor, New York, NY 10036  
 PHONE: 212-957-5300  
 FAX: 212-957-7230  
 WEBSITE: [www.generalsurgerynews.com](http://www.generalsurgerynews.com)

General Surgery News is a monthly newspaper designed to keep surgeons abreast of the latest developments in the field, online, in print and around the world. The publication features extensive meeting coverage, analysis of journal articles, educational reviews, and information on new drugs and products.

**GI SUPPLY** #722  
 200 Grandview Ave., Camp Hill, PA 17011-1706  
 PHONE: 800-451-5797  
 FAX: 717-761-0216  
 WEBSITE: [www.gi-supply.com](http://www.gi-supply.com)

Products include: Spot® – the only pre-mixed, FDA cleared non-India ink endoscopic tattoo; Taewoong Through-The-Scope Stent (TTS) – the only Esophageal TTS Stent available in the US; Polar Wand® – cryotherapy system safely ablates tissue throughout the GI tract; and RenovaRP™ Paracentesis Pump – for quickly and effectively draining ascitic fluid from the abdomen.

**GORE & ASSOCIATES** #422  
 P.O. Box 2400, Flagstaff, AZ 86003-2400  
 PHONE: 928-779-2771  
 WEBSITE: [www.goremedical.com](http://www.goremedical.com)

The Gore Medical Products Division has provided creative solutions to medical problems for three decades. More than 35 million Gore Medical Devices have been implanted worldwide. Products include vascular grafts, endovascular and interventional devices, surgical materials, and sutures for use in vascular, cardiac and general surgery. For more information, visit [www.goremedical.com](http://www.goremedical.com).

**HALYARD HEALTH** #823  
 5405 Windward Parkway, Alpharetta, Georgia 30004  
 PHONE: 1-844-HALYARD  
 WEBSITE: [www.halyardhealth.com](http://www.halyardhealth.com)

Halyard Health (formerly Kimberly-Clark Health Care) is a medical technology company focused on advancing health and healthcare by preventing infection, eliminating pain and speeding recovery. The company delivers clinically-superior products and solutions in infection prevention, surgical solutions, respiratory health, digestive health, pain management and IV therapy.

**HITACHI CABLE AMERICA** #321  
 900 Holt Ave., East Industrial Park  
 Manchester, NH 03109  
 PHONE: 603-669-4347  
 WEBSITE: [www.hca.hitachi-cable.com](http://www.hca.hitachi-cable.com)

Hitachi Cable America is a global provider of high-reliability power and communications cable. High-strength alloys, ultra-thin insulations, and repeatability, are critical to quality and miniaturization for ultrasound, catheter wiring, sensing and endoscopy products as well as rugged solutions for harsh environments like NDT for oil and gas or military robotics.

**IMAGE STREAM MEDICAL** #836  
 One Monarch Dr, Littleton, MA 01460  
 PHONE: 978-486-8494  
 FAX: 978-428-2694  
 WEBSITE: [www.imagestreammedical.com](http://www.imagestreammedical.com)

EASYSUITE® OR INTEGRATION MADE EASY! It's not just about technology. It's about improving workflow, patient safety, and simplifying a complex surgical environment. Come see how EasySuite® can simplify your job and let you focus on patient care!

**INCISIVE SURGICAL** #430  
 14405 21st Avenue North, Suite 130, Plymouth, MN 55447  
 PHONE: 877-246-7672  
 FAX: 952-591-5989  
 WEBSITE: [www.insorb.com](http://www.insorb.com)

The INSORB® Absorbable Subcuticular Skin Stapler is a patented rapid, patient-centric skin closure solution. The INSORB Stapler combines the comfort, cosmesis and convenience of suture with the speed of a metal skin stapler, while eliminating percutaneous insult and post-operative staple removal. Now available in a "Shorty" version for smaller incisions!

# Exhibitor Profiles CONTINUED

## INSIGHTRA MEDICAL

#213

9200 Irvine Center Drive, Suite 200, Irvine, CA 92618  
 PHONE: 949-215-1835  
 FAX: 949-625-8676  
 WEBSITE: [www.insightra.com](http://www.insightra.com)

Insightra Medical manufactures and distributes innovative medical devices for hernia and general surgery. Insightra is developing products that will improve patient outcomes and QoL with a focus on reducing the risk for chronic pain. Insightra is a sponsor of the AHS/QC.

## INTUITIVE SURGICAL

#534

1020 Kifer Road, Sunnyvale, CA 94086  
 PHONE: 408-523-8058  
 WEBSITE: [www.intuitivesurgical.com](http://www.intuitivesurgical.com)

Intuitive Surgical is the global leader in minimally invasive, robotic-assisted surgery. Its da Vinci® Surgical System – with a 3D-HD vision system and EndoWrist® instrumentation – enables surgeons to offer a minimally invasive approach for a range of complex procedures. da Vinci is used in more than 2,500 hospitals around the world.

## JUSTRIGHT SURGICAL

#619

6325 Gunpark Drive, Suite G, Boulder, CO 80301  
 PHONE: 720-287-7130  
 FAX: 720-287-7135  
 WEBSITE: [www.JustRightSurgical.com](http://www.JustRightSurgical.com)

JustRight Surgical™ markets right-sized MIS instruments. Developed under the guidance of the world's leading surgeons, our products enhance visibility, provide greater access in confined spaces, and do not require deviation from standard surgical technique. We expect to foster advancements in surgical approaches that reach beyond what traditional instruments have allowed.

## KARL STORZ ENDOSCOPY-AMERICA

#416

## KARL STORZ ENDOSCOPIA-LATINO AMERICA

#319

2151 E. Grand Ave., El Segundo, CA 90245  
 PHONE: 800-421-0837  
 FAX: 424-218-8537  
 WEBSITE: [www.karlstorz.com](http://www.karlstorz.com)

## LEXION MEDICAL

#601

545 Atwater Circle, St. Paul, MN 55103  
 PHONE: 651-635-0000  
 FAX: 651-636-1671  
 WEBSITE: [www.lexionmedical.com](http://www.lexionmedical.com)

LEXION's innovations include Insuflow® and Insuflow® Synergy® that conditions gas for the patient to maintain temperature, reduce pain and decrease recovery. PneuVIEW® XE/VeryClear™ removes all hazardous gas created in surgery making the OR safer for all staff.

## LIFECCELL, AN ACELITY COMPANY

#500

95 Corporate Drive, Bridgewater, NJ 08807  
 PHONE: 908-947-1100  
 FAX: 908-947-1087  
 WEBSITE: [www.acelity.com](http://www.acelity.com)

LifeCell Corporation, an Acelity Company, develops and markets innovative products for reconstructive, cosmetic and general surgery. Core LifeCell™ products include: AlloDerm® Regenerative Tissue Matrix and Strattice™ Reconstructive Tissue Matrix for breast reconstruction, revision and abdominal wall repair surgery; and REVOLVE™ System for high-volume fat processing.

## LIMBS & THINGS

#819

P.O. Box 15669, Savannah, GA 31416  
 PHONE: 912-629-0357  
 FAX: 912-629-0357  
 WEBSITE: [www.limbsandthings.com](http://www.limbsandthings.com)

Limbs & Things is a leading developer and manufacturer of medical simulation training products for Clinical Skills, Women's Health and the Surgical specialties. Recognized globally for our superior and comprehensive product offering, our trainers provide a realistic hands-on learning experience for academic and clinical professionals.

## MALLINCKRODT PHARMACEUTICALS

#348

12481 High Bluff Drive, #200, San Diego, CA 92130  
 WEBSITE: [www.mallinckrodt.com](http://www.mallinckrodt.com)

## MAQUET MEDICAL SYSTEMS USA

#306

45 Barbour Pond Drive, Wayne, NJ 07470  
 PHONE: 973-709-7000  
 WEBSITE: [www.maquetusa.com](http://www.maquetusa.com)

MAQUET Medical Systems is a market leader focused on improving patient care and quality of life. We offer a comprehensive portfolio of innovative products designed to meet the needs of clinical professionals in the areas: advanced hemodynamic monitoring, cardiothoracic and vascular surgery, thoracic drainage, cardiac intervention, perfusion, anesthesia and ventilation.

## MAUNA KEA TECHNOLOGIES

#447

9, rue d'Enghien, 75010 Paris, France  
 PHONE: 888-590-1798  
 WEBSITE: [www.maunakeatech.com](http://www.maunakeatech.com)

Mauna Kea Technologies is a medical device company focused on leading innovation in Optical Biopsy. Cellvizio®, probe-based Confocal Laser Endomicroscopy (pCLE) system, provides physicians high-resolution cellular views of tissue /in vivo, /during endoscopic procedures. Clinical trials demonstrate Cellvizio's ability to help physicians detect disease and make immediate patient management decisions.

# Exhibitor Profiles

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## MMS/MEDICAL MEASUREMENT SYSTEMS

#331

53 Washington Street, Suite 400, Dover, NH 03820  
 PHONE: 800-236-9310  
 FAX: 603-750-3155  
 WEBSITE: [www.mmsusa.net](http://www.mmsusa.net)

MMS offers GERD diagnostic (Ohmega Ambulatory Impedance-pH recorder) and GI Motility products. Our Solar GI HRM/HRIM/HRAM systems have revolutionary QuickView software for automatic classification per latest edition of the Chicago classification and easier, quicker and better analysis. MMS HRM can be performed with solid state or single-use/multi-use water perfused catheters.

## MBSAQIP (AMERICAN COLLEGE OF SURGEONS)

#300

633 N. St. Clair Street, Chicago, IL 60611  
 PHONE: 312-202-5565  
 FAX: 312-202-5063  
 WEBSITE: [www.mbsaqip.org](http://www.mbsaqip.org)

The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) is a joint program of the ACS and the ASMBS. The joint program accredits facilities that have undergone an independent, rigorous peer evaluation in accordance with nationally recognized bariatric standards and participate in the program's longitudinal outcomes database.

## MEDERI THERAPEUTICS INC.

#238

800 Connecticut Ave., Norwalk, CT 06854  
 PHONE: 203-930-9900  
 WEBSITE: [www.mederi-inc.com](http://www.mederi-inc.com)

Mederi Therapeutics manufactures innovative radiofrequency therapies for GI disorders. Stretta, for treatment of GERD, and Secca for bowel incontinence. These safe, effective treatments fill the void between failed conservative therapies and invasive and expensive alternatives, like surgery or implants. Secca and Stretta therapies are minimally invasive, outpatient, and promote rapid recovery.

### STRETTA

Mederi's Stretta procedure features low-power, low-temperature radiofrequency (RF) energy that remodels the muscles of the LES and Gastric Cardia, improving motility by reducing TLESR's, reducing acid exposure to the esophagus, and providing significant symptom relief for sufferers of GERD.

Stretta fills a significant unmet need in:

- Patients who don't respond to PPIs
- Patients who don't wish to have surgery or an implant
- Patients with non-erosive reflux (NERD)
- Post-nissen patients with recurring reflux
- Post-gastric bypass/sleeve patients with GERD

Because Stretta doesn't alter the anatomy or introduce foreign substances, it can be utilized in a variety of patient groups, and doesn't preclude other treatment options. Stretta is by far the most widely studied of any minimally invasive treatment option for GERD, with studies showing a high rate of effectiveness and durability without the higher complication rates of surgery, or the higher costs.

In 2013, Stretta was received a Grade Recommendation of "Strong" in the SAGES Clinical Spotlight Review (CSR) Guideline on Endoscopic treatments for GERD. The SAGES CSR involved an in-depth analysis of available peer-reviewed clinical evidence, focusing on randomized, controlled studies, as well as long-term follow up showing durability of treatment effect.

Stop by Booth #238 and ask us about Stretta's 37 clinical studies, which show significant symptom relief, reduced esophageal acid exposure, significant reduction in medication use, healing of esophagitis, and effects lasting from between 4-10 years.

Please ask us about a new animal study that confirms the underlying mechanism behind Stretta and Secca is non-ablative, and it improves and grows muscle in the treatment zone as well as showing a regenerative effect on tissue as well as nerves in the same region.

Stretta is now covered by many private insurance companies as well as Medicare and Tricare.

## MEDICAPTURE, INC.

#217

580 W Germantown Pike, Plymouth Meeting, PA 19462  
 PHONE: 610-238-0701  
 FAX: 610-238-0705  
 WEBSITE: [www.medicapture.com](http://www.medicapture.com)

MediCapture Inc. designs and manufactures the medical industry's most advanced video recorders. MediCapture's true HD recorders are compatible with surgical and endoscopic cameras and are certified for use in medical environments. Latest technology combined with ease-of-use and an affordable price tag, MediCapture has become a "must have" tool for doctors. Coming soon to an OR near you - 3D and 4K recording.

## MEDIGUS, LTD.

#644

Suite 7A, Industrial Park, POB 3030, Omer 8496500 Israel  
 PHONE: 972-8-6466880  
 FAX: 972-8-6466770  
 WEBSITE: [www.medigus.com](http://www.medigus.com)

Medigus (MDGS:TASE), a medical device company, specializes in creating cutting-edge endosurgical procedures and products enhancing GERD management by surgeons and gastroenterologists. The revolutionary MUSE™ system utilizes an ultrasonically-guided endostapler for transoral, anterior fundoplication by a single endoscopist for GERD patients, obviating the need for invasive surgical or laparoscopic treatment.

## MICROLINE SURGICAL, INC.

#410

50 Dunham Road, Suite 1500, Beverly, MA 01915  
 PHONE: 978-922-9810  
 FAX: 978-922-9209  
 WEBSITE: [www.microlinesurgical.com](http://www.microlinesurgical.com)

Microline Surgical utilizes a reusable platform to deliver high-quality laparoscopic instruments to healthcare facilities worldwide. Our reusable, ergonomically designed handpieces are paired with single-use tips to configure hybrid disposable/reusable devices offering precision and cost-effectiveness.

# Exhibitor Profiles

CONTINUED

## MIMIC TECHNOLOGIES, INC.

#730

811 First Avenue, Suite 408, Seattle, WA 98104  
PHONE: 800-918-1670

Visit Mimic, the leading innovator in robotic surgery simulation training to test drive the dV-Trainer, the most advanced, cost-effective simulator available! Also don't miss our new Maestro AR (augmented reality) procedure-specific modules and the Xperience Team Trainer, the first simulator allowing the first assistant to train in tandem with the console-side surgeon!

## MINISTRY HEALTH CARE

#825

900 Illinois, Stevens Point, WI 54481  
PHONE: 800-420-2622

WEBSITE: [www.ministryhealth.org](http://www.ministryhealth.org)

Ministry Health Care is an integrated network of hospitals and clinics located across Wisconsin. Our physicians enjoy leading edge technology, state-of-the-art facilities, a collaborative environment, lucrative compensation and most importantly... BALANCE. We are actively recruiting a General Surgeon to northern Wisconsin. Stop by our booth to find out more!

## NASHVILLE SURGICAL INSTRUMENTS

#402

2005 Kumar Lane, Springfield, TN 37172  
PHONE: 615-382-4996  
FAX: 615-382-4199

WEBSITE: [www.nashvillesurg.com](http://www.nashvillesurg.com)

Kumar Cholangiography Clamp® and Kumar Catheter® allow Cystic Duct Marking to Prevent CBD Injury. There is NO CYSTIC DUCT CANNULATION! Longer length available for SILS/Bariatrics. Kumar T-ANCHORS® allows Easy Trans-fascial Mesh (any brand) Fixation in Laparoscopic Ventral Hernia Repair. Eliminates need to grasp and feed sutures into Suture Passer. (\*Patent ®Trademark).

## NEOSURGICAL, INC.

#604

Riverside Center, 275 Grove Street, Suite 2-400  
Newton, MA 02466  
PHONE: 615-750-5800

WEBSITE: [www.neosurgical.com](http://www.neosurgical.com)

neoClose® is a unique device that offers simplicity and speed in trocar port site closure. Engineering innovation enables a Vector X Closure which has shown to significantly reduce suture tension on the wound and provide ease of use. Exclusive distribution by [www.symmetrysurgical.com](http://www.symmetrysurgical.com).

## NORDSON MEDICAL

#333

1270 Eagan Industrial Road, Suite 120, St. Paul, MN 55121  
PHONE: 800-624-5662  
FAX: 888-504-0606

WEBSITE: [www.nordsonmedical.com](http://www.nordsonmedical.com)

Nordson MEDICAL is your partner of choice for biomaterial delivery devices with innovative development and design expertise, comprehensive global regulatory support, and broad manufacturing and packaging capabilities. The FibrJet line of biomaterial applicators and tips is the "gold standard" for accurate control and dispensing of biomaterials such as tissue sealants, hemostats, and concentrated plasma gel.

## NOVADAQ TECHNOLOGIES- #740

5090 Explorer Drive, Suite 202, Mississauga L4W 4T9, Ontario  
PHONE: 800-230-3352

FAX: 800-886-2419

WEBSITE: [www.novadaq.com](http://www.novadaq.com)

Never before in the history of worldwide healthcare, has there been such a need to achieve and demonstrate the highest quality of care and outcomes, at a lower cost. NOVADAQ's global mission is to empower medical professionals and hospitals by providing clinically-relevant, innovative fluorescence imaging solutions to enhance the lives of patients and their surgeons, while reducing healthcare costs.

As pioneers, NOVADAQ developed SPY fluorescence imaging technology to provide surgeons and medical practitioners with real-time visualization of blood flow or perfusion, leading to improved outcomes and reduced costs without exposing the patient to harmful ionizing radiation or contrast dye toxicity.

NOVADAQ's PINPOINT Endoscopic Fluorescence Imaging System combines SPY fluorescence with the high-definition visible light capabilities of a traditional endoscopic imaging system. PINPOINT can be used as a traditional endoscopy system to obtain fluorescence images on demand or in a simultaneous imaging mode during minimally invasive surgery.

PINPOINT Imaging may assist surgeons by enabling better visualization of anatomic structures and blood flow, providing functional imaging information, resulting in reduced incidences of post-operative complications, lowering costs of care.

PINPOINT is FDA 510(k) cleared for use in minimally invasive surgical procedures for the visual assessment of blood flow in vessels and tissue perfusion.

## NOVATRACT SURGICAL

#211

170 Fort Path Road, Suite 13, Madison, CT 06443  
PHONE: 203-533-9710

WEBSITE: [www.novatract.com](http://www.novatract.com)

NovaTract Surgical, Inc. offers minimally invasive retraction options for conventional, reduced-port, and robotic-assisted laparoscopic procedures. Not requiring a dedicated port, the NovaTract™ Laparoscopic Dynamic Retractor and NovaGrasp™ Laparoscopic Tethered Grasper, 5mm devices offer improved tissue manipulation, ability to adjust tension, and easily modify the angle of retraction as needed to help facilitate improved visualization during complex procedures.

## OLYMPUS AMERICA

#522

3500 Corporate Parkway, Center Valley, PA 18034  
PHONE: 484-896-5000

FAX: 484-896-7133

Web: [www.olympusamerica.com](http://www.olympusamerica.com)

Olympus is advancing minimally invasive surgical solutions designed to help Surgeons improve clinical outcomes through our innovative world's only imaging and energy technologies. Our commitment to clinical support, professional education, flexible service and financing packages, and knowledgeable local account management make Olympus the partner of choice.

# Exhibitor Profiles CONTINUED

- OTTO TRADING, INC.** #345  
1921 Carnegie Ave., Suite C, Santa Ana, CA 92705  
WEBSITE: [www.irestmassager.com](http://www.irestmassager.com)
- PLASMA SURGICAL, INC.** #655  
1125 Northmeadow Parkway, Suite 100, Roswell, GA 30075  
PHONE: 678-578-4390  
FAX: 678-578-4395  
WEBSITE: [www.plasmasurgical.com](http://www.plasmasurgical.com)  
PlasmaJet Surgery System was developed to leverage the unique properties of pure plasma energy and offer surgeons the ability to perform no-touch, atraumatic surgery. The PlasmaJet is a safe, effective, easy-to-use and is the only device that offer Kinetic Dissection™, Microlayer Vaporization™ and Surface Sealing™ capabilities. PlasmaJet: Respect for Tissue.
- RICHARD WOLF MEDICAL INSTRUMENTS CORP.** #349  
353 Corporate Woods Parkway, Vernon Hills, IL 60061  
PHONE: 800-323-9653  
FAX: 847-913-1488  
WEBSITE: [www.richardwolfusa.com](http://www.richardwolfusa.com)  
We are a global business with headquarters in Germany and over a century of tradition and expertise in the field of endoscopy. We develop, manufacture and market specific system solutions for minimally invasive human medicine.
- RG MEDICAL USA** #752  
928 5th Avenue South, Nashville, TN 37203  
PHONE: 615-269-7256  
FAX: 615-269-4605  
WEBSITE: [www.rgendo.com](http://www.rgendo.com)  
RG Medical USA, Inc. is a worldwide market leader and pioneer in ISO certified Minimal Invasive Surgery products. The company specializes in a wide variety of equipment, instruments and ancillary products for Arthroscopy, Bronchoscopy, Cystoscopy, Hysteroscopy, Laparoscopy, Laryngoscopy, Resectoscopy, and Sinuscopy. The product line includes rigid and flexible endoscopes, video systems, surgical instruments and disposables.
- SANDHILL SCIENTIFIC** #531  
9150 Commerce Center Circle, Suite 500,  
Highlands Ranch, CO 80129  
PHONE: 303-470-7020  
FAX: 303-470-2975  
WEBSITE: [www.sandhillsci.com](http://www.sandhillsci.com)  
Sandhill Scientific continues to be a leader in GI Diagnostic innovation with our ZepHr® Impedance/pH System, the all new inSIGHT Ultima™ Motility Platform and the FibroScan™ 502Touch for liver disease management. And all of our products are supported by Sandhill University, the most comprehensive training and education program available.
- SAWBONES-PACIFIC RESEARCH LABORATORIES, INC.** #831  
10221 SW 188th St., Vashon Island, WA 98070  
PHONE: 206-463-5551  
WEBSITE: [www.sawbones.com](http://www.sawbones.com)
- SHIRE** #617  
550 Hills Drive, 3rd Floor, Bedminster, NJ 07921  
Phone: 908-450-5300  
FAX: 908-450-5351  
WEBSITE: [www.shire.com](http://www.shire.com)  
Shire enables people with life-altering conditions to lead better lives. Our strategy is to focus on developing and marketing innovative specialty medicines to meet significant unmet patient needs. We provide treatments in Neuroscience, Rare Diseases, Gastrointestinal, and Internal Medicine and we are developing treatments for symptomatic conditions treated by specialist physicians in other targeted therapeutic areas, such as Ophthalmology. Please visit [www.shire.com](http://www.shire.com).
- SONY ELECTRONICS** #301  
1 Sony Drive, Park Ridge, NJ 07656  
PHONE: 201-930-6200  
WEBSITE: [www.sony.com/medical](http://www.sony.com/medical)  
Sony Electronics Inc. is a trusted source in providing quality 2D and 3D Full HD video cameras, displays, recorders, and printers for microsurgery applications, and HD and 4K monitors, projectors, live production units and other medical equipment. Long a leader in professional electronics, Sony harnesses that same expertise for healthcare.
- SPRINGER** #829  
233 Spring Street, New York, NY 10013  
Phone: 212-460-1500  
FAX: 212-460-1700  
WEBSITE: [www.springer.com](http://www.springer.com)
- SRA DEVELOPMENTS - LOTUS** #817  
Bremridge House, Ashburton TQ13 7JX Devon, United Kingdom  
PHONE: +44 (0)1364 652426  
WEBSITE: [www.lotusultrasonicscalpel.com](http://www.lotusultrasonicscalpel.com)  
The Lotus Ultrasonic Scalpel (developed by SRA Developments) makes its North American debut at this year's SAGES conference. Using innovative torsional mode ultrasound, Lotus cuts and cauterizes soft tissue in both open and laparoscopic surgery. We look forward to demonstrating why Lotus is considered the world's most efficient ultrasonic scalpel.
- STELLAR TECHNOLOGIES** #218  
9200 Xylon Avenue North  
Brooklyn Park, MN 55445  
PHONE: 763-493-8556  
WEBSITE: [www.stellar-technologies.com](http://www.stellar-technologies.com)
- STRYKER ENDOSCOPY** #438  
5900 Optical Court, San Jose, CA 95138  
PHONE: 800-624-4422  
FAX: 800-729-2917  
WEBSITE: [www.stryker.com/endoscopy](http://www.stryker.com/endoscopy)

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## **SURGICAL SCIENCE INC.**

#400

7831 Bush Lake Rd E, Minneapolis, MN 55439  
 PHONE: 612-568-6541  
 FAX: 888-737-1648  
 WEBSITE: [www.SurgicalScience.com](http://www.SurgicalScience.com)

The global leader in medical simulation training, Surgical Science offers the only laparoscopic virtual reality system proven to improve performance in the OR. Using the most advanced modeling technology, validated curricula, uniquely flexible scenarios and challenges, and an intuitive user interface, Surgical Science is committed to enhancing performance through practice.

## **SURGIQUEST, INC.**

#734

333 Quarry Road, Milford, CT 06460  
 PHONE: 203-799-2400  
 FAX: 203-799-2401  
 WEBSITE: [www.surgiquest.com](http://www.surgiquest.com)

SurgiQuest, Inc. is the maker of The AirSeal® System, the world's first and only integrated access system for Minimally Invasive Surgery that provides stable pneumo, continuous smoke evacuation, and valve-free cavity access to enhance surgeon capabilities, improve anesthesia parameters, protect OR staff, and reduce OR time in both robotic and laparoscopic surgery.

## **SUTURE EASE, INC.**

#326

1735 N. First Street, Suite #300, San Jose, CA 95112  
 PHONE: 408-459-7595  
 FAX: 408-459-7597  
 WEBSITE: [www.sutureease.com](http://www.sutureease.com)

Suture Ease, Inc. is a manufacturer and worldwide distributor of laparoscopic port-site closure technologies. Our technologies are extremely easy to use, yet clinically effective for desired surgeon and patient outcomes. Our devices are: CrossBow™, SecurusEP™ & SecurusDL™. To evaluate any of our advanced port-site closure devices, please contact: [sales@sutureease.com](mailto:sales@sutureease.com).

## **SYMMETRY SURGICAL**

#703

3034 Owen Drive, Antioch, TN 37013  
 PHONE: 615-564-5290  
 FAX: 615-564-5566  
 WEBSITE: [www.symmetrysurgical.com](http://www.symmetrysurgical.com)

Symmetry Surgical® is dedicated to developing high-quality surgical instruments that make a difference in patients' lives. With one of the industry's most comprehensive portfolios, Symmetry Surgical® collaborates globally with healthcare providers, medical device manufacturers, and hospitals to provide solutions for today's needs and tomorrow's growth.

## **TELEFLEX**

#616

3015 Carrington Mill Boulevard, Morrisville, NC 27560  
 PHONE: 866-246-6990  
 WEBSITE: [www.teleflex.com](http://www.teleflex.com)

Teleflex – the sum of our parts, raised to the power of INNOVATION. Whatever the latest surgical breakthrough looks like, Teleflex is working to make it happen. From our MiniLap® Percutaneous Surgical System to Weck® Hem-o-lok® Polymer Locking Ligation System, our portfolio of products adds up to

a powerful offering of solutions that helps improve patient outcomes. Come see us at Booth #616 to learn where the future of surgery is heading.

## **TORAX MEDICAL**

#446

4188 Lexington Ave. N, Shoreview, MN 55126  
 PHONE: 651-361-8900  
 FAX: 651-361-8910  
 WEBSITE: [www.toraxmedical.com](http://www.toraxmedical.com)

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## **UNIVERSITY OF TENNESSEE PHYSICIAN EXECUTIVE MBA PROGRAM**

#201

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#401

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 FAX: 215-814-8911  
 WEBSITE: [www.lww.com](http://www.lww.com)

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#307

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 FAX: 800-963-6553  
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Featuring two new innovative products for maximizing patient safety. The Pink Pad® XL, a longer version of the clinically-preferred product for Trendelenburg positioning, provides a better fit for taller patients. The One-Step™ Face Protector features a lightweight, shock-absorbing, full-face viscoelastic foam mask with plastic shielding to protect the face from unintentional contact during all supine procedures.



# SAGES 2015 Schedule at a Glance

Promoting a Universal Culture of Innovation, Safety & Improved Outcomes in GI Surgery

Program Chair: Aurora D. Pryor, MD; Co-Chair: Michael D. Holzman, MD, MPH

SAGES 2015 Surgical Spring Week

## Wednesday, April 15, 2015

PG Course: Current Common Dilemmas in Colorectal Surgery

PG Course: Advances in Foregut Surgery

PG Course: The Recurrent Hernia - Strategies for Success

Career Development Seminar

PG Course: Endolumenal Management of Complications

Panel: Lessons Learned from Around the World

Panel: Perioperative Care

**SAGES Foundation Awards Luncheon - Canal A - 12:00 PM-1:30 PM**

**Exhibits and SS1: Video Presentations-Colorectal & Hernia - Ryman Exhibit Hall C - 12:00 PM-3:30 PM**

PG Course: Bariatric Revisions from Historical Operations

HO Course: Endoscopic Complications

HO Course: Career Breakouts

Debate: Inguinal Hernia Debates

Panel: Colorectal Strategies to Minimize the Impact of Surgery

Panel: Technology Innovation from Overseas

Panel: Endocrine Surgery - Balancing Innovation and Quality

Panel: GI Cancer Management

Panel: Innovation in the US

Panel: FDA Advisory On Duodenoscopes

**Opening Session - History Movie - Delta Ballroom A - 5:00 PM-5:30 PM**

**Welcome Reception in Exhibit Hall - Ryman Exhibit Hall C - 5:30 PM-7:30 PM**

## Thursday, April 16, 2015

**Exhibits, Poster Session & Learning Center Open - Ryman Exhibit Hall C - 9:30 AM-4:00 PM**

Full-Day Military Surgical Symposium

PG Course: Updates in Abdominal Wall Management

PG Course: FUSE™ - Preparation/Refresher Course

Symposium: Minimal Access

Panel: Complex and Unusual Esophageal Disorders

SS2: Video Session: MIS for Foregut Diseases

SAGES Guest/Spouse Breakfast

SS3: Cholecystectomy

SS4: Exhibit Hall Video Presentations - Solid Organ

**Keynote: Humanitarian Lecture - Horacio Asbun, MD - Delta Ballroom A - 10:45 AM-11:15 AM**

**Keynote: Karl Storz Lecture - Ed Viesturs - Delta Ballroom A - 11:15 AM-12:00 PM**

**FREE LUNCH in Exhibit Hall for All Attendees - 12:00 PM-1:30 PM**

Educator's Luncheon

SS5: Exhibit Hall Video Presentations - Foregut

PG Course: HPB / Robotics

HO Course: All Things Hernia

HO Course: Minimal Access Tricks and Techniques

SS6: Flexible/ Therapeutic Endoscopy

Panel: Management of Unusual and Complex Cases

Panel: SAGES Talks

Panel: The Science Behind Diabetes Therapy

**Refreshment Break/ Happy ½ Hour in Exhibit Hall - 3:00PM-3:30PM**

Panel: Avoiding Bile Duct Injury & Other Untoward Outcomes

Panel: Open to MIS - What is Taking Us So Long?

Panel: Adolescent Bariatric Surgery (joint with IPEG)

Community Practice Townhall Meeting

## Industry Education Evening Events (non-CME):

DAVOL INC., a BARD Company

INTUITIVE SURGICAL

OLYMPUS AMERICA, INC.

## Friday, April 17, 2015

**Exhibits, Poster Session & Learning Center Open - Ryman Exhibit Hall C - 9:30 AM-4:00 PM**

Mock Trial: See you in Court - Bile Duct Injury

Panel: MIS Jeopardy

Debate: Adolescent Achalasia (joint with IPEG)

SS7: Abdominal Wall

SS8: HPB

SS9: Scientific Investigation

SS10: Top Hernia Videos

SS11: Plenary Session 1

**Keynote: Presidential Address - L. Michael Brunt, MD - Delta Ballroom A - 10:00 AM-10:45 AM**

**Keynote: Gerald Marks Lecture - Frank Lewis, MD - Delta Ballroom A - 10:45 AM-11:30 AM**

Debate: Presidential Debates

Military Surgical Symposium

SS12: Emergency/ General Surgery

SS13: Hernia

SS14: MIS Potpourri

SS15: Robotics

SS16: Exhibit Hall Video Presentations - HPB & Bariatric

**FREE LUNCH in Exhibit Hall for All Attendees - 12:30 PM-2:00 PM**

Fellowship Council Luncheon

Panel: Acute Care Session

SS17: Colorectal

SS18: Education/ Simulation

SS19: Foregut

SS20: Obesity/ Sleeve

Symposium: SAGES SMART™ Program

Session: Emerging Technology (non-CME)

SS21: Resident/Fellow Scientific Session

**Refreshment Break/ Happy ½ Hour in Exhibit Hall - 3:30 PM-4:00 PM**

Panel: Complex Paraesophageal Hernias

Panel: Lessons Learned from Military Surgery

SS22: Outcomes & Complications

SS23: Metabolic/ Bariatric

Candidate Networking Townhall Meeting

**Meet the Leadership Reception - Delta Lobby A - 6:30 PM-7:30 PM**

**SAGES Gala & International Singoff - Wildhorse Saloon - 7:30 PM-11:00 PM**

## Saturday, April 18, 2015

**Exhibits, Posters, Learning Center - CLOSED**

Panel: Simulation and Telerobotics

SS24: Videos of Distinction

SS25: NOTES/ Transanal

SS26: Cancer

SS27: Plenary Session 2

SAGES General Membership Business Meeting

Advocacy Luncheon

Session: Top 21 Video - Expecting the Unexpected

Panel: Building and Optimizing A Surgical Practice

Panel: Quality Practices in Surgical Education and Training

SS28: Top Posters/ Poster of Distinction Presentations

## HOSTED BY

**Society of American  
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11300 W. Olympic Blvd., Suite 600

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# IPEG Schedule-at-a-Glance



## PRE-MEETING COURSE

### Tuesday, April 14, 2015

- POSTGRADUATE LECTURE: MIS in Infants and Neonates

## IPEG'S 24<sup>th</sup> ANNUAL CONGRESS

### Wednesday, April 15, 2015 NON CME *Hands On Labs*

- Critical Technical Skills for Neonatal and Infant Minimally Invasive Surgery NON CME
- High Fidelity Neonatal Course for the Advanced Learner NON CME
- Innovations in Simulation Based Education for Pediatric Surgeons NON CME
- Joint IPEG/SAGES Opening Ceremony/Welcome Reception NON CME

### Thursday, April 16, 2015

- MORNING SCIENTIFIC VIDEO SESSION I: Coolest Tricks, Extraordinary Procedures
- Welcome Address NON CME
- SCIENTIFIC SESSION: Gastrointestinal
- PRESIDENTIAL ADDRESS & LECTURE: Surgeon, Heal Thyself
- EXPERT PANEL: Bridging the Education Gap with New Innovations
- Poster Presentation of Top 1-10 Posters of Distinction
- SCIENTIFIC SESSION: Urogenital and Single Site Surgery
- SCIENTIFIC SESSION: Basic Science and Innovations
- Joint Session SAGES/IPEG Adolescent Bariatrics
- Karl Storz Lecture NON CME
- Innovations Session NON CME

### Friday, April 17, 2015

- JOINT SESSION IPEG/SAGES: Adolescent Achalasia: The Great Debate
- SCIENTIFIC VIDEO SESSION II
- SCIENTIFIC SESSION: Miscellaneous Abdominal Session
- SCIENTIFIC SESSION: Gastrointestinal, Colorectal & Hepatobiliary II
- Poster Presentation of Top 11-20 Posters of Distinction
- Keynote Lecture
- EXPERT PANEL: The Art, Science, and Ethics of Innovation
- EXPERT PANEL: What's New in Pediatric MIS?
- SCIENTIFIC SESSION: Thorax
- Friday Night Sing Off/Main Event – Joint SAGES/IPEG Event NON CME

### Saturday, April 18, 2015

- MISCELLANEOUS: Short Oral Papers
- GENERAL ASSEMBLY: Presentation of the IPEG 2016 President NON CME
- 2014 Research Award Winner Presentation NON CME
- AWARDS: Coolest Tricks, Basic Science/Innovation, and IRCAD NON CME
- VIDEO SESSION WITH EXPERT PANEL DISCUSSION: “My Worst Nightmare” – The Management of Unusual Complications, and Strategies for Future Avoidance
- Box Lunch and Closing Remarks NON CME

## Innovations Corner

### MAGNET 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 propylene (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.

### PEDIATRIC URETERAL REIMPLANTATION LAP TRAINER

#### Simulation Model for the Training in Pediatric Laparoscopic Ureteral Reimplantation

Inanimate models provide a safe environment by increasing technical performance and cognitive knowledge of surgical procedures without compromising patient's safety. This is the main reason for their rising popularity amongst pediatric surgeons.

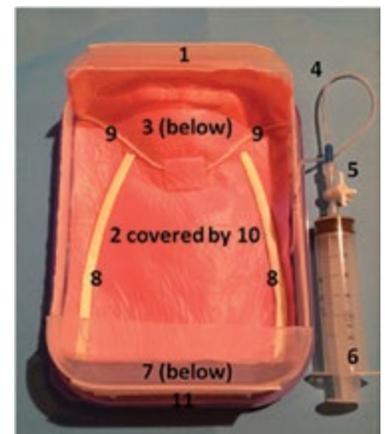
We have designed the first **L**aparoscopic **S**imulator for **P**ediatric **U**reteral **R**eimplantation (LAP SPUR) using the Lich-Gregoire technique. LAP SPUR was tested by 3 highly trained pediatric urologists, using 3-mm, 20-cm short instruments. Low cost reusable materials (RM) and Disposable Materials (DM) "off the shelf" were employed to manufacture LAP SPUR.

- RM: A rectangular plastic bowl (25 x 17 cm)<sup>1</sup> and a neoprene cloth (26 x 36 cm)<sup>2</sup>.
- DM: A water balloon<sup>3</sup>, a K-30 plastic nasogastric tube<sup>4</sup>, a 3-way valve<sup>5</sup>, a 60 ml syringe<sup>6</sup>, a rectangle of foam (17 x 23 x 0.4 cm)<sup>7</sup>, 2 long white balloons (28 x 0.5 cm)<sup>8</sup>, 2 threads of fine white lace<sup>9</sup>, a IOBANTM drape<sup>10</sup> and 1 m of Velcro strap<sup>11</sup>.

In all cases the simulator provided:

1. Usefulness, ease and ergonomics to perform the laparoscopic procedure
2. Similarity to the real anatomic structures involved in terms of appearance and consistency
3. Low cost of the materials: \$ 10.92 (RM: \$ 8.03 and DM: \$ 2.89) in total
4. Low weight (200 grams) for straightforward transportation

Further development and validation are still needed to assess its true benefits though.



## 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.

## HIGH FIDELITY NEONATAL SIMULATION MODELS

### **Simulation Models for Training in Laparoscopic Duodenal Atresia Repair, Esophageal Atresia + tracheoesophageal Fistula Repair, Diaphragmatic Hernia Repair, and Left Lower Lobe Lobectomy**

Each neonatal simulation model has undergone extensive evaluation and subsequent revision to ultimately create an anatomically correct, size appropriate, real tissue simulation model for use in advanced pediatric surgical education. Previous work determined that the models are realistic, relevant and highly valued by novice and expert pediatric surgeons.

Each model has a 3D printed structural surround that replicates the exact size and space limitations of 3.4 kg neonate (DA, EA-TEF, DH) or a 3-month old infant (Lobe). The model is then completed with fetal bovine tissue that has been surgically modified to replicate each congenital anomaly. The model is then covered with a platinum-cured silicone skin. These models are currently being used for the Annual Pediatric Surgery Fellows' Course in Minimally Invasive Surgery and society-sponsored educational courses. Starting in the fall of 2015, these models will be rolled out to several U.S. pediatric surgical training programs, as part of a comprehensive surgical curriculum.



**See page 51 to apply for STORZ Neonatal Minimally Invasive Surgery Trainers**

Available to IPEG Members Only!

## Innovations Corner CONTINUED

### INANIMATE NEONATAL MODELS

#### For Training Esophageal Atresia / Tracheoesophageal Fistula Repair (EA/TEF), Duodenal Atresia (DA) and Hepaticojejunostomy (HY).

We have developed reproducible completely inanimate low cost models anatomically validated, portable and adaptable to the needs of intermediate and advanced training of Pediatric Surgeons.

The models comply with the dimensional anatomical repairs and steps like real surgery. For its external and internal appearance and the materials used are suitable for clinical simulation in surgical environments.

We use our models as part of the training curricula of medical residents and staff physicians of our institution and other centers. Also in international courses such as IPEG and IRCAD.

Our models are in continuous development and evaluation.

#### MODELS FEATURES:

- Anatomically validated
- Low cost
- Reproducible
- Portable
- In constant development and improvement

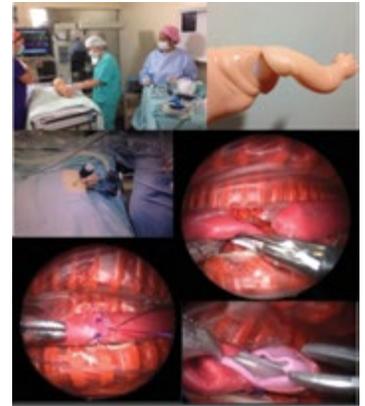
#### BACKGROUND:

*Advanced Neonatal Course. Garrahan Children Hospital. Buenos Aires, Argentina. October 2014*

*IPEG's 23rd Annual Congress for Endosurgery in Children. Edinburgh, Scotland. June 2014.*

*IPEG's 22nd Annual Congress for Endosurgery in Children. Beijing, China. June 2013.*

*IRCAD/BRAZIL Course ADVANCED COURSE IN PEDIATRIC SURGERY "LAPAROSCOPY IN NEONATES" December 2013*



**Esophageal Atresia / TEF Repair Model**



**Duodenal Atresia Model**

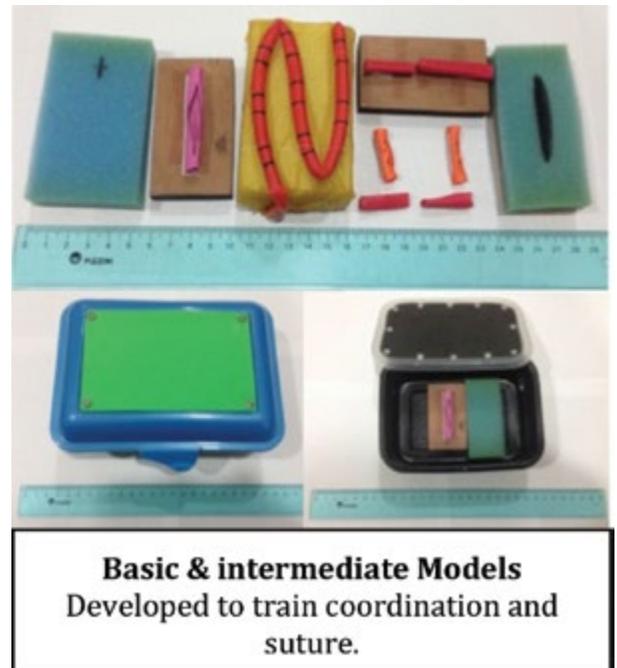
### BASIC AND SUTURING INANIMATE MODELS

We have developed models for basic training, precision, coordination. Appropriate to the endoscopic suturing and instrumental dimensions used in Pediatric Surgery. Provides volume of work area between 150 - 450 ml.

These models are used in training within the curriculum of medical residents, as well as in basic and advanced suturing training courses.

#### BACKGROUND:

*Basic and Advanced Courses. Garrahan Children Hospital. Buenos Aires, Argentina. May, Jun, Jul, Aug, Sep, Oct, Nov. 2013 and 2014*



**Basic & intermediate Models  
Developed to train coordination and  
suture.**



## PRE-MEETING COURSE

## Tuesday, April 14, 2015

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

Delta Ballroom B

CHAIR: Pablo Laje, MD  
CO-CHAIR: Go Miyano, MD

DESCRIPTION: MIS was first developed in adults in the late 1980s. Its use was slower to evolve in children and even slower to be utilized in neonates and infants. This session will review the current use of MIS in neonates and infants and discuss how to utilize this approach safely and effectively for a variety of surgical conditions. This session should be attended by pediatric surgeons who wish to improve their skills by interacting with the experts in the field of neonatal/infant MIS.

## OBJECTIVES

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

- Describe which operations are suitable and which are not for the use of MIS in neonates and infants.
- Recognize that performing MIS procedures in neonates and infants may be more difficult than in older patients and devise methods to prevent injuries when they are applied in their practice.
- Approach the use of MIS in these difficult patient populations with greater confidence.
- Identify methods to make MIS in neonates a safe approach.

TIME	TOPIC	FACULTY
4:00 pm	<b>TEF Repair</b>	Timothy D. Kane, MD
4:45 pm	<b>Duodenal Atresia Repair</b>	David van der Zee, MD
5:30 pm	<b>CDH</b>	Matthew S. Clifton, MD
6:15 pm	<b>MIS Urology</b>	Philipp O. Szavay, MD
7:00 pm	<b>Lung Lobectomy</b>	Pablo Laje, MD
7:45 pm	<b>Q &amp; A</b>	All Faculty

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

IPEG'S 24<sup>th</sup> ANNUAL CONGRESS

## Wednesday, April 15, 2015

8:00 am – 11:30 am **HANDS ON LAB: Critical Technical Skills for Neonatal and Infant Minimally Invasive Surgery** NON CME

Ryman Exhibit Hall B6

CHAIR: Pablo Laje, MD  
CO-CHAIRS: Charles M. Leys, MD & Go Miyano, MD

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: Carolina Millán, MD; Maximiliano Maricic, MD; Alexander Dzakovic, Peter Esslinger, MD; Stephan Gfroerer, MD; Andreas Leutner, MD; Manuel Lopez, MD; Martin Metzelder, MD; Reza Vahdad, MD; Paula Flores, MD; Mike K. Chen, MD

IPEG acknowledges support for this course from Covidien, Halyard Health, Karl Storz Endoscopy and Stryker Endoscopy.



8:00 am – 11:30 am **HANDS ON LAB: Advance Neonatal High Fidelity Course for the Advanced Learner** *Ryman Exhibit Hall B6*

**NON CME**

CHAIR: Matthew S. Clifton, MD

CO-CHAIR: Karen A. Diefenbach, MD & Mathijs W. N. Oomen, MD

DESCRIPTION: This course is designed for advanced MIS pediatric surgeons who are about to begin, or have already begun, to introduce into their practice 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.

#### 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: Kathy Barsness, MD; Atul J. Sabharwal, MD; Maria Marcela Bailez, MD; Simon A. Clarke, MD; Matthew Clifton, MD; Pablo Laje, MD; Philipp O. Szavay, MD

*IPEG acknowledges support for this course from Covidien, Halyard Health, Karl Storz Endoscopy and Stryker Endoscopy.*

1:00 pm – 4:30 pm **HANDS ON LAB: Innovations in Simulation Based Education for Pediatric Surgeons** *Ryman Exhibit Hall B6*

**NON CME**

CHAIR: Karen A. Diefenbach, MD

CO-CHAIRS: Jose M. Prince, MD & Charles M. Leys, 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 trying skills within the confines of a newborn chest or abdomen.
- Describe port placement for TEF and duodenal atresia operations.

#### STATIONS/FACULTY

- TEF Models – Maria Marcela Bailez, MD & Philipp O. Szavay, MD
- CDH – Maximiliano Maricic, MD & Atul J. Sabharwal, MD
- Pyloromyotomy – Joseph A. Iocono, MD
- Lap Inguinal Hernia – Todd A. Ponsky, MD & Simon A. Clarke, MD
- Hepaticojejunostomy – Paula Flores, MD
- PLS – Georges Azzie, MD, Justin T. Gerstle, MD & Dafyyd A. Davies, MD
- Neonatal – Milissa McKee, MD & Charles M. Leys, MD
- Gastrostomy Tube Placement – Marc Michalsky, MD
- Single Site Surgery – Satoshi Ieiri, MD & Holger Till, MD
- Suturing Skills – Go Miyano, MD
- Magnet Single Site – Marcelo Martinez Ferro, MD
- Urology – Carolina Millán, MD
- Gastroschisis – Munther J. Haddad, MD
- NUSS – Helen Heo, MD

*IPEG acknowledges support for this course from Covidien, Halyard Health, Karl Storz Endoscopy and Stryker Endoscopy.*

*IPEG acknowledges in-kind support in support of the Hands-on Labs from: Aesculap, Ethicon, Halyard Health, Just Right Surgical, Karl Storz Endoscopy, and Stryker Endoscopy.*

5:30 pm – 7:30 pm **Joint IPEG/SAGES Opening Ceremony/Welcome Reception** **NON CME**



## Thursday, April 16, 2015

7:30 am – 8:30 am **MORNING SCIENTIFIC VIDEO SESSION I: Coolest Tricks, Extraordinary Procedures** *Tennessee Ballroom A/B*

MODERATORS: Nam Xuan Nguyen, MD & Kenneth K. Wong, MD

**V001: TRANS ORAL ROBOTIC SURGERY FOR RESECTION OF LIFE THREATENING TUMOR OF THE LARYNX IN A 2 YEAR OLD CHILD** – [John J Meehan, MD<sup>1</sup>](#), Edward Mendez, MD<sup>2</sup>, Sanjay Parikh, MD<sup>1</sup>; <sup>1</sup>Seattle Children's Hospital, <sup>2</sup>University of Washington College of Medicine

**V002: PROVOKED AND CONTROLLED PNEUMOTHORAX (PCP): A USEFUL MANEUVER FOR LAPAROSCOPIC LEFT DIAPHRAGMATIC EVENTRATION REPAIR (VIDEO)** – [Luzia Toselli, MD](#), Carolina Millán, MD, Fernando Rabinovich, Arturo Galbarriatu-Gutierrez, MD, Maria-Soledad Valverde, MD, Gaston Bellia-Munzon, MD, Horacio Bignon, MD, Marcelo Martinez-Ferro; Fundacion Hospitalaria, Private Children Hospital

**V003: ENDOSCOPIC WEB LOCALIZATION FOR LAPAROSCOPIC DUODENAL WEB EXCISION** – [Nicholas E Bruns, MD](#), Matthew J Wyneski, MD, Todd A Ponsky, MD; Akron Children's Hospital

**V004: LAPAROSCOPIC TRANSCYSTIC COMMON BILE DUCT EXPLORATION IN AN INFANT** – [Stephanie Chao, MD](#), David Worhunsky, MD, James Wall, MD, Sanjeev Dutta, MD; Stanford University School of Medicine

**V005: MODIFICATIONS TO THE ABRAMSON'S MIS TECHNIQUE FOR PECTUS CARINATUM. MAKING A GOOD PROCEDURE EVEN BETTER (VIDEO)** – Gaston Bellia-Munzon, MD, Carolina Millan, MD, Fernando Rabinovich, MD, Luzia Toselli, MD, Maria-Soledad Valverde, MD, Horacio Bignon, MD, Carlos Fraire, MD, [Marcelo Martinez-Ferro](#); Fundacion Hospitalaria, Private Children Hospital

**V006: THORACOSCOPY MAY NOT BE ENOUGH TO TREAT EXTENSIVE BRONCHOGENIC TRACHEAL WALL CYSTS. TECHNICAL DESCRIPTION OF A COMBINED APPROACH (VIDEO)** – Gaston Bellia-Munzon, MD, [Maria-Soledad Valverde, MD](#), Fernando Rabinovich, MD, Carolina Millan, MD, Luzia Toselli, MD, Horacio Bignon, MD, Marcelo Martinez-Ferro, MD; Fundacion Hospitalaria, Private Children Hospital

**V007: THORACOSCOPIC REDO OF A NUSS PROCEDURE: TIPS AND TRICKS** – [Leonor Carmo](#), Ruben Lamas-Pinheiro, Mariana Dias, Tiago Henriques-Coelho; Centro Hospitalar São João

**V008: LAPAROSCOPIC INTRA-GASTRIC SURGERY FOR GASTRIC TUMOR TO PRESERVE CARDIAC FUNCTION UNDER AUGMENTED REALITY NAVIGATION SYSTEM** – [Satoshi Ieiri, MD, PhD](#), Ryota Souzaki, MD, PhD, Munenori Uemura, PhD, Satoshi Obata, MD, Takahiro Jimbo, MD, Makoto Hashizume, MD, PhD, FACS, Tomoaki Taguchi; Kyushu University

**V009: ULTRASOUND-GUIDED PERCUTANEOUS TRANSPERINEAL ANORECTOPLASTY OF LOW IMPERFORATE ANUS WITHOUT FISTULA** – [Benjamin Zendejas, MD, MSc](#), Christopher R Moir, MD; Mayo Clinic

8:30 am – 8:35 am **Welcome Address** NON CME *Tennessee Ballroom A/B*

Mark L. Wulkan, MD, 2015 President

8:35 am – 9:30 am **SCIENTIFIC SESSION: Gastrointestinal** *Tennessee Ballroom A/B*

MODERATORS: Miguel Guelfand, MD & Saleem Islam, MD

**S001: UTILITY OF PREOPERATIVE UPPER GASTROINTESTINAL SERIES IN LAPAROSCOPIC GASTROSTOMY TUBE PLACEMENT** – [Katherine W Gonzalez, MD](#), Sushanth Boda, BS, Brian G Dalton, MD, Pablo Aguayo, MD, Richard J Hendrickson, MD, Shawn D St. Peter, MD, David Juang, MD; Children's Mercy Hospital, Department of Surgery

**S002: RETROSPECTIVE REVIEW OF LAPAROSCOPIC NISSEN FUNDOPLICATION REQUIRING RE-OPERATION** – [Amita A Desai, MD<sup>1</sup>](#), Hanna Alemayehu, MD<sup>1</sup>, Brian Biggerstaff, MD<sup>2</sup>, Shawn D St. Peter, MD<sup>1</sup>; <sup>1</sup>Children's Mercy Hospital, <sup>2</sup>Creighton University Medical Center

**S003: ENDOSCOPIC, LAPAROSCOPIC, IMAGE-GUIDED PEDIATRIC GASTROSTOMY TUBE PLACEMENT: IMPROVED OUTCOMES WITH A STANDARDIZED APPROACH** – [Morgan K Richards, MD<sup>1</sup>](#), Jarod McAteer, MD, MPH<sup>1</sup>, Dennis Shaw, MD<sup>2</sup>, Ghassan Wahbeh, MD<sup>2</sup>, Jeffrey Foti, MD<sup>2</sup>, Lilah Melzer, BA<sup>2</sup>, [Goldin Adam, MD, MPH<sup>2</sup>](#); <sup>1</sup>University of Washington, <sup>2</sup>Seattle Children's Hospital

**S004: PEG VERSUS LAPAROSCOPIC-ASSISTED PEG (LA-PEG) TECHNIQUE: OUR CLINICAL EXPERIENCE** – Roberto Lo Piccolo, Marco Ghionzoli, Alessandra Martin, Matteo Posarelli, [Antonio Messineo](#); Meyer Children's Hospital – University of Florence



**V010: LAPAROSCOPIC REMOVAL OF GASTRIC DUPLICATION CYST** – Sandra M Farach, MD, Paul D Danielson, MD, Nicole M Chandler, MD; All Children’s Hospital Johns Hopkins Medicine

**S005: MANAGEMENT AND OUTCOME OF MUCOSAL INJURY DURING PYLOROMYOTOMY – AN ANALYTICAL SURVEY STUDY** – Sibylle Waldron, MD<sup>1</sup>, Oliver J Muensterer, MD, PhD<sup>1</sup>, Shawn D St. Peter, MD<sup>2</sup>; <sup>1</sup>University Medicine, Johannes Gutenberg University Mainz, <sup>2</sup>Children’s Mercy Hospitals, Kansas, MO

**S006: PROSPECTIVE EVALUATION OF CARDIAPPLICATION** – Sarah J Hill, MD, Mark Wulkan, MD; Emory University School of Medicine, Division of Pediatric Surgery, Children’s Healthcare of Atlanta

**S007: SYMPTOM RELIEF IN PEDIATRIC ACHALASIA IS ATTAINED WITH FEWER INTERVENTIONS IN PATIENTS UNDERGOING HELLER MYOTOMY** – Jessica A Zagory, MD, Jamie Golden, MD, Henri Ford, MD, MHA, Nam X Nguyen, MD; Children’s Hospital Los Angeles

**S008: THE IMPACT OF LAPAROSCOPIC SURGERY ON INTESTINAL OBSTRUCTION BEYOND THE NEONATAL PERIOD** – Christoph H Houben, MD, FRCSPaed, FRCSEdGlas, DTMH, Kristine Kit Yi Pang, Mb, ChB, FRCSEd, FRCSEdPaed, Wai Cheung Mou, MB, ChB, FRCSEdPaed, Kin Wai Chan, MB, ChB, FRCSEdPaed, Yuk Huk Tam, MB, ChB, FRCSEdPaed, Kim Hung Lee, MB, BS, FRCSEdPaed; Prince of Wales Hospital

9:30 am – 10:00 am **PRESIDENTIAL ADDRESS & LECTURE: Surgeon, Heal Thyself**

Tennessee Ballroom A/B

SPEAKER: Mark L. Wulkan, MD, 2015 President

Introduction by Katherine A. Barsness, MD

DESCRIPTION: This session will focus on physician/surgeon wellness. Topics covered will include work/life balance, burnout, compassion fatigue, and career satisfaction. The designated audience is surgeons; however, the topics covered are applicable to any health care provider.

OBJECTIVES

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

- Understand the prevalence of burnout, depression and poor career satisfaction among physicians.
- Recognize signs of burnout in themselves and others.
- Develop personal strategies to promote wellness.

10:00 am – 10:30 am **Break**

10:30 am – 12:00 pm **EXPERT PANEL: Bridging the Education Gap with New Innovations**

Tennessee Ballroom A/B

CHAIR: Katherine A. Barsness, MD

CO-CHAIR: Philipp O. Szavay, MD

DESCRIPTION: We will review what an educational gap is, followed by existing educational gaps for pediatric surgical education. Panel guests will then present three different applications of technology to meet these existing gaps. Participants interested in innovative solutions to surgical education are invited to attend the session.

OBJECTIVES

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

- Describe an education gap.
- Predict which emerging educational tools may best meet existing educational gaps.
- Articulate advantages and disadvantages for each of the emerging educational tools discussed in the panel.

TIME	TOPIC	FACULTY
10:30 am	<b>What is an Educational Gap?</b>	Katherine Barsness, MD, MS
10:45 am	<b>Web-based Learning Solutions for Pediatric Surgeons</b>	Todd A. Ponsky, MD
11:00 am	<b>Telementoring for New Surgical Procedures</b>	Steven Rothenberg, MD
11:15 am	<b>Educational Tools for Resource Poor Countries</b>	Allan Okrainec, MD (SAGES)
11:30 am	<b>V011: TRANSATLANTIC TELEMENTORING WITH PEDIATRIC SURGEONS: TECHNICAL CONSIDERATIONS AND LESSONS LEARNED</b> – Nicholas E Bruns, MD <sup>1</sup> , Sabine Irtan, MD, PhD <sup>2</sup> , Steven S Rothenberg, MD <sup>3</sup> , Todd A Ponsky, MD <sup>1</sup> ; <sup>1</sup> Akron Children’s Hospital, Akron, OH, USA, <sup>2</sup> Trousseau Hospital, Paris, France, <sup>3</sup> Rocky Mountain Hospital for Children, Denver, CO, USA	
11:35 am	<b>Summary Panel Discussion</b>	Philipp O. Szavay, MD



12:00 pm – 12:25 pm **Free Eat & Greet Lunch in the Exhibit Hall for All Attendees**

*Ryman Exhibit Hall C*

12:25 pm – 1:00 pm **Poster Presentation of Top 1–10 Posters of Distinction**

*Tennessee Ballroom A/B*

MODERATORS: Celeste Hollands, MD & Satochi Ieiri, MD

**T001: THE PRELIMINARY APPLICATION OF ROBOTIC-ASSISTED 3-DIMENSION-HIGH-DEFINITION LAPAROSCOPIC SURGERY IN CHILDREN** – [Jiangbin Liu, Zhibao Lv, Hui Li, Yibo Wu, Yimin Huang](#); Shanghai Children's Hospital

**T002: LAPAROSCOPIC REMOVAL OF NEUROGENIC TUMORS FOR LOCATIONS OTHER THAN ADRENAL: AN INTERESTING OPTION IN SELECTED CASES** – [Sabine Irtan, MD, PhD<sup>1</sup>](#), Gudrun Schleiermacher, MD, PhD<sup>2</sup>, Véronique Minard-Colin, MD, PhD<sup>3</sup>, Claudia Pasqualini, MD<sup>3</sup>, Jean Michon, MD, PhD<sup>2</sup>, Dominique Valteau-Couanet, MD, PhD<sup>3</sup>, Daniel Orbach, MD, PhD<sup>2</sup>, Sabine Sarnacki, MD, PhD<sup>4</sup>; <sup>1</sup>Trousseau Hospital, Paris, France, <sup>2</sup>Curie Institute, Paris, France, <sup>3</sup>Gustave Roussy Institute, Villejuif, France, <sup>4</sup>Necker Enfants malades Hospital, Paris, France

**T004: MINIMALLY INVASIVE SURGERY IN CHILDREN WITH THORACOABDOMINAL NEUROBLASTOMA** – [Evgeny Andreev<sup>1</sup>](#), Maxim Sukhov<sup>1</sup>, Denis Kachanov<sup>1</sup>, Victor Rachkov<sup>2</sup>, Nikolay Grachev<sup>1</sup>, Natalya Uskova<sup>1</sup>, Raisa Oganessian<sup>1</sup>, Tatyana Shamnaskaya<sup>1</sup>, Galina Tereschenko<sup>1</sup>, Svetlana Varfolomeeva<sup>1</sup>; <sup>1</sup>Federal Scientific and Clinical Center of Pediatric Hematology, Oncology and Immunology named after, <sup>2</sup>Russian National Research Medical University named after N.I. Pirogov

**T005: LAPAROSCOPIC ASSISTED PYELOPLASTY IN SMALL BABIES** – [Mustafa Kucukaydin, MD<sup>1</sup>](#), Ufuk Tan Aygun, MD<sup>1</sup>, Necip Fazil Aras, MD<sup>2</sup>, Ayse Betul Ozturk, MD<sup>2</sup>, Mahmut Guzel, MD<sup>2</sup>; <sup>1</sup>Division of Pediatric Urology, Erciyes University, School of Medicine, <sup>2</sup>Department of Pediatric Surgery, Erciyes University, School of Medicine

**T007: TRANS-UMBILICAL LAPAROSCOPIC-ASSISTED APPENDECTOMY (TULAAP): A COMPARATIVE STUDY BETWEEN SINGLE INCISION AND 2-TROCAR TECHNIQUES** – [Mariana Borges-Dias, MD](#), Leonor Carmo, MD, Ruben Lamas-Pinheiro, MD, Tiago Henriques-Coelho, PhD, J. Estevão-Costa, PhD; Department of Pediatric Surgery. Hospital S. João; Faculty of Medicine. Porto-Portugal

**T008: LAPAROSCOPIC CONSERVATIVE TREATMENT OF OVARIAN TERATOMA** – [Claudio Vella, MD<sup>1</sup>](#), Sara Costanzo, MD<sup>1</sup>, Camilla Viglio, MD<sup>1</sup>, Federica Marinoni, MD<sup>1</sup>, Claudia Filisetti, MD<sup>1</sup>, Monica Terenziani, MD<sup>2</sup>, Giovanna Riccipetoni, MD<sup>2</sup>; <sup>1</sup>Pediatric Surgery Department, "V.Buzzi" Children's Hospital ICP, Milan – Italy, <sup>2</sup>Pediatric Department, Fondazione IRCCS National Cancer Institute, Milan, Italy

**T009: THE CLINICAL CHARACTERS AND THE LAPAROSCOPIC OPERATION OF THE CONGENITAL CHOLEDOCHAL CYST IN PERINATAL DIAGNOSED PATIENTS** – [Kuiran Dong, MD](#), Weitao Tang, Dr, Xianming Xiao, MD, Shan Zheng, MD, Gong Chen, MD, Chun Shen, MD; Children's Hospital of Fudan University

**T010: LAPAROSCOPIC DIAGNOSIS AND TREATMENT OF COMPLEX INTESTINAL MALROTATION IN CHILDREN: REPORT OF 14 CASES** – [Bing Li<sup>1</sup>](#), Bing Chen<sup>1</sup>, Qing Wang<sup>1</sup>, Wei Guo<sup>2</sup>, Bo\* Wang<sup>3</sup>; <sup>1</sup>Department of Pediatric Surgery, Huai'an Women and Children's Hospital, 104 Renmin Road South, Jiang, <sup>2</sup>Department of Clinical Medicine, Nanjing Medical University, 140 Hanzhong Road, Nanjing, Jiangsu, 21, <sup>3</sup>Department of General surgery, Huai'an First People's Hospital, Nanjing Medical University, 6 Beiji

1:00 pm – 2:00 pm **SCIENTIFIC SESSION: Urogenital and Single Site Surgery**

*Tennessee Ballroom A/B*

MODERATORS: Oliver J. Muensterer, MD & CK Yeung, MD

**S009: SINGLE-INCISION LAPAROSCOPIC-ASSISTED ONE-STAGE ANORECTOPLASTY FOR NEWBORNS WITH ANORECTAL MALFORMATIONS AND RECTO-URETHRAL FISTULA** – [Mei Diao, MD, PhD](#), Long Li, MD, PhD, Mao Ye, M, Med, Kao-Ping Guan, M, Med, PhD, Yan-Dong Wei, M, Phil; Department of Pediatric Surgery, Capital Institute of Pediatrics, Beijing, CHINA

**V012: LAPAROSCOPIC RECONSTRUCTION FOR RETROCAVAL URETER IN A CHILD** – [Chandrasekharam Vvs, M, Ch<sup>1</sup>](#), Ramesh Babu Srinivasan, M, ch, FRCS<sup>2</sup>; <sup>1</sup>Rainbow Hospitals for women and children, Hyderabad, <sup>2</sup>SRMCH, Chennai

**S010: WILMS' TUMORS AND LAPAROSCOPIC TREATMENT** – [Francois Varlet, MD, PhD<sup>1</sup>](#), Y Heloury, MD, PhD<sup>2</sup>, Marc David Leclair, MD, PhD<sup>3</sup>, Thierry Petit, MD, PhD<sup>3</sup>, Francois Becmeur, MD, PhD<sup>4</sup>, Stephan Geiss, MD<sup>5</sup>, Hubert Lardy, MD, PhD<sup>6</sup>, Frederic Lavrand, MD<sup>7</sup>, Manuel Lopez, MD<sup>1</sup>; <sup>1</sup>University Hospital of Saint Etienne, <sup>2</sup>University Hospital of Melbourne, <sup>3</sup>University Hospital of Nantes, <sup>4</sup>University Hospital of Strasbourg, <sup>5</sup>Hospital of Colmar, <sup>6</sup>University Hospital of Tours, <sup>7</sup>University Hospital of Bordeaux



**S012: COMPARISON OF TRANSUMBILICAL LAPAROSCOPIC ASSISTED APPENDECTOMY (TULA) VERSUS SINGLE INCISION LAPAROSCOPIC APPENDECTOMY (SILA) IN CHILDREN: WHICH IS THE BETTER SURGICAL OPTIONS?** – [Yoon Jung Boo, MD, PhD<sup>1</sup>](#), Hyoung Jun Han, MD, PhD<sup>2</sup>, Sang Hee Kang, MD<sup>2</sup>, Yoon Lee, MD<sup>3</sup>, Eun Hee Lee<sup>3</sup>, Ji Sung Lee<sup>4</sup>; <sup>1</sup>Division of Pediatric Surgery, Korea University College of Medicine, Seoul, Korea, <sup>2</sup>Department of Surgery, Korea University College of Medicine, Seoul, Korea, <sup>3</sup>Department of Pediatrics, Korea University College of Medicine, Seoul, Korea, <sup>4</sup>Department of Medical Statistics, Asan Medical Center, Seoul, Korea

**S013: ONCOLOGIC OUTCOMES AFTER OPEN VERSUS LAPAROSCOPIC ADRENALECTOMY FOR ADRENAL NEUROBLASTOMA IN CHILDREN** – [Yujiro Tanaka, PhD<sup>1</sup>](#), Hiroo Uchida, PhD<sup>2</sup>, Hiroshi Kawashima<sup>1</sup>, Miki Toma<sup>1</sup>, Michimasa Fujiogi<sup>1</sup>, Keisuke Suzuki<sup>1</sup>, Hizuru Amano<sup>1</sup>, Kaori Morita<sup>1</sup>, Yuki Arakawa<sup>1</sup>, Makiko Mori<sup>1</sup>, Katsuyoshi Koh<sup>1</sup>, Tadashi Iwanaka, PhD, Professor<sup>3</sup>; <sup>1</sup>Saitama Children's Medical Center, <sup>2</sup>Nagoya University Graduate School of Medicine, <sup>3</sup>University of Tokyo Hospital

**S015: LAPAROSCOPIC TREATMENT OF RENAL TUMORS. SURGICAL ASPECTS TO DECIDE THE CONVERSION TO AN OPEN APPROACH. INITIAL EXPERIENCE IN A SINGLE INSTITUTION** – [Paula Flores, MD](#), Martin Cadario, MD, Yvonne Lenz, MD, Maria M Bailez, MD; Garrahan Hospital

**V013: HYBRID SINGLE PORT LAPAROSCOPIC CHOLECYSTECTOMY WITH INTRAOPERATIVE CHOLANGIOGRAM** – [Alfredo D. Guerron, MD](#), Federico G Seifarth, MD; Cleveland Clinic

**S016: FEASIBILITY OF TRANS-UMBILICAL LAPARO-ENDOSCOPIC SINGLE SITE SURGERY WITH CONVENTIONAL INSTRUMENTS IN PERFORMING HEPATIC DUCTOPLASTY IN MANAGEMENT OF CHILDHOOD CHOLEDOCHAL CYST** – [Tran N. Son, MD, PhD](#), Dinh A Duc, MD; National Hospital of Pediatrics, Hanoi, Vietnam

2:00 pm – 3:00 pm **SCIENTIFIC SESSION: Basic Science and Innovations**

*Tennessee Ballroom A/B*

MODERATORS: Daniel J. Ostlie, MD & Benno Ure, MD

**S017: CONSTRUCT VALIDITY AND POTENTIAL ADVANCED EDUCATIONAL ROLE OF A MORE CHALLENGING SUTURING TASK IN THE PEDIATRIC LAPAROSCOPIC SURGERY (PLS) SIMULATOR** – [Maeve O'Neill Trudeau, MD<sup>1</sup>](#), Brian Carrillo, PhD<sup>2</sup>, Ahmed Nasr, MD, FRCSC<sup>3</sup>, J. Ted Gerstle, MD, FRCSC, FACS, FAAP<sup>4</sup>, Georges Azzie, MD, FRCSC<sup>4</sup>; <sup>1</sup>Department of General Surgery, University of Toronto, St. Michael's Hospital, 30 Bond St, M5B 1W8, <sup>2</sup>Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8., <sup>3</sup>Dept of Surgery, University of Ottawa, Children's Hospital of Eastern Ontario, Ottawa ON Canada, <sup>4</sup>Division of General and Thoracic Surgery, Hospital for Sick Children, Toronto, ON, Canada M5G 1X8

**S018: FIRST LAPAROSCOPIC SIMULATOR FOR PEDIATRIC URETERAL REIMPLANTATION (LAP SPUR)** – [Carolina Millan, MD<sup>1</sup>](#), Manuel Lopez, MD<sup>2</sup>, Grecia Vivas-Colmenares, MD<sup>1</sup>, Maximiliano Maricic, MD<sup>1</sup>, Fernando Rabinovich, MD<sup>1</sup>, Luzia Toselli, MD<sup>1</sup>, Maria-Soledad Valverde, MD<sup>1</sup>, Gaston Bellia-Munzon, MD<sup>1</sup>, Horacio Bignon, MD<sup>1</sup>, Marcelo Martinez-Ferro<sup>1</sup>; <sup>1</sup>Fundacion Hospitalaria, Private Children Hospital, <sup>2</sup>Centre Hospitalier Universitaire Sanit Etienne, France

**S019: 3-DIMENSIONAL (3D) VERSUS 2-DIMENSIONAL (2D) LAPAROSCOPY IN DIFFERENT OPERATIVE SPACES IMPROVES THE EASE OF LEARNING LAPAROSCOPIC SURGERY** – Xiaoyan Feng, Anna Morandi, Tawan Imvised, Benno Ure, Joachim Kuebler, [Martin Lacher](#); Hannover medical school

**S020: TOWARDS VALIDATED SURGICAL SKILLS ASSESSMENT: AUTOMATED MONITORING OF TRACHEOESOPHAGEAL FISTULA REPAIR** – [Siddarth Jain, BE<sup>1</sup>](#), Katherine A Barsness, MD, MS<sup>2</sup>, Ellie O'Brien, BS<sup>3</sup>, Brenna D Argall, PhD<sup>1</sup>; <sup>1</sup>Northwestern University, Rehabilitation Institute of Chicago, <sup>2</sup>Ann and Robert H. Lurie Children's Hospital of Chicago, Northwestern Univ. Dept. of Medical Education, <sup>3</sup>Northwestern University Department of Medical Education

**S021: INSIGHT INTO SIMULATION-BASED TOOLS THAT MAY IMPROVE EXPERTISE AMONG EXPERTS: A COMPARISON OF ADULT AND PEDIATRIC SURGEONS** – [Maeve O'Neill Trudeau, MD<sup>1</sup>](#), Brian Carrillo, PhD<sup>2</sup>, Ahmed Nasr, MD, FRCSC<sup>3</sup>, J. Ted Gerstle, MD, FRCSC, FACS, FAAP<sup>4</sup>, Georges Azzie, MD, FRCSC<sup>4</sup>; <sup>1</sup>Dept. of General Surgery, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8., <sup>3</sup>Department of Surgery, University of Ottawa, Children's Hospital of Eastern Ontario, Ottawa, Ontario, <sup>4</sup>Division of General and Thoracic Surgery, Hospital for Sick Children, Toronto, ON, Canada M5G 1X8

**S022: CONSTRUCT, CONCURRENT, AND CONTENT VALIDITY FOR THE EOSIM® LAPAROSCOPIC SIMULATOR ADAPTED FOR PEDIATRIC LAPAROSCOPIC SURGERY** – [Giuseppe Retrosi, MD<sup>1</sup>](#), Thomas P Cundy, PhD<sup>2</sup>, Munther J Haddad, FRCS<sup>1</sup>, Simon A Clarke, FRCS<sup>1</sup>; <sup>1</sup>Division of Paediatric Surgery, Chelsea and Westminster Hospital NHS Foundation Trust, London UK, <sup>2</sup>Hamlyn Centre, Institute of Global Health Innovation, St. Mary's Hospital, Imperial College London



**S023: THE IMPACT OF LAPAROSCOPY AND LAPAROTOMY SURGERY ON NOD SIGNAL PATHWAY IN CHILDREN WITH APPENDICITIS** – Jian Wang, Yiping Li, Jie Zhu; Children’s Hospital of soochow Univesity

**S024: VIDEO ASSESSMENT OF LAPAROSCOPIC SKILL IS RELIABLE REGARDLESS OF EVALUATORS’ LEVEL OF EXPERTISE** – Celine Yeung, MSc<sup>1</sup>, Brian Carrillo, PhD<sup>2</sup>, Victor Pope<sup>3</sup>, Shahob Hosseinpour, BHSc<sup>1</sup>, J. Ted Gerstle, MD, FRCSC, FACS, FAAP, FCS<sup>2</sup>, Georges Azzie, MD<sup>2</sup>; <sup>1</sup>Faculty of Medicine, University of Toronto, <sup>2</sup>Division of General and Thoracic Surgery, The Hospital for Sick Children; CIGITI, <sup>3</sup>Division of Otolaryngology, The Hospital for Sick Children

**S025: THE NEW INNOVATIVE LAPAROSCOPIC FUNDOPLICATION TRAINING SIMULATOR WITH SURGICAL SKILL VALIDATION SYSTEM** – Takahiro Jimbo, MD<sup>1</sup>, Satoshi Ieiri, MD, PhD<sup>1</sup>, Satoshi Obata<sup>1</sup>, Ryota Souzaki<sup>1</sup>, Munenori Uemura<sup>2</sup>, Noriyuki Matsuoka<sup>3</sup>, Tamotsu Katayama<sup>3</sup>, Kouji Masumoto<sup>4</sup>, Makoto Hashizume<sup>2</sup>, Tomoaki Taguchi<sup>1</sup>; <sup>1</sup>Department of Pediatric Surgery, Faculty of Medical Sciences, Kyushu University, <sup>2</sup>Department of Advanced Medicine and Innovative Technology, Kyushu University, <sup>3</sup>Kyoto Kagaku, Co. Ltd, <sup>4</sup>Department of Pediatric Surgery, Faculty of Medicine, University of Tsukuba

3:00 pm – 3:30 pm **Break**

3:30 pm – 5:00 pm **Joint Session SAGES/IPEG Adolescent Bariatrics**

*SAGES Delta Ballroom C*

CHAIR: Janey Pratt, MD

CO-CHAIR: Carroll Harmon, MD, PhD

DESCRIPTION: In this session we will present and update on the Teen LABBS outcomes study and discuss the anatomic, metabolic and nutritional complications seen after bariatric surgery, especially those that are particularly common in Adolescents. We will also discuss Pregnancy after WLS. This session is for pediatric and adult surgeons who cover bariatric patients or perform bariatric surgery.

**OBJECTIVES**

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

- Recognize and treat anatomic, metabolic and nutritional complications of weight loss surgery.
- Identify and Diagnose unusual complications that can occur in Pediatric weight loss surgery patients but are rarely seen in adult patients.
- Counsel patients on risks and benefits of weight loss surgery before pregnancy.
- Counsel patients and develop plans for surgical or medical treatments for weight regain after weight loss surgery.

TIME	TOPIC	FACULTY
3:30 pm	<b>Teen LABBS Update</b>	Marc Michalsky, MD
3:45 pm	<b>Complications of Gastric Banding</b>	Christine Ren Fielding, MD (SAGES)
3:55 pm	<b>Anatomic Complications of Stapled Procedures</b>	Samer Mattar, MD (SAGES)
4:10 pm	<b>Pregnancy After WLS in Adolescents</b>	Janey Pratt, MD (SAGES)
4:25 pm	<b>The Great Debate: Which Operations at What Age?</b>	Carroll Harmon, MD, PhD
4:40 pm	<b>Q&amp;A</b>	

*IPEG members Uber has partnered up with IPEG to provide discounted transportation to and from the event venue.*

PROMO CODE: **IPEG2015**

Go to: <https://get.uber.com/go/IPEG2015>

*\*The code is for new users only and for a free ride up to \$20*





5:15 pm – 5:45 pm

**KARL STORZ LECTURE & LIFETIME ACHIEVEMENT AWARD RECIPIENT**  
**Pioneers, Cowboys and Desperados: The Saga of Pediatric Surgeons**  
**and Their Struggle with Hirschsprung's Disease**

NON CME

Tennessee Ballroom A/B

SPEAKER: Keith E. Georgeson, MD

Introduction by Mark Wulkan, MD, 2015 President



Dr. Keith Georgeson is a native Californian who spent his childhood years on the family farm in the San Joaquin Valley. He received his medical degree at Loma Linda University in Southern California. His fellowship in pediatric surgery was completed at the Children's Hospital of Michigan in Detroit. After nine years on the faculty at Loma Linda University, he moved with his family to Birmingham, Alabama, where he was Chief of Pediatric Surgery at the University of Alabama, School of Medicine for 26 years, and Chief of Surgery at the Children's Hospital of Alabama. He was appointed Vice Chairman of the University's Department of Surgery in 2006. In 2012, he and his wife Evelyn moved to Spokane where he has continued his practice in pediatric surgery, and serves as the Division Chief of Children's Services at Sacred Heart Children's Hospital.

Dr. Georgeson's primary academic interest has been in the evolution of minimally invasive pediatric surgery. He has developed several minimally invasive surgical techniques for children, including laparoscopic fundoplication, laparoscopic gastrostomy, laparoscopic pull-through for Hirschsprung disease and laparoscopic pull-through for high anorectal malformations. He has edit three books on the subject of pediatric minimally invasive surgery, of which two were also translated into Spanish.

Dr. Georgeson was a Director of the American Board of Surgery from 2000 to 2006 and Chairman of the Pediatric Surgery Board of the American Board of Surgery from 2003 to 2006. He is a past President of the American Pediatric Surgical Association (APSA) and a founding member and past President of the International Pediatric Endosurgery Group (IPEG). In October 2011, he was awarded the Ladd Medal from the American Academy of Pediatrics for his contributions to the field of Pediatric Surgery.

5:45 pm – 6:15 pm

**Innovations Session** NON CME

Tennessee Ballroom A/B

MODERATORS: Steven Rothenberg, MD &amp; Timothy D. Kane, MD

**ETV001: THE USE OF A 5MM 3-D VIDEO SYSTEM IN NEONATES AND INFANTS** – David C van der Zee, Department of Pediatric Surgery, University Medical Center Utrecht, The Netherlands

**ETV002: ENDOVASCULAR TREATMENT OF A CONGENITAL THORACIC AORTIC ANEURYSM IN A PREMATURE NEWBORN** – Steve Ferrara, Chad Mao, Marlon Tingzon, Romeo C. Ignacio, Jr.; Naval Medical Center San Diego

**ETV003: RIGHT NEPHROURETERECTOMY USING HYBRID TECHNIQUE: MAGNET MAGNET ASSISTED AND MINILAP IN A CHILD** – Manuel Lopez, Rocio Gutierrez, Eduardo Perez, Loren Margain, Sophie Vermersch, François Varlet; University Hospital of Saint Etienne, Department of Paediatric Surgery & Urology, Saint Etienne, France

**ETV004: INNOVATIVE INTERRUPTED X SUTURES WITH 3-1-2 KNOTTING TO PREVENT RECURRENCE OF CONGENITAL DIAPHRAGMATIC HERNIA DURING THORACOSCOPIC REPAIR** – Gulam Mohammed Irfan, MS, MRCSEd, MCh, P Srinivas Reddy, MS, MCh, K Vinod Kumar, MS, MCh; Department of Paediatric Surgery, Niloufer Hospital, Institute of Women and Child Health, Osmania Medical College

**ET001: MAGNAMOSIS V: DESIGN AND DEVELOPMENT OF TOOLS AND TECHNIQUES FOR SAFELY DEPLOYING THE MAGNETIC ANASTOMOTIC RINGS** – Dillon A Kwiat<sup>1</sup>, Luzia Toselli, MD, Anupama Arun, PhD<sup>1</sup>, Richard Fechter<sup>1</sup>, Lauren Ritz, MD<sup>1</sup>, Elizabeth A Gress<sup>1</sup>, Shuvo Roy, PhD<sup>1</sup>, Shinjiro Hirose, MD<sup>2</sup>, Corey W Iqbal, MD<sup>3</sup>, Michael R Harrison, MD<sup>1</sup>; <sup>1</sup>University of California, San Francisco, <sup>2</sup>University of California, Davis, <sup>3</sup>University of Missouri, Kansas City

**ETV005: DOUBLE ENDOSCOPY AS A METHOD OF ESTABLISHING A NEOPYLORUS IN INADVERTENT PERMANENT STAPLED PYLORIC EXCLUSION AFTER GUNSHOT WOUND** – Nicholas E Bruns, MD<sup>1</sup>, Alexander T Gibbons, BA, BS<sup>1,2</sup>, Reinaldo Garcia, MD<sup>3</sup>, Matthew J Wyneski, MD<sup>3</sup>, Todd A Ponsky, MD<sup>1</sup>; <sup>1</sup>Department of Pediatric Surgery, Akron Children's Hospital, Akron, Ohio, <sup>2</sup>Case Western Reserve University School of Medicine, Cleveland, Ohio, <sup>3</sup>Department of Pediatric Gastroenterology, Akron Children's Hospital, Akron, Ohio



## Friday, April 17, 2015

7:30 am – 8:30 am **JOINT SESSION IPEG/SAGES: Adolescent Achalasia: The Great Debate** *Tennessee Ballroom A/B*

CHAIRS: Todd A. Ponsky, MD (IPEG) & Gretchen Purcell Jackson, MD (SAGES)

DESCRIPTION: This session will address current areas of debate relating to achalasia in the adolescent. Topics will include the use of high resolution manometry, Per Oral Endoscopic Myotomy, and robotic surgery.

## OBJECTIVES

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

- Understand the current literature as it relates to the benefit of high resolution manometry in the workup of achalasia.
- Understand the current literature as it relates to the safety and efficacy of POEM in the treatment of achalasia.
- Understand the benefits of robotic heller myotomy compared to traditional laparoscopy.

TIME	TOPIC	FACULTY
7:30 am	<b>HRM: “Not Necessary” vs. “Worth the Expense” Peds Surgeon “Breaking the Bank” Adult Surgeon “Ground Breaking”</b>	Abdallah Zarroug, MD Pablo Omelanczuk, MD (SAGES)
7:50 am	<b>POEM: “Ready for Prime Time” vs. “Not Ready” Peds Surgeon “Great Idea... Where Are the Data?” Adult Surgeon “Ready for Prime Time!”</b>	Timothy D. Kane, MD Jeffrey L. Ponsky, MD (SAGES)
8:10 am	<b>Ready for Robot?: Peds Surgeon “Laparoscopes Only, Please!” Adult Surgeon “Bring in the Robot!”</b>	Daniel J. Ostlie, MD Santiago Horgan, MD (SAGES)

8:30 am – 9:30 am **SCIENTIFIC VIDEO SESSION II** *Tennessee Ballroom A/B*

MODERATORS: Marc A. Levitt, MD & Abdallah Zarroug, MD

**V014: LAPAROSCOPIC SWENSON PULL-THROUGH: HOW LOW WE CAN REACH LAPAROSCOPICALLY?** – [Chin-Hung Wei](#)<sup>1</sup>, Yu-Wei Fu, MD<sup>1</sup>, Marc Levitt<sup>2</sup>, Belinda Dickie<sup>3</sup>; <sup>1</sup>Mackay Memorial Hospital, <sup>2</sup>Nationwide Children’s Hospital, <sup>3</sup>Cincinnati Children Hospital Medical Center

**V015: AN EASY AND SAFE TECHNIQUE OF LAPAROSCOPIC PYLOROMYOTOMY: USING VASCULAR CLAMP FOR STABILIZATION OF PYLORUS** – [Michimasa Fujigoi](#)<sup>1</sup>, Yujiro Tanaka, MD, PhD<sup>1</sup>, Hiroshi Kawashima, MD<sup>1</sup>, Miki Toma, MD<sup>1</sup>, Keisuke Suzuki, MD<sup>1</sup>, Hizuru Amano, MD<sup>1</sup>, Kaori Morita, MD<sup>1</sup>, Hiroo Uchida, MD, PhD, Prof<sup>2</sup>, Tadashi Iwanaka, MD, PhD, Prof<sup>3</sup>; <sup>1</sup>Saitama Children’s Medical Center, <sup>2</sup>Nagoya University Graduate School of Medicine, <sup>3</sup>Faculty of medicine, The University of Tokyo

**V016: LAPAROSCOPIC RESECTION OF A NONCOMMUNICATING CAVITATED MULLERIAN STRUCTURE** – [Maria M Bailez](#), MD, Lucila Alvarez, MD, Mauro Caparelli, MD; Garrahan children,s Hospital Buenos Aires

**V017: LAPAROSCOPIC ROUX-EN-Y PANCREATIC CYST-JEJUNOSTOMY** – Troy Markel, MD<sup>1</sup>, [Charles M Leys](#), MD, MSCI<sup>2</sup>; <sup>1</sup>Indiana University School of Medicine, <sup>2</sup>University of Wisconsin School of Medicine and Public Health

**V018: VIDEO-ASSISTED THORACOSCOPIC RESECTION OF A LEFT BRONCHOGENIC CYST** – [Abigail B Podany](#), MD, Afif N Kulaylat, MD, Jonathan M Tomasko, MD, Dorothy V Rocourt, MD; Penn State Hershey Medical Center

**V019: PEDIATRIC PER-ORAL ENDOSCOPIC MYOTOMY FOR ACHALASIA (POEM)** – [Stephanie Chao](#), MD, William Berquist, MD, Robert Wright, BS, James Wall, MD; Lucile Packard Children’s Hospital Stanford

**V020: LAPAROSCOPIC BILATERAL GIANT INGUINAL HERNIA REPAIR: KEEP CALM AND MIX TECHNIQUES** – [Angélica Osório](#), MD<sup>1</sup>, Jorge Correia-Pinto, MD, PhD<sup>2</sup>; <sup>1</sup>Pediatric Surgery, Hospital de Braga, Braga, Portugal, <sup>2</sup>Pediatric Surgery, Hospital Braga; ICVS/3B’s – PT Associate Laboratory; Braga, Portugal

**V021: ENUCLEATION OF BLADDER WALL LEIOMYOMA VIA SINGLE INCISION PEDIATRIC ENDOSCOPIC SURGERY (SIPES) WITH GLOVE ACCESS PORT** – [Maria C Mora](#), MD<sup>1</sup>, Katilyn E Wong, MD, MPH<sup>1</sup>, David B Tashjian, MD<sup>2</sup>, Kevin P Moriarty, MD<sup>2</sup>, Michael V Tirabassi, MD<sup>2</sup>; <sup>1</sup>Baystate Medical Center, Tufts University School of Medicine, <sup>2</sup>Baystate Children’s Hospital, Tufts University School of Medicine

**V022: ROBOTIC-ASSISTED GASTROESOPHAGEAL DISSOCIATION FOR RECURRENT GASTROESOPHAGEAL REFLUX DISEASE** – [Dan Parrish](#), MD, Shannon Rosati, MD, Patricia Lange, MD, Claudio Oiticica, MD, David Lanning, MD, PhD; Virginia Commonwealth University



9:30 am – 10:00 am **Break**

10:00 am – 11:00 am **SCIENTIFIC SESSION: Miscellaneous Abdominal Session**

*Tennessee Ballroom A/B*

MODERATORS: Mathijs W. N. Oomen, MD & Samir R. Pandya, MD

**S026: THIRD ARM FOR SURGEON: FEASIBILITY AND APPLICATIONS** – Sharifa Himidan<sup>1</sup>, Elahe Abdi, PhD<sup>2</sup>, Mohamed Bouri, PhD<sup>2</sup>, Hannes Bleuler, PhD<sup>2</sup>; <sup>1</sup>University of Toronto, <sup>2</sup>EPFL, Lausanne Switzerland

**V023: LAPAROSCOPIC MANAGEMENT OF A DUODENAL DUPLICATION CYST** – [Jeffrey J Dehmer, MD](#), Walter S Andrews, MD; Children's Mercy Hospital

**S027: MAKING GOOD TIME: AN EVALUATION OF THE LEARNING CURVE WITH ROBOTIC SLEEVE GASTRECTOMIES IN MORBIDLY OBESE ADOLESCENTS** – [Victoria K Pepper, MD](#), Laura A Boomer, MD, Jennifer Smith, BSN, RN, CNOR, Karen A Diefenbach, MD, Marc P Michalsky, MD; Nationwide Children's Hospital

**S028: THE FINANCIAL IMPACT OF INTRODUCING A ROBOT TO A PAEDIATRIC SURGERY AND UROLOGY PROGRAMME IN THE BRITISH NATIONAL HEALTH SERVICE** – [Simon Clarke, FRCS, Paed, Surg](#), Lyn Brocklebank, RN, N Sprigens, BA, G Retrosi, Mk Farrugia, N Rahman, D De Caluwe, Mj Haddad; Chelsea & Westminster NHS Foundation Trust

**S029: GASTROSCOPIC-ASSISTED SURGERY FOR PYRIFORM SINUS FISTULA IN CHINESE CHILDREN: A 73-CONSECUTIVE-CASE STUDY** – [Zhibao Lu, MD<sup>1</sup>](#), Jiangbin Liu, MD<sup>1</sup>, Xianmin Xiao, MD<sup>2</sup>; <sup>1</sup>Children's Hospital of Shanghai, Shanghai Jiao Tong University, <sup>2</sup>Children's Hospital of Fudan University

**S030: APPENDICECTOMY FOR CHRONIC RIGHT ILIAC FOSSA PAIN: CORRELATING HISTOLOGY WITH OUTCOME** – [Caroline Pardy, MRCS, MBBS, BSc](#), Anies Mahomed, MB, BCh, FCSSA, FRCS, Paed, Surg; Royal Alexandra Children's Hospital, Brighton

**S031: MINIMALLY INVASIVE ILEAL POUCH ANAL ANASTOMOSIS WITH RECTAL EVERSION ALLOWS FOR EQUIVALENT OUTCOMES IN CONTINENCE** – [Laura A Boomer, MD<sup>1</sup>](#), Victoria K Pepper, MD<sup>1</sup>, Justin T Huntington, MD, MS<sup>2</sup>, Karen A Diefenbach, MD<sup>1</sup>, Jennifer L Dotson, MD, MPH<sup>1</sup>, Benedict C Nwomeh, MD, MPH<sup>1</sup>; <sup>1</sup>Nationwide Children's Hospital, <sup>2</sup>The Ohio State University Wexner Medical Center

11:00 am – 12:30 pm **SCIENTIFIC SESSION: Gastrointestinal, Colorectal & Hepatobiliary II**

*Tennessee Ballroom A/B*

MODERATORS: Suad Abul, MD & Manuel Lopez, MD

**S032: LAPAROSCOPIC TREATMENT FOR CHOLEDOCHAL CYSTS WITH STENOSIS OF COMMON HEPATIC DUCT** – [Aiwu Li, Jian Wang, Qiangye Zhang, Hongchao Yang](#); Department of Pediatric Surgery, Qilu Hospital, Shandong University

**S033: A NEW ANASTOMOSIS OF LAPAROSCOPIC KASAI PROCEDURE FOR BILIARY ATRESIA** – [Bin Wang, Shuaidan Zeng, Jianxiong Mao, Jianyao Wang, Qi Feng, Zimin Chen, Fang Chen, Lei Liu](#); Shenzhen Children's Hospital

**S034: LAPAROSCOPIC DUHAMEL PROCEDURE FOR HIRSCHSPRUNG'S DISEASE: SYSTEMATIC REVIEW AND META-ANALYSIS** – [Daniel W Scholfield, MBChB, BSc, Biology](#), Ashok Daya D Ram, MBBS, FRCS, FRCPS; Birmingham Children's Hospital, UK

**S035: LAPAROSCOPIC VERSUS OPEN KASAI PROCEDURE FOR BILIARY ATRESIA: EARLY AND INTERMEDIATE RESULTS OF A RANDOMIZED CLINICAL TRIAL** – [Tran N Son, MD, PhD](#), Doan N Hung, MD, Pham T Hung, MD, Tran A Quynh, MD, Nguyen P A Hoa, MD, PhD, Nguyen T Liem, MD, PhD; National Hospital of Pediatrics, Hanoi, Vietnam

**S036: CLINICAL OUTCOMES OF ANORECTOPLASTY PERFORMED IN THE FIRST 6 MONTHS OF LIFE FOR HIGH ANORECTAL MALFORMATIONS** – [Shuai Li, Shao-tao Tang](#); Department of Pediatric Surgery, Affiliated Union Hospital, Tongji Medical College, HUST

**S037: LEARNING CURVE FOR LAPAROSCOPIC CHOLEDOCHAL CYSTS EXCISION** – [Zhe Wen, Qifeng Liang, Tao Liu, Guangkuo Xiao, Fei Liu, Zhe Wang](#); Guangzhou Women and Children's Medical Center

**S038: A NEW MINIMALLY INVASIVE APPROACH FOR PERSISTENT CLOACA: LAPAROSCOPIC ASSISTED ANORECTAL PULL-THROUGH AND PARTIAL UROGENITAL MOBILIZATION** – [Chen Wang, Long Li, Wei Cheng, Shuli Liu](#); Department of Pediatric Surgery, Capital Institute of Pediatrics, No.2 Ya Bao Road, Beijing 100020,

**S039: CRITICAL ANALYSIS OF OUTCOME OF LAPAROSCOPIC PORTOENTEROSTOMY FOR BILIARY ATRESIA** – [Hiroki Nakamura<sup>1</sup>](#), Hiroyuki Koga<sup>1</sup>, Joel Cazares<sup>2</sup>, Tadaharu Okazaki<sup>1</sup>, Geoffrey J Lane<sup>1</sup>, Go Miyano<sup>1</sup>, Manabu Okawada<sup>1</sup>, Takashi Doi<sup>1</sup>, Masahiko Urao<sup>1</sup>, Atsuyuki Yamataka<sup>1</sup>; <sup>1</sup>Department of Pediatric General and Urogenital Surgery, Juntendo University School of Medicine, <sup>2</sup>Department of Pediatric Surgery, Hospital Regional de Alta Especialidad Materno Infantil



**V024: TRANSITION OF TECHNIQUES TO TREAT CHOLEDOCHAL CYST DISEASE IN CHILDREN** – [Brian G Dalton, MD](#), Jeffrey J Dehmer, MD, Katherine W Schnell, MD, Shawn D St. Peter, MD, Richard J Hendrickson, MD; Children's Mercy Hospital

**S040: LONG-TERM OUTCOMES AND QUALITY OF LIFE AFTER SURGICAL MANAGEMENT OF HIRSCHSPRUNG'S DISEASE** – [Quoc Viet Tran, MD<sup>1</sup>](#), Thien Kim Lam, MD<sup>1</sup>, Tania Mahler, MD<sup>2</sup>, Quang Dinh Truong, MD, PhD<sup>1</sup>, Henri Steyaert, MD, PhD<sup>2</sup>; <sup>1</sup>Children's Hospital 2, Ho Chi Minh City, Viet Nam, <sup>2</sup>Queen Fabiola Children's University Hospital, Brussels, Belgium

**S041: BILIARY OBSTRUCTIONS AT OR ABOVE HEPATICOJEJUNAL ANASTOMOSIS AFTER PRIMARY LAPAROSCOPIC HEPATICOJEJUNOSTOMY IN CHILDREN WITH CHOLEDOCHAL CYSTS** – [Mei Diao, MD, PhD](#), Long Li, MD, PhD; Department of Pediatric Surgery, Capital Institute of Pediatrics, Beijing, CHINA

**S042: A COMPARATIVE STUDY BETWEEN TWO-STAGE AND THREE-STAGE LAPAROSCOPIC ASSISTED ANORECTOPLASTY (LAARP) FOR HIGH-ARM** – [Shuai Li, MD](#), Shao-tao Tang; Department of Pediatric Surgery, Union Hospital, Tongji Medical College, HUST

**S043: DO CHOLEDOCHAL CYST PATIENTS WITH PERSISTENT JAUNDICE REALLY NEED EXTERNAL DRAINAGE?** – [Zhe Wen](#), Tao Liu, Qifeng Liang, Zhe Wang, Fei Liu, Guangkuo Xiao; Guangzhou Women and Children's Medical Center

12:30 pm – 12:55 pm **Free Eat & Greet Lunch in the Exhibit Hall for All Attendees**

*Ryman Exhibit Hall C*

12:55 pm – 1:30 pm **Poster Presentation of Top 11-20 Posters of Distinction**

*Tennessee Ballroom A/B*

MODERATORS: Matthew S. Clifton, MD & Go Miyano, MD

**T011: SAFETY AND EFFICACY OF LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE FOR HYDROCELES IN CHILDREN COMPARING WITH TRADITIONAL OPEN REPAIR** – [Yi Yang, PhD](#), Hui Chen, Ying Hou, Zhibin Niu; pediatric urology department, shengjing hospital of china medical university

**T012: THE USE OF A REHUSABLE NEEDLESCOPIC FASCIAL CLOSURE DEVICE AS AN OPERATIVE INSTRUMENT . ANOTHER TRICK FOR THE HYBRID PROCEDURES ARMAMENTARIUM** – [Maria M Bailez, MD](#), Lucila Alvarez, MD; Garrahan Hospital

**T013: SINGLE-INCISION SINGLE-INSTRUMENT (SISI) ADNEXAL SURGERY IN PEDIATRIC PATIENTS** – [Tara Loux, MD](#), Gavin A Falk, MD, Michaela Gaffley, Stephanie Ortega, Carmen Ramos, MD, Leopoldo Malvezzi, MD, Colin G Knight, MD, Cathy Burnweit, MD; Miami Children's Hospital

**T014: THORACOSCOPIC MANAGEMENT OF PATENT DUCTUS ARTERIOSUS AND VASCULAR RINGS IN INFANTS AND CHILDREN** – [Bethany J Slater, MD](#), Steven S Rothenberg, MD; Rocky Mountain Hospital for Children

**T015: RECURRENCE RATES IN CONGENITAL DIAPHRAGMATIC HERNIA REPAIR: RE-EVALUATING THE ROLE OF THE BIOPROSTHETIC PATCH** – [Avraham Schlager, MD](#), Ragavan Siddharthan, BS, Sarah J Hill, MD, Kristina L Falkenstrom, BA, Catherine McDermott, BA, Amina M Bhatia, MD, Mark L Wulkan, MD, Matthew S Clifton, MD; Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta

**T016: COST AND TIME ANALYSIS OF SINGLE PORT EXTRA-CORPOREAL APPENDECTOMY FOR ACUTE APPENDICITIS IN OVERWEIGHT AND OBESE PATIENTS** – Arathi Mohan<sup>1</sup>, [Alfredo D Guerron](#)<sup>2</sup>, Sarah Worley<sup>2</sup>, Federico G Seifarth<sup>2</sup>; <sup>1</sup>Case Western Reserve University, <sup>2</sup>Cleveland Clinic Foundation

**T017: LAPAROSCOPIC TOUPET FUNDOPLICATION FOR GASTROESOPHAGEAL REFLUX. A SERIES OF 131 PEDIATRIC CASES AT A SINGLE CHILDREN'S HOSPITAL** – [Go Miyano, MD](#), Masaya Yamoto, MD, Mariko Koyama, MD, Hiromu Miyake, MD, Masakatsu Kaneshiro, MD, Hideaki Nakajima, MD, Keiichi Morita, MD, Hiroshi Nouse, MD, Kouji Fukumoto, MD, Naoto Urushihara, MD; Department of Pediatric Surgery, Shizuoka Children's Hospital

**T018: A METHOD IN LAPAROSCOPIC INGUINAL HERNIA REPAIR TO AVOID THE DAMAGE OF THE VAS DEFERENS AND TESTICULAR VESSELS** – [Kong Feiteng](#), Xu Chang; Department of Pediatric Surgery West China Hospital of Sichuan University

**T019: CLINICAL ANALYSIS OF 112 CASES OF MODIFIED LAPAROSCOPIC SPLENECTOMY IN THE TREATMENT OF CHILDREN WITH HEMATOLOGICAL DISORDERS** – [Xiaogeng Deng, PhD](#), Yaohao Wu, Lexiang Zeng, Jie Zhang, Jiajia Zhou, Ronglin Qiu; Department of Pediatric Surgery, The Memorial Hospital of Sun Yat-Sen University

**T020: SINGLE PORT /REDUCED PORT LAPAROSCOPIC PLACEMENT OF GASTRIC PACEMAKER FOR GASTROPARESIS IN CHILDREN** – [Ashwin Pimpalwar, MD](#), Bruno Chumpitazi, MD; Baylor college of medicine and Texas Children's hospital



1:30 pm – 2:00 pm

**KEYNOTE LECTURE****Pediatric Device Development: Devices that Grow as Children Grow***Tennessee Ballroom A/B*

SPEAKER: Barbara Boyen, PhD

Introduction by Mark Wulkan, MD, 2015 President

DESCRIPTION: Developing medical devices for use in the pediatric population has been frustrated by the perceived market size, the need for multiple versions to address changes in size and physiology, and the cost of preclinical testing in relevant animal models together with difficulties conducting adequately powered clinical studies. This talk will address how the FDA, medical device industry, and academic scientists are meeting these challenges.

**OBJECTIVES**

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

- Recognize the concerns of the different stakeholders involved in pediatric device development.
- Understand how changes in physiology during growth impact device function.
- Implement new programs that support design and development of pediatric devices.



Dr. Barbara Boyan is Professor and the William H. and Alice T. Goodwin Chair in Biomedical Engineering and Dean, School of Engineering at the Virginia Commonwealth University in Richmond, VA. In addition, she is professor emerita in the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University in Atlanta, Georgia. Dr. Boyan directs the Virginia branch of the FDA-sponsored Atlantic Pediatric Device Consortium. She is a Fellow in the American Association for the Advancement of Science (AAAS) and in the American Institute of Mechanical and Biomedical Engineering (AIMBE) and in 2012 she was elected to the National Academy of Engineering and was inducted into the Fellows of the World

Congress of Biomaterials. She was appointed to the National Materials Advisory Board of the National Research Council of the National Academies and chaired their Roundtable on Biomedical Engineering Materials and Applications from 2008 to 2011. She has founded a number of biomedical technology companies and currently serves on the Boards of both public and private companies. The author of more than 430 peer-reviewed papers, reviews, and book chapters, Dr. Boyan holds 16 U.S. patents.

2:00 pm – 3:00 pm

**EXPERT PANEL: The Art, Science, and Ethics of Innovation***Tennessee Ballroom A/B*

CHAIR: Holger Till, MD

CO-CHAIR: Miguel Guelfand, MD

DESCRIPTION: This expert panel will be attractive to everybody considering the introduction of innovative surgical tools. The speakers will cover a broad spectrum of topics ranging from “the art” of how to engineer innovative surgical tools to scientific evidence, patient consent and ethics for and against innovations.

**OBJECTIVES**

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

- Articulate and predict the latest innovations and developments of the surgical industry for MIS in children.
- Compare different innovations and evaluate their importance to the field.
- Recommend certain innovations and appraise the ethics for employing new techniques.

TIME	PRESENTATION TITLE	FACULTY NAME
2:00 pm	<b>Art – Innovative Design</b>	James D. Geiger, MD
2:15 pm	<b>Answering the Value Question Through Clinical Research</b>	Shawn D. St. Peter, MD
2:30 pm	<b>Breaking Down the Informed Consent for Innovation</b>	David C. van der Zee, MD
2:45 pm	<b>Do We Violate the Hippocratic Oath When We Innovate?</b>	Holger Till, MD

3:00 pm – 3:30 pm

**Refreshment Break / Happy 1/2 Hour in Exhibit Hall***Ryman Exhibit Hall C*


**3:30 pm – 4:30 pm EXPERT PANEL: What's New in Pediatric MIS?**

Tennessee Ballroom A/B

CHAIR: Shawn St. Peter, MD  
CO-CHAIR: Atsuyuki Yamataka, MD

DESCRIPTION: This session will provide insight to practicing pediatric surgeons about emerging techniques and technologies. In addition, the session will review current applications for MIS in children with technical pearls.

## OBJECTIVES

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

- Become familiar with procedures amenable to flexible endoscopy in infants and children including the use of the equipment.
- Understand the use of magnets for organ retraction and mobilization as an adjuvant for minimally invasive surgery.
- Develop an understanding for the potential use and current implications of Esophx.

TIME	PRESENTATION TITLE	FACULTY NAME
3:30 pm	<b>Endoscopic Procedures in Infants and Children</b>	Timothy D. Kane, MD
3:45 pm	<b>Magnetic Attraction</b>	Marcelo Martinez Ferro, MD
4:00 pm	<b>Transoral Incisionless Fundoplication (TIF) in Children</b>	Marcus D. Jarboe, MD
4:15 pm	<b>Q&amp;A</b>	All Faculty

**4:30 pm – 5:30 pm SCIENTIFIC SESSION: Thorax**

Tennessee Ballroom A/B

MODERATORS: Pablo Laje, MD & Atul J. Sabharwal, MD

**V025: THORACOSCOPIC TREATMENT OF PULMONARY HYDATID CYST IN CHILDREN – ABOUT FOUR PATIENTS** – [Benaired Amine Mouloud](#), Meddah H, Khelifaoui Ahmed, central hospital of the army Algeria

**S044: THORACOSCOPIC REPAIR OF RECURRENT TRACHEOESOPHAGEAL FISTULA: EXPERIENCE OF 5 PATIENTS** – [Jinshi Huang](#), Jiangxi provincial Children's Hospital

**S045: THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA – PERSONAL EXPERIENCE WITH 106 OPERATED CASES** – [Dariusz Patkowski](#), Prof, MD, PhD<sup>1</sup>, [Sylwester Gerus](#), MD<sup>1</sup>, [Mateusz Palczewski](#), MD<sup>1</sup>, [Katarzyna Mascianica](#), MD, PhD<sup>1</sup>, [Konrad Rysiakiewicz](#), MD<sup>1</sup>, [Robert Smigiel](#), Prof, MD, PhD<sup>2</sup>; <sup>1</sup>Pediatric Surgery and Urology Department, Wroclaw Medical University, <sup>2</sup>Department of Social Pediatrics Wroclaw Medical University

**S046: THORACOSCOPIC CDH REPAIR AFTER ECMO: BENEFITS, RISKS AND RATES OF SUCCESS** – [Avraham Schlager](#)<sup>1</sup>, [Sarah J Hill](#), MD<sup>1</sup>, [Ragavan Siddharthan](#), BS<sup>1</sup>, [Sarah Keene](#), MD<sup>2</sup>, [Amina M Bhatia](#), MD<sup>1</sup>, [Mark L Wulkan](#), MD<sup>1</sup>, [Matthew S Clifton](#), MD<sup>1</sup>; <sup>1</sup>Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta, <sup>2</sup>Emory University School of Medicine, Division of Neonatology, Children's Healthcare of Atlanta

**S047: THE ADVANTAGE OF THORACOSCOPIC CDH REPAIR: DOES AVOIDING ADHESIVE SBO OFFSET THE RISK OF CDH RECURRENCE?** – [Amina M Bhatia, MD, MS](#), [Mark L Wulkan](#), MD; Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta

**S048: INTRAOPERATIVE ACIDOSIS AND HYPERCAPNIA DURING THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA OR CONGENITAL DIAPHRAGMATIC HERNIA** – [Augusto Zani](#), [Irene Paraboschi](#), [Elke Zani-Ruttenstock](#), [Sebastian S King](#), [Agostino Pierro](#); Division of General and Thoracic Surgery, The Hospital for Sick Children

**S049: THORACOSCOPIC MANAGEMENT OF LONG GAP ESOPHAGEAL ATRESIA, THE PRIMARY PROCEDURE OF CHOICE** – [Steven Rothenberg](#), MD, FACS, FAAP<sup>1</sup>, [Alan Flake](#), MD, FACS, FAAP<sup>2</sup>; <sup>1</sup>The Rocky Mountain Hospital for Children, <sup>2</sup>Children's Hospital of Philadelphia

**V026: THORACOSCOPIC HEMI-THYMECTOMY FOR MEDIASTINAL TERATOMA** – [Ruben Lamas-Pinheiro, MD](#), [Leonor Carmo](#), MD, [Mariana Borges-Dias](#), MD, [Tiago Henriques-Coelho](#); Pediatric Surgery Department, Faculdade de Medicina, Hospital São João, Porto

**S050: STRICTURE FORMATION AFTER TRACHEOESOPHAGEAL FISTULA REPAIR** – [Tate Nice](#), [Benjamin Tuanama](#), [Michelle Shroyer](#), [David Rogers](#), [Mike Chen](#), [Colin Martin](#), [Elizabeth Beierle](#), [Beverly Chaignaud](#), [Scott Anderson](#), [Robert Russell](#); Children's of Alabama



**S051: COMPLICATIONS OF THE NUSS PROCEDURE: THE CHKD EXPERIENCE IN OVER 1500 CONSECUTIVE PATIENTS**

– [Frazier W Frantz, MD](#), Ashley N Deyerle, BABS, Michael J Goretsky, MD, Robert E Kelly, MD, Marcia A Kuhn, MD, Michelle L Lombardo, MD, Robert J Obermeyer, MD; Children's Hospital of The King's Daughters

**S052: A COMPARISON OF CLINICAL OUTCOME OF NEONATAL DIAPHRAGMATIC HERNIA BETWEEN MINIMALLY INVASIVE SURGERY AND OPEN REPAIR?** – [Ma Lishuang](#); Capital Institute of Pediatrics

7:30 pm – 11:30 pm

**Friday Night Sing Off/Main Event – Joint SAGES/IPEG Event** NON CME

Wildhorse Saloon, Nashville, TN

Shuttle Service will be provided to and from the Opryland Hotel – Delta Portico entrance

*Need a certificate of attendance? CME certificate?*

*A link will be sent to all delegates after the meeting to complete their request.*

# 2015 Pediatric Colorectal, Motility and Pelvic Reconstruction Conference

November 4-7, 2015 | Nationwide Children's Hospital | Columbus, Ohio

Led by Program Directors, Marc Levitt, MD and Karen Diefenbach, MD, and experts in GI, Urology and Gynecology, the conference will feature hands-on labs, audience interaction, panel discussions on controversial topics, and case submissions from attendees. The symposium again features an amazing line-up of visiting faculty, including Drs. Keith Georgeson, Jack Langer, Donald Shaul, Dan Teitelbaum, Luis De la Torre, Jeff Avansino, Michael Rollins, Elizabeth Speck, Alp Numanoglu, Michael Helmuth, and many others.

The conference is a joint meeting with the 8th European Pediatric Colorectal Symposium and will be simulcast from both locations; Columbus, Ohio USA and Nijmegen, the Netherlands.

Visit [NationwideChildrens.org/2015-colorectal-conference](http://NationwideChildrens.org/2015-colorectal-conference)



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## Saturday, April 18, 2015

8:00 am – 9:30 am MISCELLANEOUS: Short Oral Papers

Tennessee Ballroom A/B

MODERATORS: Karen A. Diefenbach, MD &amp; Martin L. Metzelder, MD

- S053: RISK FACTORS FOR SURGICAL COMPLICATIONS AFTER APPENDECTOMY IN CHILDREN: OBSERVATIONAL COHORT STUDY OF 8110 PATIENTS** – Jan-Hendrik Gosemann, MD<sup>1</sup>, Ansgar Lange<sup>2</sup>, Jan Zeidler<sup>2</sup>, Jochen Blaser<sup>3</sup>, Carmen Dingemann<sup>1</sup>, Benno M. Ure<sup>1</sup>, Martin Lacher<sup>1</sup>; <sup>1</sup>Center of Pediatric Surgery, Hannover Medical School, Germany, <sup>2</sup>Center for Health Economics Research Hannover, Leibniz University Hannover, Germany, <sup>3</sup>Techniker Health Insurance, Representative Office of Lower Saxony, Germany
- S054: LAPAROSCOPIC GASTROJEJUNOSTOMY TUBES IN INFANTS WITH CONGENITAL HEART DISEASE** – Chinwendu Onwubiko, MD, PhD, Sigrid Bairdain, MD, MPH, Maireade McSweeney, MD, MPH, Rahul Rathod, MD, Christopher Baird, MD, C. Jason Smithers, MD; Boston Children's Hospital
- S055: COLON INTERPOSITION: VIDEOASSISTED VS. OPEN APPROACH** – Carlos Garcia-Hernandez, MD, Lourdes Carvajal-Figueroa, MD, Sergio Landa-Juarez, MD, Humberto Murguia-Guerrero, MD; Hospital Infantil Privado
- V027: LAPAROSCOPIC ANTERIOR ADRENALECTOMY AND PARAGANGLIOMA RESECTION IN AN ADOLESCENT** – Alpin D Malkan, MD, Aaron D Seims, MD, John A Sandoval, MD; St. Jude Children's Research Hospital
- S056: OUTCOMES OF REINTERVENTION FOR LAPAROSCOPIC TRANSPERITONEAL PYELOPLASTY IN CHILDREN** – L Leung, Phy Chung, Lcl Lan, Kky Wong, Pkh Tam; Division of Paediatric Surgery, Department of Surgery, Queen Mary Hospital
- S057: A COMPARATIVE STUDY OF MODIFIED LAPAROSCOPIC-ASSISTED ENDORECTAL DUHAMEL PULL-THROUGH (LEDP) AND SOAVE PULL-THROUGH (LESP) FOR LONGER (EXTENDED) HIRSCHSPRUNG'S DISEASE WITH SUBTOTAL COLECTOMY** – Shao-tao Tang, Li Yang, Shuai Li; Department of Pediatric Surgery, Union Hospital, Tongji Medical College, Huazhong University of Science
- S058: COMPARISON OF LAPAROSCOPIC HEPATICOJEJUNOSTOMY WITH OPEN HEPATICOJEJUNOSTOMY. CAN STENOSIS OF THE COMMON HEPATIC DUCT AFFECT POSTOPERATIVE OUTCOME?** – Go Miyano, MD, Mariko Koyama, MD, Masakatsu Kaneshiro, MD, Hideaki Nakajima, MD, Hiromu Miyake, MD, Keiichi Morita, MD, Hiroshi Nouse, MD, Masaya Yamoto, MD, Kouji Fukumoto, MD, Naoto Urushihara, MD; Department of Pediatric Surgery, Shizuoka Children's Hospital
- S059: PREVENTING GASTRIC PROLAPSE FOLLOWING LAPAROSCOPIC GASTRIC BANDING** – Claire Graves, MD, Jeffrey Zitsman, MD; Columbia University Medical Center
- S060: REASONS FOR RECURRENCE AFTER THE LAPAROSCOPIC REPAIR OF INDIRECT INGUINAL HERNIA IN CHILDREN** – Shuguang Jin, Bo Xiang, Lin Zhong, Fuyu Li, Xiaoping Jiang, Zhicheng Xu; West China Hospital, Sichuan University
- S061: GASTRIC PACING FOR THE TREATMENT OF REFRACTORY GASTROPARESIS IN CHILDREN** – Theodore H Stathos, MD<sup>1</sup>, Adrienne Hoyt-Austin<sup>2</sup>, Steven S Rothenberg, MD<sup>1</sup>; <sup>1</sup>Rocky Mountain Hospital for Children, <sup>2</sup>Rocky Vista University, College of Osteopathic Medicine
- V028: USE OF LAPROSCOPY FOR GASTROTOMY AND REMOVAL OF A BEZOAR** – Shannon F Rosati, MD<sup>1</sup>, Rami Maarouf, MD<sup>1</sup>, Adam Goodreau, BS<sup>2</sup>, Dan Parrish, MD<sup>1</sup>, David Lanning, MD, PhD<sup>1</sup>; <sup>1</sup>Virginia Commonwealth University Health System, <sup>2</sup>Virginia Commonwealth University School of Medicine
- S062: PATIENT REPORTED OUTCOMES AFTER MINIMALLY INVASIVE PECTUS EXCAVATUM REPAIRS** – Waleed Gibreel, MBBS, Benjamin Zendejas, MD, MSc, Daniel Joyce, BS, Christopher R Moir, MD, Abdalla E Zarroug, MD; Mayo Clinic
- S063: COMPARISON BETWEEN TRANSANAL LAPAROSCOPIC ASSISTED AND PURE PULL-THROUGH FOR HIRSCHSPRUNG'S DISEASE IN CHILDREN** – Suolin Li, MD, Yingxin Gong, MD, Chi Sun, MD; The Second Hospital of Hebei Medical University
- S064: HOW TO GET OUT OF A PINCH: COLONIC DEROTATION, A NEW TECHNIQUE FOR THE MANAGEMENT OF SUPERIOR MESENTERIC ARTERY SYNDROME** – Victoria K Pepper, MD<sup>1</sup>, Mehul V Raval, MD, MS<sup>2</sup>, Steven M Henriques, MD<sup>3</sup>, Marc A Levitt, MD<sup>1</sup>, Denis King, MD<sup>1</sup>; <sup>1</sup>Nationwide Children's Hospital, <sup>2</sup>Children's Healthcare of Atlanta, Emory University, <sup>3</sup>Beth Israel Deaconess Medical Center
- S065: ROBOTIC-ASSISTED PROCEDURES IN PEDIATRIC SURGERY: A CRITICAL APPRAISAL OF THE CURRENT EVIDENCE** – Florian Friedmacher, MD, MSc, Holger Till, MD, PhD; Department of Pediatric and Adolescent Surgery
- S066: LAPAROSCOPIC EXCISION AND HEPATICODUODENOSTOMY FOR CHOLEDOCHAL CYST IN CHILDREN: SINGLE-SURGEON EXPERIENCE WITH 31 CASES** – Chandrasekharam Vvs, M, Ch; Rainbow Hospitals for Women and Children



**S067: LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE (LPEC) FOR PEDIATRIC INGUINAL HERNIA IS MORE BENEFICIAL IN MALE PATIENTS** – [Hiromu Miyake](#), Koji Fukumoto, Masaya Yamoto, Hiroshi Nouse, Masakatsu Kaneshiro, Hideyuki Nakajima, Mariko Koyama, Naoto Urushihara; Shizuoka Children's Hospital

**V029: LAPAROSCOPY-ASSISTED INTRAOPERATIVE ENTEROSCOPIC POLYPECTOMY FOR AN INFANT WITH HARMATOMATOUS POLYPOSIS SYNDROME** – [Chin-Hung Wei](#), Yu-Wei Fu, MD; Mackay Memorial Hospital

**S068: DID MINIMAL INVASIVE SURGERY CAUSE ALTERATIONS IN OPEN SURGICAL TECHNIQUES?** – Gulnur Gollu, MD<sup>1</sup>, Gonul Kucuk, MD<sup>1</sup>, Firat Kocaay, MD<sup>2</sup>, Onur Telli, MD<sup>3</sup>, [Murat Cakmak, MD<sup>1</sup>](#); <sup>1</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY, <sup>2</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF GENERAL SURGERY, <sup>3</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF UROLOGY

**S069: COMPARISON BETWEEN LAPAROSCOPIC INTRAOPERATIVE CHOLANGIOGRAPHY AND LAPAROTOMY SURGERY IN JUDGMENT ON THE TYPE OF BILIARY ATRESIA: A CLINICAL CONTROLLED STUDY** – Pu Yu, BS, [Long Li, PhD](#); Capital Institute of Pediatrics

**S070: PEDIATRIC ENDOSCOPIC RETROGRADE CHOLANGIO-PANCREATOGRAPHY OUTCOMES AND COMPLICATIONS FROM 755 CASES** – [Theodore H Stathos, MD](#), Steven S Rothenberg, MD; Rocky Mountain Hospital for Children

**S071: TRANS-ORAL INCISIONLESS FUNDOPLICATION (TIF) AS A TREATMENT FOR GASTROESOPHAGEAL REFLUX DISEASE IN CHILDREN** – [Theodore H Stathos<sup>2</sup>](#), [Joseph G Stathos, BS, MS<sup>1</sup>](#), Steven S Rothenberg, MD<sup>2</sup>; <sup>2</sup>Rocky Mountain Hospital for Children, <sup>1</sup>Kentucky College of Osteopathic Medicine

9:30 am – 10:15 am	<b>GENERAL ASSEMBLY: Presentation of the IPEG 2016 President</b> <span style="border: 1px solid black; padding: 2px;">NON CME</span>	<i>Tennessee Ballroom A/B</i>
10:15 am – 10:30 am	<b>2014 RESEARCH AWARD WINNER PRESENTATION:</b> <span style="border: 1px solid black; padding: 2px;">NON CME</span> <b>The Effect of CO<sub>2</sub>-insufflation During Thoracoscopic Correction of Esophageal Atresia on Cerebral Oxygenation, an Update</b> <i>Updates presented by David Van der Zee, MD</i>	<i>Tennessee Ballroom A/B</i>
10:30 am – 10:45 am	<b>AWARDS: Coolest Tricks, Basic Science/Innovation, and IRCAD</b> <span style="border: 1px solid black; padding: 2px;">NON CME</span>	<i>Tennessee Ballroom A/B</i>
10:45 am – 11:45 am	<b>VIDEO SESSION WITH EXPERT PANEL DISCUSSION:</b> <b>“My Worst Nightmare” – The Management of Unusual Complications, and Strategies for Future Avoidance</b>  CHAIRS: Maria Marcela Bailez, MD & Mark L. Wulkan, MD  DESCRIPTION: The session consists of presentation of different complications illustrated with a video and a discussion of how the presenters managed them. Experienced MIS surgeons from different institutions are asked to share their experiences.  OBJECTIVES At the conclusion of this session, participants will be able to: • Identify situations in which there is high risk of complication in pancreatotomy for hyperinsulinism. • Apply different techniques to deal with unexpected situations in MIS.	<i>Tennessee Ballroom A/B</i>
11:45 am	<b>Box Lunch and Closing Remarks</b> <span style="border: 1px solid black; padding: 2px;">NON CME</span>	

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# IPEG's 25<sup>th</sup> Annual Congress *for* Endosurgery *in* Children



*Held in conjunction with JSPS, AAPS, and WOFAPS*

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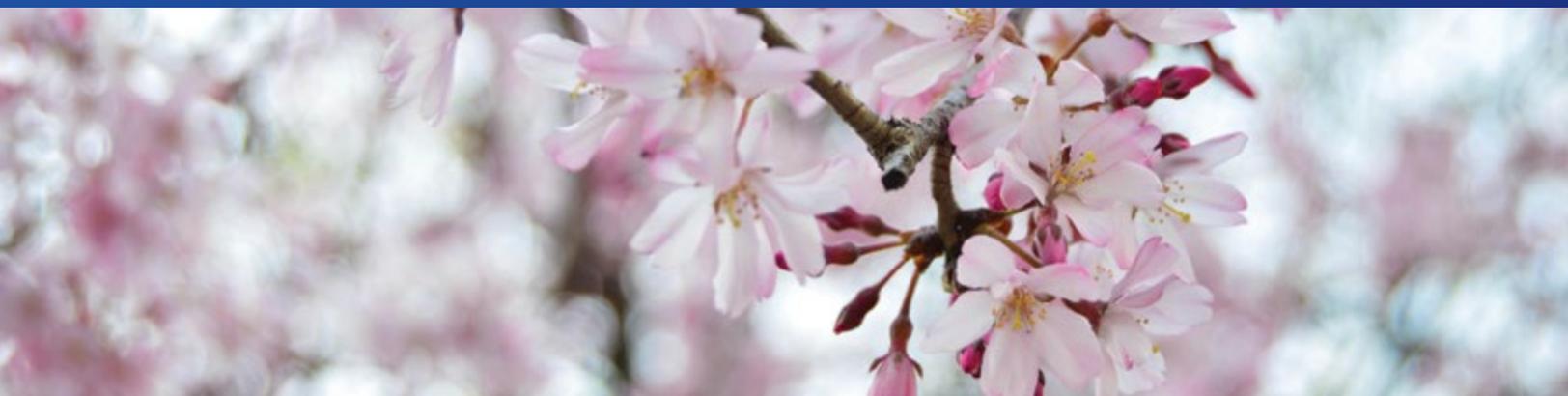
**Fukuoka, Japan**

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## SAVE THE DATE **2016**

*Call for abstracts opens in Early September!*



# Application for Set of STORZ Neonatal MIS Trainers

## Request for Proposals for Neonatal Minimally Invasive Surgery Trainers

Scaled Neonatal Minimally Invasive Surgery Trainer Sets will be available to Pediatric Surgery Training programs for assistance in training residents, fellows, and practicing pediatric surgeons based on the merit of their application. There are 40 sets to be distributed and they will be awarded based on review of each application. This is a competitive application process and not every applicant will receive a set of trainers

*Requirements to receive a set of trainers include the following:*

1. Completed application – see below.
2. Identification of a Pediatric Surgeon at the receiving program who will be responsible for the incorporation of the trainers into the MIS program.
3. Maintenance of accurate contact information for follow-up and collaboration with other centers receiving trainers to facilitate communication, data collection and sharing of information
4. Facilities to utilize trainers including camera, monitor, and instruments (suggest 3mm instruments including bowel grasper(s), Maryland dissector, scissors, and needle driver(s) or willingness to obtain.

*Considerations for successful applications:*

1. Number of residents/fellows who will be utilizing the trainers
2. Ability to define curriculum of how trainers will be incorporated into the training environment
3. Presence of coordinator/data collector for participation in research projects
4. Willingness to participate in data collection on performance, curriculum development, and outcomes associated with the incorporation of the trainers into the training programs for the next 2 years.
5. Agreement to notify collaborative of programs of research projects for the next 2 years to invite others to participate.
6. Joint applications for programs within geographic region will be reviewed favorably
7. Training program status
8. IPEG membership

## APPLICATION FOR SET OF STORZ NEONATAL MINIMALLY INVASIVE SURGERY TRAINERS

Name of Program: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

Pediatric Surgeon Coordinator: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Research/Educational Coordinator: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Number of Residents/Fellows/Surgeons in program each year who will be using the trainers: \_\_\_\_\_

Residents: \_\_\_\_\_ Fellows: \_\_\_\_\_ Attending: \_\_\_\_\_

Are you willing to collect performance data for each participant over time and participate in collaborative research: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Application for Set of STORZ Neonatal MIS Trainers

Are you currently performing any of the following procedures:  YES  NO

Laparoscopic pyloromyotomy:  YES  NO

Laparoscopic fundoplication:  YES  NO

Laparoscopic duodenal atresia repair:  YES  NO

Laparoscopic Ladd's procedure:  YES  NO

Thoracoscopic CDH repair:  YES  NO

Thoracoscopic TEF/EA repair:  YES  NO

*For the following questions, no more than one page per question.*

Describe your program (ex. academic, university affiliations, number of attendings, fellows, residents, number of pediatric surgical patients seen each year, number of pediatric surgery cases, number of MIS cases, etc.)

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How do you envision using the Neonatal MIS Trainers in your program?

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What resources do you have available currently for MIS training? (Space, equipment/instruments, supervision, etc)

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What is your current MIS training curriculum, if any?

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***Deadline for submission of application is Friday, April 20, 2015.***

Please return this form to Jacqueline Narváez at [Jacqueline@ipeg.org](mailto:Jacqueline@ipeg.org) or fax to **+1 310.437.0585**

# Nashville Maps: Dining & Entertainment

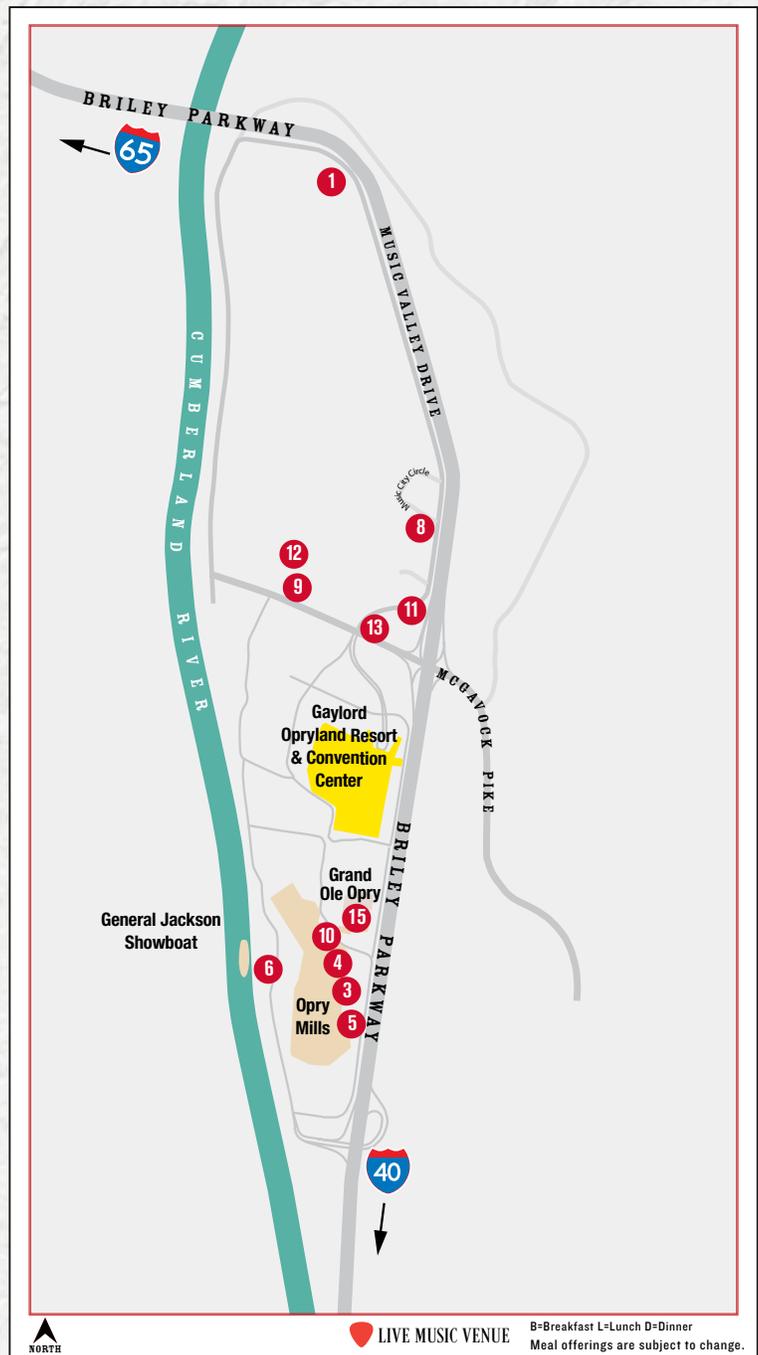
## WELCOME TO MUSIC CITY DINING & ENTERTAINMENT

### GAYLORD OPRYLAND

- Cascades American Cafe - BLD
- The Falls Bar & Lounge
- Cocoa Bean Coffee Shop - Snack
- Solario Authentic Mexican Cuisine - D
- Ravello Southern Italian Cuisine - D
- Conservatory Bar
- Wasabi's Sushi Bar - D
- ♥ Findley's Irish Pub - D
- ♥ Fuse Sports Bar - LD
- ♥ Jack Daniel's Restaurant & Bar - LD
- Old Hickory Steakhouse - D
- Library Lounge at Old Hickory Steakhouse
- Stax Burgers - LD
- Paisano's Pizzeria & Vino - LD
- Christie Cookie - Snack
- Haagen-Dazs Ice Cream - Snack

### MUSIC VALLEY

- 1. Cock of the Walk - L (Sunday only) D
- ♥ 2. A Tribute to the King:  
Through the Years 1953-1977
- 3. Claim Jumper Restaurant - LD
- 4. The Aquarium - LD
- 5. Rainforest Cafe - LD
- 6. General Jackson Showboat - LD
- ♥ 7. Nashville Nightlife Dinner Theatre - D
- 8. Grand Old Golf & GoKarts
- 9. Cooter's Place Nashville
- 10. Dave & Buster's - LD
- ♥ 11. John A's Restaurant - L (Sunday only) D
- ♥ 12. Scoreboard Bar & Grill - LD
- ♥ 13. Opry Backstage Grill - BLD  
(Inside The Inn at Opryland)
- ♥ 14. Miss Jeanne's Dinner Theatre - D
- ♥ 15. Grand Ole Opry



8-2014

# Nashville Maps: Downtown Dining

## WELCOME TO MUSIC CITY DOWNTOWN DINING

- ♥ 1. Riverfront Tavern - LD
- ♥ 2. B.B. King's Blues Club & Restaurant - LD
- ♥ 3. Wildhorse Saloon - LD
- ♥ 4. Hard Rock Cafe - LD
- ♥ 5. Rock Bottom Restaurant & Brewery - LD
- ♥ 6. Tequila Cowboy - LD
- ♥ 7. Jimmy Buffett's Margaritaville - LD
- ♥ 8. Jack's Bar-B-Que - LD
- ♥ 9. Merchants Restaurant - LD
- ♥ 10. Paradise Park Trailer Resort - BLD
- ♥ 11. Rippy's Bar & Grill - LD
- ♥ 12. The Palm - LD
- ♥ 13. The Old Spaghetti Factory - LD
- ♥ 14. Two Twenty Two - LD
- ♥ 15. Sole Mio - LD
- ♥ 16. The Listening Room - LD
- ♥ 17. Frist Center Café - L
- ♥ 18. Prime IOB - LD
- ♥ 19. The Bridge Lounge & Deli in Renaissance Hotel- BLD
- ♥ 20. Commerce Street Grille in Renaissance Hotel- BLD
- ♥ 21. Morton's-The Steakhouse - D
- ♥ 22. Puckett's Grocery - BLD
- ♥ 23. The Capitol Grille in Hermitage Hotel - LD
- ♥ 24. Meritage Grill in DoubleTree Hotel - D
- ♥ 25. Plaza Café in DoubleTree Hotel - L
- ♥ 26. The Stock-Yard Restaurant - D
- ♥ 27. The Southern Steak & Oyster - BLD
- ♥ 28. Demos' Steak & Spaghetti - LD
- ♥ 29. Joe's Crab Shack - LD
- ♥ 30. Panera Bread - BLD
- ♥ 31. Bailey's Sports Grille - LD
- ♥ 32. Dick's Last Resort - LD
- ♥ 33. Etch - LD
- ♥ 34. Hooters Restaurant - LD
- ♥ 35. Mike's Ice Cream & Coffee Bar - Snack
- ♥ 36. Popcornopolly - Snack
- ♥ 37. Benchmark Sports Bar & Grill - LD
- ♥ 38. Provence Breads & Café - BL
- ♥ 39. Patron Platinum Club - D  
(only open during Bridgestone events)
- ♥ 40. Robert's Western World - LD
- ♥ 41. Honky Tonk Central - LD
- ♥ 42. Savannah Candy Kitchen - Snack
- ♥ 43. The Melting Pot - D
- ♥ 44. Rodizio Grill - L (Thu-Sun) D
- ♥ 45. Buffalo's Nashville - LD
- ♥ 46. Back Alley Diner - LD
- ♥ 47. Bourbon Street Blues and Boogie Bar - LD
- ♥ 48. Salsa Puerto Rican & Latin Cuisine - LD
- ♥ 49. Subway - BLD
- ♥ 50. Subway - BLD
- ♥ 51. Subway - BLD
- ♥ 52. Pub 5 - LD
- ♥ 53. M. Market & Deli - BL
- ♥ 54. M. Restaurant & Bar - LD
- ♥ 55. Husk - LD
- ♥ 56. Luigi's City Pizza - LD
- ♥ 57. Cherry Street Eatery & Sweetery - BL
- ♥ 58. Bob's Steak & Chop House - D
- ♥ 59. Barlines - LD
- ♥ 60. Kitchen Notes - BLD
- ♥ 61. The Farm House - LD
- ♥ 62. Swank's Martini & Wine Bar - BLD
- ♥ 63. Pinewood Social - BLD
- ♥ 64. Nashville Street Tacos - LD
- ♥ 65. Acme Feed & Seed - LD
- ♥ 66. City Winery - D
- ♥ 67. Frothy Monkey - BLD
- ♥ 68. The District Bar & Kitchen in Hotel Indigo - BLD
- ♥ 69. Tin Roof Broadway - LD
- ♥ 70. Trattoria by Il Mulino - LD



11-2014

# Nashville Maps: Downtown Entertainment

## WELCOME TO MUSIC CITY DOWNTOWN ENTERTAINMENT

- 1. Tennessee Performing Arts Center
- 2. Swank's Marini & Wine Bar at DoubleTree Hotel
- 3. Hard Rock Cafe
- 4. Schermerhorn Symphony Center
- 5. Country Music Hall of Fame and Museum
- 6. Hilton Nashville Downtown
- 7. Bridgestone Arena
- 8. Barbershop Harmony Society
- 9. Union Station Hotel
- 10. Frist Center for the Visual Arts
- 11. The Bridge
- 12. Ryman Auditorium
- 13. Pippy's Smokin' Bar & Grille
- 14. Nashville Crossroads
- 15. Paradise Park Trailer Resort
- 16. Legends Corner
- 17. Tootsie's Orchid Lounge
- 18. The Second Fiddle
- 19. Layla's Bluegrass Inn
- 20. The Stage
- 21. Jimmy Buffett's Margaritaville
- 22. Puckett's Grocery
- 23. War Memorial Auditorium
- 24. Buffalo's Nashville
- 25. B.B. King's Blues Club & Restaurant
- 26. Wildhorse Saloon
- 27. Tequila Cowboy
- 28. The Listening Room Cafe
- 29. Whiskey Bent Saloon
- 30. Robert's Western World
- 31. Dick's Last Resort
- 32. Full Moon Saloon
- 33. The Wheel
- 34. The District Bar & Kitchen at Hotel Indigo
- 35. Cannery Ballroom/Mercy Lounge/The High Watt
- 36. Bootleggers Inn
- 37. The Big Bang
- 38. Honky Tonk Central
- 39. Bailey's Sports Grille
- 40. Silver Dollar Saloon
- 41. Rocketown
- 42. 3rd & Lindsley
- 43. Swingin' Doors Saloon
- 44. Riverfront Tavern
- 45. Benchmark
- 46. Back Alley Diner
- 47. Bourbon Street Blues and Boogie Bar
- 48. Troubadours Karaoke Bar
- 49. Doc Holliday's Saloon
- 50. Barlines
- 51. Pinewood Social
- 52. Acme Feed & Seed
- 53. City Winery
- 54. Nashville Street Tacos
- 55. Tin Roof Broadway
- 56. Hyatt Place Nashville Downtown
- 57. Musicians Hall of Fame & Museum
- 58. Nashville Municipal Auditorium
- 59. Tavern '96
- 60. Tennessee Brew Works
- 61. The Johnny Cash Museum



11-2014

# WELCOME TO MUSIC CITY

COME EARLY AND STAY LATE!

We invite you to experience for yourself what makes Nashville special during the spring months. It's a city that resonates with life and vibrates to the beat of every kind of song. It's a town that flourishes with American music, Southern hospitality, unbelievable cuisine, and a boundless spectrum of nightlife. Come join us and together we will keep the music playing!



## TOP 10 THINGS YOU CAN ONLY DO IN NASHVILLE

1. Hit The Hall — Kick off your Nashville experience with a day at the newly-expanded Country Music Hall of Fame® and Museum.



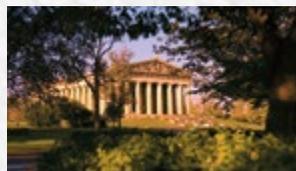
The world's largest popular music museum offers ever-changing exhibits featuring the legends of country music past and today's hottest stars. Grab a bite to eat at the museum's Two Twenty Two Grill or take some time to explore the museum's four new retail stores offering locally-made gifts, clothing, and a comprehensive selection of books and music.



2. Ride The Row — Take a tour of Music Row and visit historic RCA Studio B, the famous recording studio where Elvis recorded

more than 200 songs. Roy Orbison, Dolly Parton, Chet Atkins, Eddy Arnold, and many more recorded classic hits here. Not surprisingly, the heartbeat of Music City is driven by music — from country to classical. Tours of RCA Studio B depart daily from the Country Music Hall of Fame® and Museum.

3. Visit The Home Of The Greek Gods — In Nashville's Centennial Park, you'll find the world's only full-scale reproduction of the ancient Parthenon in Athens, Greece. The Parthenon houses an art gallery and museum as well as Alan



LeQuire's Athena Parthenos. Standing at almost 42 feet in height, Athena is the tallest indoor sculpture in the Western world.

4. Take In A Songwriters-In-The-Round Show — One of the most unique ways to hear music in Nashville is at a songwriters show. Typically called a "writers night," songwriters are put somewhere they are not used to being — in the spotlight. Several singer/songwriters will play 'in-the-round' as they sit on stage accompanied only by a microphone, a guitar, and their immense talent. These shows can be found in small, intimate clubs all over town, including the famous Bluebird Cafe and downtown's The Listening Room Cafe.



5. Get Artsy — Nashville's art scene is booming with art galleries, festivals, art crawls, and more. Be sure to head over to the Frist Center for the Visual Arts, the Downtown 5th Avenue art galleries, OZ Arts Nashville, Cheekwood Botanical Garden & Museum of Art, the First Saturday Art Crawl, Tennessee Craft festival, and more.



6. Take A Timeless Journey — The Ryman Auditorium, also called the "Mother Church of Country



Music," has had artists as diverse as Jon Bon Jovi and Patsy Cline perform on its legendary stage since 1892. You can take a backstage tour and record your own song in the Ryman studio. The stars of the Grand Ole Opry take the famous six-foot circle of wood and perform every Tuesday, Friday, and Saturday night (at the Ryman Auditorium November-January; at the Grand Ole Opry House February-October) with guest appearances by the biggest names in music. With 90 years of history, the Opry is the world's longest-running broadcast and shows no signs of slowing down.



7. Nashville's Newest Sounds — Honoring musicians from stars to studio players that represent all genres of music, the Musicians

Hall of Fame and Museum is housed in the Nashville Municipal Auditorium. From Hank Williams, Sr. to the Red Hot Chili Peppers, Motown to Southern Rock — there is truly something of interest to everyone. Pay homage to the Man in Black at The Johnny Cash Museum located on Third Avenue. Featuring the most comprehensive collection of Johnny Cash artifacts and memorabilia in the world, this is THE Cash venue to visit for all ages.

8. Salute — Three U.S. Presidents called Tennessee home: Andrew Jackson, James K. Polk, and Andrew Johnson. You can revisit the past at The



Hermitage, Home of President Andrew Jackson. Polk is buried on the grounds of the historic State Capitol building in downtown Nashville.



9. Visit Honky Tonk Highway — Tootsie's Orchid Lounge, Legends Corner, The Second Fiddle, The Stage, Layla's Bluegrass Inn, and Robert's Western

World are all experts at serving up cool longnecks and hot country music. You never know who you'll see in these Lower Broadway clubs in the shadow of the Ryman. Willie Nelson, Kris Kristofferson, Gretchen Wilson, Dierks Bentley, and other stars began their careers on Lower Broadway.

10. Special Events — If it's spring, then it's an awesome season for fun in Music City. Kick off the festivities with the Tin Pan South Songwriters' Festival, Nashville Fashion Week, Nashville Film Festival, and the Country Music Marathon & 1/2 Marathon. Be sure to also check out the Nashville Sounds baseball games, Triple-A affiliates of the Oakland A's.



EXPERIENCE SPRING IN



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## Oral Abstracts

### **S001: UTILITY OF PREOPERATIVE UPPER GASTROINTESTINAL SERIES IN LAPAROSCOPIC GASTROSTOMY TUBE PLACEMENT –**

Katherine W Gonzalez, MD, Sushanth Boda, BS, Brian G Dalton, MD, Pablo Aguayo, MD, Richard J Hendrickson, MD, Shawn D St. Peter, MD, David Juang, MD; Children's Mercy Hospital, Department of Surgery

**INTRODUCTION:** An upper gastrointestinal series is a standard preoperative test for patients being evaluated for gastrostomy tube placement. Although, the upper gastrointestinal series is justifiable for evaluation of fundoplication to rule out obstructive pathology, we have recently begun to question the value of the radiation exposing series in patients who tolerate gastric feeds.

**METHODS:** A retrospective review was conducted in 695 patients who underwent laparoscopic gastrostomy tube placement between 2000 and 2012. Demographics, indication for gastrostomy tube, co-morbidities, preoperative imaging and nutrition were analyzed. Patients with foregut pathology and those who underwent prior gastrointestinal surgery were excluded. Descriptive analysis was performed utilizing mean and percentages.

**RESULTS:** There were 695 patients who underwent laparoscopic gastrostomy tube placement. The most common indications were failure to thrive (54%), neurologic disorder (25%) and dysphagia (12%). An upper gastrointestinal series was obtained in 420 patients (60%). Of these, 96 were found to have abnormalities (reflux, aspiration, anatomic). However, only 2 of these patients (0.3%) had a change in management with 1 patient undergoing a Ladd procedure and 1 negative diagnostic laparoscopy for suspected malrotation. One patient was found to have situs inversus, which likely did not change the operative result. In the subset analysis of 256 patients tolerating goal gastric feeds, 161 (63%) had a preoperative upper gastrointestinal series with only 2 patients (1.2%) having a resultant change in operative management, 1 Ladd procedure and 1 negative diagnostic laparoscopy for suspected malrotation. Of the 275 patients who did not have a preoperative upper gastrointestinal series, 1 patient (0.4%) was found to have malrotation postoperatively after 2 coins became lodged in the duodenum. This patient subsequently underwent an elective Ladd procedure.

**CONCLUSIONS:** We found minimal impact of an upper gastrointestinal series during evaluation for gastrostomy alone. These studies may be able to be reserved for those with clear clinical indications.

### **S002: RETROSPECTIVE REVIEW OF LAPAROSCOPIC NISSEN FUNDOPPLICATION REQUIRING RE-OPERATION –**

Amita A Desai, MD<sup>1</sup>, Hanna Alemayehu, MD<sup>1</sup>, Brian Biggerstaff, MD<sup>2</sup>, Shawn D St. Peter, MD<sup>1</sup>; <sup>1</sup>Children's Mercy Hospital, <sup>2</sup>Creighton University Medical Center

**INTRODUCTION:** The risk of redo fundoplication has been demonstrated to be significantly higher in patients of younger age, with on-going retching, and dissection of the esophageal hiatus at initial operation. The purpose of this study was to review the management and outcomes of patients that require one or more re-operations for recurrence after laparoscopic fundoplication.

**METHODS:** After obtaining Institutional Review Board approval, we performed a retrospective review of all patients that underwent laparoscopic Nissen fundoplication that subsequently required a redo operation for recurrence from 2000 to 2013. Data collected included patient demographics, neurologic impairment, need for feeding gastrostomy, interval time between re-do fundoplication, operative approach, use of biologic mesh, and length of follow-up. Two-tailed independent student's t-test was used to compare continuous variables and a two-tailed chi square test with Yates correction (and Fisher Exact where appropriate) was used for discrete variables. Results are reported with standard error of the mean.

**RESULTS:** There were 82 patients (10.3% of sample) who underwent redo fundoplication during the study period. The mean age at initial surgery was  $21.7 \pm 4.7$  months. Fifteen (18.3%) required more than 1 re-operation; 12 had 2 redos, 2 had 3 redos, and 1 and 5 redos for recurrence. Of the 102 re-operations performed, 68 were successfully managed laparoscopically with 3 requiring conversion to an open procedure and 31 performed open from the outset. A biologic mesh was placed in 37 (45.1%) at the time of first redo of which 6 (15.8%) required subsequent re-operation for recurrence. Of the 45 that did not have mesh placed at time of first redo, 9 (20%) required subsequent re-operation. Of those that required more than one re-operation, there was no difference in age, weight, or time to subsequent re-operations amongst those that did and did not have mesh placed at the first redo procedure (Table 1). At subsequent re-operations, 21 patients (25.6%) required a pyloroplasty and 15 patients (18.3%) required esophageal dilations as well. Mean follow-up time was  $54.1 \pm 4.1$  months. At time of last follow-up, 13 patients (13.9%) presented with subjective complaints of recurrence.

**CONCLUSION:** The incidence of patients requiring subsequent re-operations after one redo operation after laparoscopic fundoplication is 18%. Patient demographics and time to re-operation have not been demonstrated to be predictive of requiring multiple re-operations for recurrence.

### **S003: ENDOSCOPIC, LAPAROSCOPIC, IMAGE-GUIDED PEDIATRIC GASTROSTOMY TUBE PLACEMENT: IMPROVED OUTCOMES WITH A STANDARDIZED APPROACH –**

Morgan K Richards, MD<sup>1</sup>, Jarod McAteer, MD, MPH<sup>1</sup>, Dennis Shaw, MD<sup>2</sup>, Ghassan Wahbeh, MD<sup>2</sup>, Jeffrey Foti, MD<sup>2</sup>, Lilah Melzer, BA<sup>2</sup>, Goldin Adam, MD, MPH<sup>2</sup>; <sup>1</sup>University of Washington, <sup>2</sup>Seattle Children's Hospital

**PURPOSE:** Relatively recent medical advances such as percutaneous endoscopic (PEG), image-guided, laparoscopic and even robotic gastrostomy tube (GT) placement have become common among pediatric patients. These minimally invasive approaches may be quick to perform and simple to complete, but they are not without subsequent complications such as infection, leakage, device malfunction, dislodgement, hemorrhage and intra-abdominal organ injury. In addition, many of the procedures require planned interventions such as tube exchanges or conversions from gastrostomy to gastrojejunostomy. We hypothesized that implementation of a hospital-wide clinical standardized work (CSW) feeding tube pathway would be associated with a reduction in hospital resource utilization.

**METHODS:** We performed a retrospective cohort study comparing all children undergoing GT or gastrojejunostomy tube (GJ) placement following implementation of the hospital-wide clinical standardized work (CSW) from June 1, 2013 – July 31, 2014 to those placed in a previous time period (January 1, 2010 – December 31, 2011). We limited follow up time to 365 days in both groups. Our primary outcome was the change in the rate of hospital resource utilization, defined as GT/GJ-related emergency department visits or additional planned or unplanned events before and after implementation using adjusted Poisson regression. We also compared the time to first event between cohorts using adjusted Cox regression to understand the relative number of children requiring repeat utilization ( $p < 0.05$ ). Finally, we compared hospital-level metrics prior to and after CSW implementation.

**RESULTS:** Prior to CSW implementation, 145 (48.7%) devices were placed surgically, 113 (37.9%) endoscopically, and 40 (13.4%) with an image-guided technique. After implementation, 105 (73.4%) were placed surgically, 23 (16.1%) endoscopically, and 15 (10.5%) with an

## Oral Abstracts CONTINUED

image-guided technique. Prior to implementation, 174/298 (58.4%) patients required additional hospital utilization compared to 60/143 (42.0%) after implementation. Poisson regression demonstrated that following implementation, the rate of resource utilization decreased by almost 25% (incidence rate ratio: 0.77; 95%CI 0.61-0.98;  $p=0.035$ ). The risk of at least one additional feeding tube related intervention or emergency department visit was reduced by over 30% based on Cox regression (hazard ratio: 0.66; 95%CI 0.47-0.92;  $p=0.015$ ). This demonstrated that fewer children required at least one repeat GT/GJ-related hospital utilization event after algorithm implementation. Additionally, we found that there was a decrease in the mean length of stay (28.7 to 18.4 days,  $p=0.01$ ), pharmacy charges (\$44,778 to \$21,396,  $p=0.006$ ), and radiology charges (\$8,909 to \$5,598,  $p=0.01$ ) per discharge.

**CONCLUSION:** Care of this complex and heterogeneous patient population is currently spread among multiple providers and specialties leading to variability in the pre-operative workup, intra-operative technique, and post operative care. Our study shows an association between a standardized approach to GT/GJ placement and decreased hospital resource utilization.

**S004: PEG VERSUS LAPAROSCOPIC-ASSISTED PEG (LA-PEG) TECHNIQUE: OUR CLINICAL EXPERIENCE** – Roberto Lo Piccolo, Marco Ghionzoli, Alessandra Martin, Matteo Posarelli, Antonio Messineo; Meyer Childrens' Hospital – University of Florence

**BACKGROUND:** Percutaneous endoscopic gastrostomy (PEG) is a technique that has been used for almost 35 years in pediatric patients to allow a direct gastrointestinal route for medications and feedings. The use of such technique, however, mainly in children with complex anatomy (neurologically impaired and/ or with previous surgery) has brought to observe major and minor complications. For this reason, PEG has been proposed in conjunction with laparoscopy (LA-PEG). The aim of the present study was to compare our experience with PEG and LA-PEG.

**MATERIALS & METHODS:** We performed a retrospective review of the charts of 84 consecutive patients who had their PEG inserted at our Institution from July 2005 to July 2014 using a standard pull technique performed by our endoscopic group. Data were collected by reviewing clinical, operating room and anesthesiological records. We divided children in two groups in whom PEG or LA-PEG were performed at surgeon preference. In group A, 46 patients (mean age 3,35 years – range 2mo-17yrs) underwent PEG procedure. In group B, 38 children (mean age 8,38 years – range 2 mo-18 yrs) a LA-PEG was performed. In this second group, in 17 cases LA-PEG was the final procedure of a Nissen fundoplication. Complications were classified in minor (i.e. wound infection, leakage or bleeding, temporary ileus) and major (i.e. intraperitoneal dislodgement, colonic crushing, colonic fistula). Data analysis was performed by SPSS software 21.0. Differences between the two groups were tested with Chi-square test and Fisher Exact test and when applicable, Students T-test was used with a significant  $p$  value  $\leq 0.05$ .

**RESULTS:** Forty-six patients (58,2%) had severe underlying neurologic disorders: 27 were in group A and 19 in group B. The rate of neurological impaired patients was significantly higher in group B (58,7% vs 41,3%) ( $p=0.026$ ). The incidence of minor complications was 32,6% for group A and 14% for group B. Major complications occurred only in group A, with an incidence of 15,2 % ( $n=7$ ). The overall complication rate for group A was 47,8% whilst 14% for group B ( $p=0.013$ ). Odds ratio for the rate of complications of group A compared to group B was 5,04.

**CONCLUSIONS:** These results suggest that, in our hands, LA-PEG in children was a safer procedure compared to PEG, achieving five-fold risk reduction in the overall complication rates. Thanks to a direct laparoscopic vision, LA-PEG is especially suitable in those neurologically impaired children whose anatomical landmarks are variable. A prospective study should be necessary to confirm the validity of such results.

**S005: MANAGEMENT AND OUTCOME OF MUCOSAL INJURY DURING PYLOROMYOTOMY – AN ANALYTICAL SURVEY STUDY** – Sibylle Waldron, MD<sup>1</sup>, Oliver J Muensterer, MD, PhD<sup>1</sup>, Shawn D St. Peter, MD<sup>2</sup>; <sup>1</sup>University Medicine, Johannes Gutenberg University Mainz, <sup>2</sup>Children's Mercy Hospitals, Kansas, MO

**BACKGROUND:** Several different approaches of dealing with mucosal injury during pyloromyotomy for hypertrophic pyloric stenosis have been described. There is however no consensus on the best technique to employ.

**PURPOSE:** We conducted a survey among IPEG members on the frequency of mucosal injuries during pyloromyotomy, the way in which these were handled, any modification in subsequent postoperative care, and impact on outcome.

**METHODS:** An anonymous, confidential survey was sent to IPEG members querying basic demographic data, approximate number of pyloromyotomies performed, number of times mucosal injury occurred, as well as management and consequences.

**RESULTS:** The survey was completed by 193 pediatric surgeons and 1 general surgeon, with various levels of experience. Over 75% of respondents had performed at least 50 pyloromyotomies, and 65% have experienced at least one mucosal injury during their career. Cumulatively, 222 mucosal injuries were reported, of which 203 (91%) were recognized intraoperatively. The cases were nearly equally distributed between laparoscopic (53%) and open (47%) procedures. Most surgeons addressed the mucosal perforation with primary repair (65%) +/- omental patch (36%); a minority (27%) performed full-thickness closure. One third of laparoscopic procedures were converted to open after recognizing an injury. The most common postoperative alteration in management included delay in feeding (87%), longer hospital stay (33%), and upper GI contrast study before feeding (14%). The vast majority of patients had no adverse sequelae after a mucosal injury (96%), while 2 patients underwent reoperation. Two patients developed intraabdominal infection, of which one developed sepsis. There were no deaths reported in this series.

**CONCLUSIONS:** Most pediatric surgeons will encounter mucosal injury while performing pyloromyotomy during their career. The incidence of mucosal injury seems to be equally distributed among laparoscopic and open procedures. Primary mucosal repair with or without an omental patch is the most common intraoperative management. Surgeons that perform laparoscopic pyloromyotomies tend to manage mucosal injuries laparoscopically without conversion. Many surgeons delay feeds and obtain a contrast study after mucosal injury. The overwhelming majority of patients does well despite mucosal injury and suffer no longterm sequelae.

**S006: PROSPECTIVE EVALUATION OF CARDIAPPLICATION** – Sarah J Hill, MD, Mark Wulkan, MD; Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta

**BACKGROUND:** Cardiaplication is a novel surgical technique, aimed at treating medically refractory reflux in children. The technique has been tested in a porcine model and proven to be effective at preventing reflux. Case reports have also been published

## Oral Abstracts CONTINUED

documenting the feasibility and relative success at treating reflux in patients. Based on those results we did a prospective study to further evaluate the effectiveness of cardiaplication.

**METHODS:** After IRB approval (clinicaltrials.gov #NCT02060500), enrollment in the cardiaplication study was offered to consecutive patients who were referred to the surgical service to undergo fundoplication for medically refractory reflux. Prior to undergoing surgery, all patients underwent pH impedance study and upper gastrointestinal series (UGI) to evaluate for reflux and anatomy. Cardiaplication was performed as described in previous papers. Postoperatively the patients were scheduled to have a follow-up pH impedance study at 6 weeks and clinic visits every 3 months to evaluate for recurrent reflux symptoms. At one year, the patients were scheduled to have a repeat UGI.

**RESULTS:** Laparoscopic cardiaplication was successfully performed in 8 children. The indications for surgery included failure to thrive, reflux and primary aspiration. Significant patient comorbidities included congenital diaphragmatic hernia, DiGeorge syndrome, heterotaxy, malrotation, hypoplastic heart syndrome, double outlet right ventricle, pulmonary hypertension and central apnea. The average age at the time of surgery was 3.5 months and the average weight was 4.3 kg. The average length of surgery was 80 minutes and the average post operative length of stay was 16 days. Length of follow-up from surgery was 16.5 months. Complications included one death on post-operative day 68 secondary to primary cardiac disease; this patient was excluded from further analysis of the data. A second child with DiGeorge syndrome and numerous cardiac anomalies developed necrotizing enterocolitis on postoperative day 15, requiring readmission. This same patient developed significant emesis and recurrent reflux during that hospitalization requiring conversion to a Nissen fundoplication. This patient was excluded from further data analysis.

All remaining patients had a pH study between 5 and 11 weeks post operatively (average 7.6 weeks). The average Acid Reflux Composite Score Analysis preoperatively was 16.3 compared to 2.4 six weeks after surgery ( $p=0.06$ ). Four of the six remaining patients underwent post-operative UGI. The results from the upper GI showed normal anatomy on 3 patients and a hiatal hernia on one. Reflux was seen on 2 of the patients, however on caregiver interview none of the patients had clinically significant reflux. At one year, four of the six patients were no longer taking oral anti-reflux medications.

**CONCLUSIONS:** This small series in complicated patients demonstrates a trend toward improvement in GERD based upon pH studies. Clinically these data are not much different than similar series of Nissen fundoplications. Clinically, the 6 patients who survived with their cardiaplication were clinically free of GERD. Interestingly, one patient had a post-operative hiatal hernia, despite having had no hiatal dissection during this procedure. Over all, these data suggest further investigation is warranted to determine the true efficacy of this procedure.

**S007: SYMPTOM RELIEF IN PEDIATRIC ACHALASIA IS ATTAINED WITH FEWER INTERVENTIONS IN PATIENTS UNDERGOING HELLER MYOTOMY** – Jessica A Zagory, MD, Jamie Golden, MD, Henri Ford, MD, MHA, Nam X Nguyen, MD; Children's Hospital Los Angeles

**INTRODUCTION:** Achalasia is an uncommon problem in children that is treated with a variety of interventions, including balloon dilatation, botulism injection, medical therapy, or surgical intervention with Heller myotomy. Because there is no consensus regarding the optimal treatment of children with achalasia, we investigated symptom relief in patients undergoing procedural treatment versus Heller myotomy.

**METHODS:** Following approval from the Institutional Review Board (CCI 14-00312), all patients (age 0-18 years) who underwent an intervention for the diagnosis of achalasia at a single pediatric hospital from 2004-2014 were retrospectively reviewed. Statistical analysis was conducted using Student's t-test and Chi-squared testing.

**RESULTS:** Nineteen patients were diagnosed with achalasia (12 male, 7 female), with mean age at diagnosis of 11.1 years (range 0-17). Mean duration of symptoms prior to diagnosis was 18.2 months (range 1-89). Fifteen patients underwent Heller myotomy while 4 were treated with balloon dilatation or botulism injection alone. Nine of the 15 surgical patients had pre-operative treatment with balloon dilatation, botulism injection, or both. Six of these 15 patients required additional interventions after surgery, for an average of 1.06 interventions pre-operatively and 0.8 interventions post-operatively, whereas the average number of interventions in the non-surgically treated group was 5.25 ( $p<0.001$ ). Mean duration of follow up for the surgical group was 34.1 months (range 1-105), while the non-surgical group had mean follow up of 21.75 months (range 12-33). At the time of most recent follow up, 12 of 15 patients treated surgically had complete resolution of symptoms, whereas none of the patients treated with dilatation or botulism injection alone had symptom resolution ( $p=0.009$ ). There was no difference in age, gender, comorbidities, or duration of symptoms between surgically and non-surgically treated groups.

**CONCLUSION:** Our data suggest that Heller myotomy is superior to balloon dilatation or botulism toxin injection in patients with achalasia. We conclude that earlier Heller myotomy should be recommended for newly diagnosed children with achalasia as first line therapy.

**S008: THE IMPACT OF LAPAROSCOPIC SURGERY ON INTESTINAL OBSTRUCTION BEYOND THE NEONATAL PERIOD** – Christoph H Houben, MD, FRCSPaed, FRCSEdGlas, DTMH, Kristine Kit Yi Pang, Mb, ChB, FRCSEd, FRCSEdPaed, Wai Cheung Mou, MB, ChB, FRCSEdPaed, Kin Wai Chan, MB, ChB, FRCSEdPaed, Yuk Huk Tam, MB, ChB, FRCSEdPaed, Kim Hung Lee, MB, BS, FRCSEdPaed; Prince of Wales Hospital

**AIM OF THE STUDY:** Assessing the value of minimally invasive surgery on the management of intestinal obstruction (IO) beyond the newborn phase.

**METHODS:** Retrospective review of children aged between 1 month (corrected for gestation) and 16 years who had surgery for IO at our tertiary referral centre between 1. Jan 2004 and 31. Dec 2013. The study was approved by the local clinical research ethical committee (CREC Ref. No.: 2014.295). Patients were allocated to one of three groups depending on the diagnosis: intussusception, IO secondary to abdominal surgery or primary IO as a result of congenital anomalies (e. g. Malrotation, Meckel's diverticulum, band etc.) or inflammatory processes (e. g. primary peritonitis).

**MAIN RESULTS:** One hundred and twenty eight patients (46 females) with a median age of 3 years (range 2 mths - 15 yrs) underwent surgery for IO. There were 44 (34 %) with intussusception, 46 (36 %) had adhesive IO following abdominal surgery and 38 (30 %) had primary IO.

Laparoscopic interventions were attempted in 67 (53 %) , but conversion were required in more than 40 % (28/67); resulting in laparotomies for nearly 70 % (89/128).

Within the group of intussusception (N= 44) laparoscopic interventions were done in 37 and completed for 54 % (24/44).

Open surgery (34/46, 77 %) dominated the group of IO secondary to prior surgery (N = 46). Only 12 had a laparoscopic intervention with a 50 % (6/12) conversion rate.

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LAPAROTOMY (20/38) and laparoscopic approach (18/38) were almost balanced in the group with primary IO (N = 38), however the conversion rate was again 50 % (9/18).

CONCLUSION: Laparoscopic surgery in IO is helpful in just under a third of our cohort of 128 patients (30 %).

Within the subgroup of intussusception the laparoscopic approach is successful in more than half of the 44 patients (54 %).

**S009: SINGLE-INCISION LAPAROSCOPIC-ASSISTED ONE-STAGE ANORECTOPLASTY FOR NEWBORNS WITH ANORECTAL MALFORMATIONS AND RECTO-URETHRAL FISTULA** – Mei Diao, MD, PhD, Long Li, MD, PhD, Mao Ye, M, Med, Kao-Ping Guan, M, Med, PhD, Yan-Dong Wei, M, Phil; Department of Pediatric Surgery, Capital Institute of Pediatrics, Beijing, CHINA

BACKGROUND: The current study aims to evaluate the safety and efficacy of single-incision laparoscopic-assisted one-stage anorectoplasty (SILAARP) for children with anorectal malformations (ARM) and recto-urethral fistula.

METHODS: Neonates with ARMs and recto-urethral fistula who underwent one-stage SILAARP between June 2013 and June 2014 were reviewed. The operative time, early postoperative and follow-up results were analyzed.

RESULTS: Twelve male neonates (ARM with recto-prostatic fistula vs. recto-bulbar fistula: 7/5) successfully underwent one-stage SILAARP without conversions. Mean ages at operation was 43.7 hours of age. Mean weight was 3.56 Kg. Average operative time was  $2.41 \pm 0.59$  hours. All patients resumed feeding on postoperative day 3–4. The median follow-up period was 9 months (4–16 months). No injuries of vessels, urethral or vas deferens occurred in operations. No mortality or morbidities of wound infection, rectal retraction, anal stenosis, or rectal prolapse was encountered. Postoperative MR showed centrally placed rectum within the muscle complex. Postoperative VCU showed no recurrent fistula or urethral diverticulum in these patients.

CONCLUSIONS: One-stage SILAARP is safe and effective for ARM neonates with either recto-prostatic or recto-bulbar fistula. It achieves the goal of “scarlessness” in neonates with ARMs and recto-urethral fistula.

**S010: WILMS' TUMORS AND LAPAROSCOPIC TREATMENT** – Francois Varlet, MDPhD<sup>1</sup>, Y Heloury, mDPhD<sup>2</sup>, Marc David Leclair, MD, PhD<sup>3</sup>, Thierry Petit, MD, PhD<sup>3</sup>, Francois Becmeur, MD, PhD<sup>4</sup>, Stephan Geiss, MD<sup>5</sup>, Hubert Lardy, MD, PhD<sup>6</sup>, Frederic Lavrand, MD<sup>7</sup>, Manuel Lopez, MD<sup>1</sup>; <sup>1</sup>University Hospital of Saint Etienne, <sup>2</sup>University Hospital of Melbourne, <sup>3</sup>University Hospital of Nantes, <sup>4</sup>University Hospital of Strasbourg, <sup>5</sup>Hospital of Colmar, <sup>6</sup>University Hospital of Tours, <sup>7</sup>University Hospital of Bordeaux

INTRODUCTION: The aim was to report a multicentric study with a longer follow-up to evaluate the laparoscopic radical nephrectomy in children with renal malignant tumors.

MATERIALS & METHODS: This was a retrospective multicentric study from October 2005 to September 2014 from children who underwent a laparoscopic radical nephrectomy for small renal malignant tumors. The following data were analyzed: age, size and volume of the tumor (initial and preoperative), preoperative chemotherapy, duration of the procedure, conversion, incision for extraction of the specimen, histology, stage, number of lymph nodes, follow up, local recurrence and/or metastasis.

RESULTS: Twenty six children were included in this study, 13 girls and 13 boys. Twenty five underwent chemotherapy before radical nephrectomy according the SIOp-protocol and 1 had partial nephrectomy only for a small renal cystic mass revealing a stage 1 Wilms' tumor on pathologic examination. Twenty three could be treated by laparoscopy and the biggest tumoral size was 8 cm and mean duration procedure was 141 minutes. Four conversions were required because of difficulty of dissection. No tumoral rupture occurred. The median hospital stay was 3.4 days (2–10). The pathologic examination showed 25 Wilms' tumors and 1 clear cell sarcoma. With a median follow-up of 42 months (2–101 months) after laparoscopic nephrectomy, 25 children had no oncological complications (port-site or local recurrence, pulmonary metastasis) and 1 had local recurrence with good outcome after new chemotherapy and radiotherapy (no tumoral rupture confirmed on movie and histology). No small bowel obstruction occurred.

CONCLUSION: Nephrectomy for Wilms' tumor or other renal cancer can be safely performed laparoscopically. Our indications can be summarized for small tumors under 8 cm, especially without crossing over the lateral edge of the vertebra on the CT scan at the time of surgery. Laparoscopic partial nephrectomy is debatable because of a higher local recurrence rate.

**S012: COMPARISON OF TRANSUBILICAL LAPAROSCOPIC ASSISTED APPENDECTOMY (TULA) VERSUS SINGLE INCISION LAPAROSCOPIC APPENDECTOMY (SILA) IN CHILDREN: WHICH IS THE BETTER SURGICAL OPTIONS?** – Yoon Jung Boo, MD, PhD<sup>1</sup>, Hyoung Jun Han, MD, PhD<sup>2</sup>, Sang Hee Kang, MD<sup>2</sup>, Yoon Lee, MD<sup>3</sup>, Eun Hee Lee<sup>3</sup>, Ji Sung Lee<sup>4</sup>; <sup>1</sup>Division of Pediatric Surgery, Korea University College of Medicine, Seoul, Korea, <sup>2</sup>Department of Surgery, Korea University College of Medicine, Seoul, Korea, <sup>3</sup>Department of Pediatrics Korea University College of Medicine, Seoul, Korea, <sup>4</sup>Department of Medical Statistics, Asan Medical Center, Seoul, Korea

BACKGROUND: Recently, a single incision laparoscopic approaches for appendectomy (SILA) has been adopted in pediatric patients. However, due to the technical difficulties and relatively small working space of pediatric patients, its use has some limitations. Transumbilical laparoscopic assisted appendectomy (TULA) is a single incision technique, which exteriorizes the appendix through the umbilicus, and combines the advantages of both a good laparoscopic visualization with the safety and quickness of an extracorporeal appendectomy. The aim of this study was to compare the surgical outcomes of TULA with SILA in pediatric appendicitis.

METHODS: The IRB-approved retrospective review between April 2011 and September 2014 of medical records identified 172 pediatric patients undergoing a laparoscopic appendectomy. Of these, 91 patients underwent TULA and 81 patients underwent SILA. The measured outcomes were the patient's characteristics, operative time, length of stay, pain, and postoperative complications.

RESULTS: TULA had a shorter operative time compared to SILA (26 vs 47 min,  $p < 0.001$ ). The use of rescue analgesics was more frequent in the SILA group. (6 cases (6.5 %) vs 19 cases (23.4 %),  $p < 0.001$ ) There was no significant difference in the length of stay or the cosmetic outcome between the two groups. TULA was associated with a lower complication rate (1/91, 1.1 %) than SILA (13/81, 16.0 %) ( $p < 0.001$ ). In the multiple logistic analysis, TULA was significantly associated with a lower complication rate ( $p = 0.049$ ).

CONCLUSIONS: Compared to SILA, TULA is a preferable operation for pediatric acute appendicitis because TULA is technically easier, results in better surgical outcomes, and provides the same excellent cosmetic results.

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**S013: ONCOLOGIC OUTCOMES AFTER OPEN VERSUS LAPAROSCOPIC ADRENALECTOMY FOR ADRENAL NEUROBLASTOMA IN CHILDREN** – Yujiro Tanaka, PhD<sup>1</sup>, Hiroo Uchida, PhD<sup>2</sup>, Hiroshi Kawashima<sup>1</sup>, Miki Toma<sup>1</sup>, Michimasa Fujioji<sup>1</sup>, Keisuke Suzuki<sup>1</sup>, Hizuru Amano<sup>1</sup>, Kaori Morita<sup>1</sup>, Yuki Arakawa<sup>1</sup>, Makiko Mori<sup>1</sup>, Katsuyoshi Koh<sup>1</sup>, Tadashi Iwanaka, PhD, Professor<sup>3</sup>, <sup>1</sup>Saitama Children's Medical Center, <sup>2</sup>Nagoya University Graduate School of Medicine, <sup>3</sup>University of Tokyo Hospital

**BACKGROUND:** Minimally invasive surgery has become widely accepted as a common technique for adrenal neuroblastoma resection. However, long-term oncologic outcomes of laparoscopic resection of neuroblastomas still need to be examined.

**METHODS:** Between December 1995 and August 2012, 62 children underwent adrenalectomy for neuroblastoma at our hospital. All the children were followed up for >2 postoperative years. According to the Children's Oncology Group classification, 20 children were high-risk and 42 children were low/intermediate-risk. In our hospital, the criteria for laparoscopic resection were tumor size < approximately 5 cm in its greatest dimension and absence of vascular encasement of the surrounding organs. Oncologic outcomes were retrospectively reviewed along with postoperative results.

**RESULTS:** Of the 20 high-risk children, two underwent laparoscopic surgery and one needed open conversion. Of the 42 low/intermediate-risk children, 11 underwent laparoscopic surgery and one needed open conversion due to adhesion of the tumor to the vena cava and renal vein. Among the low/intermediate-risk children, the greatest tumor dimensions were  $4.9 \pm 1.4$  cm (range: 2.0–8.3 cm) and  $3.7 \pm 0.8$  cm (range: 2.8–5.2 cm) in open and laparoscopic surgeries, respectively ( $P = 0.004$ ). Four postoperative complications occurred in the open-surgery group, namely three cases of ileus and one case of renal vein thrombosis. No complications occurred in the laparoscopic group. Recurrence occurred in four patients (local recurrence in one patient) in the open-surgery group, but in none of the patients in the laparoscopic group ( $P = 0.56$ ). None of the low/intermediate-risk children died during our survey.

To exclude the influence of tumor size and vascular encasement, we also compared patients with tumor sizes  $\leq 5.2$  cm in their greatest dimension without vascular encasement in the low/intermediate risk group. The tumor sizes were  $3.9 \pm 0.9$  cm and  $3.7 \pm 0.8$  cm ( $P = 0.69$ ), and the age at operation was  $10 \pm 5.1$  months and  $19.8 \pm 20.3$  months ( $P = 0.19$ ), in open and laparoscopic surgeries, respectively. Recurrence occurred in 2 of 12 patients and in none of 10 patients, respectively ( $P = 0.48$ ). The operative time was shorter, although not significantly, in open-surgery group ( $95.7 \pm 25.0$  min vs  $120.7 \pm 38.6$  min,  $P = 0.11$ ). Intraoperative bleeding was significantly less in the laparoscopic group ( $32.7 \pm 11.4$  g vs  $6.3 \pm 9.4$  g,  $P < 0.001$ ). The time to return to oral intake after surgery and the stay in the surgical ward were shorter in the laparoscopic group ( $3.3 \pm 1.2$  days vs  $1.8 \pm 0.9$  days,  $P = 0.006$  and  $8.2 \pm 2.1$  days vs  $6.4 \pm 1.6$  days,  $P = 0.04$ ). Concerning postoperative complications, one case of ileus occurred 10 months after adrenalectomy in the open-surgery group.

**CONCLUSION:** Laparoscopic adrenalectomy did not deteriorate the oncologic outcomes in the low/intermediate-risk group in our study. Despite its limitation in terms of tumor size ( $\leq 5$  cm) and vascular encasement, laparoscopic resection could be one of the standard methods for adrenal neuroblastoma resection in low/intermediate-risk patients.

**S015: LAPAROSCOPIC TREATMENT OF RENAL TUMORS SURGICAL ASPECTS TO DECIDE THE CONVERSION TO AN OPEN APPROACH. INITIAL EXPERIENCE IN A SINGLE INSTITUTION** – Paula Flores, MD, Martin Cadario, MD, Yvonne Lenz, MD, Maria M Bailez, MD; Garrahan Hospital

Traditionally, radical nephrectomy for renal tumor has been performed via an open approach, using either a chevron or a transverse abdominal incision. As survival rates in Wilms tumors have increased, attention has begun to focus on minimizing patient morbidity without negatively impacting in the event-free survival. However, concerns raised over the laparoscopic treatment of Wilms tumor have included: (1) an increased risk of tumor rupture due to decreased tactile feedback and the fragile nature of the tumor capsule, and (2) inadequate abdominal exploration for complete staging. In this study we discuss the situations where the decision to convert to an open surgery was based on the risk of upgrading the tumor stage. The criteria selection were unilateral tumors not crossing the midline and without venous thrombosis. Between April 2010 and July 2014, 12 laparoscopic approaches were performed in our institution. Nine patients had diagnosis of Wilms tumor. These were treated following neoadjuvant chemotherapy according to the Society of Pediatric Oncology protocol. The other three patients; two with diagnosis of renal carcinoma and one with mesoblastic nephroma, underwent primary surgery. In all cases the basic oncological principles for pediatric nephrectomy were followed. The median tumor volume was 29, 5 cc. The mean age was 43 months (1–96). The follow up period was 22 months. Two patients underwent conversion to an open approach. In the first case, the patient presented bleeding of a polar vein. The patient did not present hemodynamic instability but the decision to convert was the impossibility to obtain a correct view because of the blood dissection of the retroperitoneal fascia. In the second patient, the tumor was firmly attached to the posterior abdominal wall. It was resected "en Block" with a patch of abdominal wall after conversion. The histological exam showed blastemal type with microscopic infiltration of the capsule. The patient received additional radiotherapy, due to the abdominal wall infiltration. There was no rupture of the tumor's capsule. At the time of the analysis, all patients are alive and free from events except from the last patient with compromised capsule that presents lung metastasis. Laparoscopic nephrectomy is technical feasible in selected cases. The challenge remains in defining which situations might be hazardous for the patient's oncological prognosis. The scenario of inadequate vision or firm adhesions of the tumor to retroperitoneal fascia that may require a gross abdominal wall resection would be the indication to proceed to an open approach. Despite complete resection combined with radiotherapy, the patient with blastemal histology and capsule compromise presented lung metastasis. This situation is related to the tumor's biology and cannot be modified changing the surgical strategy. Finally, regarding the tumor staging related to node dissection, we found that the "lateral view" changing the lens to the lateral port allows an ideal vision of the retroperitoneal anatomy once the kidney has been placed on the bag.

**S016: FEASIBILITY OF TRANS-UMBILICAL LAPAROSCOPIC SINGLE SITE SURGERY WITH CONVENTIONAL INSTRUMENTS IN PERFORMING HEPATIC DUCTOPLASTY IN MANAGEMENT OF CHILDHOOD CHOLEDOCHAL CYST** – Tran N Son, MD, PhD, Dinh A Duc, MD; National Hospital of Pediatrics, Hanoi, Vietnam

**INTRODUCTION:** In cases of choledochal cyst (ChC) with small common hepatic duct or presence of an aberrant bile duct, hepatic ductoplasty may be needed, which is challenging for both open and laparoscopic

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surgery. The aim of this study is to investigate the feasibility of trans-umbilical laparo-endoscopic single site surgery (TULESS) with conventional instruments in performing ductoplasty and hepatico-jejunosomy in management of childhood choledochal cyst.

**METHODS:** All ChC cases undergoing ductoplasty and hepaticojejunosomy by TULESS with conventional instruments at our center from October 2012 to August 2014 were reviewed. Ductoplasty for common hepatic duct smaller than 5mm was performed by longitudinal incision 4-5mm of the duc wall at 12 o'clock, thus creating a larger hepatico-jejunal anastomosis (at least 8-10mm). In case of aberrant bile duct, a "double barrel" orifice was created by suturing the aberrant duct to the common hepatic duct so only a single hepatico-jejunal anastomosis was needed. All hepatico-jejunal anastomoses were done by single layer running suture. Data of patient's characteristics, intraoperative findings, operative time and early results were analyzed.

**RESULTS:** 27 patients (23 girls, 4 boys) with hepatic ductoplasty were identified from total 148 patients with ChC undergoing TULESS for that period (18.2%). Patients' median age was 18 months (range: 2 months to 10 years). Ductoplasty for a small common hepatic duct (2 - 4mm) was carried out in 20 patients and for presence of an aberrant duct in 7 patients. The median operative time was 210 minutes (range: 150 minutes to 320 minutes). There was no intraoperative complication, no conversion to open surgery. Additional trocars (conversion to conventional laparoscopic surgery) were required in just the first case of aberrant duct. Postoperative bile leak was noted in one patient, which was resolved with non-operative treatment. The median postoperative hospital stay was 5 days. At a median follow up of 12 months (range: 2 months to 24 months), one patient needed a redo surgery for anastomotic stenosis; all other patients were in good health. It was noteworthy that for all other ChC patients undergoing TULESS without the need of ductoplasty, no anastomotic complication was documented.

**CONCLUSIONS:** TULESS with conventional instrument is feasible for ductoplasty and hepatico-jejunosomy in most cases of childhood ChC with small common hepatic duct or aberrant duct. Nevertheless, the risk of anastomotic complications for this particular group seems to be higher than the other patients.

**S017: CONSTRUCT VALIDITY AND POTENTIAL ADVANCED EDUCATIONAL ROLE OF A MORE CHALLENGING SUTURING TASK IN THE PEDIATRIC LAPAROSCOPIC SURGERY (PLS) SIMULATOR** – Maeve O'Neill Trudeau, MD<sup>1</sup>, Brian Carrillo, PhD<sup>2</sup>, Ahmed Nasr, MD, FRCSC<sup>3</sup>, J Ted Gerstle, MD, FRCSC, FACS, FAAP<sup>4</sup>, Georges Azzie, MD, FRCSC<sup>4</sup>; <sup>1</sup>Department of General Surgery, University of Toronto, St. Michael's Hospital, 30 Bond St, M5B 1W8, <sup>2</sup>Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8, <sup>3</sup>Dept of Surgery, University of Ottawa, Children's Hospital of Eastern Ontario, Ottawa ON Canada, <sup>4</sup>Division of General and Thoracic Surgery, Hospital for Sick Children, Toronto, ON, Canada M5G 1X8

**INTRODUCTION:** Laparoscopic models are increasingly recognized as important surgical training tools. To date, lower fidelity systems are used mainly for simpler tasks. The purpose of this study was to establish construct validity for a more difficult suturing task, primarily focused on the training of experts.

**METHODS & PROCEDURES:** The Pediatric Laparoscopic Surgery (PLS) simulator was fitted with custom-built motion tracking hardware and software. Participants were recruited by convenience sampling at the 2013 IPEG meeting, and were stratified into novice, intermediate and expert groups based on self-reported caseloads.

Participants performed a modified, advanced intra-corporeal suturing task, involving suturing in a plane that was perpendicular to the traditional axis of sewing (similar to suturing during a Kasai procedure or choledochal cyst excision). Traditional PLS scores were calculated using time and precision. Velocity, acceleration and range were studied in all degrees of freedom available during laparoscopic surgery (Pitch, Yaw, Roll and Surge). Ability to complete the task was noted (unsuccessful tasks involved avulsion of the Penrose drain, only throwing a single knot on the first pass, or not completing the task). These data were compared to historic results for a simpler, traditional intra-corporeal suturing task.

**RESULTS:** We recruited a total of 58 participants (7 novices, 13 intermediates and 38 experts). Our modified task was able to discriminate between levels of expertise in most of the four degrees of freedom using the velocity and acceleration (Table 1) but not using the range. The Roll was least sensitive, discriminating only between novice and expert groups in the number of extreme velocity events, but not between novice and intermediate groups, nor between intermediate and expert groups. Compared to the standard intra-corporeal suturing task, PLS scores for the modified task were lower across all levels of expertise, reaching statistical significance for the intermediate and expert groups (Table 2). Only 74.4% of experts, 69.2% of intermediates, and 37.5% of novices were able to successfully complete the task (Table 3).

**CONCLUSION:** A modified, advanced intra-corporeal suturing task enabled us to significantly discriminate between novices, intermediates and experts, therefore establishing construct validity for this task in most degrees of freedom. Compared to previous data for simple suturing tasks, the number of extreme events in all degrees of freedom is higher within strata – indicating that experts, intermediates, and novices all struggled significantly more on average with this task. This is also reflected by the significantly lower (i.e. worse) PLS scores and lower task-completion rate across all levels of expertise. Given the measurable increased complexity of this task, it may serve to hone technical skills even among experts.

**Table 1: Comparison of Degrees of Freedom Motion Analysis Parameters for a Modified Task of Increased Complexity Mimicking Choledochal Cyst Excision**

<b>DOMINANT</b>	<b>Novice (N=7)</b>	<b>Intermediate (N=13)</b>	<b>Expert (N=38)</b>	<b>P value</b>
<b>PITCH</b>	<b>Mean ± SD</b>	<b>Mean ± SD</b>	<b>Mean ± SD</b>	
<b>Extreme Velocity Events</b>	119.7 ± 84.6	77.4 ± 44.8	53.0 ± 27.6	0.0008
<b>Extreme Acceleration Events</b>	194.3 ± 162.8	111.0 ± 52.7	83.3 ± 43.4	0.0011
<b>Range 90%</b>	17.5 ± 4.9	14.4 ± 2.1	15.6 ± 2.3	0.059
<b>YAW</b>				
<b>Extreme Velocity Events</b>	189.0 ± 142.8	116.3 ± 64.7	81.5 ± 38.0	0.0005
<b>Extreme Acceleration Events</b>	287.1 ± 213.9	189.5 ± 100.4	131.0 ± 57.2	0.0007
<b>Range 90%</b>	11.9 ± 3.5	9.7 ± 1.8	10.4 ± 2.2	0.144
<b>ROLL</b>				
<b>Extreme Velocity Events</b>	23.4 ± 20.1	16.0 ± 20.3	12.3 ± 11.9	0.194 *
<b>Extreme Acceleration Events</b>	37.6 ± 35.9	30.9 ± 44.8	22.1 ± 25.1	0.407
<b>Range 90%</b>	2975.4 ± 2542.8	3254.6 ± 2902.8	3225.5 ± 3191.2	0.978
<b>SURGE</b>				
<b>Extreme Velocity Events</b>	73.6 ± 97.0	42.9 ± 30.8	29.5 ± 26.7	0.038
<b>Extreme Acceleration Events</b>	105.4 ± 145.7	72.9 ± 51.9	46.1 ± 40.4	0.062 **
<b>Range 90%</b>	5719.6 ± 2057.5	4321.0 ± 1189.1	4232.2 ± 1270.8	0.074

\*p-level (Novice vs Expert Two-tailed t-test analysis) = 0.0487

\*\*p-level (Novice vs Expert Two-tailed t-test analysis) = 0.037

**Table 2: Comparison Modified PLS task vs PLS Intra-corporeal Suturing Task Scores (comparison with Azzie 2011, J Peds Surg)**

	n Standard Task	Standard Intra-corporeal Task PLS Score	n Modified Task	Modified Task PLS score	p value
Novice	20	15 ± 22	5	-53.8 ± 146.2	0.1778
Intermediate	19	70 ± 21	13	14.3 ± 54.9	0.0020
Expert	12	77 ± 14	37	45.0 ± 30.3	<0.0001
All groups	51	55 ± 33	55	28.7 ± 61.1	0.0034

**Table 3: Successful vs Unsuccessful\* Task Completion - Modified Task**

	Successful	Unsuccessful	Percent successful
Experts	29	10	74.4
Intermediates	9	4	69.2
Novices	3	5	37.5

\* (avulsion, only single knot thrown first pass, task not completed)

### **S018: FIRST LAPAROSCOPIC SIMULATOR FOR PEDIATRIC URETERAL REIMPLANTATION (LAP SPUR) – Carolina Millan,**

MD<sup>1</sup>, Manuel Lopez, MD<sup>2</sup>, Grecia Vivas-Colmenares, MD<sup>1</sup>, Maximiliano Maricic, MD<sup>1</sup>, Fernando Rabinovich, MD<sup>1</sup>, Luzia Toselli, MD<sup>1</sup>, Maria-Soledad Valverde, MD<sup>1</sup>, Gaston Bellia-Munzon, MD<sup>1</sup>, Horacio Bignon, MD<sup>1</sup>, Marcelo Martinez-Ferro<sup>1</sup>; <sup>1</sup>Fundacion Hospitalaria, Private Children Hospital, <sup>2</sup>Centre Hospitalier Universitaire Sanit Etienne, France

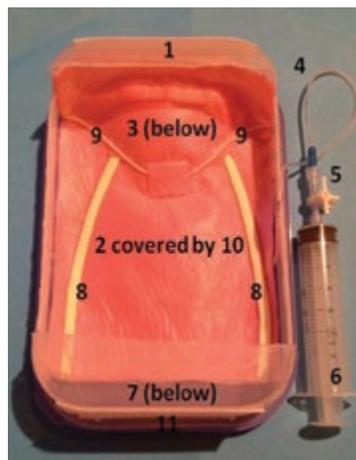
**BACKGROUND:** In recent years, IPEG members have developed numerous inanimate models designed for specific training in pediatric and neonatal MIS. Inanimate models provide a safe environment by increasing technical performance and cognitive knowledge of a surgical procedure without compromising patient's safety. This is the main reason for their rising popularity amongst pediatric surgeons. Until date, no specific trainer has been designed for the practice of laparoscopic ureteral reimplantation. Our goal has been to design the first Laparoscopic Simulator for Pediatric Ureteral Reimplantation (LAP SPUR) using the Lich-Gregoire technique.

**Materials & Methods:** For manufacturing the LAP SPUR, material supplies are divided into two categories: 1) Reusable Materials (RM) and 2) Disposable Materials (DM).

- RM: A rectangular plastic bowl (25 x 17 cm)<sup>1</sup> and a neoprene cloth (26 x 36 cm)<sup>2</sup>.
- DM: A water balloon<sup>3</sup>, a K-30 plastic nasogastric tube<sup>4</sup>, a 3-way valve<sup>5</sup>, a 60 ml syringe<sup>6</sup>, a rectangle of foam (17 x 23 x 0.4 cm)<sup>7</sup>, 2 long white ballons (28 x 0.5 cm)<sup>8</sup>, 2 threads of fine white lace<sup>9</sup>, a IOBAN™ drape<sup>10</sup> and 1 m of Velcro strap<sup>11</sup>.

**RESULTS:** The development of the trainer had a total cost of \$ 10.92 (RM: \$ 8.03 and DM: \$ 2.89). It weighs only 200 grams. LAP SPUR was tested by 3 highly trained pediatric urologists, using 3-mm, 20-cm short instruments. In all cases the simulator provided both usefulness and ease to perform the technique and similarity to the real anatomic structures involved.

**CONCLUSION:** LAP SPUR is a low cost simulator model that may become a good resource for practicing Lich-Gregoire pediatric ureteral reimplantation. Further development and validation are still needed to assess its true benefits.



### **S019: 3-DIMENSIONAL (3D) VERSUS 2-DIMENSIONAL (2D) LAPAROSCOPY IN DIFFERENT OPERATIVE SPACES IMPROVES THE EASE OF LEARNING LAPAROSCOPIC SURGERY – Xiaoyan Feng, Anna Morandi, Tawan Imvised, Benno Ure, Joachim Kuebler, Martin Lacher; Hannover medical school**

**AIM OF THE STUDY:** Three-dimensional (3D) imaging has been shown to enhance depth perception and facilitate operations in training box studies and adult laparoscopy. However, there is no comparative data on using this new technique in different working spaces and by laparoscopic novices versus pediatric surgical experts. This study examines the influence of monoscopic versus stereoscopic visualization in large versus small working spaces during procedures performed by participants of different levels of surgical training.

**MATERIALS & METHODS:** Twenty four individuals with varying surgical experience and who were naive to 3D laparoscopy were involved in the study (11 students, 8 surgical residents, and 5 pediatric surgical experts). Participants were asked to perform four tasks (target touching, peg transfer, needle transfer, suturing/knot tying) in large (24x30x50cm) and small (9x11x18cm) training boxes, using 2D and 3D imaging (2D: 30°, 10mm laparoscope; 3D: 0°, 10mm laparoscope, Karl Storz, Tuttlingen, Germany). Sixteen procedures were performed by each participant. To compensate for the learning curve the sequence of the procedures and imaging modalities (2D/3D) were alternated. Primary outcome was performance time (seconds (s)) and the number of errors. Secondary outcome parameters included subjective data on depth perception assessed after each setting by questionnaires on a 0-4 scale.

**RESULTS:** Using 3D imaging students showed a faster performance in large (2D: 757s vs 3D: 573s, p<0.05) and small training boxes (2D: 684s vs 3D: 484s, p<0.01), and residents achieved significantly shorter performance times in the large box (2D: 334s vs 3D: 255s, p<0.05). In contrast, experts had no improvement of total performance time. With stereoscopic visualization significantly less total errors were made by students in both training boxes (large box: 2D: n=14 vs 3D: n=8, p<0.01; small box: 2D: n=12 vs 3D: n=8, p<0.05) and by residents in the small box (2D: n=6 vs 3D: n=3, p<0.05). Again, the total errors in experts were not different comparing 2D and 3D in both training boxes. Subjective depth perception using 3D in the large box was significantly better in students and significantly better in the small box in all groups.

**CONCLUSION:** While subjective depth perception was improved in all groups using 3D, no benefit of this new technique regarding performance time and total error number was found in pediatric surgical experts. In contrast, 3D significantly improved laparoscopic performance in medical students and therefore the biggest benefits during 3D laparoscopy were experienced by surgical novices. In the future, this technology may improve the ease and safety of learning laparoscopic surgery.

### **S020: TOWARDS VALIDATED SURGICAL SKILLS ASSESSMENT: AUTOMATED MONITORING OF TRACHEOESOPHAGEAL FISTULA REPAIR – Siddarth Jain, BE<sup>1</sup>, Katherine A Barsness, MD, MS<sup>2</sup>, Ellie O'Brien, BS<sup>3</sup>, Brenna D Argall, PhD<sup>1</sup>; <sup>1</sup>Northwestern University, Rehabilitation Institute of Chicago, <sup>2</sup>Ann and Robert H Lurie Children's Hospital of Chicago, Northwestern Univ Dept. of Medical Education, <sup>3</sup>Northwestern University Department of Medical Education**

**BACKGROUND:** Validated assessments of technical skill are critical to the successful implementation of simulation-based educational curricula. Unfortunately, the evaluation of surgical skill is often time consuming, and cumbersome to work into the natural flow of a

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training or testing event. Computer vision and machine learning, as a component of surgical skills assessment, may alleviate many of the inefficiencies of current assessment strategies. The purposes of this work were to develop, and evaluate for accuracy, an algorithm to autonomously detect correct and incorrect procedural steps occurring during simulated thoracoscopic ligation of a tracheoesophageal fistula (TEF).

**METHODS:** Using a previously described synthetic thoracoscopic TEF repair model, two separate video-taped performances of correct and incorrect procedural steps for TEF ligation were collected. The operative telescope (OT) video was used for surgeon visualization and to establish ground truth for correct and incorrect procedural steps. The tracheal telescope (TT) video was used for subsequent development and testing of the algorithm.

Image frames from the TT video data were processed for the automated detection of correct and incorrect procedural steps, classified as – (i) Initial state, (ii) Bronchial ligation, (iii) Partial ligation, (iv) Correct ligation and (v) Tracheal compression. The detection algorithm proceeded as follows. The color image frame was converted to a high contrast grayscale image, and a binary image was obtained using thresholding, and the complement was applied. The image consisted of regions of interest, which were identified by connecting components. The geometric parameters, namely—centroid, area and equivalent diameter were then calculated and compared to the initial image parameters (Fig. 1). Tracheal compression, without a defined geometric pattern, was more difficult to detect using computer vision techniques. Therefore, machine learning was employed. A Support Vector Machine (SVM) classifier using histogram of gradient features was trained to associate sets of features with known instances of Tracheal compressions versus not, and to classify unknown instances using the previously learned model.

**RESULTS:** The automated algorithm examined two TT videotaped performances of thoracoscopic fistula ligation. The output was compared with the recorded ground truth and this comparison was used as the performance measure. The algorithm performed very well, as the output on the correct and incorrect procedural steps imitated the ground truth for the videotaped evaluations (Fig. 2). SVM classification achieved acceptable accuracy (86%) at discriminating the Tracheal compression cases on unseen test data.

**DISCUSSION:** The combination of computer vision techniques and a machine learning classifier was successfully used for the automated determination of correct and incorrect procedural steps during simulated thoracoscopic ligation of TEF. Experimental validation of the algorithm demonstrated the practical feasibility of online detection during the procedure. These strategies allowed for efficient and objective assessment of surgical skills. Future steps involve evaluation of operative videos from surgeons with variable skill levels, and assessment of the algorithm performance on a broader range of surgical skills.

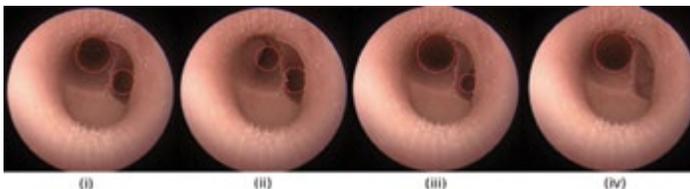


Figure 1: (i) Initial state, (ii) Bronchial ligation, (iii) Partial ligation, (iv) Correct ligation

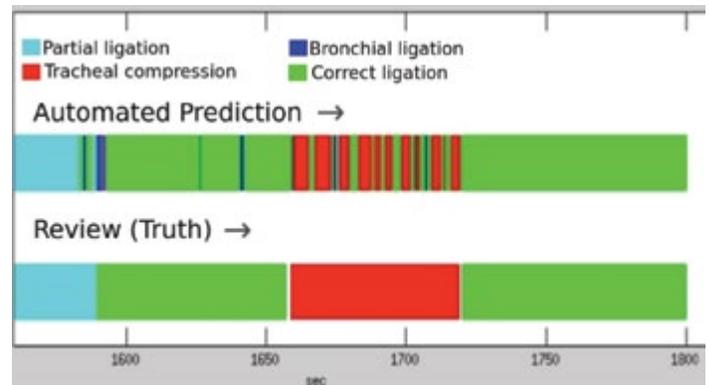


Figure 2: Illustration of performance comparison

### **S021: INSIGHT INTO SIMULATION-BASED TOOLS THAT MAY IMPROVE EXPERTISE AMONG EXPERTS: A COMPARISON OF ADULT AND PEDIATRIC SURGEONS –**

**Maeve O'Neill Trudeau, MD<sup>1</sup>**, Brian Carrillo, PhD<sup>2</sup>, Ahmed Nasr, MD, FRCSC<sup>3</sup>, J Ted Gerstle, MD, FRCSC, FACS, FAAP<sup>4</sup>, Georges Azzie, MD, FRCSC<sup>4</sup>; <sup>1</sup>Dept. of General Surgery, University of Toronto, Toronto, ON, Canada, <sup>2</sup>Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8, <sup>3</sup>Department of Surgery, University of Ottawa, Children's Hospital of Eastern Ontario, Ottawa, Ontario, <sup>4</sup>Division of General and Thoracic Surgery, Hospital for Sick Children, Toronto, ON, Canada M5G 1X8

**INTRODUCTION:** Laparoscopic models are increasingly recognized as important surgical training tools. The purpose of this study was to directly compare pediatric and adult laparoscopic surgical skills, and gain insight into the upskilling in both groups.

**METHODS & PROCEDURES:** Adult- and pediatric-sized laparoscopic simulators were fitted with custom-built motion tracking hardware and software. Participants were recruited at the Education Booth of the 2012 combined SAGES/IPEG meeting. They performed two standard intracorporeal suturing tasks: one on an adult-sized simulator, and one on a pediatric simulator. Velocity, acceleration and range were studied in all degrees of freedom available during laparoscopic surgery (Pitch, Yaw, Roll and Surge). Participants were stratified into novice, intermediate and expert groups based on self-reported caseloads and title.

**RESULTS:** A total of 57 participants (13 novices, 9 intermediates and 35 experts) were included in the study. Logistic regression showed no difference in any parameters when comparing between adult and pediatric Minimal Access Surgery (MAS) experts, regardless of whether they were being tested on the adult or pediatric simulator.

Adult and pediatric experts, combined, had significantly higher extreme events in three of the four degrees of freedom when performing the standardized suturing task in the pediatric simulator as compared to the same task in the adult simulator (Table 1). Few significant differences were seen when comparing novice and intermediate suturing performances on the adult versus pediatric simulator by t-test analysis, however this may be due to smaller sample sizes.

**CONCLUSION:** Adult MAS experts performed as well as pediatric MAS experts on a pediatric intracorporeal suturing task, and pediatric MAS experts performed as well as adult MAS experts on an adult intracorporeal suturing task.

Both pediatric and adult MAS experts were more challenged with the pediatric task than the adult suturing task. As such, experts who have mastered performance of a task in a simulator of a given size may

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benefit from simulation-based practise in simulators of diminishing domain. Novices and intermediates performed more poorly than experts on both the adult and pediatric suturing tasks. This suggests that novices and intermediates may benefit less than experts from practicing in simulators with smaller domain.

**Table 1. Comparison Adult vs Pediatric Intracorporeal Suturing Task: Motion Analysis Parameters by Degrees of Freedom**

Parameter	Novice (N=15)			Intermediate (N=15)			Expert (N=15)		
	Mean ± SD	Mean ± SD	P value	Mean ± SD	Mean ± SD	P value	Mean ± SD	Mean ± SD	P value
Time (seconds)	111.8 ± 20.7	125.1 ± 24.4	0.0001	120.5 ± 20.3	117.4 ± 18.5	0.2502	126.1 ± 20.9	127.0 ± 19.1	0.0001
Time (seconds) (95% CI)	86.5 ± 10.9	100.8 ± 20.9	0.0170	92.8 ± 13.7	117.0 ± 21.5	0.0001	110.0 ± 10.5	101.0 ± 10.8	0.0001
Path length (mm)	140.0 ± 22.0	160.0 ± 22.0	0.0001	140.0 ± 22.0	140.0 ± 22.0	0.0001	140.0 ± 22.0	140.0 ± 22.0	0.0001
Path length (mm) (95% CI)	100.0 ± 10.0	120.0 ± 10.0	0.0001	100.0 ± 10.0	100.0 ± 10.0	0.0001	100.0 ± 10.0	100.0 ± 10.0	0.0001
Time (seconds) (95% CI)	86.5 ± 10.9	100.8 ± 20.9	0.0170	92.8 ± 13.7	117.0 ± 21.5	0.0001	110.0 ± 10.5	101.0 ± 10.8	0.0001
Path length (mm) (95% CI)	100.0 ± 10.0	120.0 ± 10.0	0.0001	100.0 ± 10.0	100.0 ± 10.0	0.0001	100.0 ± 10.0	100.0 ± 10.0	0.0001
Time (seconds) (95% CI)	86.5 ± 10.9	100.8 ± 20.9	0.0170	92.8 ± 13.7	117.0 ± 21.5	0.0001	110.0 ± 10.5	101.0 ± 10.8	0.0001
Path length (mm) (95% CI)	100.0 ± 10.0	120.0 ± 10.0	0.0001	100.0 ± 10.0	100.0 ± 10.0	0.0001	100.0 ± 10.0	100.0 ± 10.0	0.0001

## S022: CONSTRUCT, CONCURRENT, AND CONTENT VALIDITY FOR THE EOSIM® LAPAROSCOPIC SIMULATOR ADAPTED FOR PEDIATRIC LAPAROSCOPIC SURGERY – Giuseppe Retrosi, MD<sup>1</sup>, Thomas P Cundy, PhD<sup>2</sup>, Munther J Haddad, FRCS<sup>1</sup>, Simon A Clarke, FRCS<sup>1</sup>; <sup>1</sup>Division of Paediatric Surgery, Chelsea and Westminster Hospital NHS Foundation Trust, London UK, <sup>2</sup>Hamlyn Centre, Institute of Global Health Innovation, St. Mary's Hospital, Imperial College London

**PURPOSE:** The Pediatric Laparoscopic Surgery (PLS) simulator remains the only construct validated training tool for pediatric laparoscopy. The eoSim® trainer represents an affordable and portable training tool that can be adapted to simulate the pediatric environment. The aim of this study is to diversify simulation tools in pediatric laparoscopy by validating the eoSim® for pediatric laparoscopy.

**METHODS:** Pediatric patients were enrolled and stratified according to level of their pediatric laparoscopy expertise. All participants performed 3 skill tasks on both the PLS and adapted eoSim® simulators. Tasks included object transfer, precision cutting, and intracorporeal suturing. Motion analysis software was used to measure performance for eoSim® tasks. Standard PLS scoring metrics were used to assess performance for PLS tasks. To assess *content validity*, Likert scale graded feedback responses for the PLS and eoSim® were compared using the Friedman test. To assess *construct validity*, Kruskal-Wallis one-way analysis of variance was used, as well as the Mann-Whitney test with Bonferroni correction to further compare outcomes amongst group pairs. To assess *concurrent validity*, relationships between PLS and eoSim® task completion times were evaluated using two-tailed Spearman's correlation tests. Median and interquartile range values were calculated for all outcome measures. Statistical significance was regarded as  $P < 0.05$ .

**RESULTS:** Twenty-eight participants were enrolled: 8 experts, 7 intermediates, and 13 novices. *Content validity:* Aggregated 5-point level of agreement Likert scale scores for participant feedback responses were either comparable, or more favourable for the eoSim® compared to the PLS, although differences did not reach statistical significance. *Construct validity:* Construct validity was demonstrated for numerous variables amongst each of the three tasks. For the object transfer task, significant differences were observed between levels of experience for variables of eoSim® completion time ( $P = 0.001$ ), instruments path length ( $P = 0.025$ ), right instrument off-screen ( $P = 0.035$ ), and PLS score ( $P = 0.015$ ). For the precision cutting task, significant differences were observed for eoSim® completion time ( $P = 0.009$ ), PLS completion time ( $P = 0.009$ ) and PLS score ( $P = 0.038$ ).

*Concurrent validity:* Significant relationships were found between eoSim® and PLS completion times for the cutting and suturing tasks. Strength of correlation was moderate for the cutting task ( $\rho = 0.435$ ,  $P = 0.021$ ), and strong for the suturing task ( $\rho = 0.861$ ,  $P < 0.001$ ). For the object transfer task, there was a weak correlation that was not statistically significant ( $\rho = 0.298$ ,  $P = 0.123$ ).

**CONCLUSION:** The eoSim® simulator is adaptable for pediatric laparoscopy, and is demonstrated to have content, construct, and concurrent validity. Based on these results, future development of the pediatric eoSim® will be aimed towards defining an inaugural proficiency-based curriculum for training and assessment in pediatric laparoscopy.

**CONCLUSION:** Transient systemic inflammation can be caused by appendectomy, but it was less severe by laparoscopy than by laparotomy. Open appendectomy can inhibit the activation of NOD signaling pathway in PBMCs upon NOD1- and NOD2-specific agonists, which may result in the insufficient amount of TNF- $\alpha$  and IL-6 during postoperative infection, while laparoscopy surgery can reduce the side effect to some extent.

For the suturing task, significant differences were observed for eoSim® completion time ( $P < 0.001$ ), instruments path length ( $P = 0.012$ ), instruments speed ( $P = 0.034$ ), instruments acceleration ( $P = 0.048$ ), instruments smoothness ( $P < 0.001$ ), PLS completion time ( $P < 0.001$ ), and PLS score ( $P < 0.001$ ).

**CONCLUSION:** The eoSim® simulator is adaptable for pediatric laparoscopy, and is demonstrated to have content, construct, and concurrent validity. Based on these results, future development of the pediatric eoSim® will be aimed towards defining an inaugural proficiency-based curriculum for training and assessment in pediatric laparoscopy.

**S023: THE IMPACT OF LAPAROSCOPY AND LAPAROTOMY SURGERY ON NOD SIGNAL PATHWAY IN CHILDREN WITH APPENDICITIS – Jian Wang, Yiping Li, Jie Zhu;** Children's Hospital of soochow Univesity

**PURPOSE:** Surgery is a special form of trauma that may affect patients' postoperative recovery, by causing local tissue damage as well as systemic stress response. Although previous studies have shown that the function of the immune system is closely related to the degree of stress response, further research is required for the exact mechanism. This study aims to discuss the effects of stress response caused by different kinds of surgery on NOD (nucleotide-binding oligomerization domain containing)-mediated innate immune response by comparing the changes in NOD signals in children with appendicitis preoperatively and postoperatively.

**METHODS:** 60 patients consecutively all presenting with the clinical diagnosis of perforated appendicitis. The patients were randomly assigned to be treated with laparoscopic(LA) or open approach(OA). Peripheral blood samples were collected from all patients before operation, at the end of operation, at Days 1 and Day 3 after operation. NOD1 and NOD2 gene expression in blood samples were quantified using qPCR. Cytokine responses of PBMCs to NOD1- and NOD2-specific agonists were assessed using ELISA kit (R&D system). The signal transduction of NOD pathway in PBMCs was measured by Western blotting.

**RESULTS:** In group LA, NOD1 and NOD2 were significantly decreased postoperatively, and recovered one day postoperatively. In group OA, these receptors had the same changes as in group LA, but were significantly lower than those in group LA ( $P < 0.05$ ) postoperatively. In group LA, no differences were found in the activities of p38, RIP2 in PBMCs preoperatively and postoperatively. But in group OA, these intracellular signals were significantly suppressed postoperatively and recovered one day postoperatively. In group LA, TNF- $\alpha$  and IL-6 were abundantly expressed in blood samples after NOD1- and NOD2-specific agonists, and there were no differences at different time points postoperatively. However, those factors in group OA were significantly decreased at postoperative point ( $p < 0.05$ ), and were recovered one day postoperatively.

**CONCLUSION:** Transient systemic inflammation can be caused by appendectomy, but it was less severe by laparoscopy than by laparotomy. Open appendectomy can inhibit the activation of NOD signaling pathway in PBMCs upon NOD1- and NOD2-specific agonists, which may result in the insufficient amount of TNF- $\alpha$  and IL-6 during postoperative infection, while laparoscopy surgery can reduce the side effect to some extent.

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### **S024: VIDEO ASSESSMENT OF LAPAROSCOPIC SKILL IS RELIABLE REGARDLESS OF EVALUATORS' LEVEL OF EXPERTISE**

– Celine Yeung, MSc<sup>1</sup>, Brian Carrillo, PhD<sup>2</sup>, Victor Pope<sup>3</sup>, Shahob Hosseinpour, BHSc<sup>1</sup>, J Ted Gerstle, MD, FRCSC, FACS, FAAP, FCS<sup>2</sup>, Georges Azzie, MD<sup>2</sup>; <sup>1</sup>Faculty of Medicine, University of Toronto, <sup>2</sup>Division of General and Thoracic Surgery, The Hospital for Sick Children, CIGITI, <sup>3</sup>Division of Otolaryngology, The Hospital for Sick Children

**INTRODUCTION:** Traditional evaluation of surgical skills is carried out by surgeons and is subject to bias as the evaluator is not blinded to the identity of the performer. Video technology may help address the issue of bias, as well as offer a more convenient and cost-effective alternative. The question then arises as to the level of expertise necessary among evaluators to assure reliable assessment of a performer's skill. The purpose of this study was to compare scores assigned by untrained novices to those assigned by staff surgeons, and to determine whether both groups of evaluators could reliably rank a performer's level of skill based on video analysis.

**METHODS & PROCEDURES:** Videos for the performance of a defined intracorporeal suturing task on a laparoscopic simulator were collected at the 2012 combined IPEG/SAGES meeting. The level of expertise of the performers (novice, intermediate, and expert) was categorized by previously established criteria based on the number of laparoscopic procedures performed per year. Fifty-nine videos were assessed by 4 untrained novices and 4 staff surgeons. Each evaluator graded the performers' level of expertise using a 5-point Likert-type scale.

Untrained novice and staff surgeon evaluator scores were averaged ( $\pm$  standard deviation) for each performer group. An unpaired Student's t-test was conducted for each performer group to determine whether a significant difference existed between the mean scores assigned by the two groups of evaluators. Intra-class correlation coefficients (ICC) were calculated to determine inter-rater reliability between individuals, within groups, and between groups.

**RESULTS:** For the novice, intermediate, and expert performer groups, the mean scores  $\pm$  SD assigned by untrained novice evaluators were  $2.2 \pm 0.9$ ,  $2.4 \pm 1.1$ , and  $3.6 \pm 1.0$ , respectively, while those assigned by staff surgeons were  $2.2 \pm 0.9$ ,  $2.6 \pm 1.0$ , and  $3.2 \pm 1.1$ , respectively. For each performer group, the Student's t-tests demonstrated no significant differences in average scores assigned by the untrained novices and staff surgeons.

There was good reliability when individual scores were compared between all 8 evaluators (ICC = 0.71, CI: 0.61–0.80), and when individual scores were compared to others within their own group (ICC = 0.77, CI: 0.66–0.85 for untrained novices, and ICC = 0.65, CI: 0.47–0.78 for staff surgeons). Using average scores rather than individual scores increased the reliability between the untrained novice and staff surgeon evaluator groups (ICC = 0.91, CI: 0.85–0.95).

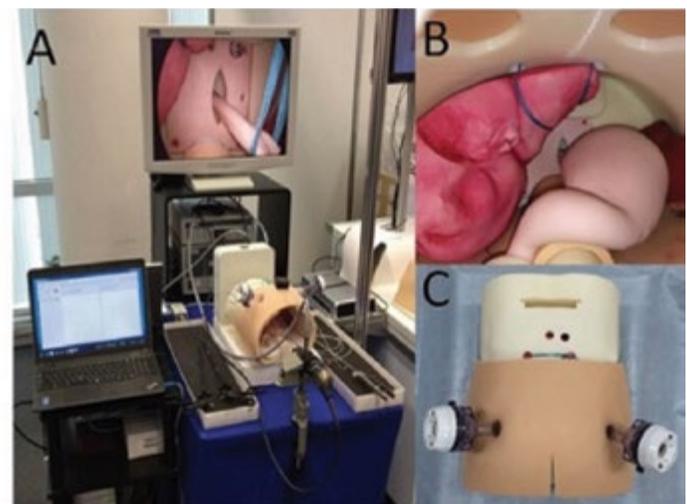
**CONCLUSION(S):** The assessment of this intracorporeal suturing task can be graded equally by evaluators of differing levels of expertise. Laparoscopic skill for this task may be reliably assessed using the score of a single evaluator, but the wide confidence intervals indicate a great degree of variability. Inter-rater reliability may be improved by averaging scores from multiple evaluators regardless of their level of expertise. Further study is needed to determine whether the burden of evaluation can be lifted from the shoulders of the most senior members of the surgical workforce, and to determine what level of training is required to adequately make such assessments.

### **S025: THE NEW INNOVATIVE LAPAROSCOPIC FUNDOPLICATION TRAINING SIMULATOR WITH SURGICAL SKILL VALIDATION SYSTEM**

– Takahiro Jimbo, MD<sup>1</sup>, Satoshi Ieiri, MD, PhD<sup>1</sup>, Satoshi Obata<sup>1</sup>, Ryota Souzaki<sup>1</sup>, Munenori Uemura<sup>2</sup>, Noriyuki Matsuoka<sup>3</sup>, Tamotsu Katayama<sup>3</sup>, Kouji Masumoto<sup>4</sup>, Makoto Hashizume<sup>2</sup>, Tomoaki Taguchi<sup>1</sup>; <sup>1</sup>Department of Pediatric Surgery, Faculty of Medical Sciences, Kyushu University, <sup>2</sup>Department of Advanced Medicine and Innovative Technology, Kyushu University, <sup>3</sup>Kyoto Kagaku, Co. Ltd, <sup>4</sup>Department of Pediatric Surgery, Faculty of Medicine, University of Tsukuba

**BACKGROUND & AIM:** The Japanese Society for Endoscopic Surgery (JSES) developed an endoscopic surgical skill qualification (ESSQ) system for all surgical fields in 2008. In pediatric surgery, the task of ESSQ is laparoscopic fundoplication. The ESSQ is a video-based evaluation system. Some simulators specifically mimicking fundoplication have been reported, but they were just for training. Therefore, we developed and validated a specific laparoscopic fundoplication simulator for use with the objective endoscopic surgical skills evaluation system. The aim of this study was to verify the quality of skills of surgeons.

**MATERIALS & METHODS:** We developed a one-year-old infant body model (body weight: 10 kg) based on computed tomography data. The pneumoperitoneum was reproduced based on the clinical situation. It was covered with synthetic skin (Fig.1). A detachable esophageal crura, stomach, liver and spleen were made of styrene, and were placed in this model. The examinees were divided into three groups, fifteen pediatric surgery experts (PSE), 24 pediatric surgery trainees (PSN) and ten general surgeons (GS). They each had to perform two tasks (Fig. 2): Task 1 was a suture ligation of the crura on both the ventral and dorsal sides; Task 2 was to perform the Nissen fundoplication using three sutures and ligatures. We evaluated the time required to complete both tasks, the number of complete full-thickness sutures of crura in Task 1, and the balance of suturing. Additionally, we evaluated the total path length and velocity of each tip of the forceps using a three-dimensional position measurement instrument with an electromagnetic tracking system (AURORA; NorthernDigital Inc. Canada) to assess the bi-hand coordination. A statistical analysis was performed using the two-tailed paired and unpaired t-test, and a value of  $p < 0.05$  was considered to be statistically significant.



**Fig.1 Laparoscopic fundoplication simulator**  
(A) System overview, (B) Laparoscopic view,  
(C) Trocar placement



Task 1: Suture and ligature of the crura on both the ventral and dorsal sides.



Task 2: Construction of the fundoplication

Fig. 2. Clinical photographs (left side) of a Nissen fundoplication, and photographs of these tasks in our fundoplication model (right side)

RESULTS TASK 1: The summary of all tasks is shown in Table 1. The PSE were significantly superior to the PSN with regard to the total time spent ( $p=0.0000005$ ) and the total path length ( $p=0.00502$ ). The GS used both forceps faster than the other groups, and the PSN used the right forceps faster than the left forceps ( $p=0.0000029$ ) (Fig. 3).

TASK 2: The PSE were significantly superior to the GS in the construction of the fundoplication and were shorter than the GS group with regard to the total path length ( $p=0.00198$ ). Conversely, the PSE and GS groups were not significantly different regarding the time for task 2 ( $p=0.403$ ).

Table 1. The results of both Tasks

		PSE	PSN	GS	Multiple comparisons		
					PSEvsPSN	PSEvsGS	PSNvsGS
Task 1	No. of surgeons	15	24	30			
	Time for Task (sec)	394±122	671±179	418±197	0.0000005	NS	0.0018327
	No. of full thickness sutures	1.9±0.35	1.6±0.58	1.2±0.63	NS	0.0025117	NS
	Total path length (mm)	15188±6800	20879±5065	19067±8395	0.0010297	NS	NS
	- path length of Left forceps	6967±3733	9177±2415	8722±3989	0.0003547	NS	NS
	- path length of Right forceps	8222±3950	11701±2915	10345±4602	0.0015176	NS	NS
	The right and left side balance of suture in task1 (mm)	2.91±1.48	2.42±1.66	2.94±1.32	NS	NS	NS
	Time for Task2 (sec)	515±120	688±207	562±156	0.0000075	NS	0.0034884
	Total path length (mm)	21130±4137	33029±10395	27943±5673	0.0001462	0.0019792	NS
	- path length of Left forceps	9850±2079	15396±5461	12899±2452	0.00063	0.0028331	NS
- path length of Right forceps	11279±2512	17633±5187	15045±3728	0.0000087	0.0057642	NS	
The right and left side balance of suture in task2 (mm)	3.23±1.37	5.08±3.22	5.52±1.09	0.0473966	0.0011949	NS	
The interval balance of wrap suturing (mm)	1.27±0.73	1.94±1.24	1.32±0.97	NS	NS	NS	

NS indicates not significant

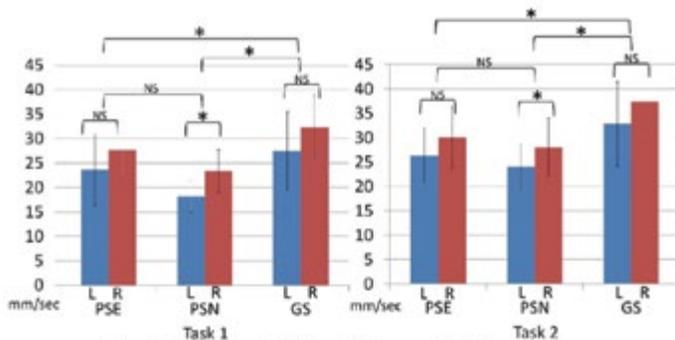


Figure 3. Comparison of the right and left forceps velocity in each group.

CONCLUSION: This study revealed that PSE and GS both have excellent bi-hand coordination and they can use both forceps equally, and both had superior skills compared to the PSN. In addition, PSE performed more compact and accurate motions compared with the GS group, thus indicating that the PSE had less wasted motion. Our model validated the quality of the endoscopic surgical skills, and makes it possible to train subjects repeatedly. In addition, we can mentor the trainees using objective evaluation data. In the future, we will hope that this model will be able to contribute to the acquisition of pediatric surgical skills by trainees.

### S026: THIRD ARM FOR SURGEON: FEASIBILITY AND APPLICATIONS

Sharifa Himidan<sup>1</sup>, Elaha Abdi, PhD<sup>2</sup>, Mohamed Bouri, PhD<sup>2</sup>, Hannes Bleuler, PhD<sup>2</sup>; <sup>1</sup>University of Toronto, <sup>2</sup>EPFL, Lausanne Switzerland

Surgeons need assistance to perform most operations. If the assistant is novice and/or unfamiliar with the surgeon, it may result in errors during the surgery. Also, recent changes in training regulation and nursing union rules have affected the manpower available to assist surgeons to perform most of these simple tasks such as retracting, holding the camera and suction apparatus. A third robotic arm under the surgeon's full control can improve his/her autonomy and dexterity. While the hardware of such an arm is basically available, it is important to study the control aspects of such an arm. In this research study we propose to use the redundant degrees of freedom of human body to control the third arm.

One solution is to use the foot for this purpose. As surgeons already use their feet for simple tasks (e.g. switching the cautery device on/off), it is potentially feasible for them to generalize this usage to more complicated applications. We conducted this study with a set of experimental studies in virtual reality. Different experiments were designed with visual and haptic feedback. Three hands appear on the monitor, two of which represent the two real hands and the foot controls the third one. The tasks with visual feedback were played from the easiest one to the hardest. In order to have a closer task to those in the surgical room, one experiment is designed for simulating the movement of the endoscope in laparoscopic surgery. This experiment is conducted both with and without force feedback. The required time for completing each task, the number of success and failures and the hand trajectories are recorded in each game. In addition, subjects fill in a questionnaire at the end of the experiment. Analyzing the data enables us to evaluate the proposed control strategy. The learning curve of the subjects and the appropriate level of complexity of the tasks are determined. Subjects filled post experiment questionnaires; Answers to these questionnaires provide information about the sense of ownership of the users towards the third arm as well as the physical and mental burden of controlling the third arm by foot. Initially, we performed the experiments using visual feedback with 13 subjects.

The results show that a few minutes of practice can improve their performance dramatically. Also they develop a sense of ownership towards the third arm as they go on in the experiment. Most of the subjects have not found the system mentally or physically tiring. The proposed games did not saturate the ability of the users and they seem capable of performing more complicated tasks. In the next steps we will provide the users with more challenging games which are more demanding and at the same time more related to surgery. We have recently focus on the end user from the early stages of the study by doing tests with surgeons and receiving their opinions. 30 surgeons at the university of Toronto Took the test. Data analysis will be added.

### S027: MAKING GOOD TIME: AN EVALUATION OF THE LEARNING CURVE WITH ROBOTIC SLEEVE GASTRECTOMIES IN MORBIDLY OBESE ADOLESCENTS

Victoria K Pepper, MD, Laura A Boomer, MD, Jennifer Smith, BSN, RN, CNOR, Karen A Diefenbach, MD, Marc P Michalsky, MD; Nationwide Children's Hospital

PURPOSE: While robotic-assisted surgery has gained acceptance in the adult population for a number of abdominal procedures, there is a relative paucity of data examining its use in the pediatric population. Our aim was to evaluate the learning curve associated with the application of robotic-assisted sleeve gastrectomy (RSG) in a cohort of severely obese adolescents.

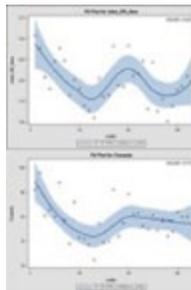
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**METHODS:** A retrospective analysis of 33 consecutive severely obese adolescents (body mass index (BMI)  $\geq$  120% of the 95th percentile or BMI  $\geq$  40kg/m<sup>2</sup>) undergoing RSG at a single institution was conducted. Data collected included age, gender, BMI, ethnicity, comorbidities, and operative time. Ten operative time points were measured: anesthesia preparation time, anesthesia-positioning time, patient positioning time, position-incision time, port placement time, robotic docking time, docking-console time, console time, closure, and total operative time. Fitted linear regression models were used for statistical analysis.

**RESULTS:** The mean BMI was 49.3  $\pm$  10.2 kg/m<sup>2</sup> in this predominantly female (88%) cohort. The mean total operative time was 198  $\pm$  27 minutes, and the mean console time was 57  $\pm$  10 minutes. When evaluating for learning curve, experience did not impact anesthesia preparation time, robotic docking time, or closure time. There was a learning curve associated with both console time and total operative time. The plateaus of both curves were reached at 13 cases, after which there was minimal improvement. After the initial 13 cases, there was a second peak related to inclusion of the pediatric surgery trainee at the console. With time, however, the combined attending and trainee team was able to re-establish the same plateau. When comparing cases 1 through 7 and 8 through 14, there was a significant improvement in console time (73 minutes (min) vs. 45 min,  $p=0.01$ ) and in total operative time (225 min vs. 180 min,  $p=0.0059$ ).

**CONCLUSION:** Experience with RSG in an adolescent cohort leads to an improvement in console time and total operative time. Furthermore, our data indicates that this plateau is reached at 13 cases, however, larger prospective studies are needed.



Definitions of Operative Time Points	
Total operative time	Anesthesia induction to out of OR
Anesthesia preparation	Anesthesia induction and line insertion
Anesthesia-positioning	Placement of foley, Padding extremities, etc.
Positioning	Positioning of patient and table
Position-incision	Prep, draping, gown and gloving, passing off cords
Port placement	Incision to placement of all ports
Docking	Positioning of robot and attachment of all arms
Docking-console	Insertion of instruments and camera until surgeon control of arms
Console	Surgeon start at console to completion at console
Closure	Closure of port sites and dressing application

**S028: THE FINANCIAL IMPACT OF INTRODUCING A ROBOT TO A PAEDIATRIC SURGERY AND UROLOGY PROGRAMME IN THE BRITISH NATIONAL HEALTH SERVICE** – Simon Clarke, FRCS, Paed, Surg, Lyn Brocklebank, RN, N Sprigens, BA, G Retrosi, Mk Farrugia, N Rahman, D De Caluwe, Mj Haddad; Chelsea & Westminster NHS Foundation Trust

Efficacy of Robotic surgery in paediatrics has yet to be determined(1). In 2013 a Da Vinci Si was introduced for both surgical and urological patients within our paediatric department, only the second in the British NHS system purchased for the use in children. Within the context of the current financial climate in the National Health Service, we performed a financial impact analysis as well as a clinical

outcome study for the first year of service. The HALO effect refers to an increase in a department's activity through the introduction of an innovative service. It was hypothesised that this may be observed within our unit.

**METHODS:** A cost analysis was performed examining all aspects of the programme from initial training to mentorship as well as maintenance and consumables. The performance indicators of time to discharge, as well as any observed increase in the department's activity as a result of the HALO effect, would also be examined. Financial and departmental activity data was retrieved through hospital episode statistics (HES) examining a 24-month period incorporating pre and post robotic purchase. Clinical data was retrieved prospectively.

**RESULTS:** The initial outlay of the robot was through charitable cause therefore was not included in the final analysis. 26 patients had 26 procedures (appendectomy, cholecystectomy, fundoplication, pyeloplasty and nephro-ureterectomy). There were two conversions. All procedures took longer than their laparoscopic equivalents, though time to discharge was unchanged. The financial cost per case was calculated after incorporating a maintenance charge of £100k per annum, decontamination/sterilizing equipment at £ 70K, cost of equipment and consumables as well training and mentoring costs (£7k for training a team of 7 and £2K/case for mentoring). The average cost per case was estimated at £10K and the overall income received from the completed cases was £7K. No additional charge can be made in the NHS if the case is performed robotically.

The activity for the first 12 months after the introduction of the robot showed a similar number of operative cases for the department when compared to the same time in the previous financial period. The referral load had increased but the additional income did not offset the financial outlay of the robotic programme. The costs of the programme during the first year therefore estimate a net loss £116K.

**CONCLUSION:** The Introduction of the Da Vinci robot to our department in 2013 has resulted in a significant financial impact into an already constrained financial system. Cost per case will likely reduce over the next 1- 2 years. Continued support will rely not only on evidence from international collaborative clinical study but also from a sustained investment into the program. An international paediatric robotic registry is required to assist in this process.

**REFS:** 1, Cundy et al. The first decade of robotic surgery in children. J Pediatr Surg. 2013 Apr;48(4):858-65.

**S029: GASTROSCOPIC-ASSISTED SURGERY FOR PYRIFORM SINUS FISTULA IN CHINESE CHILDREN: A 73-CONSECUTIVE-CASE STUDY** – Zhibao Lu, MD<sup>1</sup>, Jiangbin Liu, MD<sup>1</sup>, Xianmin Xiao, MD<sup>2</sup>; <sup>1</sup>Children's Hospital of Shanghai, Shanghai Jiao Tong University, <sup>2</sup>Children's Hospital of Fudan University

**PURPOSE:** The objective of this study was to highlight the value of intra-operative gastroscopic-assisted intubation or methylene blue injection through the internal opening as a guide in searching for the fistula.

**METHODS:** We retrospectively reviewed the charts of 73 consecutive patients diagnosed with PSF during 1999 until 2014 from two tertiary referral centers. The gastroscopic-assisted operation was performed by one surgeon (Z. Lu). The records were analyzed.

**RESULTS:** There were 31 males and 42 females, with a median age at onset and diagnosis was 3 years (range, 0 to 11 years) and 5 years (range, 12 months to 13 years), respectively. The overwhelming majority of cases (94.5%) occurred on the left side. The most common presentation was neck abscess (69.8%). Other presentations were acute suppurative thyroiditis/thyroid abscess (12.3%), neck mass

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with or without dyspnea (12.3%), and thyroid nodule (5.5%). Barium esophagography showed the sinus tract in 100% cases. The positive predictive value (ppv) of other modalities was oral-contrast computed tomography (CT) 93.7% (15/16), intravenous contrast-enhanced CT 67.5% (27/40), non-contrast CT 46.1% (6/13), and sonography 10.4% (5/48). Magnetic resonance imaging (MRI) and pharyngoscopy also had satisfactory ppv, but not widely used in this series. Thyroid function were reported normal in most tested cases (15/16, 93.8%). Thyroid scan, X-ray film of the neck, and fine-needle aspiration had no contribution to the diagnosis. The fistula tract was lined with pseudo-stratified squamous epithelium or ciliated columnar epithelium, often associated with inflammatory changes. The number of incision and drainage before definitive surgery ranged 1 to 12. Sixteen children received open surgery but recurrence occurred.

The intra-operative gastroscopy was successfully conducted in all cases. Meticulous exploration of the neck was performed first after mobilizing the ipsilateral thyroid. The sinus tract could penetrate the thyroid cartilage near the inferior cornu, the inferior pharyngeal constrictor muscle, or the cricothyroid membrane when it emerged from the larynx. Then, a 3F catheter was inserted into the tract from the internal opening and left it in the loci. In some cases, the catheter was found could easily slip out of the position and then a volume of about 0.5-1 ml methylene blue was injected into the sinus instead as an indicator. Incision of the inferior pharyngeal constrictor muscle and exposure of the inferior cornu of thyroid cartilage might simplify the dissection of the proximal part of the fistula. Partial thyroidectomy was operated on 25 cases. Two patients (2/8, 25%) who underwent open surgery without gastroscopic assistance (before 1999) exhibited recurrence, while no recurrence was noted in children with the help of intra-operative gastroscopy ( $P < 0.05$ ). Post-operative results were good in majority (97.2%). Two patients developed postoperative complications: temporary vocal fold motion impairment, and left-sided Horner syndrome, respectively.

**CONCLUSIONS:** PSF should be considered in any children with repeated neck or thyroid infection/mass. The combination of barium esophagography, CT scan, MRI and ultrasound is useful to establish the diagnosis. Intra-operative gastroscopic-assisted intubation or methylene blue injection through the internal opening as a guide can facilitate identification of the tract during dissection with minimized complications.

**S030: APPENDICECTOMY FOR CHRONIC RIGHT ILIAC FOSSA PAIN: CORRELATING HISTOLOGY WITH OUTCOME** – [Caroline Pardy, MRCS, MBBS, BSc](#), Anies Mahomed, MB, BCh, FCSSA, FRCS, Paed, Surg; Royal Alexandra Children's Hospital, Brighton

**INTRODUCTION:** The role of elective laparoscopic appendicectomy in the management of chronic right iliac fossa pain is being increasingly recognised in both the adult and paediatric population. Resolution of symptoms is achieved in 60-98% of patients<sup>1,2,3,4</sup>. Despite histological changes being identified in a significant proportion of the appendixes removed, poor correlation has been demonstrated between histology and post-operative pain scores<sup>1</sup>.

**METHODS:** Prospective review of patients presenting at a single centre with a history of chronic (> 1 month) right iliac fossa pain, undergoing elective laparoscopic appendicectomy performed by a single surgeon. All appendixes removed were examined histologically. Pain was evaluated post-operatively at outpatient follow-up.

**RESULTS:** 39 children with a median age of 12 (5-19), 26 (65%) of whom were female, underwent elective laparoscopic appendicectomy. 29 of the 39 appendixes (74%) demonstrated histological changes. In 5 patients an ovarian/paraovarian cyst was

identified and excised in addition to the appendix. Of the 5 patients in whom a potential gynaecological source of pain was identified, 2 had histologically normal appendixes removed.

The most common histological change identified was prominent lymphoid hyperplasia (11/39), followed by faecolith or significant luminal faecostasis (8/39). Pus in the lumen was noted in 5 patients, features of early suppurative inflammation in 4 patients, and fibrosis of the tip in 4 patients. Actinomyces colonisation was identified in 1 appendix. All patients reported resolution of pain at post-operative follow-up.

**DISCUSSION:** Our experience supports the findings of previous studies that have demonstrated resolution of pain in the vast majority of patients with chronic right iliac fossa pain who undergo elective laparoscopic appendicectomy. The histological findings were consistent with current literature, which has identified signs of appendicopathy in 73-94% of cases<sup>1-4</sup>. However, the significance of the histological changes observed remains uncertain and requires further investigation.

### REFERENCES

1. Roumen RMH, Groenendijk RPR, Sloots CEJ et al. Randomized clinical trial evaluating elective laparoscopic appendicectomy for chronic right lower-quadrant pain. *BJS* 2008; 95:169-174
2. van Rossem CC, Treskes K, Loeza DL et al. Laparoscopic appendicectomy for chronic right lower quadrant abdominal pain. *Int J Colorectal Dis* 2014; 29: 1199-1202
3. Koltz RL, Nelson RS, Park R. Exploratory laparoscopy for recurrent right lower quadrant pain in a pediatric population. *Pediatr Surg Int* 2006; 22: 247-249
4. Stevenson RJ. Chronic Right-Lower-Quadrant Abdominal Pain: Is There a Role for Elective Appendectomy? *JPS* 1999; 34(6): 950 - 954

### **S031: MINIMALLY INVASIVE ILEAL POUCH ANAL ANASTOMOSIS WITH RECTAL EVERSION ALLOWS FOR EQUIVALENT OUTCOMES IN CONTINENCE** – [Laura A Boomer, MD<sup>1</sup>](#), Victoria K Pepper, MD<sup>1</sup>, Justin T Huntington, MD, MS<sup>2</sup>, Karen A Diefenbach, MD<sup>1</sup>, Jennifer L Dotson, MD, MPH<sup>1</sup>, Benedict C Nwomeh, MD, MPH<sup>1</sup>; <sup>1</sup>Nationwide Children's Hospital, <sup>2</sup>The Ohio State University Wexner Medical Center

**BACKGROUND:** Different techniques for ileal pouch anal anastomosis (IPAA) have been described in children with ulcerative colitis (UC), including rectal eversion. This method allows for precise identification of the dentate line, and a more complete proctectomy, but has also raised concerns for sphincter injury from traction. The purpose of this study was to evaluate the outcomes and continence rates for patients undergoing IPAA for UC at our institution.

**BACKGROUND:** Different techniques for ileal pouch anal anastomosis (IPAA) have been described in children with ulcerative colitis (UC), including rectal eversion. This method allows for precise identification of the dentate line, and a more complete proctectomy, but has also raised concerns for sphincter injury from traction. The purpose of this study was to evaluate the outcomes and continence rates for patients undergoing IPAA for UC at our institution.

**METHODS:** After obtaining approval from the Institutional Review Board, all patients that underwent IPAA were reviewed. Data collected included demographics (age, sex, weight, and BMI among others), procedure details, proctocolectomy technique, operative time, total hospital and post-operative length of stay, and continence outcomes at 1 month, 6 months and 12 months post-ileostomy closure. All minimally invasive procedures (standard laparoscopic and robotic-assisted) were considered together for statistical analysis (MIS group).

**RESULTS:** Thirty-three patients were identified that underwent proctocolectomy and IPAA between July 2006 and October 2014. Twenty (60.6%) patients had a standard laparoscopic procedure, 8 (24.2%) had an open procedure, and 5 (15.2%) had a robotic-assisted laparoscopic procedure. Three patients in the standard laparoscopic group had a two-stage procedure, while the rest had three-stage procedures. There were no statistically significant differences in regards to demographics, mean operative time, or length of stay (LOS) when comparing the MIS group (standard laparoscopic and

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robotic-assisted) to the open group. All patients in the MIS group underwent the eversion technique, while none of the patients in the open group underwent rectal eversion. Two patients within the MIS cohort were excluded from the continence data as they had yet to undergo ileostomy reversal. Average number of stools per day for the entire cohort was 7 at 1 month, 6 at 6 months, and 5 at 12 months. There were no differences in the two groups in terms of number of daily stools ( $p=0.96$  for 1 month,  $p=0.09$  for 6 months and  $p=0.87$  for 12 months), night-time stooling ( $p=0.29$  for 1 month,  $p=0.10$  for 6 months and  $p=0.25$  for 12 months), soiling ( $p=0.43$  for 1 month,  $p=0.36$  for 6 months and  $p=0.52$  for 12 months), or stool-altering medication usage ( $p=0.37$  for 1 month,  $p=0.12$  for 6 months and  $p=0.24$  for 12 months).

**CONCLUSION:** The rectal eversion technique can be used safely and effectively during MIS for proctocolectomy and IPAA in children and adolescents without resulting in a decrease in continence rates.

	MIS with Eversion	Open	P-value
<b>No. Stools/Day, mean</b>			
1 month	7.0	6.8	0.93
6 months	5.4	7.3	0.09
12 months	5.3	5.4	0.87
<b>Stooling at Night, % of patients</b>			
1 month	67%	33%	0.29
6 months	53%	100%	0.10
12 months	19%	43%	0.25
<b>Soiling, % of patients</b>			
1 month	19%	0%	0.43
6 months	13%	33%	0.36
12 months	6%	0%	0.52
<b>Stool-altering medications</b>			
1 month	91%	67%	0.26
6 months	100%	100%	1.00
12 months	88%	71%	0.37

### **S032: LAPAROSCOPIC TREATMENT FOR CHOLEDOCHAL CYSTS WITH STENOSIS OF COMMON HEPATIC DUCT** **Aiwu Li, Jian Wang, Qiangye Zhang, Hongchao Yang; Department of Pediatric Surgery, Qilu Hospital, Shandong University**

**BACKGROUND:** Although laparoscopic approach has been proved beneficial for choledochal cyst, choledochal cysts with stenosis of common hepatic ducts were ever regarded as the contraindication of it. Here, we described our experience with laparoscopic procedures for choledochal cysts with stenosis of common hepatic ducts in child patients.

**METHODS:** This retrospective study included 106 patients with choledochal cysts, who were treated from January 2003 to December 2013, in the Department of Pediatric Surgery, Qilu Hospital, Shandong University. The study population was classified into two groups. Group 1 included 45 patients treated between January 2003 and December 2006 (stenosis of common hepatic ducts were found in 6 cases), who underwent open hepaticojejunostomy, while group 2 included 61 patients between January 2007 and December 2013 (stenosis of common hepatic ducts were found in 13 cases) treated with laparoscopy. There was no statistical difference between two groups on all the patient data and cyst characteristics. All patients were studied about the clinical presentations, operative details and outcomes. In addition, the cases of hepatic ductal stenosis which

were verified intraoperatively were compared according to different operative methods. Statistical comparison was made with unpaired t tests, X<sup>2</sup> tests and Fisher exact probability, with P value less than 0.05 were considered significant.

#### **RESULTS:**

- Laparoscopic surgery was accomplished in all of the 61 cases (group 2) including 13 cases (21.3%) with hepatic ductal stenosis and the stenosis of the common hepatic duct was confirmed by cholecystography and laparoscopy.
- In the comparison of patients of choledochal cysts between open surgery and laparoscopic surgery, laparoscopic surgery has a little longer operative time (182.3 versus 172.4 minutes,  $P<0.05$ ), the higher incidence of hepatic ductal stenosis (21.3% versus 13.3%,  $P<0.05$ ) and the lower rate of postoperative cholangitis (2.6% versus 20%,  $P<0.05$ ). There were 5 cases adhesive bowel obstruction in open group and no adhesive bowel obstruction occurred in laparoscopic group and the mean length of hospital stay was 7 days and 5 days respectively.
- In the comparison of patients of choledochal cysts with stenosis of common hepatic ducts between open surgery and laparoscopic surgery, we found that laparoscopic surgery has a little longer operative time (220.7 versus 201.2 minutes,  $P<0.05$ ) but higher incidence (21.3% versus 13.3%,  $P<0.05$ ) than open operation. There was also less operative blood loss and no intraoperative blood transfusion in laparoscopic surgery (58.3 versus 13.6ml,  $P<0.05$ ). The time for off-bed activity, start of oral liquids and mean length of hospital stay were 1 day, 3 day and 6 days respectively in laparoscopic surgery and the time in open surgery were 2-3 days, 4-5 days and 8 days. 2 cases postoperative cholangitis and 2 cases adhesive bowel obstruction occurred in open group but no case in laparoscopic surgery.

**CONCLUSIONS:** Compared to open surgery, laparoscopic surgery has many benefits especially for choledochal cysts concomitant with stenosis of common hepatic ducts in child patients. This method should be applied widely in future.

**KEY WORDS:** Choledochal cyst, Stenosis, common hepatic duct Laparoscopic surgery

### **S033: A NEW ANASTOMOSIS OF LAPAROSCOPIC KASAI PROCEDURE FOR BILIARY ATRESIA** – **Bin Wang, Shuaidan**

**Zeng, Jianxiong Mao, Jianyao Wang, Qi Feng, Zimin Chen, Fang Chen, Lei Liu; Shenzhen Children's Hospital**

**BACKGROUND:** the Laparoscopic Kasai surgery, which is the preferred treatment for biliary atresia (BA), with a certain difficulty. In our opinion, the key points of the Kasai surgery are, excision of the portal fibrous block and the hepaticojejunostomy. Therefore, we conducted a retrospective research to evaluate the efficiency of a new approach.

**SUBJECTS AND METHODS:** From 2011 to 2014, a total of 71 patients were involved in present study. All patients received the same excision of portal fibrous block, which was reported in our previous study. Depending on the different anastomosis of the paries posterior, we divided these patients into two group (group A, 25 patients with the continuous suture of jejunum and the fibrous block nub; group B, 46 patients with the continuous suture of jejunum and the ligamentum hepatoduodenale). The anastomosis of antetheca in two groups is the continuous suture of jejunum and the liver capsule. All cases had peritoneal drainage and same medications postoperatively. Operative time, intraoperative blood loss, fasting time, volume of drainage 3 days postoperatively, drainage tube removal time, the level of bilirubin 1 month postoperatively were recorded and analyzed.

**RESULTS:** All patients underwent the laparoscopy successfully. The operative time in group A was  $208\pm 12$  minutes, in group B was  $182\pm 26$

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minutes ( $P < 0.01$ ). The blood loss in group B (10–15ml) was less than group A (15–30ml), but no statistical differences was found ( $P > 0.05$ ). The fasting time in both groups was 3 days. The volume of drainage, initial 3 days after surgery, of group A were 30ml, 20ml, 5ml; of group B were 30ml, 25ml, 5ml. The drainage tubes were removed at 4–5 days after operation in group A and at 5–7 days after operation in group B. There is no significant difference in bilirubin level 1 month after surgery between two groups ( $P > 0.05$ ).

**CONCLUSIONS:** The laparoscopic anastomosis of jejunum and ligamentum hepatoduodenale is a safe and effective way to suture the paries posterior of anastomotic stoma. By using this new approach, we reduced the difficulty and the operative time of Kasai surgery, moreover, we also achieved the same effect as traditional way.

**KEY WORDS:** Laparoscopic; Kasai; Biliary atresia

**S034: LAPAROSCOPIC DUHAMEL PROCEDURE FOR HIRSCHSPRUNG'S DISEASE: SYSTEMATIC REVIEW AND META-ANALYSIS** – Daniel W Scholfield, MBChB, BSc, *Biology*, Ashok Daya D Ram, MBBS, FRCS, FRCPS; Birmingham Children's Hospital, UK

**INTRODUCTION:** Duhamel procedure remains one of the safe, standard and acceptable operations in the management of Hirschsprung's disease. Although the basic principles of the procedure remain the same, laparoscopy has significantly and dramatically improved the safety, efficacy and the outcome.

Over the past two decades many institutions have moved away from an open to a laparoscopic Duhamel procedure. However, to date there has been no randomised control trial or meta-analysis evaluating long-term outcomes of the open compared to laparoscopic Duhamel procedures. Our study is the first systematic review and the meta-analysis comparing the two approaches.

**PATIENTS & METHODS:** We undertook a systematic review of the literature of all studies over a 20 year period from 1994 to 2014 that assessed functional outcomes for open and/or laparoscopic Duhamel procedures. Exclusion criteria included patients with total colonic aganglionosis, follow-up periods of less than 6 months, cohorts smaller than 10 patients, full articles not written in English, non-peer reviewed articles and insufficient operation details. Key results and outcomes analysed in our meta-analysis include post-operative enterocolitis, constipation, incontinence, the need for further surgery. It also included operative time, length of hospital stay and time to oral feeds etc. Odds ratios (OR) were calculated for dichotomous variables using the Mantel-Haenszel method and mean differences (MD) were measured for continuous variables using the inverse variance method. A random-effects analysis model was used for all outcomes

**RESULTS:** A total of 456 patients in 11 articles were included in this review: 253 underwent an open Duhamel and 203 underwent a laparoscopic Duhamel, with no statistically significant difference in age at surgery and length of follow up ( $p > 0.05$ ).

There was a statistically significant increase in rate of soiling/incontinence (11% open vs 4% laparoscopic; OR 0.39 [95% CI, 0.18 to 0.85];  $p = 0.02$ ), further surgery (25% open vs 14% laparoscopic; OR 0.49 [95% CI, 0.30 to 0.81];  $p = 0.005$ ), length of hospital stay (9.79 days open vs 7.3 days laparoscopic; MD = -2.49 [95% CI, -3.35 to -1.63];  $p < 0.00001$ ) and time to oral feed (4.05 days open vs 3.27 days laparoscopic; MD = -0.78 [95% CI, -0.97 to -0.59];  $p < 0.00001$ ) in the open group, whilst operative time (3.83 hours open vs 4.09 hours laparoscopic; MD = 0.26 [95% CI, 0.08 to 0.44];  $p = 0.004$ ) was significantly longer in the laparoscopic group. Rate of postoperative enterocolitis (15% open vs 10% laparoscopic; OR 0.65 [95% CI, 0.37 to 1.15];  $p = 0.14$ ) and constipation (23% open vs 30% laparoscopic; OR

1.44 [95% CI, 0.91 to 2.29];  $p = 0.12$ ) were not significantly different between the two groups.

**CONCLUSIONS:** Our meta-analysis convincingly demonstrates the superiority of laparoscopic over open Duhamel pull-through in the majority of key outcomes for HD surgery, in addition to the previously well documented advantages regarding cosmetic outcome and cost. Such differences will only become greater with the inevitable improvement in technical expertise and endoscopic technology. Prospective, randomised control trials are required to overcome these limitations in the current literature.

**S035: LAPAROSCOPIC VERSUS OPEN KASAI PROCEDURE FOR BILIARY ATRESIA: EARLY AND INTERMEDIATE RESULTS OF A RANDOMIZED CLINICAL TRIAL** – Tran N Son, MD, PhD, Doan N Hung, MD, Pham T Hung, MD, Tran A Quynh, MD, Nguyen P A Hoa, MD, PhD, Nguyen T Liem, MD, PhD; National Hospital of Pediatrics, Hanoi, Vietnam

**INTRODUCTION:** The role of laparoscopic approach for Kasai procedure in management of biliary atresia is still controversial. The aim of this study is to evaluate the results of laparoscopic Kasai procedure (LKP) in comparison to open Kasai procedure (OKP).

**METHODS:** A randomized clinical trial was carried out from October 2009 to May 2013. Patients with diagnosis of biliary atresia were divided randomly in 2 groups: one group underwent LKP and the other group – OKP. All the surgical procedures were performed by the same surgeon. In both LKP and OKP, exposure of the hepatic hilar vessels and wide excision of the portal fibrotic tissue were performed. Postoperative management for both groups was identical. Patients' characteristics, operative time, rate of patients with cholic stool in the first postoperative week, jaundice free rate at 6th month after the operation, patient's cumulative survival according to Kaplan-Meier were analyzed and compared between the two groups.

**RESULTS:** 100 patients were enrolled in the study with a median aged at surgery of 78 days (range: 40 to 124 days). 49 patients underwent LKP and 51 patients – OKP. There were no significant differences between the two groups regarding patient's gender, age at surgery, mean values of preoperative liver functional tests, need of intraoperative blood transfusion. There was no conversion from laparoscopic to open surgery. Mean operative time of LKP was longer than OKP (216 minutes vs. 135 minutes,  $p < 0.001$ ). Rate of patients with cholic stool in the first postoperative week was 93.9% for LKP and 94.1% for OKP ( $p > 0.05$ ). Follow up was available in 89 patients (43 patients in LKP group and 46 patients in OKP group) with a median time of 24 months (range: 1 month to 58 months). The rate of jaundice free patients was 55.8% for LKP and 52.2% for OKP ( $p > 0.05$ ). No liver transplantation was done in both groups. The 1, 2 and 4 years cumulative survival rates with native liver after LKP were respectively 74.0%, 59.7% and 55.4% vs. 75.9%, 66.6% and 66.6% after OKP, the differences were statistically insignificant ( $p > 0.05$ ).

**CONCLUSIONS:** In this first randomized trial of LKP and OKP to date, the operative time of LKP was longer than OKP, the early and intermediate results of LKP were insignificantly different from OKP.

**S036: CLINICAL OUTCOMES OF ANORECTOPLASTY PERFORMED IN THE FIRST 6 MONTHS OF LIFE FOR HIGH ANORECTAL MALFORMATIONS** – Shuai Li, Shao-tao Tang; Department of Pediatric Surgery, Affiliated Union Hospital, Tongji Medical College, HUST

**OBJECTIVE:** The optimal age for anorectoplasty has not yet been determined. The purpose of our present study was to verify a potential advantage of the early repair of high-ARM and to detect the potential mechanism.

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**METHODS:** 44 cases with high anorectal malformations who underwent laparoscopic assisted anorectoplasty (LAARP) from September 2005 to January 2012 were included in this study. There were 39 males (12 rectourethral fistula, 22 rectoprostatic fistula and 5 rectovesical fistula) and 5 female (5 rectovaginal fistula). According to age at surgery, these patients were divided into two groups and the resected rectal end samples were analyzed: Group A (24 cases aged <6 months) and Group B (20 cases aged > 6 months). Anorectal function was assessed using the Kelly's scoring system (KCS). The detecting amount of myenteric nervous plexuses containing ganglion cells, Bcl-2 and Bax protein were analyzed by HE staining and immunohistochemical analysis. The data were analyzed by ANOVA and student t test method.

**RESULTS :** The mean follow-up time was 70 months. Patients <6 months underwent anorectoplasty have a better anorectal function ( $4.173 \pm 1.250$  vs  $3.436 \pm 1.081$ ,  $P < 0.05$ ). The detecting amount of myenteric nervous plexuses containing ganglion cells of each group was  $0.191 \pm 0.017$  and  $0.115 \pm 0.010$ , respectively. The expression of Bcl-2 protein of each group was  $0.0431 \pm 0.0071$  and  $0.0229 \pm 0.0086$ , respectively. The expression of BAX protein of each group was  $0.0186 \pm 0.0048$  and  $0.0374 \pm 0.0062$ , respectively. There was a significant difference among the patients older than 6 months and younger than 6 months in distribution of ganglion cells, the expression of Bcl-2 and Bax protein ( $P < 0.05$ ).

**CONCLUSION:** High-ARM children repaired younger than 6 months got better anorectal function than those older than 6 months. Nerve degeneration caused by the apoptosis of ganglion cells in myenteric nervous plexuses may play an important role.

**S037: LEARNING CURVE FOR LAPAROSCOPIC CHOLEDOCHAL CYSTS EXCISION** – Zhe Wen, Qifeng Liang, Tao Liu, Guangkuo Xiao, Fei Liu, Zhe Wang; Guangzhou Women and Children's Medical Center

**PURPOSE:** Laparoscopic choledochal cyst excision with hepaticojejunostomy has now gained popularity worldwide. The aim of this study is to analyze the learning curve for laparoscopic excision of choledochal cysts in our center.

**METHODS:** A retrospective study of 92 patients who underwent a laparoscopic choledochal cyst excision with hepaticojejunostomy in our medical center by a single pediatric surgeon experienced with laparoscopic surgery was conducted. Patients were divided into four groups with 23 cases in each group according to the sequence of hospitalization. Operative time, estimated blood loss and transfusion, conversion to open procedure, perioperative complications and follow-up results were analyzed.

**RESULTS:** Laparoscopic cyst excision was attempted in 92 patients and completed in 85 patients. The mean operation time of group A ( $382 \pm 91$ min) were significantly longer than group B ( $285 \pm 76$ min), the group C ( $247 \pm 67$ min) and group D ( $231 \pm 60$ min) ( $p < 0.05$ ). The length of the operation and the cumulative sum of the procedures presented a logarithmic correlation ( $P < 0.001$ ). Seven conversions to open procedure occurred due to technical difficulties, of which one in group A (4.3%) because of serious cyst adhesion, three in group B (13%) because of serious cyst adhesion in two patients and hepatic duct stenosis in one patient, three in group C (13%) because of injury of accessory hepatic duct, serious adhesion and multiple intra-abdominal malformations (accompanied with intestinal malrotation and paraduodenal hernia) respectively, and none in group D. Four complications occurred during perioperative period, including bile leakage and abdominal hemorrhage in two patients respectively of group A, umbilical hernia at the trocar port in one patient of group B, and chylous leakage in one patient of group D. Three patients needed blood transfusions, of which 2 in group A, and 1 in group 3,

none in the other groups. No complications such as abdominal pain, cholangitis, and calculus formation were found in patients within 1 to 46 months follow-up.

**CONCLUSION:** The length of the operation seems to be the main factor related to the completion of the learning curve for laparoscopic choledochal cyst excision. The learning curve of our team was about 23 cases. The operation time were significantly reduced afterwards. The proficiency of surgical operation and the improvement of surgical technique were important for shortening the length of operation. But even if the learning curve was completed, conversion may also be occurred because of various reasons.

**KEY WORDS:** choledochal cyst, laparoscopy, learning curve

**S038: A NEW MINIMALLY INVASIVE APPROACH FOR PERSISTENT CLOACA: LAPAROSCOPIC ASSISTED ANORECTAL PULL-THROUGH AND PARTIAL UROGENITAL MOBILIZATION**

– Chen Wang, Long Li, Wei Cheng, Shuli Liu; Department of Pediatric Surgery, Capital Institute of Pediatrics, No.2 Ya Bao Road, Beijing 100020,

**PURPOSE:** The aim of this study is to describe the surgical technique and assess middle outcomes of the new technique: laparoscopic assisted anorectal pull-through (LAARP) and partial urogenital mobilization.

**METHOD:** Seven patients with high persistent cloaca underwent LAARP and partial urogenital mobilization between November 2005 and December 2010. The ages of the patients at the time of operation were 6 months to 15 years. The operations were carried out using 3 trocars in 4 patients, the others were performed using transumbilical single-incision with 3 ports. Laparoscopic rectal dissection was begun at the distal sigmoid mesocolon and rectal mesentery. The circumferential dissection around the rectal pouch was performed until the fistula was identified to communicate with the urogenital sinus. The fistula was clipped with hem-o-lock as close to the urogenital sinus as possible and then divided. After dissection of the rectal pouch, the pelvic floor was inspected and puborectalis muscle was identified. Using a neuromuscular stimulator on the perineum, the center of the external sphincter was identified. The tunnel to the pelvis through the center of the sphincter complex was created bluntly under the laparoscopic guidance. The created tunnel was dilated with Hegar probes up to 12mm. The separated rectum was pulled down through the muscle complex to the perineum without tension. Anoplasty was performed with absorbable interrupted 4-0 PDS sutures. The repair of the urogenital sinus was simultaneously performed. Compared to total urogenital mobilization, only the posterior and lateral walls of the urogenital sinus were dissected and mobilized in our procedure. The lateral walls were opened longitudinally to the urethral and vaginal opening, and divided into two parts. The anterior walls of common channel and the anterior part of the lateral walls formed a 15mm width tissue flap. The urethra was constructed by lapping the tissue flap with 6-0 PDS sutures. A 8# urethral catheter was placed into the created urethra as a stent. The anterior wall of the vagina was constructed with the posterior part of the lateral walls with 6-0 PDS sutures. The interseptum between the urethra and the vagina was 5mm. The openings of constructed urethra and vagina were sutured to the skin.

**RESULT:** The ages of the patients at the time of operation were 6 months to 15 years. Mean operation time was  $125.7 \pm 8.4$  minutes (range, 110-135 minutes). Intraoperative blood loss was minimal. No blood transfusion was required. There was no intraoperative or postoperative complications. Follow-up was obtained in all patients. The median follow-up period was  $5.7 \pm 2.1$  years (range, 4-9 years). Only 1 patients (14.3%) was incontinent of urine sometimes. Bowel

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function outcomes postoperatively were assessed according to the krickenbeck classification. 2 patients(28.5%) had 2-4 stools per day but no social problems, 4 patients (57.1%) had stool occasionally. Only 1 patient (14.3%) had constipation and required laxatives, 4 patients (57.1%) had constipation manageable by changes in diet.

**CONCLUSION:** Anoplasty vaginoplasty and urethroplasty can be performed simultaneously in patients with high persistent cloaca through LAARP and partial urogenital mobilization.

### **S039: CRITICAL ANALYSIS OF OUTCOME OF LAPAROSCOPIC PORTOENTEROSTOMY FOR BILIARY ATRESIA** – Hiroki

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**PURPOSE:** Assessment of prognosis in postoperative biliary atresia (BA) patients relies almost entirely on whether patients are jaundiced or not, determined conventionally by measuring total bilirubin (T-bil) at most centers. However, other parameters of liver function biochemistry (i.e., AST/ALT) and platelet count (PC) also reflect clinical status but are not used conventionally for this purpose. We collected data from our BA patients treated by portoenterostomy (PE) for T-bil, AST/ALT, and PC and compared open PE (OPE) with laparoscopic PE (LPE), in order to establish a more comprehensive assessment of critical clinical status.

**METHODS:** Subjects for this study were 29 PE cases (OPE: n=13; LPE: n=16). Subjects were classified into 6 groups according to postoperative biochemical data; group I: normal T-bil + normal AST/ALT+normal PC, Group II: normal T-bil+normal AST/ALT+abnormal PC, group III: normal T-bil+abnormal AST/ALT+normal PC, group IV: normal T-bil+abnormal AST/ALT+abnormal PC, group V: borderline T-Bil only, and group VI: abnormal T-bil only. All data were obtained from outpatient clinic records and collected prospectively; data for liver transplantation (LTx) subjects was pre-LTx data. T-bil was defined as normal if T-bil $\leq$ 1.2mg/dL, abnormal if T-bil>2.0, and borderline if 1.2

**RESULTS:** In LPE, BA classification was 15 type III (14 isolated; 1 syndromic) and 1 type II. In OPE, BA classification was 11 type III (10 isolated; 1 syndromic) and 1 each of type I and type II. Mean age at PE was 66 days for LPE and 65 days for OPE, mean weight at PE was 4.4 kg for LPE and 4.0 kg for OPE, and mean follow-up was 3.1 years for LPE and 3.2 years for OPE. Jaundice clearance (JC: T-bil $\leq$ 1.2mg/dL) was achieved in 15/16 (93.8%) in LPE and 9/13 (69.2%) in OPE (p=NS). For LPE at the time of review, 13/16 were alive with native livers and 3/16 had received LTx. Critical clinical status distribution was group I (n=1), group II (n=0), group III (n=8; LTx=1), group IV (n=2), group V (n=4; LTx=2), and group VI (n=1; this case is awaiting LTx). For OPE at the time of review, 9/13 were alive with native livers and 4/13 had received LTx. Critical clinical status distribution was group I (n=2), group II (n=2), group III (n=3), group IV (n=1), group V (n=0), and group VI (n=5; LTx=4, 1 case awaiting LTx).

**CONCLUSIONS:** Classification of clinical status using our additional parameters is useful for obtaining a more comprehensive picture of the actual clinical status post-PE. According to our critical clinical analysis, LPE is associated with higher JC than OPE, however, outcome of LPE would appear to be worse than OPE because of a lower incidence of group I and II cases (T-bil $\leq$ 1.2mg/dL and normal AST/ALT). Thus, more comprehensive assessment provides extra data for classifying cases into groups that may benefit from more specific follow-up that might not be indicated based on assessment of T-bil alone. Further follow-up is needed to confirm the value of our assessment of critical clinical status.

### **S040: LONG-TERM OUTCOMES AND QUALITY OF LIFE AFTER SURGICAL MANAGEMENT OF HIRSCHSPRUNG'S DISEASE**

– Quoc Viet Tran, MD<sup>1</sup>, Thien Kim Lam, MD<sup>1</sup>, Tania Mahler, MD<sup>2</sup>, Quang Dinh Truong, MD, PhD<sup>1</sup>, Henri Steyaert, MD, PhD<sup>2</sup>; <sup>1</sup>Children's Hospital 2, Ho Chi Minh City, Viet Nam, <sup>2</sup>Queen Fabiola Children's University Hospital, Brussels, Belgium

**AIMS:** Investigate the long-term outcomes and the quality of life after Open or Minimal Invasive surgical management of Hirschsprung's disease (HD) in children operated in our institution.

**METHODS:** We reviewed the patients who were operated for HD from 1988-2013. In all patients we investigated operative characteristics, postoperative complications and bowel function. For the patients older than 5 years of age without mental deficit, we asked to full-fill a questionnaire of quality of life (QoL) and conducted a case control study comparing bowel function and QoL between operated children and controls. Data from anorectal manometry (AM) of all patients with defecatory problems were also collected.

**RESULTS:** we included 45 operated patients and 48 controls. Sex ratio (male/female) was 2/1 and mean age was 13.8 +/- 7.1 years in the HD group compared with 2.4/1 and 14.6+/-9.1 years in the control group. Surgical procedures were: Soave (open) 73.4% (33 cases), TERPT 13.3% (6 cases), LATEP 13.3% (6 cases). Resected colons were: rectosigmoid: 71.1%, descending 15.6%, transversal 4.4%, total 8.9%. Postoperative complications were as follow: Torsion 2.2% (1 case), Intestinal obstruction 6.7% (3 cases), and dehiscence 4.4% (2 cases). 4 cases had multiple enterocolitis (3 of those had a total colon aganglionosis).

During follow-up, 50% of defecation problems occurred during the first 64 month after surgery (figure).

21 patients needed an AM. 8 patients (31.8%) had a RAIR, 6 (28.6%) presented a decreased resting sphincter pressure, 1 an increased resting sphincter pressure, 7 (33.3%) a reduced compliance of the neo-rectum and 4 (19%) cases presented dyssynergic sphincters. Overall, there was 11/21 (52.4%) cases with abnormal AM who needed a treatment. 7/10 cases treated by intensive bowel management get better.

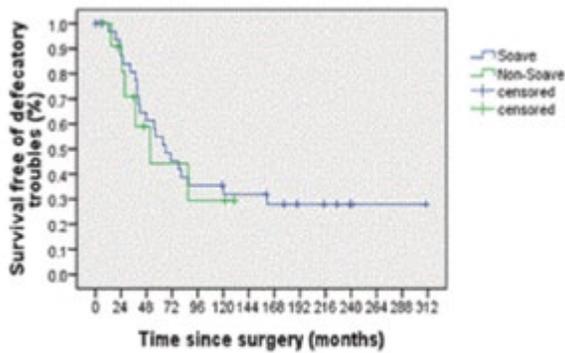
At the time of the study, 7 patients were still constipated (4 under laxatives, 2 needed enemas, and 1 without treatment). Rate of constipation was 15.6% in the HD's group versus 6.2% in the controls (P=0.19).

10 patients were still incontinent (22.2 %) in the HD's group compared with 4.2 % in the controls (P=0.03). All are under intensive bowel management and 1 received a sacral nerve stimulation device.

We found no significant differences in terms of outcome according to surgical procedures.

In 33 patients that full-filled the questionnaire of QoL (Excluding patients suffering from Down Syndrome), 26 cases (78.8%) were good (9-12 score). The average score of QoL in the HD's group was 9.9 +/- 2.5 versus the controls' score 11.9 +/- 0.3 (P<0.001, T-test; 95% CI:1.16 -2.79). Rate of school absence, unhappiness, food restriction and peer rejection was 6 (18.2%), 9 (27.3%), 12 (36.4%) and 4 (12.1%) respectively. After 10 years of age, most of the patients had a normal life, except those with severe defecatory troubles.

**CONCLUSIONS:** Incontinence and constipation have sometime important impacts on long-term outcome and quality of life in patients with HD. Constipation has mostly a favorable evolution with age. Incontinence requires an adequate work-up and intensive management. Long-term follow-up and parents' collaboration are essential.



**Figure:** Kaplan- Meier curve of survival free of defecatory troubles (constipation or incontinence) since surgery according to surgical procedure

ABBREVIATIONS: TERPT: Transanal Endorectal Pullthrough, LATEP: Laparoscopically Assisted Transanal Endorectal Pullthrough.

**S041: BILIARY OBSTRUCTIONS AT OR ABOVE HEPATICOJEJUNAL ANASTOMOSIS AFTER PRIMARY LAPAROSCOPIC HEPATICOJEJUNOSTOMY IN CHILDREN WITH CHOLEDOCHAL CYSTS** – Mei Diao, MD, PhD, Long Li, MD, PhD; Department of Pediatric Surgery, Capital Institute of Pediatrics, Beijing, CHINA

BACKGROUND: The current study is to review choledochal cyst (CDC) children who suffered biliary obstructions at or above hepaticojejunal anastomosis after primary laparoscopic hepaticojejunostomy.

METHODS: Thirty CDC children (mean age: 7.15 years, range: 8 months–24 years, F/M: 22/8) who suffered biliary obstructions at or above hepaticojejunal anastomosis after primary laparoscopic hepaticojejunostomies were referred to our hospital between January 2006 and June 2014. All patients were underwent redo hepaticojejunostomy +/- ductoplasty.

RESULTS: All patients suffered recurrent jaundice, abdominal pain, fever, or continuous abnormal liver function at postoperative 1 month to 7 years. The mean diameter of stenotic anastomotic stoma was 0.17 cm (0.1–0.3 cm). The mean maximal diameter of dilated proximal hepatic duct was 2.5 cm (2–3.5 cm). Intrahepatic duct stone formations were detected by ultrasonographic studies, CT scans and intraoperative intrahepatic duct investigations using telescope in 20 out of 30 patients (66.7%). All patients showed significantly elevated serum bilirubin with aberrant liver functions. Pathological results verified that 17 patients (56.7%) had grade I to IV of liver fibrosis. Within these patients, 14 (46.7%) patients had anastomotic strictures and underwent redo hepaticojejunostomy. Nine (30%) patients combined common hepatic duct, left or right hepatic duct strictures and underwent ductoplasty and wide hepaticojejunostomy. Seven (23.3%) patients were found aberrant right hepatic arteries in front of anastomotic stoma (common hepatic duct side). The hepatic arteries were replaced behind Roux loop and redo hepaticojejunostomy were carried out. All patients recovered uneventfully. Median follow-up period was 60 months (4–105 months). No mortality or morbidities of recurrent anastomotic stenosis, bile leak or cholangitis was observed. Liver function parameters reversed to normal level after operation.

CONCLUSIONS: Anastomotic technique, unsolved common hepatic duct, left or right hepatic duct stricture, and aberrant hepatic artery in front of common hepatic duct are attributed to biliary obstructions at or above hepaticojejunal anastomosis after primary laparoscopic hepaticojejunostomies. Early surgical correction is advocated to avoid severe liver damage.

**S042: A COMPARATIVE STUDY BETWEEN TWO-STAGE AND THREE-STAGE LAPAROSCOPIC ASSISTED ANORECTOPLASTY (LAARP) FOR HIGH-ARM** – Shuai Li, MD, Shao-tao Tang; Department of Pediatric Surgery, Union Hospital, Tongji Medical College, HUST

BACKGROUND: Two-stage laparoscopic assisted anorectoplasty (LAARP), using a colostomy firstly and subsequently stoma closure and LAARP simultaneously, has been previously created in patients with high anorectal malformations (high-ARM). The purposes of this study is to compare the outcomes between two-stage and three-stage LAARP for children with high-ARM.

METHODS: Between May 2010 to September 2012, 20 high-ARM children who underwent two-stage LAARP were reviewed. The outcomes were compared with those of 39 high-ARM children who underwent three-stage LAARP between October 2005 and September 2012. The age at operation, operative time, postoperative hospital stay, total hospitalization cost and complications were evaluated. Functional outcomes were assessed using the Kelly score.

RESULTS: The mean follow-up time was 35 months. The mean age at the second stage operation (anorectoplasty) was 4.5 months in both groups, and stoma was closed one month after anorectoplasty in three-stage group. The overall operative time ( $4.1 \pm 0.54$  vs  $4.8 \pm 0.83$  h,  $p < 0.05$ ) and the overall postoperative hospital stay was significantly shorter in the two-stage group ( $14 \pm 2.38$  vs  $20 \pm 3.52$  d,  $p < 0.01$ ). The total hospitalization cost was significantly lower in the two-stage group ( $7142 \pm 202$  vs  $9523 \pm 317$  \$,  $p < 0.01$ ). The morbidity rate of wound infections (10% vs 7.7%), recurrent fistula (0% vs 2.6%) and rectal prolapsed were similar in both groups. No significant difference was observed in both groups regarding the Kelly score ( $3.56 \pm 1.28$  vs  $3.46 \pm 1.05$ ,  $p = 0.749$ ).

CONCLUSIONS: Compared to three-stage LAARP, two-stage LAARP is a feasible and economical procedure. The early functional outcomes were equivalent.

**S043: DO CHOLEDOCHAL CYST PATIENTS WITH PERSISTENT JAUNDICE REALLY NEED EXTERNAL DRAINAGE?** Zhe Wen, Tao Liu, Qifeng Liang, Zhe Wang, Fei Liu, Guangkuo Xiao; Guangzhou Women and Children's Medical Center

PURPOSE: To summarize the features and discuss the surgical treatment of Choledochal Cyst patient with persistent jaundice.

METHODS: The clinical data of choledochal cyst patients with jaundice treated between November 2011 and June 2014 were retrospectively analyzed.

RESULTS: Twenty five choledochal cyst patients from 10 days to 11 years ( $32 \pm 19.6$  month) of age mainly presented with jaundice were treated between November 2011 and June 2014 in author's institute. Twenty cases were identified as Todani type I and 5 cases were type IV. All patients were treated with conservative treatments after administration and divided into two groups according to the outcome. Thirteen patients were assigned in group A, whose total bilirubin were brought down below  $34 \mu\text{mol/L}$  after treatments, the rest 12 patients whose total bilirubin didn't decrease significantly were assigned as group B. The mean value of total bilirubin in group B was  $100.2 \pm 33.1 \mu\text{mol/L}$  before treatment and  $88.39 \pm 34.9 \mu\text{mol/L}$  after treatment. There was no significant coagulopathy observed in both groups. Definitive operation was performed after 1 to 2 weeks' conservative treatments. Laparoscope assisted cyst resection and Roux-en-Y hepaticojejunostomy was successfully performed on every patient in both groups without conversion. Peri-cyst swelling and cyst wall thickening was encountered during the operations of group B. Because more efforts was taken, the mean total operating

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time of group B (325±41mins) is longer than group A (297±32mins), but the statistic differences was not significant ( $p>0.05$ ). Mean volume of blood lost in group A was 5.0±1.2 ml and in group B was 6.3±1.5 ml, mean fasting time after operation in group A was 3.7±0.6 days while group B was 3.9±0.4 days, mean length of stay after operation in group A was 6.5±1.3 days, group B was 8.1±2.1 days, no statistic significant differences were observed between the data above. There was one case of postoperative chylous leakage in group B, which healed after three weeks of conservative treatment. All the patients were free from retrograde biliary tract infections, postoperative intestinal obstruction, anastomotic leakage or stenosis, wound infection or other related postoperative complications.

**CONCLUSION:** External drainage has ever been a choice of treatment for choledochal cyst with persistent jaundice. From this study, we regard laparoscope assisted definitive correction is also a safe and effective choice for these patients. Postoperative outcome is more satisfactory comparing with two-stage treatment with the external drainage or PTC. One-stage definitive operation can avoid unnecessary suffering and reduce the chance of water and electrolyte disorders and other postoperative complications as well as reducing the length of stay, this treatment has obvious advantages, and it is worth promoting.

**KEY WORDS:** Choledochal cyst, Jaundice, Laparoscope

### **S044: THORACOSCOPIC REPAIR OF RECURRENT TRACHEOESOPHAGEAL FISTULA: EXPERIENCE OF 5 PATIENTS** – JINSHI HUANG, Jiangxi provincial Children's Hospital

**AIM:** With advances in minimally invasive surgery, thoracoscopic repair of oesophageal atresia has become popular in many centres worldwide and indeed has been described as the pinnacle of neonatal surgery. Here, we report our experience about thoracoscopic repair of recurrent tracheoesophageal fistula.

**METHODS:** The procedures of thoracoscopic repair recurrent tracheoesophageal fistula were performed on 5 patients from April 2014 to September 2014. There were 3 males and 2 females, aged from 3 to 16 months. In all the cases, the diagnosis was made based on the bronchoscopy. The procedure was performed using three trocars. At the end of the procedure, the chest tube was left.

**RESULTS:** The thoracoscopic procedures were completed without intraoperative complication in all patients. No patients need to conversions. The operating time ranged from 196 to 367 minutes. Amount of bleeding was less than 15ml. One patient had anastomotic leak. the days of mechanical ventilation were 3-5d. time to initial feeding 7-13days. The hospitalization time was 17-27days. Follow-up upper gastrointestinal tests show no evidence of stricture or obstruction.

**CONCLUSION:** The thoracoscopic repair of recurrent tracheoesophageal fistula is safe and effective.

**KEY WORDS:** recurrent tracheoesophageal fistula; Thoracoscopic surgical procedures

### **S045: THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA – PERSONAL EXPERIENCE WITH 106 OPERATED CASES** – DARIUSZ PATKOWSKI, Prof, MD, PhD<sup>1</sup>, Sylwester Gerus, MD<sup>1</sup>, Mateusz Palczewski, MD<sup>1</sup>, Katarzyna Mascianica, MD, PhD<sup>1</sup>, Konrad Rysiakiewicz, MD<sup>1</sup>, Robert Smigiel, Prof, MD, PhD<sup>2</sup>; <sup>1</sup>Pediatric Surgery and Urology Department, Wroclaw Medical University, <sup>2</sup>Department of Social Pediatrics Wroclaw Medical University

Endoscopic repair of oesophageal atresia (EA) remains a procedure performed by few paediatric surgeons in not many centres despite of potentials benefits to operated newborns.

**PURPOSE:** To present personal experience based on thoracoscopic repair of 106 cases with different type of EA.

**MATERIALS & METHODS:** From 18 August 2005 to 31 October 2014 one hundred and six cases (62 boys, 44 girls) underwent thoracoscopic repair in 10 different hospitals. The first author was involved in all cases except two procedures of staged repair. The patient was operated in prone position with right side slightly elevated. Three trocars 2,5-5mm in diameter were placed around the scapula. The 5mm telescope 25-300 was always used. A pneumothorax was maintained with 4-6mmHg. The azygos vein was never divided. The TEF was closed with 5mm titanic clips or ligated. The esophageal anastomosis was made over 6F nasogastric tube using single 5-0 absorbable stitches. The chest drainage was preferable. Retrospective analysis of medical records and video recordings were performed.

**RESULTS:** No contraindication to thoracoscopic repair was identified in the study series especially the patient's weight. There were 15 cases of type A, 6 cases of type B, 82 cases of type C and 3 cases of type D. The oesophageal anastomosis was completed in primary procedure without any conversion in 2/15 cases of type A, 80/82 cases of type C and 3/3 cases of type D. In two cases of type C only the fistula was closed because of patients unstable condition- one patient died and one is awaiting the final procedure. Also one patient of type B scheduled for stage repair died before the final procedure. 18 cases of long-gap EA (13 of type A, 5 of type B) were managed in staged repair - 17 with "internal traction suture" and 1 with Fokker's technique. There were 135 thoracoscopic procedure. The only four conversions (2,9%) and one open repair were in the final procedures of long-gap stage repair. The tracheoesophageal fistula was closed with titanic clips except of 7 cases with ligation. The anastomosis was made in front of untouched azygos vein in all except one case where it was positioned posteriorly. The only intraoperative complications were two cases of accidental tracheal opening, one was closed intraoperative, one required cuff intubation tube placement in postoperative period. The operative time dropped from 245minutes in the first case to 80 minutes in last cases. The shortest one was 55minutes. No difficulties with repetitive approach to the pleural cavity, as well as exposition, dissection and suture of esophagus after the previous procedures were found except one case with probably hidden esophageal perforation by traction suture that resulted in pleural cavity obliteration. The anastomotic leak rate was 11,3% (12 cases) and all were healed on conservative treatment.

**CONCLUSIONS:** The thoracoscopic repair of EA is effective method and based on our experience it is the procedure of choice if performed by experienced endoscopic pediatric surgeon.

### **S046: THORACOSCOPIC CDH REPAIR AFTER ECMO: BENEFITS, RISKS AND RATES OF SUCCESS** – AVRAHAM SCHLAGER<sup>1</sup>, Sarah J Hill, MD<sup>1</sup>, Ragavan Siddharthan, BS<sup>1</sup>, Sarah Keene, MD<sup>2</sup>, Amina M Bhatia, MD<sup>1</sup>, Mark L Wulkan, MD<sup>1</sup>, Matthew S Clifton, MD<sup>1</sup>; <sup>1</sup>Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta, <sup>2</sup>Emory University School of Medicine, Division of Neonatology, Children's Healthcare of Atlanta

**BACKGROUND:** Thoracoscopic repair of congenital diaphragmatic hernias (CDH) in patients following extracorporeal membrane oxygenation (ECMO) support remains unexplored. To date, there are no articles in the English medical literature describing its feasibility or reporting the outcomes of this procedure in the post-ECMO population. Reasons cited for reluctance to perform this procedure stem from concerns that this subset of patients will either: 1. be unable to tolerate the insufflation pressures required for the repair,

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or 2. possess a defect large enough to preclude thoracoscopic repair. The purpose of the study was to review our experience with this approach and assess its overall rate of success.

**METHODS:** We retrospectively reviewed all patients who underwent attempted thoracoscopic CDH repair at our institution between 2001 and 2014. Only patients undergoing their first repair were included in the study. The primary outcome was successful thoracoscopic repair. Secondary outcomes were successful tolerance of CO<sub>2</sub> insufflation pressure  $\geq$  3 mm Hg and days to post-operative extubation. Other recorded parameters included reasons for conversion to open repair and use of a patch. Student's t-test was used to evaluate continuous variables.

**RESULTS:** A total of 121 patients underwent attempted thoracoscopic repair for CDH between 2001 and 2014, 18 of which had a prior history of ECMO. Five of the 18 patients in the ECMO group (27.7%) were successfully completed via a thoracoscopic approach as compared to 77 of 103 (74.8%) in the non-ECMO group. Cited reason for conversion in 12 of the 13 patients (92.3%) was large defect size. The remaining patient was converted due to intolerance of high insufflation pressures (8-10 mm Hg) used as a hernia reduction technique. One patient in the thoracoscopic group expired on post-operative day 3 prior to extubation. Of the remaining 4 patients, the average time to extubation was 5.5  $\pm$  3 days as compared to 17.9  $\pm$  12 days in the open CDH group ( $p = 0.001$ ). The data from our open group is consistent with the data from the Congenital Diaphragmatic Hernia Registry (CDHR) which recorded an average extubation time of 16.5 days in this group. Eight of the 13 patients in the conversion group (61.5%) were reported to have tolerated insufflation pressures ranging from 3-7 mm Hg without clinical compromise (5 did not comment). Patch placement was required in 4 out of the 5 thoracoscopic patients (80%) and in 12 out of 13 (92.3%) in the conversion group.

**CONCLUSION:** Thoracoscopic congenital diaphragmatic hernia repair in post-ECMO patients is both safe and feasible, typically resulting in earlier extubation. The rate of conversion to open repair is higher than in the non-ECMO population and is generally due to large defect size. Standard thoracoscopic insufflation pressures (3-5 mm Hg) are generally well-tolerated in this subset of patients.

**S047: THE ADVANTAGE OF THORACOSCOPIC CDH REPAIR: DOES AVOIDING ADHESIVE SBO OFFSET THE RISK OF CDH RECURRENCE?** – [Amina M Bhatia, MD, MS](#), Mark L Wulkan, MD; Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta

**BACKGROUND:** Minimal invasive surgery has been shown to decrease risks of adhesions and the subsequent need for adhesiolysis for bowel obstructions (SBO). The aim of this study is to compare the risks of adhesive SBO and congenital diaphragmatic hernia (CDH) recurrence between thoracoscopic repair and traditional repair by laparotomy.

**METHODS:** After institutional IRB approval, medical records of children who had undergone first-time Bochdalek CDH repairs from January 1, 2000 to December 31, 2013 were retrospectively reviewed. Subjects who had undergone repair other than by laparotomy (OPEN) or thoracoscopy (MIS) were excluded. Patients who had a thoracoscopic attempt but converted to laparotomy were included in the OPEN group. Predictor variables were compared using chi-square. Controlling for a patch repair, risk of SBO and CDH recurrence were analyzed using Mantel-Haenszel chi-square analysis.

**RESULTS:** MIS repairs were successfully completed in 78/117 (67%) attempts and 100 open repairs by laparotomy were performed. OPEN repairs were associated with prenatal diagnosis (66% vs. 41.3%,  $p=0.0014$ ) and ECMO (43.8% vs. 5.1%,  $p<0.0001$ ). Operative findings in the OPEN group were more likely to include a thoracic liver (46%

vs. 6.4%,  $p<0.0001$ ) and diaphragmatic agenesis (30.6% vs. 1.3%,  $p<0.0001$ ) and were more likely require a patch repair (68% vs. 16.7%). Controlling for patch repair, there was a significantly higher incidence of postoperative adhesive SBO in the OPEN patients compared to MIS repairs (14% vs. 0%,  $p=0.007$ ). Overall recurrence was 18% for the OPEN repairs and 20.5% in the MIS group (primary repairs: OPEN 9.4% vs MIS 16.9%; patch repairs: OPEN 22.1% vs MIS 38.5%). Controlling for patch repair, the incidence of recurrence was not significantly different between OPEN and MIS repairs ( $p=0.12$ ).

**CONCLUSIONS:** If the risks of recurrence and SBO among MIS repairs found in this study were applied to this OPEN cohort of 100 patients, theoretically MIS repair could have prevented 14 operations for SBO but resulted in 14 more recurrences, thus off-setting any potential increased recurrence risk. However, other risk factors for SBO and recurrence may be more prevalent in the OPEN patient population. Within the 32 patients who underwent OPEN primary repairs, however, 3 SBO could have potentially been prevented with only 2 additional recurrences if MIS repair was successfully completed. The potential advantage of MIS repair may be greatest in patients needing only a primary repair of the diaphragmatic defect, in which recurrence risks are more comparable between MIS and OPEN repairs. Furthermore, adhesive SBO presents a lifelong risk after, while CDH recurrences are typically within the first year after repair.

**S048: INTRAOPERATIVE ACIDOSIS AND HYPERCAPNIA DURING THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA OR CONGENITAL DIAPHRAGMATIC HERNIA** – [Augusto Zani](#), Irene Paraboschi, Elke Zani-Ruttenstock, Sebastian S King, Agostino Pierro; Division of General and Thoracic Surgery, The Hospital for Sick Children

**INTRODUCTION:** A previous European study reported that thoracoscopy for esophageal atresia (EA) or congenital diaphragmatic hernia (CDH) repair can be associated with prolonged and severe intraoperative hypercapnia and acidosis. The aims of the present study were to confirm whether this phenomenon existed in a North American institution and to analyze its effects on postoperative complications.

**METHODS:** Ethical approval (REB1000046653, REB1000046560) was obtained for this study. We selected all neonates born with EA or CDH who underwent thoracoscopic repair at our institution between August 2004 and October 2014. Only patients with arterial blood gas values recorded intraoperatively were included. Comparison between pre- and intraoperative arterial gas analysis was made using paired t-test. Severe intraoperative acidosis ( $pH<7.25$ ) was correlated with duration of postoperative ventilation (days) using linear regression analysis, and with the development of anastomotic esophageal stricture or CDH recurrence using contingency tables (X<sup>2</sup>). Data were reported as mean  $\pm$  SEM;  $p$  value  $<0.05$  was considered significant.

**RESULTS:** During the study period, there were 148 EA and 155 CDH patients who underwent surgical repair at our institution. Of the 21 (14%) EA and 33 (21%) CDH neonates who underwent thoracoscopic repair, intraoperative arterial gases were available in 13 (62%) EA and 22 (67%) CDH. EA patients had a birth weight of 3126 $\pm$ 169g and a gestational age of 39 $\pm$ 0.3weeks, and CDH patients had a birth weight of 3100 $\pm$ 151g and a gestational age of 38 $\pm$ 0.5weeks.

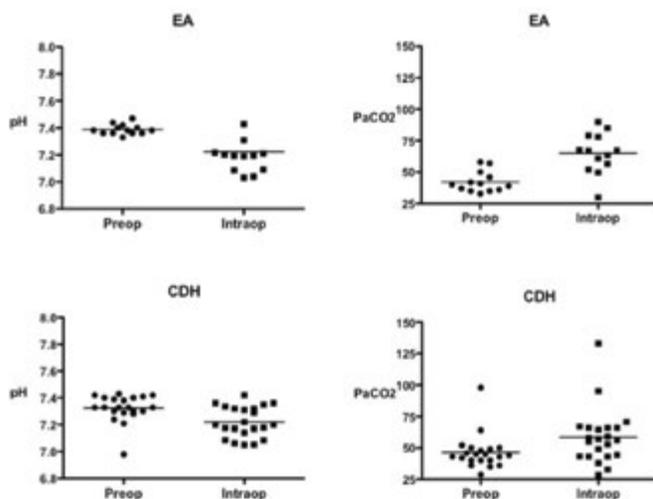
Both thoracoscopic EA and CDH patients developed low intraoperative arterial pH (EA pre-op 7.39 $\pm$ 0.01 vs. intra-op 7.18 $\pm$ 0.03,  $p<0.0001$ ; CDH pre-op 7.32 $\pm$ 0.02 vs. intra-op 7.21 $\pm$ 0.03,  $p=0.0009$ ) and high intraoperative arterial gas PaCO<sub>2</sub> values (EA pre-op 42.2 $\pm$ 2.3 vs. intra-op 65.1 $\pm$ 4.5,  $p=0.0002$ ; CDH pre-op 47.1 $\pm$ 3.3 vs. intra-op 60.1 $\pm$ 5.4,  $p=0.02$ ) [Figure]. Thoracoscopy was converted to open surgery in 4 (19%) EA and in 5 (14%) CDH patients, but only in one

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CDH neonate was this due to acidosis. Postoperative ventilation was continued for 4 days (2-16) in EA and for 5 days (1-40) in CDH neonates; there was no correlation between intraoperative acidosis and the duration of postoperative ventilation ( $r=0.02$ ,  $p=0.45$ ).

Ten of 13 (77%) EA neonates developed significant intraoperative acidosis: of these 6/10 (60%) developed a stricture compared with 4/10 (40%) without stricture ( $p=0.55$ ). Similarly, 7/22 (32%) CDH neonates developed a recurrence: 3/7 (43%) of these had severe intraoperative acidosis compared with 4/7 (57%) without acidosis ( $p=0.38$ ).

**CONCLUSION:** Patients undergoing thoracoscopic EA or CDH repair develop severe intraoperative acidosis and hypercapnia. However, abnormal intraoperative arterial gas values do not correlate with postoperative complications. Further studies are needed to evaluate whether acidosis during thoracoscopy is associated with long-term neurological sequelae.



### **S049: THORACOSCOPIC MANAGEMENT OF LONG GAP ESOPHAGEAL ATRESIA, THE PRIMARY PROCEDURE OF CHOICE** – Steven Rothenberg, MD, FACS, FAAP<sup>1</sup>, Alan Flake, MD, FACS, FAAP<sup>2</sup>; <sup>1</sup>The Rocky Mountain Hospital for Children, <sup>2</sup>Children’s Hospital of Philadelphia

**INTRODUCTION:** The first thoracoscopic repair of a pure esophageal atresia in a infant was performed in March of 1999. This report evaluates the results of this technique in patients with long gap EA (greater than 4 vertebral bodies) at 2 institutions

**METHODS:** From March 2000 to August 2014 13 consecutive patients with pure esophageal atresia (EA) were repaired by or under the direct supervision the authors. All patients initially underwent placement of a gastrostomy tube. The gap length was then evaluated by contrast G-tube study with pressure placed on the NG tube. The patients were operated on between 4 to 8 weeks of age. Patient weights ranged from 2.6 to 3.8kg. 6 patients had significant associated congenital anomalies The longest gap was 7 1/2 vertebral bodies. The repairs were performed using a three ports technique. Dissection was carried well up into the thoracic inlet on the upper pouch and down to the esophageal hiatus on the lower pouch in all cases. A transanastomotic tube and chest drain were left in all cases.

**RESULTS:** All 13 procedures were completed successfully thoracoscopically. Operative times ranged from 60 to 135 minutes. There were 2 leaks, both resolved with conservative therapy. Feeds were started on day 5 in all other patients. 6 of 13 patients required dilations (1 to 9), and 8 required a Nissen fundoplication for severe

reflux. All patients are currently on full oral feeds. No patient has any evidence of chest wall asymmetry, winged scapula, or clinically significant scoliosis.

**CONCLUSIONS:** Thoracoscopic repair of long gap EA has proven to be an effective and safe technique When performed in the first 2 months of life. The improved visualization and access to the upper pouch and lower pouches allows for maximal mobilization. The results are superior to that of documented open series and avoid the morbidity of repeated operations in the neonatal period.

### **S050: STRICTURE FORMATION AFTER TRACHEOESOPHAGEAL FISTULA REPAIR** – Tate Nice, Benjamin Tuanama, Michelle Shroyer, David Rogers, Mike Chen, Colin Martin, Elizabeth Beierle, Beverly Chaignaud, Scott Anderson, Robert Russell; Children’s of Alabama

**PURPOSE:** Tracheoesophageal fistula (TEF) is a common congenital anomaly requiring surgical correction. Multiple studies have been done exploring treatments for TEF, many including information about various complications. However, there is little information specifically investigating stricture rates after repair. The purpose of this study was to examine the association of multiple pre-operative and post-operative variables with stricture formation after TEF repair.

**METHODS:** A single institution retrospective review of patients who underwent TEF repair was performed from June 1999 to January 2014. All TEF classes were included. Patients who died prior to discharge were excluded. Data were collected on patient demographics (gender, race, gestational age, birth weight, mother’s age), disease specifics (Gross Type, Waterson Class, associated anomalies), treatment (surgery type, staging, blood loss, OR time), and outcome (length of stay, time to extubate, time until oral intake, esophageal leak, need for g-tube, need for fundoplication, number of esophageal dilations needed). Surgery staging was defined as primary or staged, depending on whether TEF ligation and esophageal repair were both performed at the initial operation or two separate procedures. Esophageal leak was defined by post-operative esophagram. A clinically significant esophageal stricture was defined as those requiring more than 3 esophageal dilations. Univariate analysis for stricture formation used  $\chi^2$  for categorical variables and binomial logistic regression for continuous variables. A multivariate logistic regression model was then created.

**RESULTS:** The study included 121 infants. On univariate analysis, TEF Gross classification ( $p=0.046$ ), surgery type ( $p=0.0099$ ), surgery staging ( $p=0.0211$ ), and development of leak ( $p=0.0479$ ) had a statistically significant association with stricture formation. 84.3% were type C, of which 21.6% developed a stricture. Both type B patients developed a stricture while no type E repairs strictured. 98 patients (81%) underwent open repair with a stricture rate of 16.3%, while 20 patients (16.5%) underwent thoracoscopic repair with a 40% stricture rate. 3 patients required conversion from thoracoscopic to open surgery (66.7% stricture). Patients that were able to be repaired primarily had a lower stricture rate (15.7%) compared to those who required staged repair (34.2% stricture). 10.1% of patients developed a leak, which increased stricture rate from 19.4% to 45.5%.

Due to sample size, 7 variables were selected for multivariate analysis (Waterson class, operation type, surgery staging, time to PO, leak, g-tube, and cardiovascular [CV] anomalies). Variables were sequentially removed until all remaining variables were significant. Patients undergoing a staged repair had increased risk of stricture formation over primary repair (OR 5.575,  $p=0.0017$ ). Thoracoscopic surgery also increased risk of stricture (OR 7.039,  $p=0.0017$ ). CV anomalies were found to be protective from stricture formation (OR 0.235,  $p=0.0065$ ).

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**CONCLUSION:** Thoracoscopic repair and staged repair are both associated with increased risk of clinically significant stricture formation after TEF repair, while the presence of CV anomalies may decrease stricture formation. TEF Gross classification also affects stricture risk. This information is important in the consultation of parents regarding prognosis as well as provides direction for future quality improvement initiatives to decrease stricture formation after TEF repair.

### **S051: COMPLICATIONS OF THE NUSS PROCEDURE: THE CHKD EXPERIENCE IN OVER 1500 CONSECUTIVE PATIENTS**

– **Frazier W Frantz, MD, Ashley N Deyerle, BABS, Michael J Goretsky, MD, Robert E Kelly, MD, Marcia A Kuhn, MD, Michelle L Lombardo, MD, Robert J Obermeyer, MD;** Children’s Hospital of The King’s Daughters

**PURPOSE:** Despite widespread implementation of minimally invasive pectus excavatum repair using the Nuss procedure, potential associated complications remain poorly defined. We sought to characterize the nature and incidence of these complications in a large, single institution, clinical experience.

**METHODS:** A retrospective review was performed of all consenting patients (n=1589) undergoing pectus excavatum repair at our institution between 2000 and 2014. Data regarding occurrences of defined early (< 30 days from operation) and late complications were collected. Treatment modalities for these complications were compiled and standardized. Trends in complication incidence rates were analyzed to substantiate modifications in pre-operative evaluation and procedural techniques.

**RESULTS:** Specific complications, overall incidence, and treatment modalities utilized are summarized.

<b>Early</b>	Post-op pneumothorax (enlarging)	3.0%	Tube thoracostomy
	Pleural effusion requiring drainage	1.4%	Tube thoracostomy
	Suture site infection	0.7%	Antibiotics
	Hemothorax	0.6%	VATS & tube thoracostomy
<b>Late</b>	Pectus bar displacement	3.9%	Revision required in 3/4 of patients
	Wound infection - skin intact, disrupted skin or abscess (superficial), involving bar (deep)	2.4%	Antibiotics +/- drainage; early bar removal if unresponsive
	Bar allergy	1.1%	Steroids +/- antibiotics; early bar removal if unresponsive
	Overcorrection	1.2%	Observation, early bar removal, bracing, cartilage resection
	Recurrence	0.7%	Observation, vacuum bell, re-do repair

Rare complications encountered included brachial plexopathy, upper GI bleeding, and temporary paralysis related to epidural usage. There was no mortality. Implementation of routine metal allergy testing and pectus bar fixation with wired stabilizers/PDS pericostal sutures during the review period had favorable impacts on bar allergy and pectus bar displacement rates, respectively.

**CONCLUSIONS:** Retrospective review has allowed for definition of complications and incidence rates related to minimally invasive pectus excavatum repair. From this information, treatment and prevention strategies have been developed to minimize complications and ensure safe surgery.

### **S052: A COMPARISON OF CLINICAL OUTCOME OF NEONATAL DIAPHRAGMATIC HERNIA BETWEEN MINIMALLY INVASIVE SURGERY AND OPEN REPAIR? – Ma Lishuang;** Capital Institute of Pediatrics

**OBJECTIVE:** The aim of this study was to evaluate outcome of neonatal with congenital diaphragmatic hernia(CDH) undergoing open versus minimally invasive surgery.

**METHODS:** 59 neonatal congenital diaphragmatic hernia cases collected from June. 2002 to February. 2014.These patients were divided into 2 groups, minimally invasive surgery group and open-group.19 cases were repaired by minimally invasive surgery, 10 cases were repaired by thoracoscopy, 9 cases were repaired by laparoscopy. 40 cases were treated by open surgery.Clinical data including preoperative data, treatments, postoperative management were retrospectively reviewed. The comparison of clinical data was made between minimally invasive surgery and open-group.

**OUTCOME:** and recurrence were evaluated.Results Age[(3.4±0.2) d vs.(4.1±0.5)d,P=0.654],body weight[(3.3±0.3)kg vs.(3.5±0.2) kg,P=0.815] were not different between the 2 groups.Survival rate of diaphragmatic hernia was 94.9% in total(56/59).The comparison of the two groups, the in-hospital time[(14.2±2.7)d vs.(21.5±3.5) d,P=0.042], postoperative duration of mechanical ventilation[(1.8±0.2) d vs.(5.1±0.9)d,P=0.034] had significant statistic differences(P<0.05) ,The minimally invasive surgery group significantly shorter than open-group;The duration of operation [(115.6±31.2)min vs.(92.5±19.4) min,P=0.023]was significantly greater than open-group , but the recent 5 years recurrence rate between the two groups had no significant statistic differences(9%vs.5%,P=0.327).

**CONCLUSION:** To compare with open surgery,minimally invasive surgery repair have no increase in the incidence rate of operation-related complication.And two groups’ survival rate is equated.We consider that the minimally invasive surgery repair is safe and valid.

### **S053: RISK FACTORS FOR SURGICAL COMPLICATIONS AFTER APPENDECTOMY IN CHILDREN: OBSERVATIONAL COHORT STUDY OF 8110 PATIENTS – Jan-Hendrik Gosemann,**

**MD<sup>1</sup>, Ansgar Lange<sup>2</sup>, Jan Zeidler<sup>2</sup>, Jochen Blaser<sup>3</sup>, Carmen Dingemann<sup>1</sup>, Benno M Ure<sup>1</sup>, Martin Lacher<sup>1</sup>;** <sup>1</sup>Center of Pediatric Surgery, Hannover Medical School, Germany, <sup>2</sup>Center for Health Economics Research Hannover, Leibniz University Hannover, Germany, <sup>3</sup>Techniker Health Insurance, Representative Office of Lower Saxony, Germany

**AIM OF THE STUDY:** In Germany children with appendicitis are treated by pediatric surgeons (PedSurg) as well as general surgeons (GenSurg). Various factors have been discussed to influence the risk of surgical complications. In this study we analyzed treatment modalities, outcomes, and the risk of developing a surgical complication for children and adolescents with appendicitis in a large cohort.

**METHODS:** Data were extracted from a major public health insurance (10% of the German population, ~ 8 million clients) during a 3-year period (2010–2012). Patients aged 4 to 17 years with OPS codes for appendectomy were included. Logistic regression analysis for risk of a surgical complication within the first 180 postoperative days was performed (variables: gender, age, severity of appendicitis (uncomplicated/complicated), surgical technique (laparoscopy/ open), time of surgery (working-day/week-end), surgical department (Pediatric/General Surgery), and geographical region within Germany). Complications were defined by ICD and OPS codes.

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RESULTS: 8110 patients (52.6% male; 47.4% female) were included in the study. 23.8% underwent open appendectomy and 75.0% were operated laparoscopically. In 1.2% of the cases conversion from laparoscopy to open surgery was performed. The majority of the patients had an uncomplicated appendicitis (78.7%), 8.5% had a complicated appendicitis and in 12.9% of the patients a clear assignment to either of the groups was possible.

Open appendectomy was performed in 23.82% of all patients, 74.98% were treated with laparoscopic appendectomy, and 1.20% underwent conversion from laparoscopic to open surgery

76% of the patients were operated by GenSurg and 24% were operated by PedSurg. Laparoscopic surgery was utilized more frequently by GenSurg compared to PedSurg (79% vs. 61%;  $p < 0.01$ ) and the conversion rate of GenSurg was significantly lower compared to PedSurg (0.7% vs. 2.9%,  $p < 0.001$ ).

Complication rate during the initial hospital stay was 1.7% for patients with uncomplicated appendicitis and 6.9% for patients with complicated appendicitis. Logistic regression analysis identified the variables "male gender", "complicated appendicitis" and "conversion" as significant risk factors for a surgical complication during the initial hospital stay ( $p < 0.001$ ).

2.2% of the patients with uncomplicated appendicitis and 5.7% with complicated appendicitis were readmitted for a surgical complication within 180 days. The variables "complication during initial stay", "complicated appendicitis" and "pediatric surgery" were identified as significant risk factors ( $p < 0.01$ ).

Laparoscopic surgery was associated with a shorter hospital stay and a lower risk for a surgical complication in patients with complicated appendicitis ( $p < 0.01$ ).

CONCLUSIONS: The overall quality of care in children with appendicitis in Germany is very good. The nonmodifiable variables "severity of appendicitis" and "male gender" as well as the modifiable variable "surgical technique" were identified as significant factors influencing the outcome after appendectomy. These results suggest that laparoscopic appendectomy should be further promoted and training should be improved especially in pediatric surgery.

**S054: LAPAROSCOPIC GASTROJEJUNOSTOMY TUBES IN INFANTS WITH CONGENITAL HEART DISEASE** – Chinwendu Onwubiko, MD, PhD, Sigrid Bairdain, MD, MPH, Maireade McSweeney, MD, MPH, Rahul Rathod, MD, Christopher Baird, MD, C Jason Smithers, MD; Boston Children's Hospital

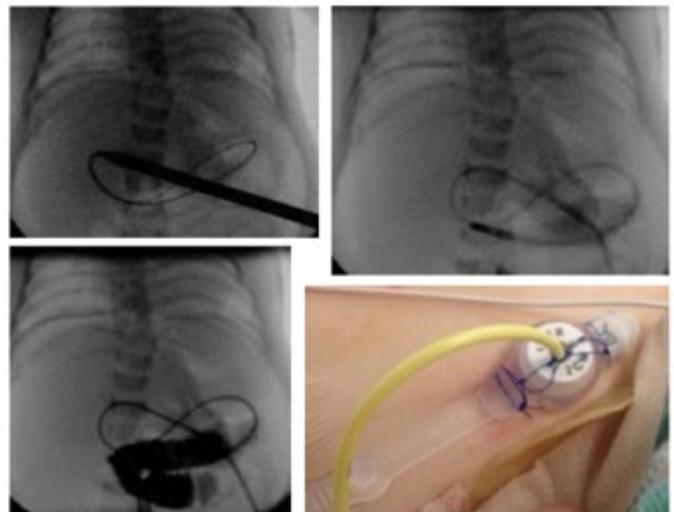
BACKGROUND: Durable enteral access is essential for critically ill infants with congenital cardiac disease who struggle with obtaining adequate nutrition to maintain proper weight gain and growth. Gastrojejunostomy (GJ) tubes are an option for infants who are unable to tolerate gastric feeding or are at high risk for reflux-related aspiration.

METHODS: We identified patients less than 10 kilograms with congenital cardiac anomalies that received placement of a laparoscopic GJ tube at our institution from November 2011 to August 2014. Hospital records were reviewed to extract patient age, gestational age, weight, and the indication for tube placement. Primary outcome measures included anesthetic and surgical complications and 30-day mortality. The operative technique utilized an umbilical port for the camera and a single stab incision for the gastric access site. After insufflation to 5-8mmHg, the stomach was suspended by two sutures placed with tiny skin openings that allowed the knots to be tied in the subcutaneous space. Stomach access and dilation occurred by the Seldinger technique. Once the stomach was secured to the abdominal wall, the dilator was maneuvered into a post-pyloric position using laparoscopic visualization and fluoroscopic

confirmation, and a guide wire was passed into the duodenum. The GJ tube was then threaded over the guide wire under fluoroscopy; final position was confirmed by contrast injection (Figures 1-3).

RESULTS: There were 24 laparoscopic GJ tube placement operations performed within this time frame; 5 (20.8%) of these tubes were standard single-unit GJ tubes and 19 (79.2%) were low-profile gastrostomy tubes modified with a jejunal feeding tube threaded through the feeding port (Figure 4). Average patient age was  $4.1 \pm 3$  months, with a gestational age at birth of  $36.7 \pm 3.9$  weeks. Male patients made up 58.3% of the population and average weight was  $4.2 \pm 1.2$  kilograms. The most common congenital defects in this population were hypoplastic left heart syndrome (7 patients; 29.2%) and pulmonary vein atresia or stenosis (5 patients; 20.8%). Other anomalies included coarctation of the aorta, total anomalous pulmonary venous return, and double outlet right ventricle, among others. The most common indications were gastric feeding intolerance (70.8%) and/or aspiration (33.3%). Mean operative time was 84 minutes; median time was 64 minutes (range 35-221 min). Longer median operative times (53 versus 150 min) occurred in patients undergoing multiple concurrent operations. There were 4 postoperative complications, resulting in a 30-day complication rate of 16.7%; there was one anesthetic complication of stridor, one postoperative pneumothorax, and 2 GJ tube complications related to tube malfunction or migration. Thirty-day mortality was 12.5% (3 patients) with no mortality related to the GJ tube operation. Hospital length of stay (LOS) was dependent on underlying comorbidities; total median post-operative LOS was 14.5 days.

CONCLUSION: Laparoscopic GJ tube placement may be performed safely in infants with cardiac anomalies and allows these patients to receive adequate nutrition despite intolerance of gastric feeding. Further study is needed to evaluate the role of GJ tubes in these patients in transitioning to oral or gastric feeds versus the need for fundoplication.



**S055: COLON INTERPOSITION: VIDEOASSISTED VS OPEN APPROACH** – Carlos Garcia-Hernandez, MD, Lourdes Carvajal-Figueroa, MD, Sergio Landa-Juarez, MD, Humberto Murguía-Guerrero, MD; Hospital Infantil Privado

BACKGROUND/PURPOSE: There are several indications for esophageal replacement procedures in children. For their reconstruction several organs can be used. Traditionally all of these surgeries have been conducted through great surgical procedures. Since 2003 there have been gradual publications of gastric pull up reports in children, although there is only one report of colon

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interposition. The current challenge of the minimum invasive surgery is to demonstrate not only the feasibility to conduct a procedure but to provide sufficient evidence of the real advantages of minimum invasive surgery. Hence, the purpose of this text is to evaluate the advantages and disadvantages of the video assisted procedure against the open procedure of colon interposition.

**METHODS:** Retrospective study, comparative and observational, in which the files of the patients that required colon interposition were evaluated, these were divided in two groups: Group I open surgery, Group II video assisted surgery. Statistical analysis: descriptive statistics. T of Student ( $p=0.01$ ).

**RESULTS:** From 2004 to 2014, 12 of group I (open surgery) and 7 to group 2 (video assisted surgery). In group I, 6 patients con esophageal stenosis due to caustic injuries and 7 with esophageal atresia. In group II, 3 patients with caustic injury and 4 with esophageal atresia. Surrigical time in group I:  $X=3.83$  hrs and in group II:  $X=3.94$  hrs, ( $P=0.31$ ). Star feeding for group I  $X=9.5$  days and for group II  $X=5.42$  days,  $p=0.57$ . All of these presented gastro colonic reflux in group I: 4 severe and 8 moderated in group II: 1 severe, 3 moderated and 3 simple. 5 patients of group I had fistulae and saliva in the neck and these were presented in 2 patients of group 2. The medium follow up of group I was of 89 months and group II of 30.2 months. 10 patients of group I and 4 of group II continue with antireflux treatment.

**DISCUSSION:** In the patients with esophageal atresia or with caustic injury, esophageal in occasions they need their substitution. These are wide procedures and require tissue expositions and always the ascent of the tissue to interpose is conducted blindly. The minimum invasive approach in children has been used since 2003 to conduct gastric interposition and only a report of Estevez of an approach of this type using colon in children. Due to its irrigation, longitude and resistance to acid we rather use colon, to conduct such through minimum invasive techniques resulted in no aggregated morbidity and these can be reproduced by all the steps of the open technique. In contrast with the open techniques the mediastinal view is excellent, prevents the vascular injuries and allows to allocate the colon in a secure manner in the mediastinum. Nonetheless, in this study the results that were obtained were similar, without any evident advantage of the open technique over the laparoscopic approach that are not related with esthetic aspects such as a major incision for the open procedure in comparison with 4 small incisions for the laparoscopic approach.

**S056: OUTCOMES OF REINTERVENTION FOR LAPAROSCOPIC TRANSPERITONEAL PYELOPLASTY IN CHILDREN** - L Leung, Phy Chung, Lcl Lan, Kky Wong, Pkh Tam; Division of Paediatric Surgery, Department of Surgery, Queen Mary Hospital

**OBJECTIVE:** There is no consensus for the management of failed laparoscopic pyeloplasty in paediatric surgical patients and only limited publications are available. We evaluate the clinical outcomes of reintervention for failed laparoscopic transperitoneal pyeloplasty in infants and children.

**METHODS:** Retrospective review of all children who have undergone laparoscopic transperitoneal dismembered Anderson-Hyndes pyeloplasty for ureteropelvic junction obstruction from 2002 to 2013 was performed. Patients' demographics, indications, operative details and outcomes for primary operation as well as reintervention were studied.

**RESULTS:** There were forty-two patients with median age of 20 months (range: 3 - 192 months) and median body weight of 12 kg (range 6 - 56 kg) undergoing a total of 46 laparoscopic transperitoneal pyeloplasty during the study period. The median

operative time and blood loss were 193 mins (range 115 - 480 mins) and trace amount (range trace amount - 400 ml) respectively. No conversion was reported. Ten (22%) required reintervention. No statistically significant risk factor for failed pyeloplasty was identified. Indications for reintervention included deterioration of differential renal function ( $n = 6$ ), progressive hydronephrosis ( $n = 1$ ), urinary ascites ( $n = 2$ ) and urosepsis ( $n = 1$ ). Median time of reintervention was  $6.5 \pm 38$  months post-pyeloplasty. Reintervention was categorized into redo-pyeloplasty group ( $n = 6$ ) and urinary diversion group ( $n = 4$ ) (insertion of double J catheter or endopyelotomy) with success rates of 50% and 25% respectively. Among the redo-pyeloplasty group, 3 patients underwent redo-laparoscopic pyeloplasty and all of them had drainage restored with a median improvement in differential renal function of 11%. The mean follow up duration was  $77 \pm 38$  months.

**CONCLUSION:** Laparoscopic transperitoneal pyeloplasty is safe and feasible in children. Redo-pyeloplasty is a more favourable reintervention when compared to urinary diversion in our series. Redo-laparoscopic pyeloplasty has the highest success rate (100%).

**S057: A COMPARATIVE STUDY OF MODIFIED LAPAROSCOPIC-ASSISTED ENDORECTAL DUHAMEL PULL-THROUGH (LEDP) AND SOAVE PULL-THROUGH (LESP) FOR LONGER (EXTENDED) HIRSCHSPRUNG'S DISEASE WITH SUBTOTAL COLECTOMY** - Shao-tao Tang, Li Yang, Shuai Li; Department of Pediatric Surgery, Union Hospital, Tongji Medical College, Huazhong University of Scie

**OBJECTIVE:** We describe herein our experiences with Modified Laparoscopic-assisted endorectal Duhamel pull-through (LEDP) and Soave pull-through (LESP) for longer (extensive) Hirschsprung's disease (HD) with subtotal colectomy. We evaluated the clinical outcomes, complications, feasibility, and efficacy.

**METHODS:** Between 2006 and 2014, 42 patients (28 males and 14 females, mean age of 9.75 months, 18 patients with colostomy) with longer HD underwent LEDP and LESP with subtotal colectomy. The surgical procedure consisted mainly of two phases: the laparoscopic phase and the transanal phase. All 42 patients underwent almost the same laparoscopic phase, which included the trocars locations, freeing the different parts of the colon, the Deloyer technique for the 270° transposition of the colon and appendectomy. For the transanal phase, 18 patients underwent the LEDP and 24 patients underwent the LESP. The LEDP consisted of the extra-anal low rectal transection using Endo-GIA Stapler for a short rectal stump (4-5 cm) and the colorectal anastomosis. The LESP consisted of the rectal mucosa dissection with a long cuff, coloanal anastomosis with a short cuff 2-3 cm and a V-shaped partial resection in the posterior wall of the muscular cuff.

**RESULTS:** The LEDP and LESP groups were similar in regard to age, gender, transition zone, operative time, blood loss, hospital stay, and intraoperative complications. No conversion to open surgery was necessary. Postoperative complications were slightly different, 27.8% for LEDP and 37.5% for LESP. The significant difference was observed in the defecation frequency during early postoperative period and the mean Timespan to obtain normal defecation frequency (1-2times/day), 4.1months for LEDP and 6.1 months for LESP. Mean follow-up period was 32 months.

**CONCLUSIONS:** LEDP with subtotal colectomy for longer HD has quicker recovery and better bowel function compared to LESP. Using the Endo-GIA Stapler extra-anally is simple and more beneficial, reduces trauma to the abdominal wall.

**S058: COMPARISON OF LAPAROSCOPIC HEPATICOJEJUNOSTOMY WITH OPEN HEPATICOJEJUNOSTOMY. CAN STENOSIS OF THE COMMON HEPATIC DUCT AFFECT POSTOPERATIVE OUTCOME** – [Go](#)

[Miyano, MD](#), Mariko Koyama, MD, Masakatsu Kaneshiro, MD, Hideaki Nakajima, MD, Hiromu Miyake, MD, Keiichi Morita, MD, Hiroshi Nouse, MD, Masaya Yamoto, MD, Kouji Fukumoto, MD, Naoto Urushihara, MD; Department of Pediatric Surgery, Shizuoka Children's Hospital

**PURPOSE:** To compare laparoscopic hepaticojejunostomy (LHJ) with conventional open hepaticojejunostomy (OHJ) for treating choledochal cyst (CC) associated with common hepatic duct (CHD) stenosis.

**METHODS:** Data for patient demographics, outcome, and complications (intra- and postoperative) collected prospectively from LHJ cases since 2009 and retrospectively from OHJ cases from 2003 to 2008 were compared with respect to outcome and CHD stenosis. Our LHJ initially involved inserting a 12mm trocar for a 30 degree 10mm telescope through an infraumbilical incision followed by placement of 3 additional 5mm ports with creation of a Roux-en-Y jejunostomy intracorporeally. Later in our series, a SILS port was used and the Roux-en-Y jejunostomy was created extracorporeally. Intraoperative cholangiography was performed to determine the extent of stenosis. After excision of the extrahepatic bile duct system, and if indicated, the CHD was incised longitudinally to create a larger anastomotic stoma for hilar hepatic ductoplasty (HD-plasty). All patients with CHD stenosis were evaluated separately as LHJ-s and OHJ-s. Patients with narrowing of any part of the extrahepatic bile duct system without intrahepatic bile duct dilatation were not defined as having stenosis.

**RESULTS:** The subjects of this study were LHJ (n=27, 4M/23F) and OHJ (n=31; 6M/25F). Mean age and weight at surgery, incidence of pancreatitis, incidence of perforation, and necessity for laparoscopic bile drainage through the gallbladder were not significantly different. Classification of CC according to Todani in LHJ was type-1 (n=16) and type-4 (n=11), and in OHJ was type-1 (n=26) and type-4 (n=5). Mean operative time for LHJ was 386 minutes (range: 260-620 minutes) and for OHJ was 341 minutes (range: 255-440 minutes) (p<.05). Mean intraoperative blood loss was 5.9mL in LHJ and 18.4mL in OHJ (p<.05). HD-plasty was performed in 23/27 patients in LHJ and in 21/31 in OHJ. There were no intraoperative complications in either group, and no patients in LHJ required conversion to OHJ. Enteral feeding was recommenced significantly earlier and hospital stay was significantly shorter in LHJ (p<.05). Postoperative complications seen in LHJ were 3 cases of minor bile leakage and 2 cases of anastomotic stricture (type 1-a and type 4-A), and in OHJ were 1 case of bile leakage and 3 cases of intestinal obstruction. For stenosis cases, LHJ-s (n=10/27) and OHJ-s (n=10/31), there was one postoperative complication in each group; anastomotic stricture in a type 4-A patient in LHJ-s and intestinal obstruction in OHJ-s. The incidence of postoperative complications was not significantly different between LHJ and OHJ, and LHJ-s and OHJ-s.

**CONCLUSION:** Our LHJ compared favourably with OHJ for the treatment of CC irrespective of the presence of stenosis and requirement for HD-plasty, suggesting that our LHJ is a safe effective procedure for treating CC.

**S059: PREVENTING GASTRIC PROLAPSE FOLLOWING LAPAROSCOPIC GASTRIC BANDING** – [Claire Graves, MD](#), [Jeffrey Zitsman, MD](#); Columbia University Medical Center

**INTRO:** Nearly one-fifth of American children and adolescents meet criteria for obesity, which confers significant risk for short and long-term comorbidities. Laparoscopic adjustable gastric banding (LAGB)

has been shown to help adolescents achieve greater excess weight loss than lifestyle intervention. However, band displacement remains a relatively frequent complication in both children and adults, and current techniques have failed to create a definitive solution.

**METHODS:** We reviewed a prospectively collected database of 144 adolescent patients who underwent LAGB at a single tertiary care center in the U.S. from August 1, 2006, to December 5, 2012. All procedures were performed by a single, experienced pediatric surgeon with the Allergan LapBand® System, placed using the pars flaccida technique. An anterior fundoplication was performed with gastrogastic sutures from the fundus and cardia below the band to the upper gastric pouch; an additional suture was then placed from lateral to medial anterior fundus below the band. Patients were followed for a minimum of 24 months (median 37). We defined gastric prolapse as radiographic evidence of excess stomach superior to the band with increased spine-to-band angle >90°, and band slippage as failure of prolapse to resolve after emptying all fluid from the band system.

**RESULTS:** Of the 144 patients who successfully underwent LAGB, prolapse and/or band slippage occurred in 16 (11%). Significant excess weight loss (>50%) was noted in 9/16 (56%) of this group. In each case, the fundus herniated cranially through the band, suggesting that fixing the stomach over the band with anterior fundoplication did not protect against prolapse. Operative correction or removal was required in 12 patients. No patient has had a recurrence to date. In one revision and one new band placement, we sutured the fundus to the anterior abdominal wall at the left upper quadrant port site as an additional measure to prevent gastric prolapse or band slippage. One of these patients complained of mild pain at the port site at the two-week follow-up visit which resolved by six weeks post-op and has not recurred. Otherwise, neither has demonstrated any adverse events to date (22 and 20 months post-op).

**CONCLUSIONS:** Existing LAGB techniques continue to allow prolapse of the fundus and band displacement. Gastropexy to the anterior abdominal wall is a novel technique that is well-tolerated and may help reduce the rate of band displacement.

**S060: REASONS FOR RECURRENCE AFTER THE LAPAROSCOPIC REPAIR OF INDIRECT INGUINAL HERNIA IN CHILDREN** – [Shuguang Jin](#), Bo Xiang, Lin Zhong, Fuyi Li, Xiaoping Jiang, Zhicheng Xu; West China Hospital, Sichuan University

**BACKGROUND and objective:** Pediatric indirect inguinal hernia repair has performed laparoscopically in the West China Hospital of Sichuan University for 5 years. Compared with the open repair, recurrence rates were markedly lower; however, a small number of children develop recurrent hernias. Here, we summarize our experience and discuss the reasons for post-laparoscopic hernia recurrence.

**METHODS:** From June 2008 to June 2013, 6,120 laparoscopic repairs were performed of pediatric indirect inguinal hernia involving 5,382 males and 738 females. The average age was 3.1 (three months to fourteen years). The approach of surgery was relatively easy. Pneumoperitoneum was established through the umbilicus, the laparoscopic lens and a clamp were placed into the upper and lower edges of the umbilicus respectively, and the bilateral internal rings were inspected initially; then on the surface projection of unclosed internal ring, a sled-like needle with suture was circled and tightened internal ring at extraperitoneum.

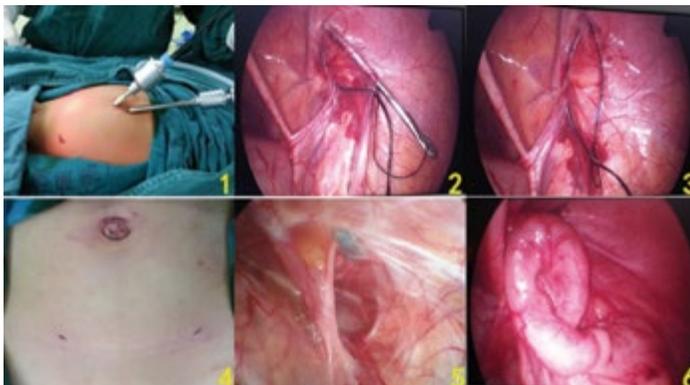
**RESULTS:** Patients were followed-up for between 6 months to 5 years. A total of 21 cases developed recurrent hernia (0.3%). All of these patients underwent a second surgery with either a laparoscopic repair (n=18) or an open repair (n=3). None of these patients had

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a second recurrence. There were four main surgical causes of recurrence: i) the internal inguinal ring was weak and significantly expanded, especially underneath the internal ring, which led to the peritoneum nearby the internal ring sliding through; ii) a sled-like needle repeatedly perforated the peritoneum, causing a hydrocele; iii) some of the peritoneum was left unsutured; and iv) there was an unexpected release of the ligature around the hernial ring. If causative relapse factors, such as cough, constipation, or diarrhea, were removed, the majority of recurrent hernias could be cured laparoscopically, but a small number will need an open repair.

**CONCLUSION:** The laparoscopic repair of pediatric indirect inguinal hernias results in little trauma, excellent cosmetic appearances, and rapid recovery times, but recurrent hernia still appeared postoperatively in a small number of patients. The main preventive measures were removal of risk factors for hernia and an appropriate surgical approach.

FIGURE:



**S061: GASTRIC PACING FOR THE TREATMENT OF REFRACTORY GASTROPARESIS IN CHILDREN** – [Theodore H. Stathos, MD<sup>1</sup>](#), [Adrienne Hoyt-Austin<sup>2</sup>](#), [Steven S Rothenberg, MD<sup>1</sup>](#); <sup>1</sup>Rocky Mountain Hospital for Children, <sup>2</sup>Rocky Vista University, College of Osteopathic Medicine

Gastroparesis is a chronic gastric motility disorder characterized by delayed gastric emptying of solid meals. Gastroparesis and associated symptoms are uncommon (4.6 per 10,000) with a 5:1 female to male ratio. In severe and chronic cases, patients may suffer dehydration, poor nutritional status, and poor glycemic control (in diabetics). The causes are numerous and include diabetic, post viral, post surgical, medication induced, neurologic, auto immune, and idiopathic. Idiopathic causes comprise up to half of all cases. Predominant symptoms are nausea, vomiting, early satiety, post prandial fullness/bloating, abdominal pain, and rarely weight loss. Typical treatments include pro-kinetic agents. Macrolide antibiotics, and metoclopramide are the mainstay of medical treatment, urecholine, domperidone and cisapride are less common alternatives. Gastric electrical stimulation (GES) entails the use of a set of pacing wires attached to the stomach and an electrical device that provides a low-frequency, high-energy stimulation to the stomach. In adults GES is an established treatment for gastroparesis, nausea, and vomiting refractory to standard medical treatment. Our study was designed to determine if children with gastroparesis and related symptoms refractory to medical management would have beneficial effect from GES.

Eight children with gastroparesis refractory to medical management were selected for treatment with GES. Six females and two males, ranging from 6 years to 17 years of age were selected. Initial assessment and diagnosis of the patients with gastroparesis was established clinically. All were assessed by parental and patient

questionnaire for nausea, post-prandial fullness, early satiety, and bloating. All children but one had an initial gastric emptying study.

Initially, temporary gastric pacing wires were placed endoscopically, either nasally or via gastrostomy and attached to the Enterra Therapy System gastric electrical stimulator (Medtronic, Minneapolis, MN). If symptoms improved significantly and the patient remained symptom free, a permanent pacer was placed surgically 2-3 wks later. Symptom assessment was recorded before, 1 month, and 3 months following the procedure. Statistical analysis was of the patient and parental response were performed using a paired Student's t test. All of the patients selected had a positive response to the initial use of the temporary external GES. All patients then progressed to placement of a permanent internal gastric pacing device. After treatment with permanent gastric pacing, 100% of the patients had a significant decrease in the frequency and severity of vomiting, nausea, bloating, early satiety, and postprandial fullness. The combined symptom frequency p-value was 0.0006 and 0.00003 at one month and three months respectively and the combined symptom severity p-value was 0.001 and 0.0003 at one month and three months respectively.

Gastric electrical stimulation is a valid treatment for pediatric patients with gastroparesis refractory to medical treatment. All of the patients studied had a positive response to GES. The decision for permanent placement is easily assessed prior to placement, as the temporary pacing device is readily removed without significant difficulty for the patient or expense to the family. No significant adverse effects were observed in the study. We recommend additional and continued study in children to determine the long-term effects of treatment.

**S062: PATIENT REPORTED OUTCOMES AFTER MINIMALLY INVASIVE PECTUS EXCAVATUM REPAIRS** – [Waleed Gibreel, MBBS](#), [Benjamin Zendejas, MD, MSc](#), [Daniel Joyce, BS](#), [Christopher R Moir, MD](#), [Abdalla E Zarroug, MD](#); Mayo Clinic

**PURPOSE:** Examine patient reported outcomes following minimally invasive pectus excavatum repair.

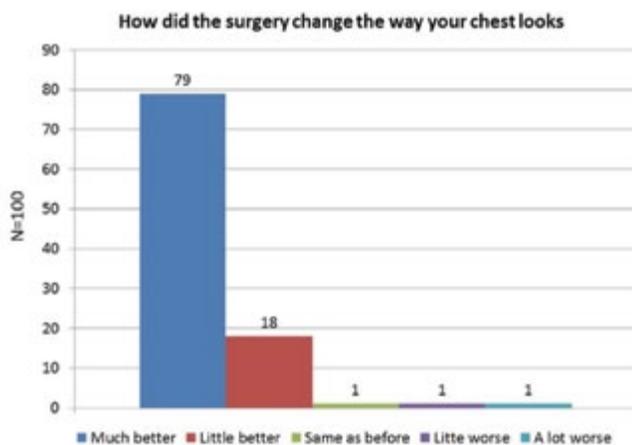
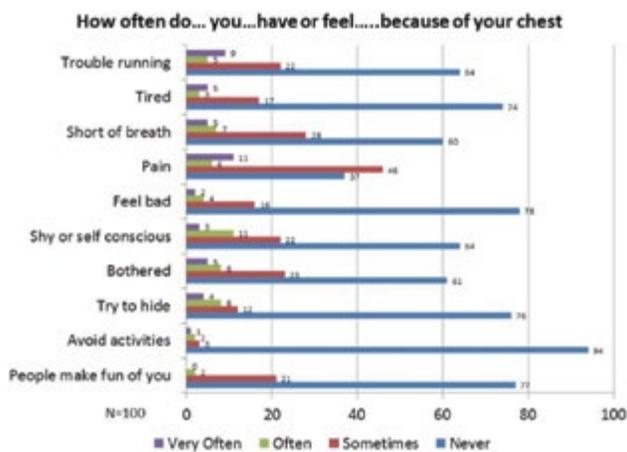
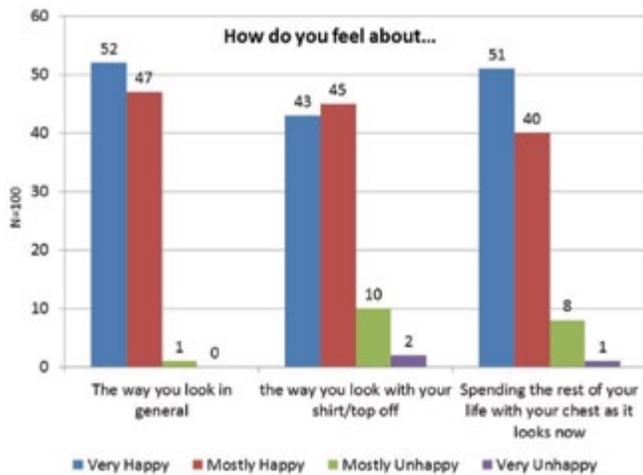
**METHODS:** With IRB approval, a mailed survey was sent to all 311 patients who underwent a minimally invasive pectus excavatum repair at our institution from April 1998 to June 2014. Surveys included Nuss's validated postoperative quality of life questionnaire. For patients under the age of 18 at the time of the survey, parents were asked to fill out the survey in addition to the patient. Response bias was assessed by comparing responders versus non-responders with regards to demographic, clinical and operative variables. Results are presented in the form of descriptive statistics.

**RESULTS:** During the study period, 311 patients (79% males) underwent repair at a median age of 14 years (IQR 13-16). One hundred (32%) patients responded to the survey, of which 17 were under 18 years of age at the time of the survey, to which both patient and parent surveys were received. Mean time from operation to survey response date was 7.1 years (range 0.1-15.7). Responders were not significantly different than non-responders with regards to demographic, clinical and operative variables. Most patients (99%) felt either very happy (n=52) or mostly happy (n=47) with the way their chest looks in general (Figure 1). Approximately 2/3 of the cohort report no symptoms or complaints with regards to their pectus repair, however a certain proportion of patients report that they sometimes have trouble running (n=22), feel tired (n=17), have pain (n=46), or feel self-conscious (n=22), Figure 2. Nonetheless, when asked whether their repair changed the way they looked, the majority rated their outcome as much better (n=79), or little better (n=18), Figure 3. There were no statistically significant differences between patient and parent responses to the survey.

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**CONCLUSIONS:** Patient reported outcomes following minimally invasive pectus excavatum repairs are encouraging. The majority of patients and parents report satisfaction with their repair. The psychological impact (e.g. self-consciousness) of postoperative patient reported symptoms (e.g. pain) warrants further investigation.



## S063: COMPARISON BETWEEN TRANSANAL LAPAROSCOPIC ASSISTED AND PURE PULL-THROUGH FOR HIRSCHSPRUNG'S DISEASE IN CHILDREN – Suolin Li, MD, Yingxin Gong, MD, Chi Sun, MD; The Second Hospital of Hebei Medical University

**BACKGROUND:** Hirschsprung's Disease(HD) is a common malformation in alimentary tract, which is characterised by an absence of ganglion cells in the distal bowel. Transanal endorectal pull-through as exclusive operative approach has been become the main method for common HD due to its convenience, minimal invasion and aesthetics. Primary laparoscopic assisted pull-through for HD contributes to identifying the pathologic transition zone with preliminary biopsy and mobilizing the mesenteric vessels. The aim of this study was to compare the operative outcomes between transanal laparoscopic-assisted and pure pull-through procedure for the common type HD.

**METHODS:** From January 2011 to December 2013, 50 children with common type HD underwent transanal endorectal pull-through in our hospital, which were randomly divided into laparoscopic-assisted group and pure pull-through group. They were all diagnosed by barium enema with a 24-hour delayed evacuation and anorectal manometry. Of them, 36 were males and 14 females with age ranged from 3 months to 2 years. The colorectal anastomotic stoma was checked by digital rectal touch or proctoscopy after 10 days. The operative time, intraoperative blood loss, postoperative blow resuscitation and complications in two groups were recorded and compared.

**RESULTS:** Transanal laparoscopic assisted pull-through was completed in 26 cases ( including one case carried out pure transanal pull-through was forced to convert due to long segment HD). Compared to pure transanal pull-through necessitating repeated dissection and ligation of the marginal vessels and even to wait the final frozen biopsy, the operation time was shortened ( $137.64 \pm 35.92$  min vs.  $109.11 \pm 18.76$  min,  $P < 0.05$ ) and the estimated bleeding was decreased ( $21.20 \pm 9.24$  ml vs.  $13.30 \pm 3.08$  ml,  $P < 0.01$ ) because of using ultrasonic scalpel in laparoscopic assisted group. One child occurred partial dehiscence of anastomosis with pelvic infection and another developed enterocolitis that were cured by conservative antibiotic therapy in laparoscopic group (7.69%). However, 7 children had postoperative complications in pure pull-through group (29.17%). Three cases had symptomatic anastomotic dehiscences and one case happened enterocolitis that could be treated with conservative management, one child occurred diffuse peritonitis due to anastomotic leakage that had to reoperate a colostomy, one patient suffered from intermittent faecal incontinence, and one patient with intestinal neuronal dysplasia required a redo laparoscopy ( $P < 0.01$ ).

**CONCLUSION:** Transanal laparoscopic-assisted pull-through could thoroughly mobilize the left colon and remain its marginal vessels to ensure a free colorectal anastomosis without excessive retracting anus. It is characteristics of less bleeding, shorter operative time, fewer perioperative complications, and faster recovery because its technique might identify the transitional zone or intraoperative biopsy prior to mobilization of rectosigmoid.

## S064: HOW TO GET OUT OF A PINCH: COLONIC DEROTATION, A NEW TECHNIQUE FOR THE MANAGEMENT OF SUPERIOR MESENTERIC ARTERY SYNDROME – Victoria K Pepper, MD<sup>1</sup>, Mehul V Raval, MD, MS<sup>2</sup>, Steven M Henriques, MD<sup>3</sup>, Marc A Levitt, MD<sup>1</sup>, Denis King, MD<sup>1</sup>; <sup>1</sup>Nationwide Children's Hospital, <sup>2</sup>Children's Healthcare of Atlanta, Emory University, <sup>3</sup>Beth Israel Deaconess Medical Center

**INTRODUCTION:** Superior mesenteric artery (SMA) syndrome (or Wilkie's Syndrome) is a condition in which the duodenum

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is compressed between the SMA and aorta. When medical management fails, the condition has traditionally been managed by gastrojejunostomy, duodenojejunostomy, or division of the Ligament of Treitz with mobilization of duodenum. While these techniques effectively bypass the obstruction, risks such as anastomotic leak, infection, and anastomotic stricture must be considered. We present a method that eliminates the risks associated with an anastomosis and anatomically corrects the condition through derotation of the colon.

**METHODS:** The diagnosis of SMA syndrome was made by upper gastrointestinal contrast study and confirmed with upper endoscopy. After medical management failed, the patient was scheduled for surgical intervention. The procedure was completed using 3 ports: a 5-mm umbilical port, a 12-mm left lower quadrant port, and a 5-mm right lower quadrant port. The cecum, ascending colon, and transverse colon were fully mobilized and placed in the left side of the abdomen thus alleviating the compression of the duodenum. An appendectomy was performed.

**RESULTS:** Total operative time was 54 minutes. The patient was started on a liquid diet the following day. He was advanced to a general diet and discharged home on postoperative day 2. At 1-month follow-up, the patient was doing well with no symptoms and gaining weight.

**CONCLUSION:** Colonic derotation offers an alternative to current surgical therapies for SMA syndrome, addressing the problem at an anatomic level by relieving the tension caused by the ileocolic vessels on the SMA that leads to compression of the duodenum. It also avoids the requirement for an enteric anastomosis. With laparoscopy, colonic derotation can be performed with brief anesthetic exposure, minimal incisional pain, and rapid post-operative recovery.

**S065: ROBOTIC-ASSISTED PROCEDURES IN PEDIATRIC SURGERY: A CRITICAL APPRAISAL OF THE CURRENT EVIDENCE** – Florian Friedmacher, MD, MSc, [Holger Till](#), MD, PhD; Department of Pediatric and Adolescent Surgery

**INTRODUCTION:** Since the first reported case in April 2001, the use of robotic-assisted surgery (RAS) has rapidly expanded within pediatric surgery. Although an increasing number of larger pediatric RAS case-series have been published, authors mainly focused on the comparison with open surgery rather than conventional laparoscopy. Furthermore, most studies investigating the advantages of RAS in children do not achieve a high level of evidence. According to a recently introduced grading system from the Oxford Centre for Evidence-based Medicine (CEBM), studies can be classified into levels 1 to 5, with 1 representing the highest level of evidence. The aim of our study was to critically appraise the published literature comparing pediatric RAS with conventional minimally invasive surgery (MIS) in order to evaluate the current level of evidence, based on CEBM criteria.

**MATERIALS & METHODS:** A systematic literature-based search for comparative studies was performed using MEDLINE®, EMBASE®, ISI Web of ScienceSM and the Cochrane Library. The search period was defined as April 2001 to October 2014. Reference lists of identified articles were manually searched for additional studies. The search was supplemented with published abstracts from IPEG annual congresses from 2002 to 2014. Only studies comparing pediatric RAS with the corresponding MIS procedures were included. The level of evidence was determined using the CEBM criteria.

**RESULTS:** A total of 19 comparative studies met defined inclusion criteria, reporting on 5 different procedures: fundoplication (n=8), pyloroplasty (n=7), nephrectomy (n=2), sleeve gastrectomy (n=1) and gastric banding (n=1). The included publications comprised of

4 systematic reviews and 15 case-control studies (CEBM level 3a and 3b, respectively), originating from 7 different countries. No studies of CEBM level 1 or 2 were identified. Reported advantages of pediatric RAS were reduced operative time (pyloroplasty) and shorter postoperative hospital stay (fundoplication), whereas disadvantages were longer operative time (fundoplication, nephrectomy, sleeve gastrectomy and gastric banding) and higher total costs (fundoplication and sleeve gastrectomy). There were no differences reported for complications, success rates or short-term outcomes between pediatric RAS and conventional MIS in these procedures. There was a progressive trend of increasing number of publications with higher evidence levels over time. However, inconsistency was found in study design, with clinical heterogeneity and differing levels of experience between individual surgeons.

**CONCLUSIONS:** The best available evidence for pediatric RAS is currently CEBM level 3, relating to only 5 procedures. Randomized controlled trials and comparative data for other RAS procedures in pediatric surgery are required to extend the current level of evidence.

**S066: LAPAROSCOPIC EXCISION AND HEPATICODUODENOSTOMY FOR CHOLEDOCHAL CYST IN CHILDREN: SINGLE-SURGEON EXPERIENCE WITH 31 CASES** – [Chandrasekharam Vvs, M, Ch](#); rainbow hospitals for women and children

**PURPOSE:** Laparoscopic choledochal cyst (CC) excision and reconstruction is a technically advanced laparoscopic surgery. Reconstruction with hepaticoduodenostomy (HD) is considered to result in bile reflux into the stomach. We present our experience with laparoscopic HD and postoperative evaluation for duodenogastric reflux (DGR)

**PATIENTS & METHODS:** Over a 4.2- year period, 31 children (median age 2.3 years, range 0.2-14, 5 infants, 22girls) had laparoscopic excision and HD for type 1 choledochal cyst. The medical records of these children were reviewed for clinical, imaging, operative and follow-up details. Four children had antenatal diagnosis, 26 children presented with cholangitis and/or pancreatitis, and one child presented with biliary peritonitis due to ruptured choledochal cyst. Four children had obstructive jaundice at the time of surgery. The child with giant cyst also had portal hypertension, splenomegaly and pancytopenia. After initial ultrasound, all children underwent CT or MRI scan to confirm the diagnosis and the anatomy. The cyst size ranged from 1.4-13 cm. All children underwent laparoscopic total excision of CC with HD using 4 ports (3x5mm, 1x3mm). The duodenum was Kocherised and opened and the anastomosis was made at the junction of the first and second parts of the duodenum. The anastomosis was covered with omentum. A tube drain was placed near the anastomosis. Liquid feeds were started on the 4th postoperative day, and the children were discharged home once they were on full feeds. The children were seen in the clinic at 1 and 3 months, and yearly thereafter. Follow-up consisted of clinical examination, ultrasound at 3 months, and hepatobiliary scintigraphy to look for duodenogastric reflux.

**RESULTS:** The mean operating time was 156 minutes (121-230). Four ports were used, except in the child with giant (13cm) cyst who required an additional port. There were no major operative or post-operative complications. There was no bile leak or pancreatic leak in this series, and the mean post-operative hospital stay was 7.5 days (6-10). At a mean follow-up of 18 months (3-48), all children are asymptomatic. No child has had jaundice, cholangitis or symptoms of bile gastritis. Follow-up ultrasound was essentially normal. Hepatobiliary scintigraphy was performed in 19 children; it showed duodenogastric reflux in 2 (11%) children. The cosmetic result has been excellent.

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**CONCLUSIONS:** Laparoscopic excision of type 1 choledochal cyst with Hepaticoduodenostomy could be performed safely even in small infants, large cysts and ruptured cyst, with excellent short and mid-term success and minimal complications. Covering the anastomosis with omentum protected against anastomotic leak. Only a minority of children had asymptomatic duodenogastric reflux.

### **S067: LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE (LPEC) FOR PEDIATRIC INGUINAL HERNIA IS MORE BENEFICIAL IN MALE PATIENTS** – [Hiromu Miyake](#),

Koji Fukumoto, Masaya Yamoto, Hiroshi Nouse, Masakatsu Kaneshiro, Hideyuki Nakajima, Mariko Koyama, Naoto Urushihara; Shizuoka Children's Hospital

**BACKGROUND:** Laparoscopic percutaneous extraperitoneal closure (LPEC) for pediatric inguinal hernia has recently been gaining popularity. However, in some institutions, because male patients are thought to experience more difficulty with the procedure due to the involvement of the spermatic duct and testicular vessels, only female patients undergo LPEC. The aim of this study was to compare LPEC with the open method for each sex.

**METHODS:** This was a retrospective, single-institution study. Our institution started LPEC for essentially all patients with inguinal hernia in July 2008. This study included 617 male (OM) and 433 female (OF) patients who underwent open method from July 2003 to June 2008, and 561 male (LM) and 456 female (LF) patients who underwent LPEC from July 2008 to June 2013. We compared LPEC with OR for each sex.

**RESULTS:** Mean age at operation for each group was 3.11 years with OM, 3.16 years with LM, 4.59 years with OF, and 4.67 years with LF (OM vs. LM,  $p=0.73$ ; OF vs. LF,  $p=0.53$ ). Mean body weights were 13.7 kg in OM, 13.8 kg in LM, 16.2 kg in OF, and 16.0 kg in LF (OM vs. LM,  $p=0.85$ ; OF vs. LF,  $p=0.75$ ). Preoperative laterality of hernia (unilateral/bilateral) was 546/71 in OM, 511/50 in LM, 391/42 in OF, and 414/42 in LF. With LPEC, an asymptomatic contralateral internal ring was routinely observed, and when a patent processus vaginalis was confirmed, prophylactic surgery was performed regardless of the size of patency. Mean anesthesia time for unilateral surgery was 70.2 min for OM, 61.1 min for LM, 57.1 min for OF, and 60.0 min for LF (OM vs. LM,  $p<0.01$ ; OF vs. LF,  $p=0.02$ ). Mean anesthesia time for bilateral surgery was 100.8 min in OM, 66.2 min in LM, 74.4 min in OF, and 63.5 min in LF (OM vs. LM,  $p<0.01$ ; OF vs. LF,  $p<0.01$ ). Mean operative time for unilateral surgery was 33.4 min in OM, 23.1 min in LM, 22.1 min in OF, and 18.6 min in LF (OM vs. LM,  $p<0.01$ ; OF vs. LF,  $p<0.01$ ). Mean operative time for bilateral surgery was 61.6 min in OM, 27.5 min in LM, 37.6 min in OF, and 23.2 min in LF (OM vs. LM,  $p<0.01$ ; OF vs. LF,  $p<0.01$ ). Frequency of postoperative recurrence was 0.87% in OM, 0.49% in LM, 0% in OF, and 0% in LF, (OM vs. LM,  $p=0.51$ ; OF vs. LF,  $p=1$ ). Two patients showed postoperative testicular atrophy and two displayed iatrogenic postoperative cryptorchism in OM, while no postoperative testicular complications were seen in LM.

**CONCLUSION:** While anesthesia time for unilateral hernia was significantly shorter in OF than in LF, the time for LPEC was significantly shorter than that for open method in every study point among male patients. Furthermore, testicular complications were not seen in any LM patients, but in some OM patients. Although it seems to be the standard operation for pediatric inguinal hernia in both sexes, our results suggest that LPEC is more beneficial in male patients.

### **S068: DID MINIMAL INVASIVE SURGERY CAUSE ALTERATIONS IN OPEN SURGICAL TECHNIQUES?** – [Gulnur Gollu, MD<sup>1</sup>](#), [Gonul Kucuk, MD<sup>1</sup>](#), [Firat Kocaay, MD<sup>2</sup>](#), [Onur Telli, MD<sup>3</sup>](#), [Murat Cakmak, MD<sup>1</sup>](#); <sup>1</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY,

<sup>2</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF GENERAL SURGERY, <sup>3</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF UROLOGY

**AIM:** Some of the methods which were routinely used in traditional open surgical techniques became vanished nowadays as a result of technological improvements. The aim of this study is to interrogate the coherence of the surgeons who have different specialties but have similar working areas in the body to these technical alterations and their feasibility in open surgeries.

**MATERIALS & METHODS:** The study included 30 Pediatric Surgeons, 30 Urologists and 30 General Surgeons who were specialized for at least five years and had minimal invasive surgery experience. A questionnaire was developed asking about the alterations that the surgeons faced since the beginning of their endoscopic surgery experience. The questionnaire was conducted by three researchers who belong to each group. Demographic data, results of questions about the most common procedures were recorded.

**RESULTS:** Pediatric Surgery group included 23 males and 7 females from 18 centers who had a median age of 47 years (28-62 years). They have been working as Pediatric Surgeon for an average of 16 years and have endoscopic surgery experience for an average of 9.6 years. Urology group included 29 male and one female from 18 centers who had a median age of 36 years (31-51 years). They have been working as Urologist for an average of 7.2 years and have endoscopic surgery experience for an average of 7.5 years. General Surgery group included 28 males and two females from 16 centers who had a median age of 38 years (30-56 years). They have been working as General Surgeons for an average of 9.1 years and have endoscopic surgery experience for an average of 9.4 years.

THE Pediatric Surgeons break the taboos in six of the eight questioned procedures (73%). These six included management of non-palpable testis, appendectomy, intussusception, splenectomy, varicocele and mesenteric dissection. Alterations of the Urologists were in three pathologies (61%) which included hernia repair, management of non-palpable testis and mesentery dissection and four pathologies (72%) in General Surgeons which included hernia repair, appendectomy, mesentery dissection and colon tumor surgeries. Eighty-six percent of Pediatric Surgeons, 27% of Urologists and 40% of General Surgeons use these alterations of laparoscopic surgical techniques in open surgeries.

**CONCLUSION:** Laparoscopic surgical techniques have changed some of the basic surgical techniques that were thought to be unchangeable. It was observed that these alterations were also preferred in open surgeries however in a lesser extent. Minimal invasive surgeries were misevaluated as close technique of open surgeries however it is a separate branch of surgery which has unique technical features. It may cause much more changes in open surgical techniques by developing supportive and innovative aspects of minimal invasive surgery.

### **S069: COMPARISON BETWEEN LAPAROSCOPIC INTRAOPERATIVE CHOLANGIOGRAPHY AND LAPAROTOMY SURGERY IN JUDGMENT ON THE TYPE OF BILIARY ATRESIA: A CLINICAL CONTROLLED STUDY** – [Pu Yu, BS](#), [Long Li, PhD](#);

Capital Institute of Pediatrics

**OBJECTIVES:** Biliary atresia (BA) is an obliterative cholangiopathy with progressive hepatobiliary disease starting from the perinatal period, it

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is a life-threatening liver disease for infants, which is divided into three types, and different types with different prognosis, which will lead to infant's parents to make a decision on whether they will continue the therapy of BA or not, thus, it is important to diagnose this disease and determine the type at the early stage, the earlier the better. Some scholars consider cholangiography as a golden criteria of diagnosis and judgment on the type of BA. This article is aimed to analyze whether the laparoscopic intraoperative cholangiography is consistent with laparotomy surgery in judgment on the type of BA or not.

**METHOD:** The data was collected and retrospectively analyzed for infants who were diagnosed with BA by laparoscopic intraoperative cholangiography during the time period from Jan'2013 to Sep'2014, and who also had laparotomy surgery performed, either hepatico jejunostomy or Kasai hepatoportoenterostomy, their medical records and laparoscopic intraoperative cholangiography images are complete, totally there were 56 eligible cases, male:27, female:29; the type of BA was judged and recorded according to laparoscopic intraoperative cholangiography and laparotomy surgery respectively, then the types of BA obtained from the two methods were compared.

**RESULT:** With laparoscopic intraoperative cholangiography, 8 infants were diagnosed as type I of BA, including 5 infants with cyst; no type II; 48 infants were diagnosed as type III, including 6 infants with cyst. With laparotomy surgery, 11 infants were detected with type I, including 9 infants with cyst; 2 infants with type II; 43 infants with type III, including 2 infants with cyst. McNemar test was used for consistence analysis of the 2 methods, result  $P > 0.05$ , it indicates that there was no significant difference between two methods in the judgment on the type of BA, and the kappa value is 0.595, which means the result of laparoscopic intraoperative cholangiography is consistent with laparotomy surgery.

**CONCLUSION:** Laparoscopic intraoperative cholangiography which has the advantages of being minimally invasive and recovering faster is an effective method in judgment on the type of BA, and can tell type I and type III, but it is not able to distinguish type II from type III effectively, from statistical perspective, there is no significant differences between two methods, and laparoscopic intraoperative cholangiography is consistent with laparotomy surgery in judgment on the type of BA.

### **S070: PEDIATRIC ENDOSCOPIC RETROGRADE CHOLANGIO-PANCREATOGRAPHY OUTCOMES AND COMPLICATIONS FROM 755 CASES Theodore H Stathos, MD, Steven S Rothenberg, MD; Rocky Mountain Hospital for Children**

Diagnostic and therapeutic endoscopic retrograde cholangio-pancreatography (ERCP) has been demonstrated to be a safe and highly useful diagnostic and therapeutic tool in the adult population. Data in the pediatric population is much less available. The diseases and problems that necessitate the need for ERCP tend to be less prevalent in children. Additionally, there is very little equipment or instruments specifically designed for use in pediatric ERCP procedures. The purpose of this study was to evaluate the safety of therapeutic of ERCP in children. 554 Children had 755 ERCPs from 1995 through 2014. Ages ranged from 6 weeks to 21 years. 281 Were males and 273 were female.

The indications for ERCP were: obstructive jaundice, recurrent biliary colic with or without jaundice, acute and chronic pancreatitis, postoperative bile leak, hemobilia, acute cholecystitis with jaundice, inflammatory bowel disease with abnormal liver function tests with or without jaundice, and following laparoscopic cholecystectomy. ERCP was carried out under general anesthesia in all of the patients. Successful cannulation of the Ampulla was achieved in 99.3% of the patients. Multiple patients underwent endoscopic sphincterotomy, stone removal, biliary stenting and pancreatic stenting.

Complications were as follows: minor pancreatitis 52 patients (6.8%), moderate pancreatitis 18 patients (2.4%). Necrotizing pancreatitis in 1 patient. Bleeding requiring additional treatment in 1 patient, and no perforations. Our conclusions are that pediatric ERCP is as safe as adult ERCP within appropriate settings with equipment that is appropriately sized. Risks for common complications (pancreatitis) approach those seen in adults. Major complications seem to be less, possibly secondary to the use of an-esthesia and/or the population age.

### **S071: TRANS-ORAL INCISIONLESS FUNDOPPLICATION (TIF) AS A TREATMENT FOR GASTROESOPHAGEAL REFLUX DISEASE IN CHILDREN – Theodore H Stathos<sup>2</sup>, Joseph G Stathos, BS, MS<sup>1</sup>, Steven S Rothenberg, MD<sup>2</sup>; <sup>2</sup>Rocky Mountain Hospital for Children, <sup>1</sup>Kentucky College of Osteopathic Medicine**

Gastroesophageal reflux disease (GERD) is a common problem in the pediatric population. Medical therapy is the most common approach for significant GERD. Some patients fail medical treatment and require surgical intervention. Surgical intervention typically consists of a fundoplication using either an open or laparoscopic method. Laparoscopic fundoplication has been recognized as the least invasive surgical treatment of choice in the prevention of disease associated with GERD. The use of trans-oral incisionless fundoplication (TIF) has recently been described as an effective, less invasive method in the treatment of GERD in adults. We describe 8 cases of using this novel method of surgical correction in children. The TIF procedure is performed by two physicians. One physician is operating the TIF device (Endogastric solutions) while the other is providing video using an endoscope. The fundus of the stomach is manipulated using the TIF device, H-tie fasteners are fired through the tissue to create a plication. Fasteners are used in a methodical fashion to build a plication in the fundus. Eight patients, 8-18 years of age were chosen over the course of two years as appropriate candidates. All patients weighed at least 30 kg. Two of the patients were females and 6 were males. All had endoscopic evidence of GERD and histologic findings consistent with inflammation associated with GERD. All the patients underwent a pre-TIF and post-TIF EGD with a bravo pH probe. All patients were screened for a hiatal hernia both with upper gastrointestinal x-rays as well as endoscopically. The percentage of time with a pH of less than 4 in the esophageal lumen as well as the DeMeester scores were compared in the pre pH probe and the post pH probes done 6 weeks after the TIF. All patients were admitted to the Rocky Mountain Hospital for Children and observed overnight for possible complications. The intraluminal time for a pH of less than four on average decreased on average by 72%. The total DeMeester score done on pre-and post-pH probes decreased on average by 69.9%. All patients had a histologic improvement on biopsies done before and after the TIF procedure. No complications occurred. One of the patients has subsequently undergone a laparoscopic fundoplication due to recurrence of symptoms.

### **T001: THE PRELIMINARY APPLICATION OF ROBOTIC-ASSISTED 3-DIMENSION-HIGH-DEFINITION LAPAROSCOPIC SURGERY IN CHILDREN – Jiangbin Liu, Zhibao Lv, Hui Li, Yibo Wu, Yimin Huang; Shanghai Children's Hospital**

**OBJECTIVE:** To review the preliminary experience and clinical assessment of 3-dimension-high-definition (3D-HD) laparoscopic surgery in children.

**METHODS:** From February to June 2014, the clinical data from series of 17 children operated by laparoscopy with Aesclap 3D-HD Einstein Vision system were analyzed, including choledochocyst(3 cases), hiatal hernia(1 case), ovary cyst(2 cases), thalassaemia with splenomegaly(1 case), Hirschsprung's disease(3 cases), inguinal hernia(4 cases), duodenum ulcer perforation(1 case) and acute appendicitis(2 cases). All the procedure performed by one surgeon.

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**RESULTS:** All the laparoscopic procedure was completed successfully with no conversions. The operation time and intra-operative bleeding were same to those performed by the conventional 2D laparoscopic system. The 3D-HD visualization improves surgeons' hand-to-eye coordination, intracorporeal suturing and fine dissection. The combination of 3D-HD visualization with the robotic camera arm results in very high image quality and stability. And all the patients were followed up till October 2014 without any complications.

**CONCLUSIONS:** 3D-HD laparoscopic system provides three-dimensional perception, especially for precise depth perception, spatial location, movement velocity and improvement of surgical performance. With the improved quality of vision, laparoscopic surgeons may benefit from 3D imaging and perform precise operation in children.

**T002: LAPAROSCOPIC REMOVAL OF NEUROGENIC TUMORS FOR LOCATIONS OTHER THAN ADRENAL: AN INTERESTING OPTION IN SELECTED CASES** – Sabine Irtan, MD, PhD<sup>1</sup>, Gudrun Schleiermacher, MD, PhD<sup>2</sup>, Véronique Minard-Colin, MD, PhD<sup>3</sup>, Claudia Pasqualini, MD<sup>3</sup>, Jean Michon, MD, PhD<sup>2</sup>, Dominique Valteau-Couanet, MD, PhD<sup>3</sup>, Daniel Orbach, MD, PhD<sup>2</sup>, Sabine Sarnacki, MD, PhD<sup>4</sup>; <sup>1</sup>Trousseau Hospital, Paris, France, <sup>2</sup>Curie Institute, Paris, France, <sup>3</sup>Gustave Roussy Institute, Villejuif, France, <sup>4</sup>Necker Enfants malades Hospital, Paris, France

**BACKGROUND:** The use of laparoscopy has already been widely described in the literature for the commonest adrenal location of neuroblastoma, pheochromocytoma or adrenocortical adenoma but only one recent retrospective series compared laparoscopic and open approach adrenalectomy for neuroblastoma and concluded in favor of laparoscopy in term of long-term survival. By contrast, laparoscopy has been exceptionally reported for neurogenic tumors arising from the sympathetic chain running along the paraspinal space or around the vessels within the abdomen or for paraganglioma.

**AIM:** We hereby retrospectively review and describe the use of laparoscopy for neurogenic abdominal tumors located elsewhere than within the adrenal gland.

**MATERIALS & METHODS:** From 2006 to 2013, ten patients, four male and six females, were diagnosed with neurogenic tumors at a median age of 103 months [9-183]. Eight newly diagnosed patients presented a localized primary tumor, five patients having a L1 tumor and three a L2 tumor according to the International Neuroblastoma Risk Group Staging System. Among them, all except one patient (L2 tumor) underwent primary surgery. The two last patients presented with a relapse of a previously treated neuroblastoma, one having a mature ganglioneuroma at relapse leading to primary surgery whilst the other was treated with preoperative chemotherapy. Tumors were distinguished according to their location: paraspinal (two right-sided lumbar, three left-sided lumbar and one left-sided sacral) versus perivascular location (one around the inferior mesenteric artery, two around the left renal pedicle and one at the aortic bifurcation). The median size of the tumors was 38.7 mm [10-75].

**RESULTS:** The laparoscopy procedure was performed using a 10-mm optic umbilical port and two or three 5-mm working ports placed according to the location of the tumor, i.e. laterally in the flanks or either side of the umbilicus on the midline. The careful dissection of the surrounding structures around the tumor was carried out with the hook and the LigaSure (Valleylab, Tyco Healthcare Group, Boulder, CO). All except one specimen was extracted in a bag through the slightly enlarged umbilicus. The tumor was morcelated in a piecemeal fashion if needed. The median time for surgery was 124 mn [78-335]. No conversion occurred. The post-operative course was uneventful in all patients who were discharged home at a median of 3.3 days

[1-7 days]. Final pathological analysis of the specimen showed two neuroblastoma, three intermixed ganglioneuroblastoma, three ganglioneuroma and two paraganglioma. Postoperative imaging confirmed a complete macroscopic resection of all tumors. After a median follow-up of 37 months [25-85], all patients are alive with no recurrence. One of the two patients whose tumor originated from the renal pedicle developed at six months post-surgery renal atrophy from assumed renal artery spasm.

**CONCLUSION:** Laparoscopy allowed a complete and safe resection of abdominal tumors localized other than in the adrenal gland and could be considered as a valuable approach in selected cases. A careful attention should go along with the dissection of the renal pedicle.

**T004: MINIMALLY INVASIVE SURGERY IN CHILDREN WITH THORACOABDOMINAL NEUROBLASTOMA** – Evgeny Andreev<sup>1</sup>, Maxim Sukhov<sup>1</sup>, Denis Kachanov<sup>1</sup>, Victor Rachkov<sup>2</sup>, Nikolay Grachev<sup>1</sup>, Natalya Uskova<sup>1</sup>, Raisa Oganessian<sup>1</sup>, Tatyana Shamnaskaya<sup>1</sup>, Galina Tereschenko<sup>1</sup>, Svetlana Varfolomeeva<sup>1</sup>; <sup>1</sup>Federal Scientific and Clinical Center of Pediatric Hematology, Oncology and Immunology named after, <sup>2</sup>Russian National Research Medical University named after N I Pirogov

**PURPOSE:** Minimally invasive surgery (MIS) is increasingly used in pediatric oncology. One of the promising area is MIS in children with neuroblastoma, especially in infants < 1 year. However, due to the lack of large number of observations, long follow-up data, the application of MIS requires the development of clear indications and structural analysis of the results in order to optimize surgical treatment of children with thoraco-abdominal neuroblastoma.

**METHOD:** 230 patients with a diagnosis of «neuroblastoma» were observed and treated during the period 01.2012 – 10.2014. Patients were treated according to NB2004 protocol. Image-defined risk factors (IDRF) and size of the tumor were used to select patients for MIS. After initial work-up patients with the lack of IDRF and tumors < 7 cm in largest dimension were eligible for MIS.

**RESULT:** During the study period definitive surgery was performed in 147 patients. MIS performed in 37 patients (25,2% of operated patients). Median age was 22,1 months (range 0,7-67,1). M:F ratio was 1:1,3. Distribution by stage according to INSS: stage 1 – 21 (56,8%) patients, stage 2 – 6 (16,2%), stage 4 – 7 (19%), stage 4S – 3 (8 %). Laparoscopic tumoradrenalectomy performed in 24 (65%) patients, thoracoscopic resection in 11 (29,6 %), endoscopic removal of retroperitoneal tumors in 2 (5,4 %). Resected tumor was removed completely using Endobag through an additional incision. The size of the tumor ranged from 1 to 7 cm. The mean duration of surgery was 112 minutes. Intraoperative complications occurred in 3 (8%) patients: 2 (5%) injury of major vessels required conversion to laparotomy, 1 (3%) – trauma of duodenum. Postoperative complications occurred in 6 (16,2%) patients: 4 (10,8%) injury of sympathetic ganglia after toracoscopy complicated by horner's syndrome, 1 (2,7%) – sepsis, 1 (2,7%) – intestinal obstruction required the open re-surgery. Early postoperative period in all patients after endosurgical operations proceeded much faster and easier than in patients undergoing open surgery: early discontinuation of mechanical ventilation, less severe pain, early activation, better cosmetic effect. No local relapses was observed. Median follow-up time was 14,8 months (range 1,0-31,6).

**CONCLUSION:** MIS of neuroblastoma may be the procedure of choice in children with localized form of the disease in the absence of contraindications and surgical risk factors (IDRF), especially in children < 1 year due to more favorable biology of the tumor. Indications for MIS in patients with neuroblastoma should be based on a multidisciplinary approach.

**T005: LAPAROSCOPIC ASSISTED PYELOPLASTY IN SMALL BABIES** – Mustafa Kucukaydin, MD<sup>1</sup>, Ufuk Tan Aygun, MD<sup>1</sup>, Necip Fazil Aras, MD<sup>2</sup>, Ayse Betul Ozturk, MD<sup>2</sup>, Mahmut Guzel, MD<sup>2</sup>; <sup>1</sup>Division of Pediatric Urology, Erciyes University, School of Medicine, <sup>2</sup>Department of Pediatric Surgery, Erciyes University, School of Medicine

AIM: To present the results of an innovative minimally invasive technique of performing dismembered pyeloplasty in small babies.

MATERIAL and Methods: Between December 2008 and July 2014, 75 children underwent laparoscopic assisted dismembered pyeloplasty. The children (53 male, 22 female) were in the age range of 20 to 60 days. The ureteropelvic junction (UPJ) obstruction was left side in 45(60%) patients, right side in 20 (26%) and bilateral in 10 (14%). Twenty-five patients were symptomatic, whereas the remaining 50 were detected to have UPJ obstruction during evaluation for antenatal period. Using a 3 mm camera and two 3 mm working ports, the UPJ was mobilized by a transperitoneal laparoscopic technique. The UPJ was brought out through a tiny flank incision and a standard dismembered pyeloplasty was performed over a double J stent.

RESULTS: Mean operative duration was 60 minutes (range 45–80 minutes). Incision was smaller than 2 cm in all, and the average postoperative hospital stay was 3 days (range, 2–4 days). Follow-up ranging from 3 months to 5 years, showed reduction in hydronephrosis and improvement in renal function of all the operated units.

CONCLUSION: It is our impression that this technique has results comparable with that of open pyeloplasty. It is especially recommended in small babies where laparoscopic pyeloplasty is difficult.

**T006: A FETAL SHEEP MODEL OF FETOSCOPIC ABDOMINAL DECOMPRESSION FOR CONGENITAL DIAPHRAGMATIC HERNIA** – Robert Bergholz, MD<sup>1</sup>, Felipe Fromm<sup>1</sup>, Katharina Wenke, MD<sup>1</sup>, Thomas F Krebs, MD<sup>2</sup>, Michael Boettcher, MD<sup>1</sup>, Georg Eschenburg<sup>1</sup>, Kurt Hecher, Prof<sup>3</sup>, Konrad Reinshagen, Prof<sup>1</sup>; <sup>1</sup>Department of Pediatric Surgery, UKE Medical Center Hamburg Eppendorf, Hamburg, Germany, <sup>2</sup>Department of Pediatric Surgery, St. Gallen Childrens' Hospital, Switzerland, <sup>3</sup>Department of Obstetrics and Fetal Medicine, UKE Medical Center Hamburg Eppendorf, Hamburg, Germany

BACKGROUND: Fetoscopic tracheal occlusion (FETO) is the current prenatal management for severe cases of congenital diaphragmatic hernia (CDH). But FETO does not target the origin of lung hypoplasia in CDH, which is the intrathoracically prolapsed intestine compressing the lungs.

In contrast, fetal abdominal decompression (AD) was demonstrated to be effective in reducing the pressure effect by directing the growing intestine into the amniotic cavity away from the lungs, but all reported procedures have been performed by open fetal surgery. Therefore, aim of this study was to establish an animal model for fetoscopic abdominal decompression in fetal sheep with CDH.

METHODS: CDH was created surgically on mid-gestation in eight fetuses. Two weeks later, an opening was fetoscopically created in the fetal abdominal wall. The fetuses were retrieved by cesarean section at the end of pregnancy and evaluated.

RESULTS: Five fetuses with CDH were treated with fetoscopic abdominal decompression. Three fetuses with CDH were taken as controls. One fetus was lost after creation of the CDH and two other after creation of the abdominal defect. The lung to body weight ratio (LBWR) was higher in fetuses treated with abdominal decompression compared to untreated fetuses.

CONCLUSIONS: The lungs of treated fetuses were larger and heavier than those of untreated controls. Stereologic examinations revealed a reduction of lung damage after abdominal decompression. These findings support the hypothesis of an alternative palliative fetal surgery for severe CDH apart from tracheal occlusion.

**T007: TRANS-UMBILICAL LAPAROSCOPIC-ASSISTED APPENDECTOMY (TULAAP): A COMPARATIVE STUDY BETWEEN SINGLE INCISION AND 2-TROCAR TECHNIQUES**

– Mariana Borges-Dias, MD, Léonor Carmo, MD, Ruben Lamas-Pinheiro, MD, Tiago Henriques-Coelho, PhD, J Estevão-Costa, PhD; Department of Pediatric Surgery Hospital S Joãõ; Faculty of Medicine. Porto-Portugal

INTRODUCTION: Trans-umbilical laparoscopic assisted appendectomy (TULAAP) combines the know how of open surgery with the benefits of laparoscopy. It may be performed by a single incision, usually with an optical laparoscope, or by a 2-trocar approach.

In the present study, the main outcomes of single incision and 2-trocar approach were compared.

METHODS: All patients submitted to TULAAP between 1 July 2013 and 30 June 2014 were retrospectively reviewed. Two groups were considered: Group A (single incision)- abdominal access by an umbilical 10mm optical laparoscope (with a 5mm working channel, Hopkins, Storz) or, alternatively, by a 10mm umbilical trocar for telescope with peri-umbilical stab incision at the midline aponeurosis. Group B (2-trocar approach)- 10mm umbilical trocar for telescope and a 5mm trocar at the supra-pubic area. Extracorporeal appendectomy was performed after mobilization of the appendix through the trans-umbilical incision. The choice of technique was made according to surgeon's preference.

The following parameters were analysed: operative time, length of hospital stay and postoperative complications. Statistical significance was set at 5%.

RESULTS: 189 patients (77 females; 112 males) with a mean age of 11.6 years underwent TULAAP due to acute appendicitis. 32 patients (18%) presented perforated appendicitis. The mean follow-up was 266 days.

Group A encompassed 157 patients (83%) and group B had 32 patients (17%); both groups were similar concerning age, gender, proportion of perforated appendicitis, and length of follow-up.

OPERATIVE time and hospital stay were slightly but not significantly longer in group B than in group A (63±26 v 54±26 min; 4.5±4.4 v 3.4±3.3 min, respectively).

In group A, 8 patients had an iatrogenic rupture of the appendix; in 4 cases (2.5%) the procedure was converted to open technique or 2-trocar approach. In group B there were no conversions. The prevalence of postoperative complications was similar in both groups: in group A, there were 11 (7%) complications (3 intra-abdominal abscesses, all with perforated appendicitis, all resolved with prolonged i.v antibiotics; and 8 umbilical granulomas, due to foreign body reaction or incisional abscess); in group B, there were 2 (6.3%) postoperative complications (intra-abdominal abscesses).

CONCLUSION: Single incision and 2-trocar trans-umbilical laparoscopic-assisted appendectomy (TULAAP) are effective procedures with low complication rates. Despite our preference to perform a simpler TULAAP with the optical laparoscope, it may be safely done by the alternative single incision method or by 2-trocar technique with similar outcomes.

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**T008: LAPAROSCOPIC CONSERVATIVE TREATMENT OF OVARIAN TERATOMA** – Claudio Vella, MD<sup>1</sup>, Sara Costanzo, MD<sup>1</sup>, Camilla Viglio, MD<sup>1</sup>, Federica Marinoni, MD<sup>1</sup>, Claudia Filisetti, MD<sup>1</sup>, Monica Terenziani, MD<sup>2</sup>, Giovanna Riccipetoni, MD<sup>2</sup>; <sup>1</sup>Pediatric Surgery Department, “V Buzzi” Children’s Hospital ICP, Milan – Italy, <sup>2</sup>Pediatric Department, Fondazione IRCCS National Cancer Institute, Milan, Italy

**AIM OF THE STUDY:** Surgical treatment of ovarian teratoma (OT) should provide, when possible, the preservation of ovarian tissue. The possible existence of bilateral or metachronous lesions supports the laparoscopic sparing surgery

**MATERIALS & METHODS:** In the period between January 2011 and January 2014, 18 patients with a median age of 11 yrs, were subjected to OT excision. A Total of 22 OT were treated. In 4 patients out of 18 the OT were bilateral (2 metachronous and 2 synchronous). All the patients were studied with ultrasound, MRI and dosage of tumor markers ( $\alpha$ FPT,  $\beta$ HCG, CEA, Ca19.9, Ca125, LDH). A multidisciplinary oncological evaluation to define the surgical strategy was achieved in all cases. The patients attended a periodic follow-up including pelvic ultrasound.

**RESULTS:** 8/22 OT with negative markers and favourable imaging were enucleated with a laparoscopic technique. All the masses were excised without rupture using endobags. Histopathological examination confirmed in all cases the radicality of the procedure. A mean follow-up of 2 years showed no recurrence and allowed the ready identification of 2 cases of metachronous contralateral OT.

**CONCLUSION:** In cases of OT with favourable imaging and negative tumor markers a conservative surgery must be considered. In experienced hands, the laparoscopic technique may be feasible and safe. The follow-up should be extended, however, for the risk of local recurrence and metachronous OT. In our opinion the laparoscopic magnification and modern devices allows to perform a radical sparing surgery.

**T009: THE CLINICAL CHARACTERS AND THE LAPAROSCOPIC OPERATION OF THE CONGENITAL CHOLEDOCHAL CYST IN PERINATAL DIAGNOSED PATIENTS** – Kuiran Dong, MD, Weitao Tang, Dr, Xianming Xiao, MD, Shan Zheng, MD, Gong Chen, MD, Chun Shen, MD; Children’s Hospital of Fudan University

**OBJECT:** The primary purpose of this retrospective study is to investigate the clinical characters of the congenital choledochal cyst in perinatal diagnosed patients as well as the value of the laparoscopic surgery.

**METHODS:** A retrospective analysis were done to all the data of the initially diagnosed congenital choledochal cyst patients in our hospital between 2003 to 2013, among the perinatal, infancy and childhood patients.

**RESULTS:** There were 216 initially diagnosed cases, 12, 39 and 165 cases in perinatal, infancy and childhood groups respectively. The incidence of the abdominal pain and jaundice in perinatal group were all lower than those in unperinatal groups (8.3%, 72.1%,  $P=0.000$ ; 16.7%, 71.8%,  $P=0.001$ ). The incidence of abnormal about the inflammatory markers and the liver function in perinatal cases was lower than those in inperinatal cases (8.3%, 48.7%,  $P=0.012$ ; 50%, 92.3%,  $P=0.002$ ). In the 12 perinatal cases, there was no differences about the operation time and hospital stay between the open surgery and laparoscopic surgery ( $276\pm 71.62$ minutes,  $327.14\pm 70.17$ minutes  $P=0.164$ ;  $13.6\pm 2.19$ days,  $14.43\pm 4.65$  days,  $P=0.722$ ). There was no relevance between the size of cysts and the length of operation time ( $rs=-0.493$ ;  $P=0.123$ ). By drawing the ROC (receiver operating characteristic) curve according to the liver function, we found the cutpoint of the age of treatment for CC patients was 5 months.

**CONCLUSIONS:** The abdominal pain, jaundice, inflammatory markers and the liver function of CC patients in perinatal group is better than that in unperinatal groups. It seems the best time of the treatment is before 5 months of age for those perinatal diagnosed patients. We recommended The laparoscopic surgery to be the first choice of the managements for these patients.

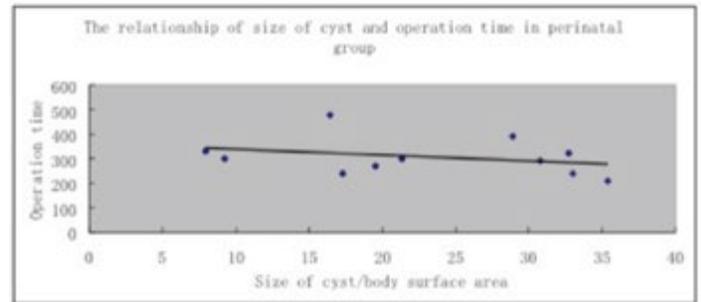


CHART 1: The relationship of size of cyst and laparoscopic operation time in perinatal group.

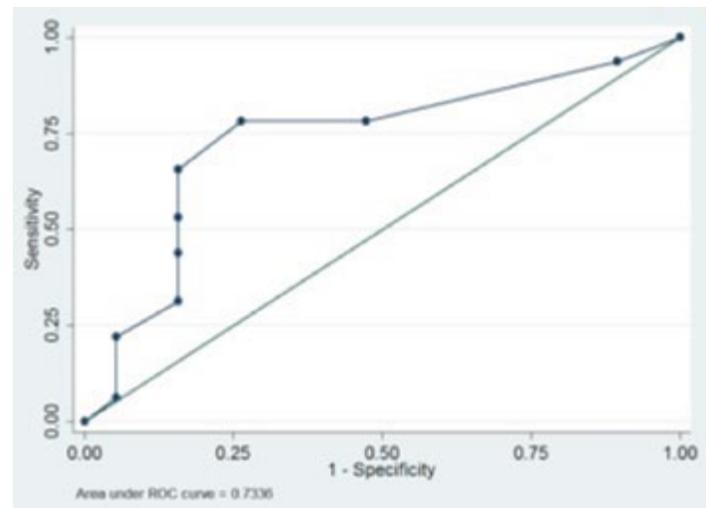


CHART 2: The ROC curve for the age of treatment in the perinatal group and infancy group according to liver function.

**T010: LAPAROSCOPIC DIAGNOSIS AND TREATMENT OF COMPLEX INTESTINAL MALROTATION IN CHILDREN: REPORT OF 14 CASES** – Bing Li<sup>1</sup>, Bing Chen<sup>1</sup>, Qing Wang<sup>1</sup>, Wei Guo<sup>2</sup>, Bo Wang<sup>3</sup>; <sup>1</sup>Department of Pediatric Surgery, Huai’an Women and Children’s Hospital, 104 Renmin Road South, Jiang, <sup>2</sup>Department of Clinical Medicine, Nanjing Medical University, 140 Hanzhong Road, Nanjing, Jiangsu, 21, <sup>3</sup>Department of General surgery, Huai’an First People’s Hospital, Nanjing Medical University, 6 Beiji

**PURPOSE:** Intestinal malrotation that causes duodenal obstruction in children is relatively common anomaly. Successful laparoscopic management of malrotation has been described in a number of case reports. This study aims to provide an overview of our preliminary experience to emphasize the advantages and feasibility of laparoscopic diagnosis and treatment for complex intestinal malrotation in 10 cases.

**METHODS:** Overall, 45 cases of intestinal malrotation occurred in infants underwent laparoscopic approach from June 2011 to August 2014 at our hospital. The clinical characteristics and laparoscopic methods of complex intestinal malrotation in 13 cases were reviewed retrospectively.

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**RESULTS:** Of the 45 cases, 13 cases of complex intestinal malrotation were found: intestinal malrotation complicated with annular pancreas, 2; complicated with left-sided perforated appendicitis, 1; complicated with chylous ascites, 2; complicated with Amyand's hernia, 1; associated with Waugh's syndrome, 2; 3 complicated duodenal atresia and stenosis, 3; complicated with intestinal atresia and meconium peritonitis, 2; complicated with prepyloric web, 1. The neonate with intestinal malrotation complicated duodenal atresia and multiple jejunal atresia and the case with prepyloric web were converted to open surgery, other cases were managed by laparoscopy. The cases were followed up for 2-23 months (mean 11.6 months): one case with chylous ascites complicated with incomplete intestinal obstruction two months later and other cases were doing well.

**CONCLUSIONS:** From a surgical perspective, complex intestinal malrotation can cause many critical problems and sometimes could be pitfall for surgeons. A laparoscopic multidisciplinary approach is necessary for managing this condition. Under some circumstances, it must be converted to open surgery.

**T011: SAFETY AND EFFICACY OF LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE FOR HYDROCELES IN CHILDREN COMPARING WITH TRADITIONAL OPEN REPAIR** – Yi Yang, PhD, Hui Chen, Ying Hou, Zhibin Niu; pediatric urology department, shengjing hospital of china medical university

**INTRODUCTION:** Laparoscopic procedures for hydroceles in children have become widespread in the past few decades. This study was to perform a retrospective analysis of our experience in laparoscopic percutaneous extraperitoneal closure (LPEC) of hydrocele in children and to assess the safety and efficacy of this technique compared with conventional open repair (OR).

**SUBJECTS & METHODS:** Medical records of 501 boys who underwent LPEC or OR for hydrocele at our department between August 2013 and September 2014. The patients were divided into two groups (Group LPEC and Group OR) according to the operation they underwent. The length of operation, complications, contralateral patent processus vaginalis, and incidence of metachronous contralateral hernia or hydrocele were compared between the two groups.

**RESULTS:** Among 501 boys in this study, 287 underwent LPEC, and 214 underwent OR. There was no significant difference in the length of operation between the two groups ( $P > 0.05$ ). The incidence of recurrence was also not significant between the two groups (two in the LPEC and one in the OR group,  $P > 0.05$ ). There were no other complications in both groups. There were 3 cases with abdominoscrotal hydroceles in LPEC group, all of them were treated successfully by laparoscopic technique. Contralateral patent processus vaginalis was found in 55 cases in LPEC group. The incidence of metachronous contralateral hernias in the LPEC group was lower than that in the OR group (none in LPEC; 5 cases in OR,  $P < 0.05$ ).

**CONCLUSIONS:** LPEC is safe and effective for hydroceles in children and could reduce the incidence of metachronous contralateral hydrocele or hernias.

**T012: THE USE OF A REHUSABLE NEEDLESCOPIC FASCIAL CLOSURE DEVICE AS AN OPERATIVE INSTRUMENT ANOTHER TRICK FOR THE HYBRID PROCEDURES ARMAMENTARIUM** – Maria M Bailez, MD, Lucila Alvarez, MD; Garrahan Hospital

Laparoendoscopic single-site surgery (LESS) has emerged as an alternative approach to conventional laparoscopic surgery. Pure LESS although feasible, remains a technical challenge for the surgeon,

preventing its widespread application. Hybrid techniques emerged as an alternative not to sacrifice triangulation but still avoid scars.

**AIM:** Describe the use of a reusable needlescopic fascial closure device as a left hand instrument avoiding the use of a standard trocar or instrument.

**METHODS:** We used a Berci needle (Karl Storz, Tuttlingen, Germany) which is an instrument created to facilitate fascial closure of port entries as a left hand operative instrument. It is a needle with grasper capabilities operated through a handle. In procedures requiring specimen removal we combined it with a 2.5 mm ports in the umbilicus following the SIMPLE (single incision, multiple ports laparoendoscopic procedures) principles. Procedures included 10 cholecystectomies, adnexal pathology (5 complicated ovarian cysts diagnosed in perinatal period, 4 fallopian tube cysts in adolescents and 4 bilateral gonadectomies in patients with DSD); 2 Georgeson pullthrough procedures for Hirschsprung disease and 3 orchidopexies. Patients age ranged from 7 days to 16 years and weight from 4 to 47 kg. We used a 4 or 5 mm 30-degree 18 to 29 cm long lens and 13 or 5 mm standard laparoscopic ports for the right hand. Different models and lengths were combined to avoid collision when using the SIMPLE approach. The operating scope was placed through a transumbilical incision and the right hand port or an isolated instruments were placed around the umbilicus using the same skin incision. Different directions were used depending on the affected side. The Berci percutaneous needle was used as the left operative instrument. A 3 mm bipolar forceps or a 5 mm bipolar sealer were used depending on the age of the patients. The 5-mm fasciotomies were joined for specimen extraction through the umbilical incision.

**RESULTS:** All procedures were completed successfully without need for conversion to standard laparoscopy or open surgery. There were no operative or postoperative complications. The median operative time was 60 min (range 45-100). The median postoperative hospital stay was 1 day (range 1-3 days).

**DISCUSSION:** The use of a reusable needlescopic fascial closure device as an operative instrument provided traditional anatomical exposure and allowed application of conventional laparoscopic principles

**T013: SINGLE-INCISION SINGLE-INSTRUMENT (SISI) ADNEXAL SURGERY IN PEDIATRIC PATIENTS** – Tara Loux, MD, Gavin A Falk, MD, Michaela Gaffley, Stephanie Ortega, Carmen Ramos, MD, Leopoldo Malevzzi, MD, Colin G Knight, MD, Cathy Burnweit, MD; Miami Children's Hospital

**BACKGROUND:** Pediatric surgeons often practice pediatric and adolescent gynecology. The single-incision single-instrument (SISI) technique used extensively for appendectomy is often applicable in gynecologic surgery.

**METHODS:** Following IRB approval, we retrospectively analyzed the records of patients undergoing pelvic surgery in our institution from 2008-2013. Data collected included demographics, surgical indication, initial and final surgical approaches, pathology, operative times, and complications. Patients were excluded for misclassified operation, if treatment of adnexal pathology was not the primary indication, or if insufficient data were available for analysis. SISI surgery was performed through a 10mm transumbilical Hassan trocar using an operating endoscope. The affected adnexa was mobilized to the umbilicus and extracorporealized for removal. For large simple cysts, decompression was often performed prior to exteriorization. Statistics were calculated using student t-test with p values  $< 0.05$  considered significant.

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**RESULTS:** Over 5 years, we performed 271 ovarian or para-ovarian surgeries. Five patients were excluded for non-ovarian primary surgery (e.g., bowel or tumor resection) and 22 for incomplete data, leaving 244 adnexal procedures for review. In 130 (53%), the initial approach was SISI; 67 operations (52%, equaling 27% of the entire cohort) were completed using SISI. Successful SISI surgery was performed in patients from 1 day of age to 19.9 years, with weights ranging from 4.7 to 117 kg.

The rationale for converting to standard two- or three-port laparoscopy (n=47) included a desire to pexy the contralateral gonad in cases of torsion (n=16), suspicion of tumor (n=6), inability to mobilize the adnexa to the umbilicus (n=6), large mass size (n=3), need for an additional procedure requiring three ports (n=4), bleeding (n=2), adhesions (n=1) or need for better visualization (n=2). For 7 patients, no reason was documented. When SISI surgery was converted directly to Pfannenstiel incision (n=16), the principal reason was a solid mass (n=13), although 2 were due to a large mass and 1 for adhesions.

Successful SISI surgery was significantly shorter than standard laparoscopy (45 minutes vs. 61 minutes,  $p < 0.0005$ ). Pathology was overwhelmingly benign, with only 5.4% representing any form of malignant lesion; none of these cases was completed with the SISI technique. Peritoneal or cyst fluid was sent in 28% of cases and showed atypical cells only in one malignant tumor. Cytology presented benign mesothelial cells or leukocytes in the remainder. There were no major complications in the series. The overall cohort had a 9% minor complication rate (e.g., umbilical drainage or wound seroma); there was no significant difference comparing SISI with SISI conversion or open operations.

**CONCLUSIONS:** SISI adnexal surgery is safe, quick, inexpensive and effective in appropriately-selected pediatric patients of any age or weight. In this series, the largest report using SISI for pediatric ovarian conditions to date, the technique was successful in over half the patients in whom it was attempted. It carries the advantage of an essentially scarless approach. If SISI is unsuccessful or the pelvic inspection makes it inadvisable, the majority of cases can be completed with standard multiport laparoscopy.

**T014: THORACOSCOPIC MANAGEMENT OF PATENT DUCTUS ARTERIOSUS AND VASCULAR RINGS IN INFANTS AND CHILDREN** – [Bethany J Slater, MD](#), Steven S Rothenberg, MD; Rocky Mountain Hospital for Children

Both Patent Ductus Arteriosus (PDA) and vascular rings often require surgical treatment to prevent complications and alleviate symptoms respectively. Management in infants and children has traditionally required an open thoracotomy. However, given the known advantages of the thoracoscopic approach, increased technical experience, and improved instrumentation, the minimally invasive technique to repair these thoracic vascular anomalies has grown in popularity. We report our experience with thoracoscopic patent ductus arteriosus ligation and vascular ring division at a single institution.

From October 1993 to March 2014, 78 patients underwent thoracoscopic PDA ligation and 13 patients presented with vascular rings. Ages ranged from two days to 17 years (mean of 18 months) and weights ranged from 2 to 60 kg (mean of 8.5kg) for the thoracoscopic PDA group and ages ranged from 6 weeks to 13 years and weights ranged from 3.6 to 38 kg for the thoracoscopic vascular ring division group. In the thoracoscopic PDA group, the mean operative time was 36 minutes. Complications consisted of one mortality not related to the procedure, one conversion to open for a torn ductus, one recurrence requiring re-operative thoracoscopic repair, and one residual PDA requiring cardiac catheterization with occlusion. In the

vascular ring group, one procedure was unable to be completed thoracoscopically and was converted to open. In two cases, thoracoscopic exploration revealed no significant compression from the vascular ring and dissection was stopped.

Thoracoscopic closure of PDA and division of vascular rings are safe and effective techniques which minimizes physiologic and cosmetic adverse effects.

**T015: RECURRENCE RATES IN CONGENITAL DIAPHRAGMATIC HERNIA REPAIR: RE-EVALUATING THE ROLE OF THE BIOPROSTHETIC PATCH** – [Avraham Schlager, MD](#), Ragavan Siddharthan, BS, Sarah J Hill, MD, Kristina L Falkenstrom, BA, Catherine McDermott, BA, Amina M Bhatia, MD, Mark L Wulkan, MD, Matthew S Clifton, MD; Emory University School of Medicine, Division of Pediatric Surgery, Children's Healthcare of Atlanta

**BACKGROUND:** Despite advances in our understanding and management of congenital diaphragmatic hernia (CDH), recurrence remains the Achilles heel of the procedure. Reported rates of recurrence range from 10% for primary repairs to 50% for patch repairs. In an effort to reduce CDH recurrences, we have been using porcine small intestinal submucosa (SIS) (Cook Medical, Bloomington, Indiana, USA) as an underlay to reinforce both primary and Polytetrafluoroethylene (PTFE) (Gore Medical, Flagstaff, Arizona, USA) patch repairs. The aim of our study is to compare our results of CDH repair with and without SIS underlay.

**METHODS:** We reviewed all patients who underwent CDH repair at our institution between 2001 and 2012. Patients were grouped into 5 categories based on repair technique: 1 – Primary repair, 2 – Primary repair with SIS underlay, 3 – PTFE patch, 4 – SIS patch, and 5 – PTFE patch with SIS underlay. Our primary outcome was recurrent hernia within 2 years of initial repair. This was evaluated based on return to our system as there are no other major pediatric centers in the region. As 87% of recurrences occurred within 2 years of initial repair, patients repaired after October 1 2012 or who had expired prior to 2 years post-repair were excluded from the study. Nominal variables were compared using Chi square analysis.

**RESULTS:** We identified 184 patients who underwent CDH repair between 2001 and 2012. 22 patients expired within 2 years of the repair and were excluded from the study. Of the remaining 162 patients, 63 patients underwent primary repair with 8 recurrences (12.3%). 31 patients underwent primary repair with the addition of an SIS underlay, of which 1 recurred (3.2%) ( $p = 0.26$ ). 1 of 5 patients recurred after PTFE only patch repair (20%); 13 of 18 patients recurred with SIS patch alone (76.5%,  $p = 0.56$ ). 45 patients underwent combination patch repair with PTFE and SIS underlay with 9 documented recurrences (20%). The recurrence rate with combination PTFE/SIS patch repair was significantly lower than the SIS patch alone ( $p = 0.002$ ).

**CONCLUSION:** The use of SIS patch alone results in an increased rate of diaphragmatic hernia recurrence compared to standard patch repair using PTFE alone. SIS underlays used to reinforce primary and patch repairs show a trend toward decreased rates of hernia recurrence though a larger sample size will be required to demonstrate a statistically significant benefit.

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## **T016: COST AND TIME ANALYSIS OF SINGLE PORT EXTRA-CORPOREAL APPENDECTOMY FOR ACUTE APPENDICITIS IN OVERWEIGHT AND OBESE PATIENTS** – Arathi Mohan<sup>1</sup>, Alfredo D Guerron<sup>2</sup>, Sarah Worley<sup>2</sup>, Federico G Seifarth<sup>2</sup>; <sup>1</sup>Case Western Reserve University, <sup>2</sup>Cleveland Clinic Foundation

**PURPOSE:** Single port, extra-corporeal laparoscopically assisted appendectomy has been shown to be less costly in pediatric patients compared to conventional triple port laparoscopic appendectomy. This study aims to determine whether this single port technique results in shorter operative times, shorter lengths of stay, and lower hospitalization costs in overweight and obese children needing surgery for acute appendicitis.

**METHODS:** Following IRB approval, a single center retrospective chart review was performed to identify patients undergoing laparoscopic appendectomy from 01/2010-12/2012. Patients with a final diagnosis of acute appendicitis, available BMI data, operative time (OT), length of stay (LOS), and available cost data were included. Exclusion criteria: appendectomy not exclusive procedure, acute appendicitis not sole diagnosis, perforated or gangrenous appendicitis. The final cohort consisted of 299 patients.

2 different operative techniques were performed: single port, extra-corporeal laparoscopically assisted appendectomy (SP) and conventional triple port laparoscopic appendectomy with intra-corporeal appendiceal amputation and retrieval in endocatch bag (TP). Patients were divided into 6 groups based on operative technique and BMI. "Normal weight" was defined as BMI ranging from 5th-84th percentile. «Overweight» was defined as BMI between 85th-94th percentile and «obese» as BMI  $\geq$  95th percentile.

OT (time of incision to time of closure), LOS (PACU discharge time to hospital discharge time), and total cost of hospitalization were compared.

**RESULTS:** Comparison was performed among single port laparoscopic appendectomies between normal weight, overweight, and obese groups. Mean cost: 6593.3 vs. 5833.7 vs. 7653.4 (p=0.080). Mean LOS: 16.9 vs. 20.3 vs. 14.8 9 (p=0.55). Mean OT: 46.5 vs. 54.1 vs. 47.0 (p=0.71).

**CONCLUSIONS:** Overall hospitalization cost in patients operated by the SP technique is lower in all weight groups but did not reach significance in obese patients. SP operative times were significantly shorter in all weight groups. LOS reduction reached significance in the normal weight group. In addition, weight as an independent factor did not result in a significant difference in cost among the normal, overweight, and obese patients operated by SP. SP should be considered for all pediatric patients with acute appendicitis regardless of weight. Our study was limited by a small number of obese and overweight patients (n=43, n=43).

	Group 1	Group 2	p-value	Group 3	Group 4	p-value	Group 5	Group 6	p-value
n	98	115		12	31		12	31	
Operative Technique	SP	TP		SP	TP		SP	TP	
Weight	Normal	Normal		Overweight	Overweight		Obese	Obese	
Age (years)	12.84 Mean (Range) (3.70-19.86)	12.03 Mean (Range) (3.55-18.58)		13.86 Mean (Range) (4.99-17.72)	14.20 Mean (Range) (7.05-20.69)		13.36 Mean (Range) (8.36-17.78)	12.84 Mean (Range) (7.80-17.72)	
BMI (kg/m <sup>2</sup> )	18.67 Mean (Range) (12.41-23.79)	18.46 Mean (Range) (13.18-23.61)		24.35 Mean (Range) (16.74-27.88)	23.73 Mean (Range) (18.06-28.60)		28.34 Mean (Range) (21.93-33.43)	30.28 Mean (Range) (21.02-46.80)	
Cost (USD)	6593.4 Mean (Range) (3000.0-11617.0)	8355.3 Mean (Range) (5270.0-19983.0)	<0.001	5833.7 Mean (Range) (4214.0-9871.0)	8296.9 Mean (Range) (4945.0-11131.0)	<0.001	7653.4 Mean (Range) (4261.0-15711.0)	9031.2 Mean (Range) (4720.0-19826.0)	0.16
OT (minutes)	46.5 Mean (Range) (22.0-98.0)	64.2 Mean (Range) (27.0-107.0)	<0.001	47.0 Mean (Range) (29.0-94.0)	71.4 Mean (Range) (43.0-116.0)	<0.001	54.1 Mean (Range) (28.0-85.0)	71.1 Mean (Range) (43.0-126.0)	0.05
LOS (hours)	16.9 Mean (Range) (1.0-92.0)	20.5 Mean (Range) (1.0-57.0)	<0.001	14.8 Mean (Range) (1.0-24.0)	19.5 Mean (Range) (9.0-39.0)	0.23	20.3 Mean (Range) (4.0-43.0)	19.6 Mean (Range) (1.0-66.0)	0.87

## **T017: LAPAROSCOPIC TOUPET FUNDOPLICATION FOR GASTROESOPHAGEAL REFLUX A SERIES OF 131 PEDIATRIC CASES AT A SINGLE CHILDREN'S HOSPITAL** – Go Miyano, MD, Masaya Yamoto, MD, Mariko Koyama, MD, Hiromu Miyake, MD, Masakatsu Kaneshiro, MD, Hideaki Nakajima, MD, Keiichi Morita, MD, Hiroshi Nouse, MD, Kouji Fukumoto, MD, Naoto Urushihara, MD; Department of Pediatric Surgery, Shizuoka Children's Hospital

**PURPOSE:** To present the medium to long-term outcome of the largest pediatric series of laparoscopic Toupet funduplications (LTF) performed at a single children's hospital.

**PATIENTS & METHODS:** Subjects were 131 neurologically impaired children (81 males & 50 females; all less than 18 years old) who underwent primary LTF between 2003 and 2013. Our LTF, using a standard 4 trocar technique, involves full dissection of the crura of the diaphragm to allow the intraabdominal esophagus to be mobilized at least 3-4cm, which we believe is the crucial step in our procedure. During the entire study period, there was only one technical change made involving retraction of the left lobe of the liver; in early cases, a snake retractor inserted below the xiphoid process was used but in later cases, and now, a Nathanson static liver retractor is used. Two to 3 sutures are used for distal cruroplasty, with 2 anchoring sutures between the anterior wall of the esophagus and each crus of the diaphragm to create a 270 degree wrap that is fixated at 3 places on both sides using 3-0 Ethibond sutures. A gastrostomy tube was inserted in each case of LTF we performed because all our cases were neurologically impaired. Postoperatively, upper gastrointestinal tract imaging and pH-monitoring were performed only if patients were symptomatic to check for recurrence.

**RESULTS:** Mean age at LTF was 6.7 years (range: 3 months to 18 years) and mean weight at LTF was 13.5kg (range: 1.8-48.2kg). Preoperative mean fraction time for pH<4 was 14.6%. Mean duration of follow-up was 5.0 years (range: 1.1-12.1 years). Only 1 early case in our series (0.8%) required conversion to open surgery. Intraoperative complications were injuries to the esophagus (n=4; 3.0%), including one case of full-thickness perforation (n=1; 0.8%). Postoperative complications included pyloric stenosis (n=4; 3.3%; open pyloromyotomy was required in 1 (0.8%) case), dysphagia (n=1; 0.7%), incisional hernia (n=1; 0.7%), hemorrhage requiring transfusion (n=1; 0.7%), and gastrostomy site infection (n=8; 6.1%). Mean fraction time for pH<4 in symptomatic postoperative patients (n=8) was 0.6%; recurrence of gastroesophageal reflux was confirmed in 4 cases (3.0%), at 11, 13, 48, and 61 months respectively. These 4 patients were treated by laparoscopic re-Do Toupet's fundoplication without further recurrence; etiology was sliding hiatal hernia in 3 cases and wrap dehiscence in 1 case. Mean operative time decreased significantly with experience from 180.8 minutes for the first quarter of subjects to 150.6 for the second quarter of subjects, 128.6 for the third quarter of subjects, and 109.1 minutes for the last quarter of subjects.

**CONCLUSIONS:** Our LTF should be considering a viable alternative to Nissen fundoplication especially in neurologically impaired children because of reliable outcome and low recurrence.

## **T018: A METHOD IN LAPAROSCOPIC INGUINAL HERNIA REPAIR TO AVOID THE DAMAGE OF THE VAS DEFERENS AND TESTICULAR VESSELS** – Kong Feiteng, Xu Chang; Department of Pediatric Surgery West China Hospital of Sichuan University

**BACKGROUND/PURPOSE:** Laparoscopic techniques have been applied widely in the management of pediatric inguinal hernia. However, there are some reports about the postoperative complications occasional. The damage of the important structure

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such as the vas deferens and testicular vessels and the testicular atrophy were mentioned in the literature constantly. We introduced a new method to avoid the injury. The retrospective data was analyzed to evaluate the safety and feasibility of this method.

**PATIENTS AND METHODS:** There were 1398 boys who received the laparoscopic inguinal hernia repair (LIHR) in our hospital from January 2009 to January 2013. We performed the process to avoid the damage. The vas deferens and peritoneum were lifted up through a homemade hooked needle, where the needle was located in the vicinity of the vas deferens. The grasping forceps grasped the peritoneum carefully behind the vas deferens, and the peritoneum formed folds due to the stretch. The forceps maintained the tension and stretched the space between the vas deferens and peritoneum, separated the space through the cusp of the needle to avoid the injury of vas deferens while the needle advanced along the preperitoneal space, and crossed the vas deferens clingy the peritoneum. We used same procedure to cross the testicular vessels along the preperitoneal space.

**RESULTS:** There were 1263 boys in our analysis, in which, 836 (66.2%) had unilateral repair and 427 (33.8%) bilaterally. The average operative time was 11.2 min for unilateral hernia and 17.4 min for bilateral hernia. Follow-up ranged from 7 month to 5 years (median 37 months). At follow-up, there were 6 (0.5%) patients with recurrence. There were no incidences of postoperative hydroceles, testicular atrophy or testicular malposition in the data. The cosmetic results were excellent.

**CONCLUSION:** The preliminary outcome was satisfied. This technique of LIHR can be a routine procedure due to its feasibility, safety and effectivity. However, prospective efficacy still needs confirmed with long-term follow up.

### **T019: CLINICAL ANALYSIS OF 112 CASES OF MODIFIED LAPAROSCOPIC SPLENECTOMY IN THE TREATMENT OF CHILDREN WITH HEMATOLOGICAL DISORDERS** – Xiaogeng Deng, PhD, Yaohao Wu, Lexiang Zeng, Jie Zhang, Jiajia Zhou, Ronglin Qiu; Department of Pediatric Surgery, The Memorial Hospital of Sun Yat-Sen University

**PURPOSE:** To Summarize the experiences, characteristics and outcomes of modified laparoscopic splenectomy (LS) in the treatment of children with hematological disorders.

**METHODS:** This clinical analysis involved a retrospective series of 112 pediatric patients with haematological disorders who underwent LS by the same surgeon from March 2005 to June 2014. The hematological disorders including  $\beta$ -thalassaemia (n=35),  $\alpha$ -thalassaemia (n=25), hereditary spherocytosis (n=18), idiopathic thrombocytopenic purpura (ITP, n=32) and Splenic lymphoma (n=2). Among them, there were 44 cases with massive splenomegaly. The modified LS technique included as following: Using only three trocars to operate and initial ligation of the splenic artery just above the tail of the pancreas. After the spleen had been completely devascularized and detached, it was removed through a bag for normal or mildly enlarged spleen, while for massive splenomegaly through an accessory incision of 2–3 cm at 12 mm trocar port site by consecutively cutting into piecemeal. The operation time, intraoperative blood loss, postoperative complications, the hemoglobin level and platelet count were collected and analyzed statistically.

**RESULTS:** 103 patients were successfully underwent laparoscopic splenectomy, however, 9 cases were converted to laparotomy. The operation time was ranged 75–195min, average 118min; the intraoperation blood loss was ranged 2–600ml, average 51ml. Patients recovered well after operation. The hemoglobin level or platelet count of post-operation was significantly improved

compared with that of pre-operation. The preoperative hemoglobin level of  $\beta$ -thalassaemia patients was  $71\pm 16\text{g/L}$  and reached to  $91\pm 9\text{g/L}$  postoperatively ( $P<0.05$ ); The preoperative hemoglobin level of  $\alpha$ -thalassaemia patients was  $74\pm 15\text{g/L}$  and reached to  $89\pm 9\text{g/L}$  postoperatively ( $P<0.05$ ); The preoperative hemoglobin level of hereditary spherocytosis was  $86\pm 14\text{g/L}$  and reached to  $107\pm 14\text{g/L}$  postoperatively ( $P<0.05$ ); The preoperative platelet count of ITP patients was  $44\pm 67\times 10^9/\text{L}$  and reached to  $441\pm 230\times 10^9/\text{L}$  postoperatively ( $P<0.05$ ).

**CONCLUSIONS:** Our modified laparoscopic splenectomy in the treatment of children with hematological disorders is less invasion, safe and feasible. Particularly, it makes laparoscopic splenectomy for some massive splenomegaly possible which was thought to be impossible in the past.

**KEY WORDS:** laparoscopic; splenectomy; hematological disorders; children

### **T020: SINGLE PORT /REDUCED PORT LAPAROSCOPIC PLACEMENT OF GASTRIC PACEMAKER FOR GASTROPARESIS IN CHILDREN** – Ashwin Pimpalwar, MD, Bruno Chumpitazi, MD; Baylor college of medicine and Texas Children's hospital

**BACKGROUND:** Gastroparesis is a stomach disorder in which there a full thickness loss of cells of Cajal (neuroconducting cells of the stomach) which leads to a decrease in gastric emptying. When medical management fails to control symptoms placement of a gastric pacemaker to electrically stimulate the stomach is one of the options.

**AIM:** To report our single /reduced port technique of placement of Gastric pacemaker in children.

**MATERIAL & METHODS:** We retrospectively reviewed the charts of 4 patients who underwent the above procedure at our institution over the last 2 years. M: F was 1:3. Oldest patient was 21 years and youngest was 11 years.

**TECHNIQUE:** Under anesthesia the child was placed in a supine position and an incision was made in the scar of the umbilicus. Access was obtained into the peritoneal cavity using the modified Hasson's technique and a 5 mm step trocar was introduced. Pneumoperitoneum was achieved and a 5mm 30 deg telescope was introduced. Using a marker pen incision is then planned for the placement of the gastric pacemaker. This incision is deepened and subcutaneous pocket is created. At the medial most point of the incision a 5mm step trocar was introduced. Using a grasper through this incision the point for placement of the electrodes is chosen (10 cm proximal to the pylorus). The stomach is then grasped at this point and gently pulled out of the port site. The electrodes are then placed on the stomach and the stomach is returned back to the abdominal cavity. This whole process is continuously monitored using a gastroscope in the stomach. The purpose is to make sure that the electrode stays submucosal and does not parse the full thickness of the stomach. The electrodes are then connected to the pacemaker and the pacemaker is fixed in the pocket with prolene sutures. Two point fixation is used to secure the pacemaker. The pocket is then closed with vicryl sutures. The peritoneal cavity is then desufflated and the single umbilical port is withdrawn. Port site is closed with vicryl suture and skin is closed with dermabond glue.

**RESULTS:** All patients did well postoperatively. None of them had any early or delayed postoperative complications. 2 patients had complete response and became asymptomatic and the other 2 had partial response. 2 patients needed addition of Nissen's fundoplication for persistent vomiting. Of the 4 patients one patient remained asymptomatic after switching off the stimulator for 3 months and had his stimulator removed. Presently of the 3 remaining

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2 patients have complete response and are doing well and 1 patient has partial response.

**CONCLUSION:** Single port /reduced port laparoscopic placement of Gastric neurostimulator /pacemaker is a safe and feasible option for children with gastroparesis. It is possible to safely perform this procedure with a single 5mm incision through the umbilicus vs the 3 incisions described in literature.

**ET001: MAGNAMOSIS V: DESIGN AND DEVELOPMENT OF TOOLS AND TECHNIQUES FOR SAFELY DEPLOYING THE MAGNETIC ANASTOMOTIC RINGS** – [Dillon A Kwiat](#)<sup>1</sup>, Anupama Arun, PhD<sup>1</sup>, Richard Fechter<sup>1</sup>, Lauren Ritz, MD<sup>1</sup>, Elizabeth A Gress<sup>1</sup>, Shuvo Roy, PhD<sup>1</sup>, Shinjiro Hirose, MD<sup>2</sup>, Corey W Iqbal, MD<sup>3</sup>, Michael R Harrison, MD<sup>1</sup>; <sup>1</sup>University of California, San Francisco, <sup>2</sup>University of California, Davis, <sup>3</sup>University of Missouri, Kansas City

**PURPOSE:** Magnamosis forms a compression anastomosis using self-orienting magnetic rings with engineered geometry that insures reliable healing prior to passage of the coupled rings. The rings can be deployed using open, laparoscopic, endoscopic, radiographic, or hybrid techniques. The purpose of this study is to report further development and testing of tools and strategies for safe deployment.

**METHODS:** In our previous large animal studies in porcine and primate models, we identified two potential problems. First, the two magnetic rings must orient close enough together to assure pressure necrosis without any unrecognized, intervening structures such as tissue or staples that could cause incomplete healing and subsequent anastomotic leak. Therefore, the surgeon must be able to measure the distance and/or force between the magnets to ensure adequate, circumferential engagement of the magnetic rings before any opening is made in the bowel. Second, to avoid temporary obstruction while the anastomosis is forming, the surgeon must be able to open the bowel walls trapped in the center of the rings to allow immediate passage of gas and liquid.

**RESULTS:** Measuring the distance between rings by intra-operative fluoroscopy or ultrasound proved inaccurate. Using changes in tissue impedance or tissue oxygen saturation also proved unsatisfactory. Sensing changes in magnetic strength with Hall sensors and sensing change in inductance in coils did prove feasible and were incorporated in delivery device prototypes. For creating the perforation, electrocautery worked but risked damage to the bowel wall opposite the rings by “past pointing”. Perforation with a “T” Fastener deployed through a separate channel in the delivery device allows the surgeon to leave the resorbable suture as a tether to recover the coupled magnets or as a “seton” string to facilitate passage of gas / fluid until the anastomosis forms. A delivery device that solves these two problems also prevents the “slip” problem by not allowing perforation until the correct position and force applied to the tissue is measured and transmitted to the operating surgeon which will prevent early anastomotic failure.

**CONCLUSION:** We have designed, developed, and tested a delivery tool that incorporates measurement of the distance and force between magnet rings and signals the surgeon when the force is adequate to ensure a safe anastomosis. This modification allows the surgeon to safely perforate the trapped bowel to allow immediate patency and ensure there are no anastomotic failures.

## Poster Abstracts

### **P001: IS PNEUMOPERITONEUM FOR EXTREMELY LOW BIRTH WEIGHT INFANTS WITH PERITONITIS SAFE? A PRELIMINARY STUDY USING THE CHICK EMBRYO** – Akira Hatanaka, MD,

Tetsuya Ishimaru, PhD, MD, Shinya Takazawa, MD, Hiroko Komura, Tadashi Iwanaka, PhD, MD; Department of Pediatric Surgery, Graduate School of Medicine, The University of Tokyo

Safety of pneumoperitoneum in peritonitis in extremely low birth weight (ELBW) infants is unclear. A proper animal model of the ELBW infant that enables surgical interventions is not available because preterm mammals are too difficult to maintain alive for the desired duration. However, the chick embryo is easy to access for surgical intervention and to maintain even before hatching. The embryos at the 18th day of incubation that we used are equivalent to human fetuses at 28 gestational weeks, which is the typical gestation period of ELBW infants. This study aimed to observe the impact of pneumoperitoneum on bacteremia and survival in the chick embryo ELBW model.

**EXPERIMENT 1:** 216 chick embryos were divided into 4 groups. For 3 groups, peritonitis was induced by injection of avian pathogenic *E. coli* ( $1.0 \times 10^6$  CFU/ml, 0.1 ml). After 90 min, 1 of the 3 groups was injected with 8 ml of CO<sub>2</sub> (A1: intervention group), another was punctured by an injection needle (B1: sham group), and the third group had no further intervention (C1: infected control group). The 4th group was injected with 0.1 ml of LB medium without further intervention (D1: null control). 120 min after *E. coli* or LB medium injection,  $1.0 \times 10^2$  µl of blood was taken and spread over MacConkey agar plates. The number of colonies was counted 24 h later.

**EXPERIMENT 2:** 52 chick embryos were divided into 3 groups in the same fashion as in experiment 1 (A2: intervention; B2: sham; C2: infected control). The injection of gas or the puncture was performed 330 min after *E. coli* injection and blood samples were taken 360 min after *E. coli* injection.

**EXPERIMENT 3:** 72 embryos were divided into 5 groups. Two of the 5 groups were injected with 0.1 ml of LB medium. After 6 h, 1 of the 2 groups had no further intervention (D3-1: null control). The second group was injected with 8 ml CO<sub>2</sub> (D3-2: pneumoperitoneum control). The remaining 3 groups were injected with *E. coli* ( $1.0 \times 10^6$  CFU/ml, 0.1 ml). After 6 h, 1 of those 3 groups was injected with 8 ml CO<sub>2</sub> (A3), 1 was only punctured (B3), and the 3rd group had no further intervention (C3). Survival in each group was observed in 12 h.

#### RESULTS

- EXPERIMENT 1: The number of colonies was significantly higher in the A1, B1, and C1 groups than in the D1 group. However, there was no significant difference between any 2 groups among A1, B1, and C1.
- EXPERIMENT 2: There was no significant difference in the number of colonies between any 2 groups among A2, B2, and C2.
- EXPERIMENT 3: There was no significant difference between D3-1 and D3-2, but there was a significant difference between C3 and both A3 and B3.

**CONCLUSION:** We infer that pneumoperitoneum in ELBW infants with peritonitis might be safe since induction of pneumoperitoneum in the chick embryo peritonitis model had no significant impact on bacteremia and survival.

### **P002: UNINTENDED TEMPERATURE RISE AT THE DISPERSIVE ELECTRODE: PATTERN OF DISTRIBUTION AND MODIFIABLE FACTORS** – Nicole T Townsend, MD<sup>1</sup>,

Nicole Nadlonek, MD<sup>1</sup>, Edward L Jones, MD, MPH<sup>2</sup>, Thomas N Robinson, MD, MS<sup>1</sup>; <sup>1</sup>University of Colorado, <sup>2</sup>The Ohio State University

**BACKGROUND:** Unintended burns occur at the dispersive electrode (e.g., “grounding pad”). Dispersive electrode burns create substantial

morbidity. The PURPOSE of this study was to determine if, and to what extent, the skin underneath the dispersive electrode increases in temperature following monopolar instrument activation, the pattern of this temperature increase, and to describe practical steps to minimize the magnitude of increased temperature underneath the dispersive electrode.

**METHODS:** A neonatal dispersive electrode was placed ex vivo on porcine skin embedded in TX 151 (an agar-based material which simulates human electrical constants). The monopolar “bovie” was activated on adjacent skin. The primary outcome variable was increased temperature from baseline quantified by a thermal camera which was immediately measured following the activation of the active electrode. Clinically modifiable variables tested included: duration of activation, generator power settings, orientation of the dispersive electrode, and dispersive electrode size.

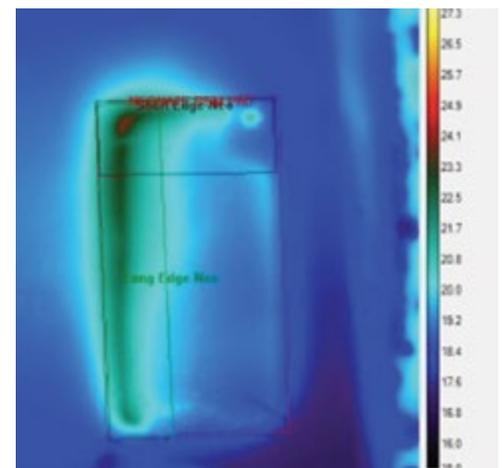
**RESULTS:** Temperature is created under the dispersive electrode unevenly. The greatest temperature change is located at the edge of the dispersive electrode closest to the active electrode (“leading edge”) compared to the center ( $p < 0.001$ ), perpendicular (“side”) edges ( $p = 0.039$ ), or edge farthest from the active electrode (“trailing edge”), ( $p < 0.001$ ) (see Picture 1 and Table 1). Temperature change under the “leading edge” was minimized by: (1) orienting the long edge of the rectangle toward the active electrode versus the short edge ( $p = 0.024$ ); (2) orienting the long edge of the rectangle toward the active electrode versus a corner of the dispersive electrode ( $p = 0.002$ ); (3) shortening dwell time of active electrode activation (30 seconds v. 60 seconds;  $p = 0.033$ ) (4) using a larger sized dispersive electrode (adult v. neonatal;  $p = 0.002$ ).

#### SUMMARY OF RESULTS

Heat Distribution		
Leading edge v. Center	$2.7 \pm 0.8^\circ\text{C}$ v. $0.4 \pm 0.2^\circ\text{C}$	$p < 0.001$
Leading v. Side edge	$2.7 \pm 0.8^\circ\text{C}$ v. $1.4 \pm 0.6^\circ\text{C}$	$p = 0.039$
Leading v. Trailing edge	$2.7 \pm 0.8^\circ\text{C}$ v. $0.8 \pm 0.2^\circ\text{C}$	$p < 0.001$
Mitigation of Heat		
Orientation of Long v. Short edge	$2.7 \pm 0.8^\circ\text{C}$ v. $4.9 \pm 1.6^\circ\text{C}$	$p = 0.024$
Orientation of Long edge v. Corner of pad	$2.7 \pm 0.8^\circ\text{C}$ v. $6.8 \pm 1.7^\circ\text{C}$	$p = 0.002$
30s v. 60s duration of activation	$2.7 \pm 0.8^\circ\text{C}$ v. $3.9 \pm 0.6^\circ\text{C}$	$p = 0.033$
Adult v. neonatal size	$0.9 \pm 0.3^\circ\text{C}$ v. $2.7 \pm 0.8^\circ\text{C}$	$p = 0.002$

**CONCLUSIONS:** The dispersive electrode increases temperature of underlying skin following activation of the monopolar “bovie”. This temperature change is heterogenous; greatest at the “leading edge” (edge closest to active electrode activation) of the dispersive electrode.

To minimize unintentional temperature rise, the surgeon can orient the dispersive electrode so the rectangle’s long edge is towards the active electrode, use lowest effective power setting and shorten the active electrode dwell time.



## Poster Abstracts CONTINUED

**P003: DENDRITIC CELLS REGULATE TREG-TH17 AXIS IN OBSTRUCTIVE PHASE OF BILE DUCT INJURY OF MURINE BILIARY ATRESIA** – Li Yang, Shao-tao Tang, Kang Li, Xin-xing Wang, Xi Zhang; Union hospital, Tongji medical college, Huazhong university of Science and Technology

Several cell types were considered as effector cells in bile duct injury in rhesus rotavirus (RRV) induced experimental biliary atresia (BA). Here we identified an increased T helper cell 17 (Th17) population in BA models. By depletion of Th17 cells, BA symptoms including onset of jaundice and acholic stool was attenuated and survival rate was improved. Furthermore, we found that percent of CD4+CD25highFoxp3+ regulatory T cells (Tregs) decreased along with increased percent of Th17 cells in BA mice. But absolute number of Treg and Th17 were both increased. Proportion of Th17 cells at 7 days post-infection was decreased if on day 5 of life we intraperitoneally transfer Tregs isolated from normal adult mice but not Tregs from liver of BA mice. In vitro experiments also showed that Tregs from BA exert diminished suppression function on Th17 generation. Searching for the mechanisms, we investigated the production of cytokines in the liver milieu. IL-6, proved to be abundantly secreted by activated dendritic cells (DCs), was remarkably elevated. We injected IL-6 antibody 24 hours post-infection and observed that pro-inflammatory response was dampened and disease progression was ameliorated in these mice. Importantly, in Treg/Th17 suppression assay, IL-6 was demonstrated to paralyze Treg's suppression function on Th17, and eventually the unrestrained increasing of Th17 contributed to bile duct injury. Conclusion: The DC regulated Treg-Th17 axis, probably working with other effector T cells, aggravates the progressive inflammatory injury at the time of ductal obstruction.

**P004: LAPAROSCOPIC RECTOPEXY FOR ANTERIOR WALL COMPLETE RECTAL PROLAPSE, A NEW SIMPLIFIED TECHNIQUE** – Maged Ismail; Al Azhar University

Rectal prolapse in children is a relatively common condition. Laparoscopic approach became the standard procedure for its management. The aim of this study was to present a new simplified laparoscopic technique for its management.

**PATIENTS & METHODS:** The study was done at Al-Azhar University and other private hospitals, Cairo, Egypt during the period from October 2007 to January 2012. Seventy-two cases of complete rectal prolapse (42 were males and 30 females) was the material of this study. Their median age was 8 years (range, 4-14 years). With prolapsing rectum a deep Douglas pouch was confirmed by preoperative peritoneography and defaecography and dynamic MRI.

**TECHNIQUE:** Douglasectomy (pelvic peritonectomy) was done, followed by suspension the anterior wall of prolapsed rectum to the lower end the medial umbilical ligament on left side. Douglas pouch shallowing was achieved by closure of its neck. The redundant recto-sigmoid junction was fixed to the peritoneum of the left lateral abdominal wall.

**RESULTS:** All cases were done successfully by laparoscopy. Laparoscopic exploration revealed anterior wall complete rectal prolapse in 52 out of the 72 cases, with deep Douglas pouch. The median duration of surgery was 25 minutes (range, 20-30 minutes). No intraoperative complications, complete relief of pain, discharge, straining and constipation. No post-operative recurrence. Median postoperative hospitalization was 3 days (range, 2-5 days). All cases were available for post-operative follow up for 2 years. **CONCLUSION:** This innovative technique is simple, safe, and effective as it corrects the essential pathology with avoidance of retrorectal dissection with possible bleeding and nerve injuries.

**P005: LAPAROSCOPIC AND LAPAROSCOPY-ASSISTED RESECTION OF ENTERIC DUPLICATIONS IN CHILDREN** – Bartosz Bogusz, MD, Wojciech J Gorecki, MD, PhD, Piotr Soltysiak, MD, Marcin Maslanka, MD, Krzysztof Solecki, MD; Department of Pediatric Surgery, University Children Hospital of Krakow

**BACKGROUND DATA:** Enteric duplication presents a rare type of congenital malformation of the gastrointestinal tract with an incidence of about 1 in 5000 live births. The commonness of ultrasonographic investigation in children during the first year of life contributes to an earlier diagnosis of such pathology before the onset of the first clinical symptoms. An early diagnosis allows for planned mini-invasive surgical treatment within the period preceding the development of intestinal complications (obstruction, strangulation, bleeding, ulceration or perforation).

**OBJECTIVE:** To present the possibility and safety of laparoscopic or laparoscopy-assisted mini-invasive resection of enteric duplication avoiding bowel resection.

**MATERIALS & METHODS:** A retrospective review of medical records of 6 patients at the age from 3 to 22 months with the final diagnosis of enteric duplication, treated in the Department of Pediatric Surgery, Jagiellonian University Medical College, within the period from January 2012 to September 2014.

**RESULTS:** Laparoscopic excision of enteric duplications without bowel resection was performed in 5 children (cecal and ileal duplications). Laparoscopic excision was performed in 2 of them (1 cecal and 1 ileal duplication). In the other 3 children from that group (ileal duplications), laparoscopy was employed to confirm the diagnosis with consecutive resection of the malformation without bowel resection after the evacuation of the cyst through an incision within the lower umbilical margin. The resection of cecum and Bauhin valve was necessary in 1 patient with large cecal duplication and malrotation. The procedure was performed after the evacuation of the intestine through a widened incision within the lower umbilical margin (omega-shape). The postoperative course was uneventful in all the cases.

**CONCLUSIONS:** Laparoscopic approach allows for confirming the diagnosis and accurately defining the exact site of duplication, as well as for effective and safe mini-invasive treatment. Laparoscopic or laparoscopy-assisted excision of enteric duplication without bowel resection seems to be a safe option in a significant number of cases of ileo-cecal duplications.

**P006: LAPAROSCOPIC HISTOLOGICAL MAPPING FOR THE DETERMINATION OF THE LENGTH OF AGANGLIONIC SEGMENT IN CHILDREN WITH HIRSCHSPRUNG DISEASE**

– Bartosz Bogusz, MD, Wojciech J Gorecki, MD, PhD, Piotr Soltysiak, MD, Marcin Maslanka, MD, Krzysztof Solecki, MD; Department of Pediatric Surgery University Children Hospital of Krakow

**BACKGROUND DATA:** Optimal treatment of Hirschsprung disease comprises the earliest possible resection of the aganglionic segment in the course of a minimal number of surgical interventions. One-stage surgical repair limits additional anesthesia, surgery and complications of colostomy. Primary Transanal Endorectal Pull-Through (TEPT) requires unequivocal determination of the length of the aganglionic segment for the patient to be qualified for the operation. The efficacy of a standard method used for this purpose – contrast enema – is questionable in patients, in whom because of the early presentation of the disease, there is no diagnostic bowel distension above the level of transitional zone.

## Poster Abstracts CONTINUED

**OBJECTIVE:** To present the method used for the diagnosis and determination of surgical treatment mode in patients with Hirschsprung disease subjected to one-stage surgical repair, in whom the determination of the length of the aganglionic segment was not possible with the use of contrast enema.

**MATERIALS & METHODS:** Four patients at the age from 2 weeks to 6 months with Hirschsprung disease, treated in the Department of Pediatric Surgery, Jagiellonian University Medical College, within the period from January 2013 to June 2014. The technique uses 3 abdominal 3-5 mm ports inserted in the umbilicus for the camera and in the left and right flank for manipulation. Three to five seromuscular biopsies of the colon and, in one case also of the ileum, were taken with a grasper and scissors. One biopsy site was sutured in one patient because of unintentional bowel perforation.

**RESULTS:** In all the patients, laparoscopic histological mapping allowed for the determination of the length of the aganglionic segment and for establishing the final mode of surgical treatment. Three children with aganglionic sigmoid colon were subsequently subjected to TEPT. In the patient with aganglionosis involving the transverse colon, temporary colostomy followed by Duhamel procedure was used. No postoperative complications related to the laparoscopic procedure were identified.

**CONCLUSIONS:** The method of laparoscopic histological mapping is effective in the determination of the length of the aganglionic segment in children with diagnosed Hirschsprung disease. In doubtful cases, it can be helpful in establishing the final mode of surgical treatment.

### **P007: APPLICATION OF HEMOLOCK IN LAPAROSCOPICALLY ASSISTED ANORECTAL PULL-THROUGH** – Xu Li, Kaoping Guan, Shuli Liu, Long Li, Capital Institute of Pediatrics

**OBJECTIVE:** To evaluate the application of Hemolock in laparoscopically assisted anorectal pull-through for the treatment of rectal urethral fistula.

**METHODS:** Retrospectively reviewed the clinical data of 37 patients with high imperforate anus in our hospital from Jan 2012 to Dec 2013. All patients were male and the age ranging from 1 days to 17 months (median: 4.97±3.11m). Of these, 22 cases had rectourethral bulbar fistula, 11 cases had rectourethral prostate fistula and 5 cases had rectal bladder neck fistula. 28 patients had transverse colostomy and 8 patients had sigmoid colostomy. 1 patient aged 1 day had one-stage laparoscopically assisted anorectal pull-through without colostomy.

**RESULTS:** All patients had laparoscopically assisted anorectal pull-through and 17 patients with single-hole laparoscopy. 15 patients applied Hemolock in laparoscopically assisted anorectal pull-through for the treatment of rectal urethral fistula and 22 patients applied laparoscopically assisted suture and ligation. The operative time ranged from 1.5 to 2.5 hours (median: 2.0 hours). The mean blood loss of the operation was 15 ml (10 to 20 ml) and blood transfusion was unnecessary. All patients had no intraoperative complications.

**CONCLUSIONS:** Application of Hemolock in laparoscopically assisted anorectal pull-through for the treatment of rectal urethral fistula is an accurate, convenient, time saving, and achieved a satisfactory therapeutic effect.

### **P008: ENDOSCOPIC ARGON PLASMA COAGULATION FOR THE TREATMENT OF ACUTE HEMORRHAGIC ANGIODYSPLASIA IN A CHILD** – Ünal Adigüzel<sup>1</sup>, Bircan Savran<sup>1</sup>, Sezgin Zeren<sup>2</sup>;

<sup>1</sup>Dumlupinar University Faculty of Medicine, Department of Pediatric Surgery, <sup>2</sup>Dumlupinar University Faculty of Medicine, Department of General Surgery

Angiodysplasia of the colon is an important cause of lower gastrointestinal hemorrhage in the elderly, but it is extremely rare in children. Endoscopic thermal coagulation has generally performed as the first line treatment for angiodysplasia in adults patients. However, in the children any study about this issue could not be found.

Here in we present a case of a 6-year-old boy who presented with lower gastrointestinal hemorrhagia. The physical examination was unremarkable except for rectal hemorrhagia. There were not any anal fistule and anal fissure. Rectal examination was normal. Laboratory investigations revealed a normal complete blood cell count, electrolytes, liver function tests, amylase, lipase, and lactate dehydrogenase. Results of abdominal ultrasonografi and Meckel scintigraphy were normal. We decided to perform a colonoscopy. At the colonoscopy in the level of hepatic flexure and transverse colon, we saw hemorrhagic angiodysplasia focuses. In addition to this colonoscopy angiodysplasias were treated with argon plasma coagulation. The patient normally had his diet following the operation and discharged from the hospital after one day.

When we reviewed about this subject in literature, angiodysplasia of the colon is very rare in childhood. In addition to this, in these cases generally surgery is chosen for treatment. In our patient we performed a minimally invasive technique; endoscopic argon plasma coagulation.

Eventually, we can offer endoscopic argon plasma coagulation as a first preference for acute hemorrhagic angiodysplasias by experienced endoscopic surgeons.

### **P009: MINIMALLY INVASIVE SURGERY(LAARP) FOR HIGH ARM – INSTITUTIONAL EXPERIENCE** – Madhu Ramasundaram, MS, DNB, MCh, Prakash Agarwal, MS, MCh, DNB, Balamourougane Paramasamy, MS, MCh, DNB, MNAMS, SRI RAMACHANDRA MEDICAL COLLEGE & RESEARCH INSTITUTE, PORUR, CHENNAI, INDIA

**MATERIALS & METHODS:** In our institute we performed 13 LAARP (Laparoscopic Assisted AnoRectoPlasty) between May 2010 to May 2014. All the children were Male with High ARM ranging from 6 months to 2 years. Female children and those with clear intermediate variety were excluded. Three port technique was used (5mm umbilical 30° scope with two working ports as per the colostomy site). Transcutaneous bladder stitch was used in few cases to hitch up the bladder. Child was placed supine cross table with the Laparoscopy trolley at the caudal end and Anaesthetic machine at the cranial end.

**DISCUSSION:** LAARP was completed in all children with time ranging from 2 hours 50 minutes to 1 hour 30 minutes. The initial 2 cases the fistula was ligated but in the remaining 11 cases we divided the fistula. Post op complications included Anal stenosis-2 (Managed by dilatation and stool softeners) Mucosal prolapse-2 (Trimmed by surgery in one), one case of prolonged ileus and serous drainage (probably leak from fistula managed conservatively). All children have good continence as appreciated via Good Kellys score.

**CONCLUSION:** Laparoscopic pullthrough is a very effective modality of treatment of High ARM in Male children. This procedure has clear advantages of Excellent visualisation of muscle and sphincter complex, Good delineation of the fistula and less pain and morbidity with good postop recovery

**KEY WORDS:** HIGH ARM, LAARP, MALE CHILD

## Poster Abstracts CONTINUED

### **P010: ENDOVIDEOSURGERY APPROACH IN CHILDREN WITH RECTOSIGMOIDAL FORMS OF HIRSCHSPRUNG'S DISEASE**

– Damir Jenalayev, MD<sup>1</sup>, Bulat Jenalayev<sup>2</sup>, Ruslan Bilyal, MD<sup>1</sup>, Omar Mamlin, MD<sup>1</sup>; <sup>1</sup>National Research Center for Mother and Child Health, <sup>2</sup>West Kazakhstan State Medical University

Since 2008, there have been 116 patients with Hirschsprung's Disease in the Department of Pediatric Surgery of the National Research Center for Mother and Child Health.

Of the 116 patients, 78 underwent a pull-through using a laparoscopic approach. The age range of these 78 patients was between 3 month and 14 years. All patients appeared to have proctosigmoidal aganglionosis by X-ray examination.

After confirming the diagnosis, and standard preoperative preparation, all patients underwent a laparoscopic pull-through as described by K.Georgeson.

No significant perioperative complications were seen. Blood loss during surgery never exceeded 30ml, with no patients requiring transfusion. In all cases there was return of bowel function within 12-18 hours after surgery. All patients were underwent routine outpatient anal dilatation beginning 14 day after surgery, using dilators sized based on age. There were no clinically significant symptoms of anal stenosis.

One of the patients had fever and difficulty with defecation on post-operative day 7. A 3x4cm fluid collection was seen by ultrasound, which was drained transrectally, with removal of 30ml of fibrinous fluid. The cavity was irrigated under ultrasonic guidance, and follow up showed resolution over the next few days, with the patient being discharged 15 days after the surgery with no further complaints over the ensuing 6 months.

All other patients were discharged at 8-9 days after surgery. Minimal post-operative follow up of 6 months showed no significant complications. There were cases of significant abdominal distention, encopresis or obstipation.

**DISCUSSION:** Here, we found that in our hands the laparoscopic approach for the surgical treatment of Hirschsprung's Disease, as outlined by Georgeson, in older children appears to be safe, effective, and less traumatic. The endovideosurgery technology allowed us to perform all of the intra-abdominal components of the surgery, including mobilization and pull-through, with the same effectiveness as open surgery. We found good cosmetic results, and the patients' quality of life and recovery during the postoperative period appeared to be significantly improved over open surgery.

**CONCLUSION:** Laparoscopic surgery for the treatment of Hirschsprung's Disease in children is considered by many to be superior to open surgery in many ways. We found that by following a consistent technical approach in these older patients, we were able to minimize the risk of intra- and perioperative complications, and to achieve significant improvement in our outcomes as measured by length of stay, patient satisfaction, and excellent cosmetic.

**P011: INVESTIGATION OF THE ROLE OF SILK LASSO-SHAPED LOOPS IN INTRACORPOREAL LAPAROSCOPIC APPENDECTOMY** – Unal Adiguzel, Bircan Savran, Dumlupınar University Faculty of Medicine, Department of Pediatric Surgery

**OBJECTIVE:** Appendicitis is the most common surgical emergency in childhood. Laparoscopic appendectomy (LA) now has become a common approach to appendicitis in childhood in many centers. Closure of the appendiceal stump in laparoscopic appendectomy is the most crucial part of the procedure. To investigate the possible benefits of silk lasso-shaped loops in laparoscopic appendectomy approach used in appendiceal stump closure.

**MATERIALS & METHODS:** In this retrospective clinical study, we describe a technique for laparoscopic appendectomy, in which the appendiceal stump was closed and secured by 2/0 or 3/0 silk loop sutures. We have applied this approach to 103 patients diagnosed as having appendicitis in our clinics between October 2012 and October 2014 dates and gathered related registration data. During the operation, 2/0 or 3/0 silk suture was binded as lasso loop and intracorporeal appendix stump was constricted within this lasso-shaped loop twice.

**RESULTS:** None of the patients has had a stump leakage or wound infection except two patient with perforated appendicitis.

**CONCLUSION:** The closure of the appendiceal stump with silk lasso-shaped loop in laparoscopic appendectomy is a simple, quick and safe approach with favorable outcomes comparable to those gathered from the other methods.

**P012: LAPAROSCOPIC PROCEDURE FOR HIRSCHSPRUNG'S DISEASE IN LATER STAGE: CHARACTERISTIC, COMPLICATIONS AND FUNCTIONAL RESULTS** – Li Yang, Shao-tao Tang, Guo-qing Cao, Hai-yan Lei; Union hospital, Tongji Medical College, Huazhong University of Science and Technology

**PURPOSE:** It was observed that patients receive operation at a later stage have different characteristics in recovery process compared to patients at an earlier stage. This study summarized the complications and functional results of patients who receive surgery after three years old.

**METHOD:** Data of 146 patients were collected who received surgery for Hirschsprung's disease between June 2008 and June 2014 in a single center. These patients were divided into two groups (group A: < 3yr, 103 cases; group B: > 3yr, 43 cases). 36 cases had a protective colostomy (22 cases were over 3 years old). 97 cases underwent left hemicolectomy (56 cases were over 3 years old). 19 cases underwent subtotal colectomy (6 cases were over 3 years old). Complications and defecation functions were compared between different groups.

**RESULTS:** 51.1% (22/43) patients had protective colostomy in Group B, which is significantly higher than that of Group A (13.6%:14/103). No significant difference exist between the percent of subtotal colectomy in Group B (13.9%: 6/43) and Group A (12.6%: 13/103). Percent of postoperative enterocolitis is significantly higher in Group B than that of Group A (23.2% vs 4.8%, p<0.05). In patients without protective colostomy, incidence of anastomotic leak is 14.3% (3/21), which is significantly higher than that of Group A (2.2%: 2/89). In patients with protective colostomy, however, the incidence of anastomotic leak is similar. There is no difference regards to the anastomotic stricture. Patients in Group A has a slightly higher incidence of soiling problems than Group B but the difference is not significant at the time point of 3 years after surgery. Long time follow-up shows that the defecation function of Group A and Group B is comparable.

**CONCLUSIONS:** For patients who receive surgery after 3 years old, the incidence of enterocolitis was higher and particularly, anastomotic leak was higher if without a protective colostomy, compared to patients operated before 3 years old. Early diagnosis and operation, especially protective colostomy is beneficial.

**P013: COMPARISON OF THE LAPAROSCOPIC METHODS FIXATION OF GASTROSTOMY TUBES IN CHILDREN** – Yury Kozlov, MD<sup>1</sup>, Konstantin Kovalkov<sup>2</sup>, Vladimir Novozhilov<sup>1</sup>; <sup>1</sup>Pediatric Hospital Irkutsk, <sup>2</sup>Pediatric Hospital Kemerovo

**BACKGROUND:** Insertion of the gastrostomy tube provides a direct access to the gastrointestinal tract for the enteral nutrition and it

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is one of the most common surgical procedures in pediatric and general surgery. Comparative analysis of postoperative data clearly demonstrated the advantages of laparoscopy that is the reducing of the time of enteral feeding start, the duration of hospital stay and the number of postoperative complications. Another not determined question concerns a method of the gastropexy during laparoscopic gastrotomy. We report dates of the comparison two endosurgical methods fixation of gastrotomy tubes with using U-stiches and anchor set with Saf-T-Pexy T-fasteners (Kimberly-Clark, Roswell, USA).

**MATERIALS & METHODS:** Between January 2012 and June 2014, we have performed 24 laparoscopic operations of insertion gastrotomy tube with using U-stiches (Group I) and 24 laparoscopic operations with using anchor devices Saf-T-Pexy (Group II). The two groups were compared for patients demographics, operative report and postoperative outcomes.

**RESULTS:** There were no statistical differences in the demographics parameters and intra- and postoperative results between the two groups. The mean operative time in Group I was 23,75 min. In contrast, the mean duration of the operation in the Group II was 22,71 min. The mean time to beginning and time of full enteral feeding for patients with laparoscopic approach were similar in both groups (9,96 hours vs 10,63 hours; 23,13 hours vs 24,5 hours;  $p>0,05$ ). Similar mean postoperative hospital stay were registered in patients of comparing groups I (7,25 days vs 7,21 days;  $p>0,05$ ). During the period of this study, we did not register cases of major complications in patients of both groups. The reliable difference was found in the analysis of minor postoperative complications (41,67 % vs 8,33 %;  $p<0,05$ ). The basic minor postoperative complications consisted symptoms of peristomal dermatitis, or overgrowth of granulation tissue. Use of topical antibacterial ointment and coagulating agents allowed to stop and win the development of minor peristomal problems.

**CONCLUSIONS:** Our study supports the opinion that laparoscopic gastrotomy is a safe method for enteral nutrition delivery in infants. Anchor devices Saf-T-Pexy is a simple and effective way of gastropexy allowing to reduce number of postoperative complications in small babies.

**P014: ACUTE APPENDICITIS IS NOT AN ACUTE SURGICAL PROBLEM** – Mead Ferris, MD, Paul Diegidio, MD, Emma Robl, Martin Durkin, MD, MPH, Juan I Camps, MD, MBA; Palmetto Health Children's Hospital/USC school of Medicine

**PURPOSE:** Acute appendicitis in children has been a longstanding surgical emergency requiring prompt intervention. However recent literature has shown that this may not be the case. A preoperative interval of antibiotic therapy to impede the infectious process and adequate intravenous hydration has shown equivocal results to emergent surgery. At our institution these findings have changed management and allowed for next day surgery under a more controlled environment. The purpose of this study is to review our data on perioperative care of these patients with respect to their outcomes.

**METHODS:** A retrospective review of 214 consecutive pediatric cases of appendicitis by a single surgeon was analyzed from September 2004 to June 2012. All patients, ages 2 to 21, underwent laparoscopic surgery in the teaching children's hospital. Data was collected on total length of stay from admission to discharge (LOS) and compared to admission to start time of surgery (ADM2OR). Data was extrapolated and analyzed using the spearman's correlation.

**RESULTS:** Spearman's rank correlation statistic is 0.26 with a p-value  $<0.001$ .

Median LOS in days by ADM2OR

N=214	LOS	N
Q1	1.66	54
Q2	1.44	52
Q3	1.61	54
Q4	2.64	54

N=214	AGE	OR/DUR Hrs	ATB2OR Hrs	ADM2OR Hrs	LOS/Day
Min	2	0.27	0.00	0.00	0.49
Q1	8	0.58	0.08	1.38	1.23
Median	11	0.77	1.97	4.93	1.73
IQR	5	0.42	6.11	9.23	2.60
Q3	13	1.00	6.19	10.6	3.83
Max	21	2.33	46.8	65.4	31.7

**CONCLUSIONS:** This is a weak association, but we statistically reject the Null Hypothesis that the true association is zero. Scheduling acute appendicitis cases for the next day with a period of antibiotics and fluid resuscitation appears to be a safe alternative to emergent surgery.

**P015: LAPAROSCOPIC EXCISION OF AN ASCENDING COLON DUPLICATION CYST IN AN ADOLESCENT** – Heather R Nolan, MD<sup>1</sup>, Craig Wengler, MD<sup>2</sup>, Charles W Hartin, Jr, MD<sup>3</sup>, Joshua B Glenn, MD<sup>1</sup>; <sup>1</sup>Mercer University School of Medicine/Medical Center of Central Georgia, <sup>2</sup>The Cleveland Clinic, <sup>3</sup>Michael E DeBakey Dept of Surgery, Baylor COM, Div Pediatric Surgery, Texas Children's Hospital

**INTRODUCTION:** Intestinal duplications are mucosa lined structures that share a common wall with an adjacent portion of the gastrointestinal tract. They can occur at any level with the majority located in the small intestine. Duplications involving the colon are comparatively rare. Despite variances in location, most intestinal duplications are symptomatic and are discovered within the first two years of life. Patients presenting later in life are infrequent and present with a variety of findings from abdominal pain to obstruction.

**CASE REPORT:** We present a case of a 17-year-old previously healthy boy who presented with a two day history of abdominal pain. A computerized tomography (CT) scan demonstrated a 15 by 7 cm inflammatory, cystic mass in the right lower quadrant. Diagnostic laparoscopy revealed a mass encompassing the majority of the abdominal and pelvic cavity. The mass was resected en-bloc with the anastomosis of the ileum and colon performed extra-corporeally through a small extension of the port site. Pathological review indicated an inflamed small intestine and colon duplication cyst with cytology negative for malignancy.

**DISCUSSION:** Very few incidences of intestinal duplications have been reported in patients greater than two years old and even fewer related to duplications of the colon. A literature search revealed merely a few case reports of colonic duplications arising in patients outside of early childhood. Management of most colonic duplications traditionally has involved laparotomy with en bloc resection of the duplication and adjacent gastrointestinal tract. With the advancement of laparoscopy, resection is also feasible via a minimally invasive approach but is an exceedingly rare intervention within the existing literature. Our case in particular, appears to be the first report of a laparoscopic resection of an ascending colon duplication cyst in an adolescent.

## Poster Abstracts CONTINUED

### **P016: LAPAROSCOPIC SWENSON'S PROCEDURE FOR HIRSCHSPRUNG'S DISEASE** – [Mustafa Kucukaydin, MD](#),

Mahmut Guzel, MD, Ayse Betul Ozturk, MD, Necip Fazil Aras, MD; Department of Pediatric Surgery, Erciyes University, School of Medicine

**BACKGROUND & AIM:** There has been a recent trend in the use of laparoscopic one-stage pull-through in the management of Hirschsprung's disease (HD). We want to present our experience with laparoscopic pull-through (LP) for HD in the small babies.

**MATERIALS & METHODS:** Between January 2010 and April 2014, 30 infants (21 male, 9 female) underwent LP. The age ranged 15 to 45 days (mean 24 days). The procedures were performed with one 3/4 mm camera and two 3 mm working ports. The transition zone was identified by seromuscular biopsies obtained laparoscopically. The colon and rectum were mobilized laparoscopically and pull-through was performed as a manner of Swenson's procedure. A colo-anal anastomosis was performed, using an absorbable 4/0 suture. Anal dilatation program was started in 2-3 weeks following the operations.

**RESULTS:** The entire mobilization of the bowel as well as biopsy confirmation of the transition zone was done laparoscopically in all the cases. The median operative time was 95 minutes (range, 80-120 minutes). All children tolerated full enteral feeds after 48 hours and the median hospital stay was 5 days (range, 3-8 days). There were no early postoperative major complications. In four cases (13%), mild enterocolitis were developed and resolved with conservative management. The average followed up period was 2.5 years (7 months-5 years). The overall early anorectal functional outcome was good in all cases.

**CONCLUSION:** LP, apart from being cosmetically superior, permits obtaining biopsies as well as an adequate mobilization of the bowel and a minimal dissection which causes less damage to the internal sphincter and pelvic nerves.

### **P017: LAPAROSCOPIC PARTIAL SPLENECTOMY FOR CONGENITAL EPIDERMOID CYSTS IN CHILDREN** – [Mustafa Kucukaydin, MD](#),

Necip Fazil Aras, MD, Mahmut Guzel, MD, Ayse Betul Ozturk, MD; Department of Pediatric Surgery, Erciyes University School of Medicine

**BACKGROUND & AIM:** Congenital epidermoid splenic cysts are very rare in children. They are known to become symptomatic as a consequence of enlargement, hemorrhage, rupture or infection. Recent options in the treatment of splenic cysts have included percutaneous drainage, partial splenectomy or splenectomy. In this study, we report six pediatric patients who underwent laparoscopic partial splenectomy for epidermoid splenic cysts.

**PATIENTS & METHODS:** Between June 2010 and March 2014, 6 patients (4 female, 2 male) the age ranged from 7 to 13 years (median 11.0 years) with splenic epidermoid cyst were treated with laparoscopic partial splenectomy using three ports (one 10 mm and two 5 mm).

**RESULTS:** Four cysts were presented abdominal pain, one with abdominal pain and mass and one with rupture. The splenic cysts were diagnosed with ultrasonography and MR. The average operative time was 100 min (range 70-140 min). There was no need for conversion and no intraoperative complications. Pathological examination showed epidermoid cysts in all cases. The median follow-up period was 2 years (7 months-4 years) and ultrasonography showed in a small size spleen in all the patients and platelet counts showed preservation of splenic function

**CONCLUSIONS:** We thought that laparoscopic partial splenectomy is, apart from being cosmetically superior, a feasible minimal invasive access for splenic cyst with preserving splenic function.

### **P018: LAPAROSCOPIC HELLER MYOTOMY IN CHILDREN: THE EXPERIENCE FROM THE TWO CHILDREN'S HOSPITALS OF SHANGHAI CITY** – [Jiangbin Liu<sup>1</sup>](#),

Zhibao Lv<sup>1</sup>, Xianmin Xiao<sup>2</sup>, Kuiran Dong<sup>2</sup>; <sup>1</sup>Shanghai Children's Hospital, <sup>2</sup>Children's Hospital of Fudan University

**AIMS & OBJECTIVES:** To review the experience of laparoscopic Heller myotomy (LHM) and Dor fundoplication as treatment of pediatric esophageal achalasia.

**METHODS:** From March 2011 to January 2014, 5 cases of esophageal achalasia were underwent by LHM and Dor fundoplication in Shanghai Children's Hospital, Shanghai Jiao Tong University and Children's Hospital of Fudan University in Shanghai city. There were 4 males and 1 female with a median age was 35.5 months (range, 18.5-85 months). The demographics, presentation symptoms, perioperative details and follow-up were analyzed. The symptoms were dysphagia, weight loss, vomiting and recurrent chronic cough. And the outcomes were assessed by medical records.

**RESULTS:** All patients were operated on by laparoscopy with no conversions; the median time of the operation was 85 minutes (range, 75-120 minutes). There were no intra or postoperative complications. At a median follow-up of 2.2 years (range: 0.8-3.7 years), none of the patients were re-operated. The symptoms such as weight loss, vomiting and recurrent chronic cough disappeared in all the patients and 4 children have normal eating habits. One presented episodes of dysphagia after operation, after twice endoscopic dilatations the symptom disappeared for this child.

**CONCLUSIONS:** Laparoscopic Heller myotomy is effective and safe for achalasia in children, offering a good and durable quality of life

### **P019: MIDGUT VOLVULUS IN TERM AND PRETERM NEONATES – IS LAPAROSCOPY INDICATED?** – [Christine Burgmeier, MD<sup>1</sup>](#),

Felix Schier, MD, PhD<sup>2</sup>; <sup>1</sup>Department of General and Pediatric Surgery, University Medical Center Ulm, Germany, <sup>2</sup>Department of Pediatric Surgery, University Medical Center Mainz, Germany

**AIM:** Midgut volvulus is a common surgical emergency with high morbidity and mortality, especially in neonates. Most cases are associated with malrotation, but there are also patients without malrotation or other primary anatomical cause. Intrauterine presentation of midgut volvulus is rare but also described in the literature. Immediate surgical intervention requires derotation and in case of bowel necrosis also bowel resection. The introduction of minimal-invasive surgery enables the laparoscopic approach even in small infants and neonates. The aim of this study was to analyze our experiences with laparoscopy in the surgical treatment of midgut volvulus in term and preterm neonates.

**METHODS:** This retrospective, single-institution study includes all term and preterm neonates undergoing laparoscopic surgery because of midgut volvulus with or without malrotation between January 2004 and January 2012. The charts were reviewed for the performed operative procedure, conversions to open surgery and intraoperative complications.

**RESULTS:** Altogether, diagnostic laparoscopy was initially started in three neonates (two term and one preterm) presenting with midgut volvulus. Two were term infants presenting with additional malrotation. One patient (33 %) was a preterm neonate who underwent laparoscopy immediately after birth because of a suspected intrauterine volvulus. In this neonate bowel necrosis was immediately identified during the laparoscopic procedure and subsequent bowel resection and primary anastomosis was performed using the open approach. In one (33 %) term neonate without

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evidence of bowel necrosis but extensive Ladd bands conversion from laparoscopy to open surgery was necessary due to poor visualization. This was a case early in the series. In one term neonate (33 %) presenting with midgut volvulus and malrotation laparoscopic derotation could be performed successfully without intraoperative complications.

**CONCLUSION:** Laparoscopic derotation of midgut volvulus without bowel necrosis can be performed successfully in neonates. Conversion to open surgery is necessary in case of bowel necrosis or poor visualization, mostly because of extensive Ladd bands. In case of midgut volvulus without necrosis immediate laparoscopic derotation can be performed. In the future prospective clinical studies are necessary to further evaluate the role of laparoscopy in the surgical treatment of midgut volvulus in neonates with or without malrotation.

### **P020: THORACOSCOPIC VERSUS OPEN REPAIR OF TRACHEOESOPHAGEAL FISTULA AND ESOPHAGEAL ATRESIA**

– Long Li, MD, Cuizhu Feng; Capital Institution of Pediatrics

**OBJECTIVE:** To evaluate the efficacy and safety of the thoracoscopic versus open techniques for esophageal atresia(EA) and tracheoesophageal fistula (TEF).

**METHODS:** We performed a retrospective review of 50 type-? TEA/TEF patients, Twenty-five patients underwent thoracoscope from December 2012 to January 2014 in Jiangxi Children's Hospital, Twenty-five patients underwent traditional repair through thoracotomy from June 2008 to April 2014 in Capital Institution of Pediatrics. Definite diagnosis and complete operation were accomplished to 27 males and 23 females. The group of thoracoscope undergone the ligation of tracheoesophageal fistula and end-to-end anastomosis of esophagus using three trocars and the group of open accomplished operation through extrapleural approach.

**RESULTS:** The operation was completed under thoracoscope in 25 cases, 2cases died after operation. 23 cases were accomplished extrapleural esophageal anastomosis and 2 cases undergone the ligation of tracheoesophageal fistula and gastrostomy because of excessively long gaps and the 2cases abandon treatment after operation. The mean operative time was 127 minutes (range, 110–160) for the thoracoscopic approach, compared to 133 (range, 105–170) for the thoracotomy; the mean time to extubation was 2.6 days (range, 1–13), compared to 2.3 (range,1–11), there were no significant. The anastomotic leak rate was 8%, same in two groups. The stricture rate was 28 versus 16% for the closed and open techniques, respectively. Of the thoracoscopic group, TEF relapse rate was 8%, and no case in open group.

**CONCLUSION:** Our results suggest that the outcomes of the thoracoscopic technique are comparable to that of the open technique. However, it is necessary that surgeon master the minimally invasive technique and relevant operation skill.

### **P021: LAPAROSCOPIC APPENDECTOMY- THE METHOD OF CHOICE FOR ACUTE APPENDICITIS IN CHILDREN** – Vasyly Prytula, Proff, PhD<sup>1</sup>, Oleg Godik, MD, PhD<sup>2</sup>, Valerie Soroutchan<sup>1</sup>, Roman Zhezhera<sup>3</sup>, Igor Mirochnik<sup>3</sup>, Igor Nosenko<sup>3</sup>; <sup>1</sup>National Medical University of O O Bogomolets, <sup>2</sup>Oberig clinic, <sup>3</sup>National Specialized Children's Hospital OHMATDIT

**AIM:** To analyze the minimally invasive surgical approach in the treatment of appendicitis in children of different ages.

**MATERIALS & METHODS:** A retrospective review of the laparoscopic approach for acute appendicitis in our institution was performed, in the time period from November 2011 up to September 2014. In

the operative technique we use a 10mm camera positioned through an umbilical trocar, and 5mm ports at the flanks. Both monopolar and bipolar coagulation was used to dissect the mesoappendix with its vessels. The appendiceal base was ligated with 2 loops made from a 2.0 non- absorbable monofilament, and then the appendix was amputated in between them. The remaining appendiceal base was additionally coagulated. The appendix was removed from the abdominal cavity through the umbilical trocar. If washing of the abdominal cavity was needed normal saline was used.

**RESULTS:** There were 335 children admitted to our hospital with acute appendicitis over the above time period. The average age was 10 years 3 months. There were 151 (45.1%) girls, and 184 (54.9%) boys. Out of all the cases histology showed 33 (9.8%) catarrhal, 271 (80.9%) phlegmonous, 12 (3.6%) gangrenous appendicitis's, and perforated appendicitis occurred in 19 (5.7%) cases. In the cases with catarrhal appendicitis one rupture of the right ovary was found. Out of the 271 phlegmonous appendicitis's 46 (17%) of them presented with peritonitis, and in 6 (2.2%) cases simultaneous operations were performed: percutaneous internal ring suturing for inguinal hernia repair for 3 (1.1%) right sided hernias and 1 (0.4%) case of bilateral hernias, 2 (0.7%) cases of ovarian cystectomy. From the 19 perforated appendicitis cases 9 (47.4%) of them showed appendicular abscesses. The average operative time for non perforated appendicitis was 25±7 minutes, and for a perforated appendicitis 59±12 minutes. There were no intra- operative complications and no conversions. All patients received antibiotics post operation for 4–6 days, and required non-steroidal anti- inflammatory medicine only 24 hours after operation. All patients were discharged on the 4–6 day post-operation, except in one case with a post operative complication of omentitis, which required laparotomy with the resection of the omentum and washing of the abdominal cavity.

**CONCLUSION:** Laparoscopic appendectomy has a great cosmetic result, a short period of hospital stay, and lessens pain in the post operative period. It provides good revision of the abdominal cavity which gives the surgeon an ability to diagnose other pathologies and perform simultaneous operations. Taking the above into consideration we believe laparoscopic appendectomy should be the method of choice in the treatment of acute appendicitis in children.

### **P022: LAPAROSCOPIC TREATMENT OF ACHALASIA: DEMONSTRATING FIRST RESULTS OF FEASIBILITY AND EFFICACY** – Alexander Dubrovin, Proff, PhD<sup>1</sup>, Oleg Godik, PhD<sup>2</sup>, Valerie Soroutchan, MD<sup>1</sup>; <sup>1</sup>National Medical University of O O Bogomolets, Kiev, Ukraine, <sup>2</sup>Oberig clinic, Kiev, Ukraine

**INTRODUCTION:** The aim of this study was to evaluate the evolution of surgical treatment for achalasia in a single center, and to present our early results.

**MATERIALS & METHODS:** We performed a retrospective review of all patients who received laparoscopic treatment for achalasia in our institution. All the patients underwent a laparoscopic Heller myotomy with a Dor fundoplication. They all had a NG tube placed prior intubation to evacuate the distal esophagus and prevent aspiration. For the procedure we used 5mm working ports and a 5 mm camera. Myotomy was performed with dissection, using monopolar coagulation. Our proximal landmark of dissection was the proximal dilated esophagus, and the distal landmark was an extension onto the gastric wall for 2–2.5cm. Myotomy was considered complete when mucosal herniation was seen, making up 1/2 or 2/3 semicircle of the esophagus. Mucosal integrity was checked by insufflating air into the esophagus through the NG tube, and also by performing an intra-operative endoscopy. Mucosal herniation was protected by an anterior 180- degree gastric fundoplication. Non- absorbable monofilament 2.0 was used to stitch the stomach wrap. The wrap was

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also fixated to both crus of the diaphragm to prevent its migration into the thoracic cavity. All the patients had the NG tube left in.

**RESULTS:** In the time period from April 2013 to August 2014 a total of 5 patients received laparoscopic surgical treatment for achalasia in our institution. There were 2 (40%) females, and 3 (60%) males. The median age of patients was 13 years 2 months. Four (80%) patients presented with type I achalasia, and 1 patient (20%) with type II. In the diagnostic algorithm all patients had a blood test, an endoscopy, and barium swallow esophagram study performed. All the patients were fed fluids 1 day prior to the operation to allow the distal esophagus to clear. The average time of operation was 110±27 minutes. Drinking clear liquid was allowed 6–10 hours post operation with the NG tube left inside, which was removed within 24 hours post operation. After removal of the NG tube all patients started feeding mash food up to the 4th post operative day. On day 4 post op all patients had a barium swallow test performed to exclude any leakage, after which they started normal feeding. All patients were discharged on 5th–6th post operative day. We had one intra-operative complication of mucosal perforation while performing the myotomy, and the perforation was sutured with interruptive stitches and a drainage tube was left in until 3rd post-op day. All patients had post-op follow ups with a clinical score Visik 1. The longest follow up was 1 year 5 months.

**CONCLUSION:** In this small series the laparoscopic treatment of achalasia proved to be both feasible and effective with a great cosmetic result.

### **P023: LAPAROSCOPIC INTRAPERITONEAL REPAIR OF INDIRECT INGUINAL HERNIAS IN CHILDREN: RETROSPECTIVE REVIEW OF ONE CENTERS EARLY EXPERIENCE**

– Kathryn L Martin, MD, Kyle Cowan, MD, PhD, Marcos Bettolli, MD; Children's Hospital of Eastern Ontario

**BACKGROUND:** Laparoscopic herniorrhaphy has yet to gain universal acceptance by pediatric surgeons. Many feel the laparoscopic extraperitoneal approach differs too greatly from the gold standard open repair, as there is no dissection/separation of the hernia sac at the level of the internal ring. We have adopted an intraperitoneal technique that mimics the open technique by allowing complete separation of the peritoneum at the level of the internal ring with proximal sac excision followed by intracorporeal high ligation. The purpose of this study is to describe this technique and report our early experience.

**METHODS:** A single institution retrospective chart review was conducted including all laparoscopic intraperitoneal inguinal hernia repairs completed from April 2013 to Sept 2014. Data extracted includes: patient demographics, pre-operative diagnosis, presence of contralateral patent process vaginalis (PPV), operative times, length of follow-up, and post-operative complications. Data is presented as descriptive statistics.

**RESULTS:** A total of 100 patients underwent laparoscopic indirect inguinal hernia repair during the study period with a mean age of 4.6 years (min 35 days, max 15.9 years). The majority of patients were male (79%). Eight had had a previous contralateral open herniorrhaphy. Total mean operative time was 83 +/- 5.4 minutes, with a total mean surgical time of 50 +/- 4.3 minutes. Pre-operatively 9 patients had documented bilateral hernias, with an additional 19 found to have a contralateral PPV at OR. Mean follow-up was 4 +/- 1 weeks. Five complications occurred including: a post-operative hydrocele, a metachronous contralateral inguinal hernia, an umbilical seroma, a stitch abscess, and one patient who experienced post-operative groin pain. To date no recurrences or testicular injuries have been reported.

**CONCLUSION:** Our early experience suggests that laparoscopic intraperitoneal inguinal hernia repairs are safe and effective in children. This technique recapitulates the extraperitoneal operation while obviating the need for dissection along the testicular vessels and vas deferens. Additional benefits include the avoidance of testicular malposition and the identification and repair of contralateral PPV. Data collection is ongoing to confirm the durability of this repair with regards to recurrence. Long-term follow-up will be required to confirm the benefits of minimizing spermatic cord dissection with regards to fertility.

### **P024: A COMPARATIVE STUDY ON TRANSUBILICAL SINGLE-HOLE LAPAROSCOPIC APPROACH VS CONVENTIONAL APPROACHES TO INCARCERATED INGUINAL HERNIA IN CHILDREN** – Jun Zhang, md, Shuli Liu, Long Li; Capital Institute Of Pediatrics

**OBJECTIVE:** The purpose of this study is to determine whether single-hole Laparoscopic repair (SLR) of incarcerated inguinal hernia in children is superior to conventional repair (CR) approaches.

**METHODS:** Between March 2013 and September 2013, 126 infants and children treated were retrospectively reviewed. All patients were divided into three groups. Group A (48 patients) underwent transumbilical single-hole Laparoscopic repair, group B (36 patients) underwent transumbilical conventional two-hole (TLR) Laparoscopic repair while the conventional open surgery repair (OR) was given to group C (46 patients). operating time, bleeding volume, postoperative complications, hospitalize stay and cost of patients were collected.

**RESULTS:** There were statistically significant differences in the operating time, bleeding volume, postoperative complications, hospitalize stay and cost between the (SLR, TLR) group and OR group ( $P < 0.05$ ). No statistically significant differences were between SLR and TLR except for more cosmetic result in SLR.

**CONCLUSIONS:** Single-hole Laparoscopic approach for incarcerated inguinal hernia in children without broken the anatomy of the inguinal canal and high ligation of hernial sac. Laparoscopy allowed for simultaneous reduction under direct visual control. Recessive contralateral hernia could be detected. Technically, it is safe and effective, minimally invasive, is a worth promoting new technology.

### **P025: FEASIBILITY OF LAPAROSCOPIC INTERVAL APPENDICECTOMY AS A DAY CASE PROCEDURE**

– Caroline Pardy, MRCS, MBBS, BSc, Anies Mahomed, MB, BCh, FCCSA, FRCS, Paed, Surg; Royal Alexandra Children's Hospital, Brighton

**INTRODUCTION:** The role of interval appendicectomy in the management of appendix mass remains controversial. Advocates argue that the risk of recurrent appendicitis justifies an elective procedure<sup>1</sup>, whilst others believe that this risk is low enough for an appendix mass to be managed conservatively<sup>2</sup>. Our centre is a proponent of interval appendicectomy and sought to determine the feasibility of performing interval appendicectomy as a day case procedure.

**METHODS:** Prospective data collection for children undergoing elective laparoscopic interval appendicectomy for appendix mass, managed by a single surgeon over a 9 year period. Statistical analysis was performed using Mann-Whitney U Test, Graphpad Prism version 6.

**RESULTS:** 16 children with a median age of 9 (2–16), 10 of whom were female, underwent elective laparoscopic interval appendicectomy between January 2005 – September 2014. Operating time was a median of 45 mins (20–60 minutes). 2 cases were performed using Single Incision Laparoscopic Surgery (SILS). There were no conversions, and no intra-operative complications.

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9 patients (56%) were discharged the day of their procedure. 1 patient undergoing SILS was discharged the same day, the other patient was discharged the following day. The median length of stay for patients who could not be discharged on the day of surgery was 1 day (1-4). 1 patient who was discharged on day 1 post-surgery was re-admitted 3 days after discharge with pain and vomiting that settled with antibiotics.

There was a trend towards younger patients being able to be managed as a day case procedure (median 9 years vs. 11 years), although this was not statistically significant ( $P = 0.31$ ). Perhaps not surprisingly, patients who were discharged the day of surgery had shorter operating time ( $P = 0.03$ , median 30 minutes vs. 60 minutes), likely to reflect a less technically challenging procedure, and although not significant ( $P = 0.15$ ), trended towards a shorter time to full feeds (median 6 hours vs. 8 hours).

**CONCLUSIONS:** This series has demonstrated that just over half of patients undergoing elective laparoscopic interval appendicectomy can be discharged safely on the day of surgery. It appears that the surgeon alone may be the best judge of whether a patient is suitable for discharge on the day of surgery, depending on the technical difficulty and length of procedure.

### REFERENCES

1. Lahiri R, Pardy C, Mahomed A. Response to: Interval appendicectomy in children clinical outcomes, financial costs and patient benefits. David Fawcner-Corbett, Wajid J Jawaid, Jo McPartland, Paul D Losty. *Pediatr Surg Int* 2014;30:1177
2. Fawcner-Corbett D, Jawaid WB, McPartland J, Losty PD. Interval appendicectomy in children clinical outcomes, financial costs and patient benefits. *Pediatr Surg Int* 2014; 30: 743-746

**P026: LAPAROSCOPIC SPLENECTOMY FOR SPLENIC PATHOLOGIES IN CHILDREN** – Madhu Ramasundaram, MS, DNB, MCh, Prakash Agarwal, MS, MCh, DNB, Balamourougane Paramasamy, MS, DNB, MCh, DNB; SRI RAMACHANDRA MEDICAL COLLEGE & RESEARCH INSTITUTE, PORUR, CHENNAI, INDIA

**MATERIALS & METHODS:** This is a retrospective analysis of nine laparoscopic splenectomies done in children in our institution between April 2011 to September 2014 for various splenic pathologies. All children were immunised with Trivalent vaccine. Standard four port technique was used for all cases (10 mm camera port umbilical, epigastric and left flank working ports and one left pararectal). Energy source was Bipolar and Harmonic scalpel. No Endostaplers were used in all cases. Splenic pathologies included (Hereditary Spherocytosis-5, ITP-2, Splenic cyst-1, splenic abscess-1).

**DISCUSSION:** All the nine patients underwent successful splenectomy laparoscopically with no conversions. Four children required a small Pfannenstiel incision to remove the organ due to its large size, Two required mild extension of the left flank port, Three removed by endobag. Postoperative period of 7 children were uneventful. Splenic abscess child had some fluid collection in the bed which resolved with conservative treatment and serial USG. One ITP child had wound infection which resolved with antibiotics and drainage

**CONCLUSION:** Laparoscopic splenectomy is safe, feasible even if the spleen is large and child is small and can be done even if endostaplers and ligasure is not available

**KEY WORDS:** LAPAROSCOPY, SPLENECTOMY, CHILDREN

**P027: NATURAL ORIFICE TRANSLUMENAI ENDOSCOPIC SURGICAL TREATMENT OF CONGENITAL DUODENAL DIAPHRAGM: A CASE** – Kong Chihuan, Li Long; Capital Institute of Pediatrics? Beijing 100020? China

**OBJECTIVE:** To investigate the methods and safety of endoscopic surgery with congenital duodenal diaphragm.

**METHODS:** A case, male, 2 years old, 9.5kg. Preoperative ultrasonography diagnosis: duodenal stenosis, diaphragm type, proximal expansion diameter of 4.3 cm. Diagnostic gastroscopy was performed first, duodenal nearly period of expansion with type I duodenal stenosis, underwent a partial excision of the diaphragm in the duodenum, until the gastroscope through narrow segment.

**RESULTS:** Postoperative x-rays showed no bowel perforation, after 12 hours can drink, three days later the liquid diets, after a week a half solid food.

**CONCLUSION:** The method of Natural orifice transluminal endoscopic surgery was lifted intestinal obstruction, and little injury, recovery fast, is a new attempt.

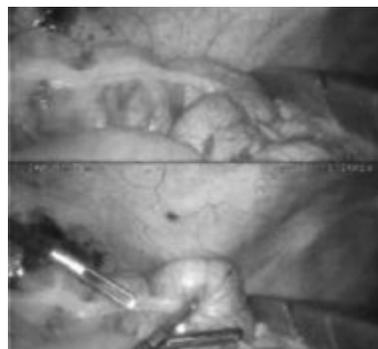
**KEY WORDS:** Endoscopic surgery; Duodenum; Intestinal atresia; Intestinal stenosis; Natural orifice; Children

**P028: THE MERIT OF MAGNETISM: A NOVEL USE FOR A MAGNETIC PROBE** – Victoria K Pepper, MD, Laura A Boomer, MD, Karen A Diefenbach, MD; Nationwide Children's Hospital

**INTRODUCTION:** Foreign body ingestion remains a significant challenge within the pediatric population. This problem is increased with the ingestion of multiple magnetic foreign bodies, which pose a higher risk of obstruction, fistulization, or perforation. However, many of these objects are small and may be difficult to localize within the bowel by vision alone, limiting the use of laparoscopy. We present a novel use of a magnetic ophthalmologic probe for use in identifying magnetic foreign bodies.

**METHODS/RESULTS:** A 4-year-old female presented two weeks after ingestion of a magnetic toy. The toy was noted to be in a similar location in the right lower quadrant on serial imaging and, due to increased symptomatology, the patient was scheduled for diagnostic laparoscopy. After placement of 3 ports, the bowel was examined, but the foreign body was not identified. A magnetic ophthalmologic probe was used to identify the magnet in the cecum and manipulate it to the hepatic flexure. It was removed via colonoscopy after bowel prep. The patient did well post-operatively and was discharged the day following foreign body removal.

**CONCLUSION:** This technique highlights the potential use of a magnetic ophthalmologic probe in the identification of magnetic foreign bodies. After identification, the object can either be manipulated distally for retrieval by endoscopy or spontaneous evacuation. Alternatively, the magnet could be used to secure the magnetic foreign body until removal via enterotomy.



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### **P029: COMPLICATED APPENDICITIS IN CHILDREN: TRADITIONAL VS LAPAROSCOPIC APPROACH** – Carlos Garcia-Hernandez, MD, Lourdes Carvajal-Figueroa, MD, Humberto Murguía-Guerrero, MD, Sergio Landa-Juarez, MD; Hospital Infantil Privado

**BACKGROUND:** Appendicitis is the main reason for acute abdomen and urgency surgery in children. There are different reports that describe a greater risk of infectious complications in patients with perforated appendicitis treated through laparoscopic approach.

**AIM:** Determine the advantages and areas of opportunity of the laparoscopic approach, in contrast with the traditional approach, for the treatment of complicated acute appendicitis.

**METHODS.** Prospective random comparative study. Patients with complicated appendicitis. These were divided in two groups: Group I traditional open approach and Group II with laparoscopic approach in three ports.

**RESULTS:** In the period from January 2004 to January 2014, a total of 340 patients with a diagnostic of complicated appendicitis were included. Group I was formed by 164 children and Group II by 176 patients. The age ranges of Group I were in average 7.088 and in Group II of 7.45 years (P=0.86). Evolution time of Group I of X=54.53 and Group II of X=53.58 hours (P=0.20). The amount of purulent material in Group I varied from 30 to 300 ml with an X=68.62 ml and in Group II from 30 to 600 ml with an X=70.72 (P=0.16). The average surgery time of Group I was of X=72.64 minutes and in Group II of 32.12 minutes (P=0.0007). The commencement of oral feeding in the Group I was of X=114.27 hrs. And in Group II of X=38.52 hrs. (P=0.005). The hospital permanence of Group I was of X=7.31 days and in Group II was of X=3.5 days (P=0.067). 104 patients of Group I presented wall abscesses whereas only 14 patients presented abscesses in 14 patients (P=0.004). There was presence of residual abscesses in 14 patients of Group I and in 8 patients of Group II, without statistical significance. 19 patients of Group I and 4 patients of Group II showed intestinal obstruction (P=0.007).

**DISCUSSION:** The use of laparoscopic treatment for complicated appendicitis is not widely accepted due to the fact that it is argued that it is associated with a greater frequency of infectious complications. This study demonstrated that the laparoscopic approach has the following advantages: it required half of the surgery time, oral feeding was started early, the hospitalization was less than the time taken by the traditional open approach, and there were less infections. Contrary to what is believed, the laparoscopic approach does not contribute to infectious complications.

**CONCLUSION:** The minimum invasive approach is an adequate treatment for children that present acute complicated appendicitis, due to the fact that it allows an earlier oral feeding with a reduced hospitalization period in addition to a reduced frequency of infectious complications.

### **P031: A NOVEL METHOD OF MANAGING ANASTOMOTIC STRICTURE FOLLOWING DUODENAL ATRESIA REPAIR** – Andrew R Ross, MBChB, MRCS, Ashish Minocha, FRCS; Jenny Lind Children's Hospital, Norfolk & Norwich University Hospital, UK

**BACKGROUND/AIM:** Successful duodenoduodenostomy for duodenal atresia confers a survival rate of approximately 95%. The development of duodenal stricture following this procedure is a recognised complication that may require additional laparotomies.

THE use of endoscopic balloon dilatation in infants and children has not been described frequently in the literature. Reports exist which describe balloon dilatation being used to manage anastomotic strictures following the STEP procedure (Miraglia 2010),

jejunal atresia repair (Kim 2008) and in treatment of membranous duodenal stenosis (van Rijn 2006). Diamond's 2006 series of 11 children included NEC strictures in addition to congenital duodenal stenosis and an annular pancreas. In each report all dilatations were performed by interventional radiology. To the best of our knowledge no report currently describes management of anastomotic stricture following repair of duodenal atresia. We include our experience of endoscopic balloon dilatation of a post duodenoduodenostomy anastomotic stricture.

**METHODS:** A term female infant with an antenatal diagnosis of duodenal atresia, trisomy 21 and an atrial septal defect with patent ductus arteriosus underwent successful open 'diamond' duodenoduodenostomy on day one of life. No early post-operative complications occurred; she achieved full enteral feeds on D4 of life and was discharged on D10. Follow up passed without incident over 5 years when she was discharged by the surgical team. At age eight she presented with new onset bile-stained vomiting and reported symptoms of abdominal discomfort after eating. An upper GI contrast study demonstrated 'significant anastomotic stricture'. This was confirmed with diagnostic upper GI endoscopy during which it was demonstrated that the stricture could be traversed endoscopically. Balloon dilatation (18 x 8mm to 50 PSI), was then performed as an alternative to the planned re-laparotomy and the stricture dilated. No further bilious vomiting was reported.

**RESULTS:** In total 4 further elective balloon dilatations were performed over 2 years as part of surveillance UGI endoscopy (reflux oesophagitis was noted at initial endoscopy). After each intervention symptoms of abdominal pain were reduced and the appearance of the stricture incrementally improved. On each occasion the patient was able to be discharged on the day of the procedure.

**CONCLUSION:** Balloon dilation is an effective and safe means of treating anastomotic stricture following duodenal atresia repair. This technique may be performed by interventional radiology or by the surgeon who has sufficient endoscopic experience. This method may prove particularly beneficial in those patients for whom long invasive re-do procedures may be poorly tolerated.

### **P032: RECURRENT VOLVULUS FOLLOWING LAPAROSCOPIC LADD'S PROCEDURE** – Danielle S Walsh, MD<sup>1</sup>, James C Parker<sup>2</sup>;

<sup>1</sup>East Carolina University, <sup>2</sup>Trinity School of Medicine

**INTRODUCTION:** Recurrent midgut volvulus following a laparoscopic Ladd's procedure is a much feared, but not yet reported, complication. In this report, we describe a patient with a small bowel volvulus 11 years after a laparoscopic Ladd's.

**CASE PRESENTATION:** A 14-year old male was admitted with a two day history of emesis without fever and increasing abdominal pain. His history was notable for DiGeorge syndrome, Tetralogy of Fallot, and malrotation treated with laparoscopic Ladd's procedure at three years of age. Abdominal plain film was concerning for significantly dilated small bowel and obstruction, and physical exam revealed distention and peritonitis. He was taken urgently to the OR for exploratory laparoscopy for suspected volvulus. On confirmation of ischemic and necrotic volvulus, the procedure was converted to laparotomy with resection of his nonviable ascending and transverse colon followed by an ileostomy and Hartmann's pouch formation. The remaining small bowel was viable after detorsion. Several weeks later, the patient's ostomy was taken down and the patient is currently asymptomatic.

**METHODS:** A literature search was performed through PubMed using the search terms "malrotation," "volvulus," and "laparoscopy" to identify cases of recurrent volvulus after laparoscopic Ladd's procedure.

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**RESULTS:** Twenty-nine relevant papers were identified and reviewed. No other reports of recurrent volvulus after a laparoscopic Ladd's procedure were identified.

**DISCUSSION:** The traditional Ladd's procedure has been performed since 1934 with reported volvulus recurrence rates of  $w < 1\%$  and incidence of small bowel obstruction between 3–8%. Theoretically, the adhesions formed during laparotomy anchor the bowel in place, preventing future recurrences of intestinal volvulus. However, the adhesions may also result in obstruction requiring reoperation. Since the introduction of the laparoscopic Ladd's procedure technique in 1995, its role in the management of malrotation with and without volvulus has been widely debated. Laparoscopy decreases adhesion formation, minimizing the risk of bowel future obstruction, but may also increase the risk of developing volvulus due to lack of adhesions. While this has been theorized frequently, it has yet to be reported in the surgical literature until now. Surgical management of intestinal malrotation forces the surgeon to decide between laparotomy and laparoscopy, each generating a risk for undesirable post-surgical complications.

**CONCLUSION:** As suspected, recurrent volvulus can occur after laparoscopic Ladd's procedure. When selecting a technique for the treatment of malrotation, surgeons should carefully consider the advantages and disadvantages of both the laparoscopic and open techniques, recognizing recurrence after laparoscopic Ladd's is no longer theoretical. The prospect of future volvulus recurrence continues beyond the typical follow-up period reported in previous case studies comparing the two methods. Further prospective randomized studies or database evaluations could shed light on more occurrences of this deadly complication.

**P033: RETROPERITONEAL PERFORATION OF DUODENUM AFTER LAPAROSCOPIC NISSEN FUNDOPLICATION AND GASTROSTOMY TUBE PLACEMENT IN TWO NEUROLOGICALLY IMPAIRED INFANTS AN UNUSUAL LATE COMPLICATION** – Farid Khanmammadov, MD<sup>1</sup>, [Gulnur Gollu, MD<sup>1</sup>](#), Gonul Kucuk, MD<sup>1</sup>, Ayhan Yaman, MD<sup>2</sup>, Caglar Odek, MD<sup>2</sup>, Tanil Kendirli, MD<sup>2</sup>, Meltem Bingol Kologlu<sup>1</sup>; <sup>1</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY, <sup>2</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRICS, PEDIATRIC INTENSIVE CARE UNIT

**INTRODUCTION:** Laparoscopic Nissen fundoplication and gastrostomy tube placement are standard procedures in neurologically impaired children. The aim is to present an unusual late complication, retroperitoneal duodenal perforation which occurred in two neurologically impaired infants after laparoscopic Nissen fundoplication and gastrostomy placement.

**CASE 1:** Ninety-six-day-old, 2.700gr male infant who had previous surgery for double aortic arch presented with cerebral palsy, feeding difficulties, failure to thrive and gastroesophageal reflux. He underwent laparoscopic Nissen fundoplication and gastrostomy tube placement. His early postoperative period was uneventful and he was doing well on his last control. On postoperative 36th day, he presented with clinical deterioration and findings of sepsis. Work-up revealed retroperitoneal free air, mostly around the left kidney. He underwent laparotomy and found to have a retroperitoneal duodenal perforation on the posterior wall, 2 cm proximal to duodeno-jejunal junction and presence of retroperitoneal abscess around abdominal aorta extending to the both peri-iliac and inguinal areas. The perforation was primarily sutured and retroperitoneal area was drained. The patient died on postoperative third day because of uncontrolled sepsis.

**CASE 2:** Seventy-four-day-old, 2500gr infant with cerebral hypoplasia, dysmorphic face and spastic extremities presented with recurrent lower respiratory tract infection episodes, feeding difficulties and failure to thrive. Work-up for evaluation of gastroesophageal reflux revealed presence of a congenital hiatal hernia. He underwent a successful laparoscopic hiatal hernia repair, Nissen fundoplication and gastrostomy placement. On postoperative 46th day, he presented with bilious vomiting and abdominal distention. Work-up revealed free air in the abdomen. He underwent laparotomy and found to have retroperitoneal duodenal perforation exactly on the same place like the previous patient. The perforation was primarily sutured and placement of duodenal tube and a feeding jejunostomy tube were done. The patient recovered and doing well.

Both patients had a history of occluded gastrostomy tube few hours before they became symptomatic and both parents tried to unclog the tubes by pushing plunger hardly and by forcing the water into the tube.

**CONCLUSION:** Retroperitoneal duodenal perforation is an unusual complication which can occur after laparoscopic Nissen fundoplication and gastrostomy tube placement, especially in small infants with growth retardation. This complication should be kept in mind, especially in infants, presenting with symptoms of sepsis after Nissen fundoplication and gastrostomy tube placement. It could be speculated that forceful attempts for unclogging gastrostomy tubes and increased intraduodenal pressure could be the reason of perforation. Therefore parents and caregivers should be advised against forceful flushing of occluded gastrostomy tubes.

**P034: THORACOSCOPIC EXCISION OF AN INTRAMURAL ESOPHAGEAL BRONCHOGENIC CYST** – Nil Yasam Tastekin, MD<sup>1</sup>, Gonul Kucuk, MD<sup>1</sup>, [Gulnur Gollu<sup>1</sup>](#), Ergun Ergun, MD<sup>1</sup>, Sinan Yildiz, MD<sup>2</sup>, Suat Fitoz, MD<sup>2</sup>, Meltem Bingol Kologlu<sup>1</sup>; <sup>1</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY, <sup>2</sup>ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF RADIOLOGY

**AIM:** Bronchogenic cysts are rare mediastinal masses. Usually they appear adjacent to esophagus but rarely take place in the muscular layer of esophagus. We present a case of intramural esophageal bronchogenic cyst managed by successful thoracoscopic excision

**CASE:** Six-year-old boy who had history of asthma since 6 months old and hospitalized twice because of lower respiratory tract infection was found to have a mediastinal mass during evaluation. Computerized tomography revealed 4x3cm lower mediastinal mass neighbouring the front wall of the esophagus. In thoracoscopy, mediastinal mass was dissected, found to be in the muscular layer of esophagus and excised. Intraluminal connection of the esophagus was repaired with intracorporeal sutures. The nasogastric tube was removed on postoperative fifth day and the patient was fed on postoperative sixth day. There were no intraoperative or postoperative complications. In two years of follow-up, he is doing well. Histopathological examination was consistent with bronchogenic cyst.

**CONCLUSION:** Although esophageal duplications or leiomyomas are primarily seen as intramural esophageal cysts, bronchogenic cysts should also be kept in mind. Thoracoscopic excision is an easy, safe and minimal invasive approach in the management of intramural esophageal bronchogenic cysts.

## Poster Abstracts CONTINUED

### **P035: LAPAROSCOPIC MANAGEMENT OF CHILDHOOD INTUSSUSCEPTION** – Fuad Mammadov, MD, [Gulnur Gollu, MD](#), Gonul Kucuk, MD, Farid Khanmammadov, MD, Nil Yasam Tastekin, MD, Aydin Yagmurlu, MD, Murat Cakmak, MD, Tanju Aktug, MD, Huseyin Dindar, MD, Meltem Bingol Kologlu, MD; ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY

AIM: Minimally invasive approaches are beginning to be employed in the management of pediatric patients with intussusception who fail radiological reduction. In order to find out the success rate of laparoscopic approach, the experience in management of childhood intussusceptions was reviewed.

PATIENTS and Method: Records of patients who were treated for intussusception from 2006 to 2013, inclusive were reviewed. The data including age, gender, symptoms and findings at admission, type of reduction and follow-up were recorded and evaluated.

RESULTS: Two hundred and thirty-six patients whose ages range from four months to 13 years (median of 2 years) were admitted because of vomiting, abdominal pain, restlessness, abdominal distention and bloody stools. Hundred and fifty-three (64%) of these patients were male and 83 (36%) were female. Radiological reduction either by ultrasound (n:201, 85%) or fluoroscopy guidance (n:6, 2.5%) was successful in 88% of the patients. Laparoscopic reduction was attempted in 29 (12%) of the patients and successfully done in 18 (62%) of them. Eleven (38%) of the 29 patients in whom laparoscopic reduction was unsuccessful underwent laparotomy. Manual reduction was performed in 4 (1.7%) patients whereas resection and anastomosis were required in the remaining 7 (2.9%) patients. Meckel diverticulum (n:4) and intestinal Burkitt lymphoma (n:2) were the leading points in those patient who required intestinal resection and anastomosis. The remaining patient underwent resection anastomosis because of the presence of necrotic areas in small bowel after manual reduction. Recurrent intussusception occurred in 12 (5%) of the cases who underwent radiological reduction for the first and second intussusception. Seven of the 12 patients encountered third intussusception and underwent laparoscopic evaluation for leading point. They were found to have enlarged mesenteric lymph nodes without significant pathological findings at terminal ileum.

CONCLUSION: Both radiological and laparoscopic reductions were successful in 95% of pediatric patients presented with intussusception. The data shows that the utility of laparoscopic reduction has significantly reduced the need of classical open manual reduction. It seems that mostly the patients with underlying leading points require resection and anastomosis.

### **P036: LAPAROSCOPIC GASTROSTOMY IS SUPERIOR TO PERCUTANEOUS ENDOSCOPIC GASTROSTOMY TUBE PLACEMENT IN CHILDREN LESS THAN 5 YEARS OF AGE** – Mikael Petrosyan, MD, [Ashanti Franklin, MD](#), Tina Doan, Philip Guzzetta, MD, Timothy Kane, MD; Children's National Medical Center

PURPOSE: Minimally invasive procedures for enteral access in children have significantly evolved over the years, resulting in various techniques of gastrostomy tube placement. Two most common techniques are laparoscopic gastrostomy (LAPG) and percutaneous endoscopic gastrostomy (PEG) placement. Our study compares the outcomes of both procedures in children under the age of 5.

METHODS: All procedures relating to enteral access in children under 5 years of age were reviewed from July 2009 to July of 2014. Demographics, techniques, complications were collected and analyzed.

RESULTS: Of 293 patients in our study, 150 patients underwent PEG, 75 LAPG and 68 LAPG with Nissen Fundoplication. Most common indication for enteral tube placement was failure to thrive and feeding intolerance. Operative time was less in PEG group compared to the other two groups ( $p=0.001$ ). Overall complication was 46.7% for LAPG, 36.8% for LAPG with fundoplication and 43% for PEG ( $p=NS$ ). Major complications occurred only in PEG group 1 death, and 2 gastrocolonic fistulas. Significant number of patients from (PEG) group ( $n=68$ ) underwent tube exchanges under anesthetic requiring additional trip to operating room with general anesthesia compared to other groups ( $p=0.001$ ). 134 patients from PEG group required number of fluoroscopic interventions for tube dislodgments, and conversion to gastrojejunostomy tubes for significant reflux and inability to tolerate gastric feeds. ( $p=0.001$ ).

CONCLUSION: Minimally invasive LAPG and PEG techniques have both advantages and disadvantages. Although operative time is longer in laparoscopic group, laparoscopic primary button placement seems to be the procedure of choice for children under the age of 5. This could eliminate unnecessary tube changes requiring an additional anesthetic. Furthermore, LAPG with anti-reflux procedure will minimize unnecessary exposure to fluoroscopy for conversion to GJ tubes in those patients who initially underwent PEG placement and are not able to tolerate gastric feeds.

### **P037: ENDOSCOPIC MANAGEMENT OF FOREIGN BODIES IN UPPER GASTROINTESTINAL TRACT IN CHILDREN** – Ergun Ergun, MD, Bilge Turedi, MD, Nil Yasam Tastekin, MD, Gonul Kucuk, MD, [Gulnur Gollu](#), Aydin Yagmurlu, MD, Murat Cakmak, MD, Tanju Aktug, MD, Huseyin Dindar, MD, Meltem Bingol Kologlu, MD; ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY

BACKGROUND: Foreign body (FB) ingestion is a common and potentially serious problem in children. The aim of this study is to review the experience on managing FBs in upper gastrointestinal tract with special emphasis on endoscopic techniques used for FB extraction.

MATERIALS & METHODS: A seven-year retrospective review of children who were admitted with upper gastrointestinal FB and required endoscopic management between January 2007 and September 2014 was undertaken. Clinical data, location of the FB, management techniques were evaluated. The patients with all esophageal FBs, disk batteries and sharp objects entrapped in stomach underwent emergent endoscopic foreign body removal.

RESULTS: Hundred and two children were treated for upper gastrointestinal FB ingestion, of which 56% were entrapped in stomach and 44% in esophagus. The mean age of the patients was 33 months (7 months -15 years) The most frequently ingested item was coin (34%), followed by small disk batteries (21%) and safety pins (15%). Esophageal FBs were most commonly entrapped in the upper third of the esophagus (71%) followed by middle third (18%) and lower third of esophagus (11%). 63% of the patients were treated with flexible endoscopy whereas 31% were treated with rigid endoscopy. In 6% long-bladed laryngoscope and Magill forceps were used. In one patient who ingested two magnets, one of the magnets which was buried into the stomach wall could not be removed endoscopically and required laparotomy. Rigid endoscopy was preferred mostly in upper esophageal foreign bodies. Optical forceps (35%) were the most commonly used tool, followed by grasping forceps (25%), polypectomy snares (20%) and tripod forceps (10%). The FB was successfully removed in 99% of patients.

CONCLUSIONS: Flexible endoscopic treatment is a safe and reliable procedure with a high success rate in upper gastrointestinal FBs. Rigid

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endoscopy is suitable for esophageal coins since optical forceps allow strong grasping of the coin. However retrieval of sharp objects like safety pins requires flexible endoscopic view for a safe FB extraction. Various removal tools should be available for successful FB removal. Grasping forceps and polypectomy snares are the most effective tools in the removal of foreign bodies.

**P038: ANALYSIS OF LAPAROSCOPIC VS ENDOSCOPIC GASTROSTOMY TUBES** – Kelsey Nestor, BS, David Kays, MD, Shawn Larson, MD, Janice Taylor, MD, Saleem Islam, MD, MPH; University of Florida

**PURPOSE:** Gastrostomy tube placement is a very common procedure in children due to the need for additional feeds. There are two minimally invasive techniques to place these tubes – Endoscopic (PEG) or laparoscopic. The purpose of this report was to describe our experience and compare the two techniques.

**METHODS:** A retrospective review of patients who had gastrostomy tubes placed over a 5 year period (2009–2014) was performed and clinical as well as outcome data was obtained. The patients who had open procedures were excluded, and two cohorts created (PEG and Laparoscopic). Data was analyzed between the cohorts using the t test, Fischer’s exact test, and Mann Whitney – U Test.

**RESULTS:** A total of 273 gastrostomies were performed during the study period, with 55 open ones excluded. Of the remaining, 168 were laparoscopic while 41 were PEG tubes. Patients having a PEG were significantly older (84 vs. 16 months,  $p < 0.0001$ ), and the proportion of PEG greater than 3 was significantly higher. Similarly, mean weight was higher for PEG’s as well (21.5 vs. 7.9 kg,  $p = 0.001$ ). The gender, race, preoperative comorbidities, type of postoperative feedings, and overall complications were not different between PEG and laparoscopic tubes. A higher proportion of PEG patients complained of pain at the site, and required a repeat OR procedure. There were significantly more laparoscopic procedures in patients who had GER in their primary diagnoses, and a large number of these patients had a nissen fundoplication at the same time (54.8%). Granulation tissue formed equally in both types of tubes, however the PEG group was more likely to require excision of the tissue indicating increased severity.

**CONCLUSIONS:** In comparing MIS gastrostomy tubes, complication rates were not different, but there were more operative procedures needed in the PEG group. The laparoscopic approach was well suited to the younger patient, while PEG was better for the older child, and has become our practice.

**P039: ENDOLOOPS FOR APPENDICEAL STUMP CLOSURE IN PEDIATRIC LAPAROSCOPIC APPENDECTOMY: IS THERE A SUPERIOR TECHNIQUE?** – Katherine P Davenport, MD<sup>1</sup>, Erin Ward, MD<sup>2</sup>, Timothy Fairbanks, MD<sup>1</sup>, Julia Grabowski, MD<sup>1</sup>; <sup>1</sup>Rady Children’s Hospital San Diego, <sup>2</sup>UCSD Department of Surgery

**BACKGROUND:** Endoloops have been previously shown to be safe in managing the appendiceal stump in laparoscopic appendectomies in children. There are a variety of techniques described for the placement of endoloops with the goal being secure stump closure as well as prevention of spillage during specimen retrieval. We sought to determine whether method of endoloop placement affected post-operative infection rate.

**METHODS:** We reviewed 500 consecutive laparoscopic appendectomies performed for acute appendicitis at our university children’s hospital. We included only patients with nonperforated appendicitis in order to exclude those with preexisting contamination due to perforation. We reviewed demographics, operative reports and post-operative complications. Operative details included method

of appendiceal stump ligation, use of irrigation and/or suction and method of appendix retrieval.

**RESULTS:** Five-hundred consecutive patients underwent appendectomy from 1/2013 through 7/2013. We identified 332 patients who had nonperforated appendicitis. Of these, there were 198 males and 134 females with an average age of 10.9 years (range 3–21). In all cases, the appendiceal mesentery was taken with with electrocautery, and stump closure was performed with endoloops. Several techniques of endoloop stump closure were utilized: 2 proximal and 1 distal, 1 proximal and 1 distal, 2 proximal and 0 distal, and 1 proximal and 0 distal. The appendiceal base was divided between proximal and distal loops. There were 8 postoperative complications (2.4%) which included 5 umbilical wound infections and 3 intra-abdominal abscesses. There was no significant difference in post-operative complication rate regardless of method of endoloop utilization. Additionally, complication rates were not influenced by use of specimen retrieval bag, suction or irrigation.

Postoperative Complications			
Endoloop Configuration	Total #	# Postop Infections	%
2 Proximal + 1 Distal	98	3	3.1 %
2 Proximal + 0 Distal	57	0	0 %
1 Proximal + 1 Distal	93	2	2.2 %
1 Proximal + 0 Distal	84	3	3.6 %

**CONCLUSION:** With the use of endoloops for appendiceal stump closure, the rate of post-operative complications after laparoscopic appendectomy for nonperforated appendicitis is low. Furthermore, the method of endoloop placement does not appear to affect complication rates. This study suggests that limiting the number of endoloops used in appendectomies is safe and effective. The use of fewer endoloops may be promote cost efficiency by reducing operative time and disposable equipment costs.

**P040: PERFORATED STUMP APPENDICITIS – A RARE COMPLICATION** – Oliver J Muensterer, MD, PhD<sup>1</sup>, Gerard Weinberg, MD<sup>2</sup>; <sup>1</sup>University Medicine, Johannes Gutenberg University Mainz, <sup>2</sup>Children’s Hospital at Montefiore, Albert Einstein College of Medicine

**INTRODUCTION:** Stump appendicitis is a rare complication after incomplete appendectomy. This report describes a case of perforated stump appendicitis and reviews the pertinent published literature on the subject.

**VIDEO case report:** A 12 year old girl developed diffuse peritonitis 18 months after previous laparoscopic appendectomy. A computed tomography showed inflammation in the right lower quadrant with free fluid. The abdomen was explored using single-incision endosurgery, showing purulent peritonitis with intense adhesions. After careful dissection, a 3 cm long appendiceal stump leaking pus from a perforation at the staple line was encountered. It was mobilized down to its base and removed including a portion of healthy cecal tissue. The patient recovered well and was discharged home after 5 days of intravenous broad-spectrum antibiotics.

**METHODS:** A pubmed literature search was performed using the term „stump appendicitis“ The resulting abstracts were screened for relevance and systematically reviewed.

**RESULTS:** The literature search returned 217 published abstracts of which 93 actually described at least one case of stump appendicitis. Most were case reports or series including up to 3 patients. Delays and errors of diagnoses were common, because appendicitis is initially excluded as a cause of the abdominal pain due to surgical history. Cross sectional imaging such as computed tomography or magnetic resonance imaging is useful to make the diagnosis.

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Stump appendicitis has been treated almost exclusively by open appendectomy in the past. Incidentally, our patient is the first case of stump appendicitis treated by single-incision endosurgery.

**CONCLUSION:** Stump appendicitis is difficult to diagnose and frequently picked up late. If the presentation is unclear, cross-sectional imaging should be performed. Stump appendectomy by minimal-invasive techniques is a viable alternative to open surgery.

**P041: LAPAROSCOPY IN EMBRYONIC REMNANTS AND APPENDICITIS** – J Syed, S Kern, Rt Carbon; Pediatric Surgery, University Hospital Erlangen

**BACKGROUND:** Pathogenesis of appendicitis is by far based on obstructive conditions, which eventually create the inflammatory transition by bacterial oversupply. To exclude the differential diagnoses it should be thought about a variety of pediatric and surgical diagnoses. Because of laparoscopic approach many of those common conditions can ultimately be eliminated, however some can be discovered.

We are talking about embryological remnants located in the peritoneal cave, which can cause appendicitis by stenosis, kinking of the bowel, compression or circulatory disorders. Such regression disorder can develop from several embryological structures: yolk sac (Meckel's diverticulum, yolk sac cyst, ROSEY cyst, vasa vitellina), allantois duct (urachus), ventral mesentery (ligamenta ileoparietalia (LANE membrane A/B/C), coloparietalia, ileogenitalia). Particularly LANE membranes can cause kinking of small bowel, compression and various ileocecal pouches. Those findings are hardly found in the literature, seem to be more often than assumed, can not only completely detract from apparative diagnostic measures, but are also often misdiagnosed as retrocecal adherence in a not pre-operated abdomen, mostly destroyed in open and blunt preparation and its genesis gets obliterated. However, such structures are laparoscopically shown native and are explored especially in pneumoperitoneum.

**PATIENTS & RESULTS:** In our own pediatric surgical patients [1993-2012, age: 2 days - 23 years, median: 11,3 years, weight: 1850 grams - 152 kilograms, median: 44 kg, 1460 female (62%)] primary laparoscopy was made because of tentative diagnosis appendicitis and/or acute abdomen in 2355 cases. In 1912 patients embryologic remnants with ileocecal alteration were found (81,2%). 2043 patients had a histologically defined appendicitis (86,8%). In 1804 of those cases corresponding ligaments were found (88,3%). 552 (26,7%) of those patients showed a histologically high graded appendicitis (ulcerophlegmoneous, gangrenous, perforated), that was associated with ileocecal ligament structures in 512 patients (92,7%) [ $p < 0.01$ ]. The embryologic structures were removed in any case respectively cut by using piezoelectric device. Avascular, tent- and canvas-formed ligaments could be cut by scissors. Stapling device was necessary in strong and blood circulated ligaments. Histologically embryological angiocytes were found besides a variety of connective tissue structures.

**DISCUSSION:** Few sources mention peritoneal, embryological, ligamentary structures of different genesis. Waldschmidt gave a classification of those remnants (Waldschmidt J. Das akute Abdomen, VCH, 1990) and showed resulting clinical pictures, certainly without any significant conclusion relating to the pathogenesis of appendicitis. From our observation we can reason, that in ileocecal ligamentary appearance, obviously based on physical moments (compression, torsion, obturation), appendicitis can be induced in context of constipation and high grade inflammatory reactions can result. The ligamentary structures cannot be seen in any imaging (ultrasound, CT, MR), so that in the end laparoscopy is not only therapeutically efficacious, but also the only diagnostic instrument in embryological ligaments in the peritoneum.

**P042: LAPAROSCOPIC PROCEDURES FOR CYSTIC PANCREATIC LESIONS IN CHILDREN** – Shuli Liu, MD, Long Li, MD, Xu Li, MD, Jun Zhang, MD, Kaoping Guan, MD, Zhen Chen, Zhen Zhang, Yandong Wei, Chen Wang; Capital Institute of Pediatrics

**OBJECTS:** The aim of the present study was to review and analysis the use of laparoscopic Roux-Y Procedures in children with pancreatic cystic lesions.

**MATERIALS & METHODS:** Retrospective review during April 2006 to June 2014 laparoscopic Roux-Y Procedures for cystic pancreatic lesions were performed in children using 3 or 4 trocars under general anaesthesia. Data are quoted as median (range). Their age ranged from 13 to 56 months. 2 were boys, and 3 were girls. The median diameter of lesions was 6 (ranged, 4-12) cm. 5 children underwent the laparoscopic procedure.

**RESULTS:** laparoscopic Roux-Y Procedures for cystic pancreatic lesion was performed successfully in 5 children. Pancreatic pseudocysts presented in 3 patients, and pancreatic cysts presented in 2. the median operating time was 90(ranged, 80-150)min. the estimate blood loss was 10 to 30ml. The median hospital stay postoperatively was 7 (2-14) days. No pancreatic and intestinal leak occurred. There was no ileus in this group. There has been no recurrence at median follow-up of 28 (4-98) months.

**CONCLUSIONS:** laparoscopic Roux-Y Procedures for cystic pancreatic lesions is a safe and effective preliminary. And laparoscopic procedure is alternative for the management of cystic pancreatic lesions in children and should now be considered as treatment of choice.

**P043: LAPAROSCOPIC TREATMENT FOR STRICTURE OF BILIARY-INTESTINAL ANASTOMOTIC STOMA IN CHOLEDOCHOCYST POSTOPERATION** – Zhaozhu Li, MD, Qingbo Cui, Dapeng Jiang, Bo Xu, PhD; Department of Pediatric Surgery, the 2nd Affiliated Hospital of Harbin Medical University

**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 postoperative periods. Stenosis of biliary-intestinal anastomosis, cholelithiasis and infection of biliary tree may also occur in post-operation. Here we treated 3 patients with the stenosis of biliary-intestinal anastomosis complications associated with choledochocyst by laparoscopic technique.

**METHODS:** Total 3 children were treated in our hospital from June 2010 to June 2014. Two boys and one girl 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. The girl was 14 years-old and had been treated by open choledochal cyst excision with Roux-en-Y hepatico-jejunostomy 7 years ago. She had been ill with reoccured cholangitis and cholelithiasis for half year.

**RESULTS:** All patients were operated by redo laparoscopic hepatico-jejunostomy. The procedure included splitting adhesions, enlarging anastomotic stoma, and calculus removed ect. All children recovered well and were hospital stay for 10, 12 and 14 days, respectively.

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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. 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

**P044: LAPAROSCOPIC EXCISION OF CHOLEDOCHAL CYST WITH ROUX-EN-Y HEPATOENTEROSTOMY IN CHILDREN WITH PAST HISTORY OF BILE DUCT DRAINAGE** – Jiangbin Liu<sup>1</sup>, Zhibao Lv<sup>1</sup>, Xianmin Xiao<sup>2</sup>; <sup>1</sup>Shanghai Children's Hospital,, <sup>2</sup>Children's Hospital of Fudan University

**AIMS & OBJECTIVES:** To review the experience on the laparoscopic cyst excision with Roux-en-Y hepatoenterostomy in children with past history of bile duct drainage for choledochal cyst.

**MATERIALS & METHODS:** from March 2010 to June 2014, 6 cases of choledochal cyst with past history of bile duct drainage 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 University. 4 males and 2 females were studied. Median age was 3.75 years (range, 1.7-5.5 years). The reasons for bile duct drainage were as the following: obstruction of the bile duct associated with severe cholangitis(3 children, 2 with bile duct perforation); "huge" choledochal cyst(1 child); pancreatitis with peritonitis(1 child); and multiple stones in common bile duct(1 child).

**RESULTS:** 4- or 3-trocar were utilized with 3- to 5-mm instrumentation. 5 cases were completely performed by laparoscopic excision of choledochal cyst with Roux-en-Y hepatoenterostomy. Only one converted to opening for severe adhesion. The average duration of operation was 225-275min; intraoperative blood loss was 15-35ml without any blood transfusion. The postoperative course was uneventful in all the patients with a hospital postoperative stay ranging from 4.5 to 7 days. There were no postoperative complications in the 0.3 to 3.7 years follow-up in 5 children, and 1 patient lost follow-up.

**CONCLUSIONS:** Laparoscopic excision of choledochal cyst with Roux-en-Y hepatoenterostomy is safe and feasible method for the treatment of children with past history of bile duct drainage without severe adhesion, and the surgery should be underwent by experienced Laparoscopic surgeon.

**P045: LAPAROSCOPIC HEPATECTOMY FOR HEPATIC TUMOR IN CHILDREN** – Jiangbin Liu<sup>1</sup>, Zhibao Lv<sup>1</sup>, Kuiran Dong<sup>2</sup>, Xianmin Xiao<sup>2</sup>; <sup>1</sup>Shanghai Children's Hospital, <sup>2</sup>Children's Hospital of Fudan University

**AIMS & OBJECTIVES:** To review the experience the Laparoscopic hepatectomy (LH) for hepatic tumor in children from the two children's hospitals of Shanghai city in China.

**MATERIALS & METHODS:** From April 2010 to August 2014, 5 cases of hepatic tumor were performed by total laparoscopic resection in Shanghai Children's Hospital, Shanghai Jiao Tong University and Children's Hospital of Fudan University. All the patients with an age range from 2.75 to 4.5 years and a body weight from 14.5 to 21.5 kg.

**RESULTS:** LH was completed in all the 5 patients. The types of hepatectomy performed included partial hepatectomy, 2 cases; segmentectomy, 3 cases (II, IV or VI segment respectively); The pathologies were as the following: hepatoblastoma (2 cases, 40%), hemangioma (1 cases, 20%), hepatic cysts (1 case, 20%) and focal

nodular hyperplasia (1 case, 20%). The median operative time was 65 min (range: 35-115min) while the median quantity of blood loss was 12.5 ml (range: 5-15ml). No conversion to open surgery and no blood transfusion were needed. The duration of hospital stay ranged between 3 and 5.5 days. No complications, no cases of disease recurrence or death of patients were reported.

**CONCLUSIONS:** LH, especially for the partial hepatectomy or segmentectomy, is feasible for the children with hepatic tumor. However, the further technical advancements are needed to enhance the accuracy of the resection, especially for the superior/posterior segments.

**P046: REPORT OF FIRST SUCCESSFUL LAPAROSCOPIC-ASSISTED CHOLECYSTOCOLOSTOMY IN A CHILD WITH PFIC IN EUROPE** – Wilfried Krois, MD<sup>1</sup>, Patricia Feil, MD<sup>1</sup>, Wolf-Dietrich Huber, MD<sup>2</sup>, Azadeh Hojreh, MD<sup>3</sup>, Winfried Rebhandl, MD<sup>1</sup>, Martin Metzelder, MD<sup>1</sup>; <sup>1</sup>Medical University of Vienna, Clinical Department of Pediatric Surgery, <sup>2</sup>Medical University of Vienna, Department of Pediatrics, Division of Pediatric Gastroenterology, <sup>3</sup>Medical University of Vienna, Department of Biomedical Imaging and Image-guided Therapy, Division of

**BACKGROUND:** Without treatment, progressive familial intrahepatic cholestasis (PFIC) leads to fibrosis, cirrhosis and liver failure and in many cases to life-quality decreasing irritating pruritus. Many different techniques for external and internal biliary diversion are published in literature. To our knowledge this is the first reported case of a 12 year old boy with PFIC-2 first successfully treated with laparoscopic-assisted cholecystocolostomy in europe.

**METHODS:** A 12 year old boy with genetically verified PFIC type 2, growth retardation, mild elevation of liver enzymes and a pronounced pruritus underwent a laparoscopic assisted cholecystocolostomy with a 4-trocar technique. Left colonic flexure was mobilized laparoscopically. A small extension of left mid-abdominal trocar-incision was used to do the end-to-side transverso-descensostomy extracorporeally. The cholecystocolostomy was sutured laparoscopically using intracorporeal knot-technique. Beside the suitability of the procedure we assessed the course of serum bile acids, total bilirubin, liver enzymes and pruritus score postoperatively so far in an 2 month follow up.

**RESULTS:** No intra- and postoperative complications occurred. The patient was discharged on the 9th POD. The 5-D itch scale decreased from 20 preoperatively to 5 three days after the operation with complete relief of the pruritus. Total bilirubin decreased into normal range (from 1.57 to 0.95), aspartate amino transferase, alanine amino transferase and gamma-glutamyltransferase decreased mildly during follow up 1 month after the operation. No diarrhea was reported with a normal stool frequency of 1-2 per day. Postoperative MRCP-images show adequate biliary excretion of hepato specific MRI contrast agent into the colon descendens. The patients and parents satisfaction and the life quality improvement was excellent.

**DISCUSSION:** Laparoscopically-assisted cholecystocolostomy seems to be a safe technique for internal biliary diversion in patients with PFIC. It achieves an adequate bile flow with consecutive relief of pruritus and a mild decrease of liver enzymes and bile acids in the short term. We think the main benefit of this technique is the biliary diversion without the need of a cholecystostomy. This improves the quality of life in these children dramatically. Various internal biliary diversions with exclusion of the terminal ileum seem to bring bad long-term results because of adaptation-processes in the small intestines, which might hardly be possible in the colon. So far no complications and no cholangitis was noticed in this patient, nevertheless a longer follow up is necessary to estimate the long term outcome.

## Poster Abstracts CONTINUED

### **P047: ANALYSIS OF POSTOPERATIVE COMPLICATIONS OF LAPAROSCOPIC CHOLEDOCHAL CYST SURGERY** – Hongwei Xi, Shanxi Children's Hospital

**Objective:**To study postoperative complications of laparoscopic choledochal cyst surgery.

**METHODS:** A retrospective study was performed. 92 cases were conducted with laparoscopic choledochal cyst surgery between 2007 and 2014. Sociodemographic data (age and sex), complications and data of treatment were collected.

**RESULTS:** 5 cases were underwent conversion to laparotomy because of severe inflammation in the cyst wall and too much bleeding. Early complications: 2 cases suffering with early postoperative complication of anastomotic leakage, received laparotomy and reanastomosis. One was found incompatible diameter in end-to-side anastomosis between the common hepatic duct stump and Roux loop and the other case was untight tie. 1 case of postoperative pancreatic leakage, was cured with drainage in 1 month. 1 case of postoperative bleeding was discovered with bleeding in bed of cyst in the secondary laparotomy. 1 case with intermittent drainage of heavy bleeding postoperatively, because of the suture's mistakenly penetration through the right hepatic artery wall, was cured by reanastomosis. 1 case of intestinal obstruction was cured with reoperation.

**LATE COMPLICATIONS:** 1 case, presenting abdominal pain and jaundice 6 months after the operation, was considered anastomotic stenosis and found a suture seaming the anterior wall and posterior wall in the secondary operation. 1 case, found biliary calculi 3 years later, was treated with laparoscopic choledocholithotomy and choleric drugs.

**CONCLUSION:** Laparoscopic cyst excision and Roux-Y hepaticojejunostomy, for children with choledochal cyst is reliable. However, different degree of complications will appear, if improper disposal. Laparotomy should be timely carried out for heavy inflammation of cyst wall and longer time of operation. Adequate hemostasis during operation is an effective measure to lessen complication and raise the operation quality. Appropriate disposal should be taken to for the distal bile duct to avoid pancreatic leakage, especially for cylindrical ectasia in Todani type?. Being free of missing and unsuitable diameter in the end-to-side anastomosis between the common hepatic duct stump and Roux loop is the point to avoid anastomotic leakage. Sufficient carefulness is inquired to avoid damage the hepatic artery and portal vein when making hepaticojejunostomy. Skilled surgical technique and intraoperative carefulness are the keys to reduce the complications.

### **P048: LAPAROSCOPIC KASAI PROCEDURE FOR BILIARY ATRESIA, FIRST FIVE CASES RESULTS AND FOLLOWING IN HIGHLY SPECIALIZED HOSPITAL IN MEXICO CITY** – Pedro Salvador J Urueta, md, Rodrigo H Cifuentes, MD, Miguel Angel A Hernandez, MD, Luis Manuel A Zaragoza, md, Alfredo Castañeda, MD; CMN 20 de noviembre ISSSTE

**BACKGROUND:** Biliary atresia (BA) is a progressive inflammatory destructive process of the bile ducts occurring in about one of every 20,000 live births. The Kasai procedure allows the infant increased survival at 10 years that can reach 50-70%. If left untreated, biliary atresia can lead to liver failure. The only effective treatments for BA at the moment are the Kasai operation and liver transplantation. The laparoscopic approach has already been defined and has been carried out with mixed results exist even controversy in its final utility. Minimally invasive surgery requires mastery of complex skills and exhaustive knowledge of anatomic variations but the patient benefits from excellent cosmesis, less requirement for analgesia. Thus, the risk for damage to micro bile ducts around the porta hepatis is minimized

because deep suturing and extensive dissection are eliminated. The aim of the study was to present early outcomes of the laparoscopic technique for biliary atresia with some technical modifications and report our experience in laparoscopic management of five patients with biliary atresia.

**METHODS:** A retrospective observational study. We reviewed charts of all patients with biliary atresia who underwent laparoscopic portoenterostomy from January 2011 to January 2014. There were 5 patients with biliary atresia, including 3 male and 2 female. Surgery was performed within 60 days in 3 patients. A patient at 75 days and one at 115 days after birth, all patients undergo cholangiography transsurgical with liver biopsies to confirm the diagnosis of atresia,

**RESULTS:** All five patients underwent a laparoscopic procedure, conversion was not necessary. The mean surgical time was 3 hours and 40 minutes (range: 3:09 y 3:55). There were not intra operative complications and all of them had a satisfactory postoperative recovery. was performed Portoenterostomy with Extracorporeal Roux Limb Construction, two patients had resolution of cholestasis 10 days after surgery and one at 15 days, Two deaths due to severe liver damage occurred 6 months after surgery, followed for three years, 3 patient currently without portal hypertension with a normal liver function

**DISCUSSION:** Laparoscopic Kasai portoenterostomy for biliary atresia must be performed by qualified staff in laparoscopic techniques, also requires experience with open Kasai technique with appropriate results and extensive experience in laparoscopic procedures in order to decrease morbidity. Besides the certain advantages compared with conventional surgical procedures (lower surgical damage, diminished post-operative recovery), laparoscopic management of BA, allows a better exposure of the porta hepatis without hepatic mobilization so it shows similar or better preliminary results than conventional techniques. The advantages of laparoscopic portoenterostomy are yet to be proved whenever liver transplantation is indicated.

### **P049: LAPAROSCOPIC SIDE-TO-SIDE PANCREATICOJEJUNOSTOMY FOR CHRONIC PANCREATITIS IN CHILDREN IS A SAFE AND FEASIBLE SURGICAL PROCEDURE AND PROVIDES GOOD COSMETIC RESULTS** – Kyoichi Deie, MD<sup>1</sup>, Hiroo Uchida, MD<sup>2</sup>, Hiroshi Kawashima, MD<sup>3</sup>, Yujiro Tanaka, MD<sup>3</sup>, Michimasa Fujjogi, MD<sup>3</sup>, Hizuru Amano, MD<sup>3</sup>, Tadashi Iwanaka, MD, PhD<sup>1</sup>; <sup>1</sup>Department of Pediatric Surgery, University of Tokyo Hospital, <sup>2</sup>Department of Pediatric Surgery, Nagoya University Graduate School of Medicine, <sup>3</sup>Department of Pediatric Surgery, Saitama Children's Medical Center

**BACKGROUND:** Surgical pancreatic ductal drainage for chronic pancreatitis in children is relatively rare. It is indicated in cases of recurring pancreatitis and pancreatic ductal dilatation that have not responded to conservative management such as medical therapy or therapeutic endoscopy. We report the technique of laparoscopic side-to-side Roux-en-Y pancreaticojejunostomy in two children with chronic pancreatitis.

**CASE 1:** A 13-year-old boy had been admitted to hospital more than ten times for recurrent chronic pancreatitis since the age of three. Magnetic resonance cholangiopancreatography (MRCP) at the age of 12 revealed pancreatic stones as well as dilatation and tortuosity of the main pancreatic duct. Endoscopic sphincterotomy was performed with removal of the pancreatic stones, after which a pancreatic ductal stent was inserted. However, pancreatitis occurred repeatedly three months after this procedure. Ultrasonography and MRCP revealed dilation of the pancreatic duct to 6 mm and the patient was diagnosed with pancreatic exocrine function disorder; these were considered indications for surgical pancreatic ductal drainage.

## Poster Abstracts CONTINUED

CASE 2: A 6-year-old girl had been repeatedly admitted to hospital for recurrent pancreatitis over the past 2 years. Endoscopic retrograde pancreatography revealed pancreas divisum and dilatation and stenosis of the main pancreatic duct. Although the patient was managed medically, as well as insertion of a pancreatic ductal stent via endoscopy, these therapies were not effective. There was continued dilatation and stenosis of the pancreatic duct, and we considered that surgical pancreatic ductal drainage was unavoidable.

**OPERATIVE TECHNIQUE:** The patient was placed in a supine position. Carbon dioxide pneumoperitoneum was set at 8–12 mmHg after port insertion. Laparoscopic side-to-side pancreaticojejunostomy was performed using four or five incisions. A multi-access port for a camera, ultrasound probe, and for exteriorized intestinal anastomoses was inserted via the umbilicus. Three or four 5 mm ports were inserted into both sides of the abdomen as working ports and into the right upper and left upper quadrants of the abdomen as supporting ports. The gastrocolic ligament was divided and the pancreas was exposed. After locating the dilated pancreatic duct by intraoperative ultrasonography, laparoscopic coagulating shears were used to open the pancreatic duct. We also performed pancreatography to delineate the whole pancreatic duct. The dilated pancreatic duct was split longitudinally as far as the pancreatic head, and the small bowel was then exteriorized from the umbilical port and a Roux loop was created outside the abdominal cavity through the retrocolic route. A laparoscopic side-to-side pancreaticojejunostomy was performed using a continuous 4-0 PDS suture from the pancreatic tail. A drain was placed near the anastomosis.

**RESULTS:** There were no intraoperative or postoperative complications. At postoperative follow-up at one year, there was no recurrence of the symptoms of pancreatitis or dilated pancreatic duct in either patient, and the pancreatic exocrine function was improved. The incisions made in the laparoscopic side-to-side pancreaticojejunostomy procedure had less cosmetic impact compared with that for open surgery for chronic pancreatitis.

**CONCLUSION:** Laparoscopic side-to-side pancreaticojejunostomy in children is feasible, safe, and provides effective pain relief. It has cosmetic advantages compared with open surgery for chronic pancreatitis.

**P050: COMBINED THERAPY OF ENDOSCOPIC NASOBILIARY DRAINAGE AND LAPAROSCOPIC SURGERY FOR CONGENITAL CHOLEDOCHAL CYST WITH OBSTRUCTIVE JAUNDICE** – Yeming Wu, MD, Dihua Shen, Yiqing Tao, Ying Zhou, Fan Lv, Wenjie Wu, Jia Shi; Xinhua Hospital of Shanghai Jiaotong Univ Medical School

**OBJECTIVE:** To evaluate the feasibility and clinical value of combined therapy of endoscopic nasobiliary drainage and laparoscopic surgery for congenital choledochal cyst with obstructive jaundice.

**METHODS:** A retrospective analysis of 15 cases of congenital choledochal cyst associated with obstructive jaundice in March 2010 to and March 2014 in our hospital. There were 5 males and 10 females, aged from 10 months to 6 years. All cases were identified by ultrasound preoperation. Diameter of choledochal cyst was 1.2cm to 12cm. All children with existing endoscopic cholangiopancreatography (ERCP) and then placed ENBD. At last we did laparoscopic radical surgery.

**RESULTS:** All patients were confirmed type I of choledochal cyst by ERCP. In which anomalous union of pancreaficobiliary duct (PBM) was found in 6 cases, no PBM 7 cases. 9 cases complicated bileduct stone, which endoscopic stone extraction was successful. One case because of the cyst is too large to be placed nasal duct and need the emergency drainage. The other 14 cases were successfully placed a nasal endoscopic biliary drainage. then did laparoscopic radical surgery. Children were followed up from 3 months to 6 years. Laparoscopic surgical resection was performed after jaundice disappeared almostly and liver function recovery after 4–10 days

(average 5.7 days) of ENBD, without complications of anastomotic leakage and intraperitoneal infection.

**CONCLUSION:** Combined therapy of endoscopic nasobiliary drainage and laparoscopic surgery for congenital choledochal cyst with obstructive jaundice is effective and safe and well tolerated method, and can reduce the patients' pain and increase the patients' living quality and long-term prognosis is good.

**P051: LAPAROSCOPY IN TREATMENT OF CHOLEDOCHAL CYST IN CHILDREN** – Damir Jenalaye, MD<sup>1</sup>, Bulat Jenalaye, MD<sup>2</sup>, Dulat Mustafinov, MD<sup>1</sup>, Omar Mamlin, MD<sup>1</sup>, Aslan Ergaliev, MD<sup>2</sup>; <sup>1</sup>National Research Center for Mother and Child Health, <sup>2</sup>West Kazakhstan State Medical University

Since 2008, 37 patients with choledochal cyst have been treated at National Research Center for Mother and Child Health. 19 of them had complaints on pain at epigastrium, 12 children – transitory jaundice, and 6 patients had not clinical symptoms. All the children passed CT and ultrasound investigation.

We applied endovideosurgery in 26 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 24 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 11 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 postaggressive response to laparoscopic 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.

**P052: LAPAROSCOPIC APPROACH FOR NON-PARASITIC SPLENIC CYSTS: AVOIDING RECURRENCE (VIDEO)** – Fernando Rabinovich, MD, Horacio Bignon, MD, Maria-Soledad Valverde, MD, Carolina Millan, MD, Luzia Toselli, MD, Gaston Bellia-Munzon, MD, Marcelo Martinez-Ferro, MD; Fundacion Hospitalaria, Private Children Hospital

**BACKGROUND:** Recent evidence suggests that laparoscopic treatment of non-parasitic splenic cysts is associated with high recurrence rates (over 50 %) in children. Since they are uncommon, reports of large case series are currently unavailable. Our objective is to evaluate the long-term outcome of pediatric patients in whom 3 different operative strategies were employed.

## Poster Abstracts CONTINUED

**METHODS:** Medical records of 12 children with a median age of 12.3 years (range: 7–15 years), who underwent laparoscopic excision of non-parasitic splenic cysts –between January 2005 to December 2013– were reviewed retrospectively. The most common complaint was palpation of a left upper quadrant mass (n=4) and abdominal pain (n=3). Six patients were asymptomatic and had been diagnosed incidentally. Median cyst size was 9 x 7 cm. Anatomopathological results revealed 9 epithelial cysts and 3 pseudocysts. Patients were treated with different laparoscopic approaches: 1) Unroofing (n=2); 2) Unroofing + Surface fulguration + Epiploplasty (n=7); and 3) Partial splenectomy (n=3).

**RESULTS:** There were no intraoperative complications. Follow-up ranged from 1 month to 5.75 years. Recurrence was observed in 2 patients (16.7%) with epithelial cysts located at the upper pole of the spleen, and dealt by laparoscopic unroofing. Cyst mean size was 15 x 13 cm, the largest observed in these case series. Recurrence excision was resolved by MIS, in one case by partial splenectomy and in the other one, by surface fulguration + epiploplasty.

**CONCLUSIONS:** Our experience shows that unroofing alone is an insufficient procedure for the treatment of large splenic cysts. Long term follow-up has shown that either unroofing combined with surface fulguration + epiploplasty or partial splenectomy appears to prevent recurrences.

### **P053: LAPAROSCOPIC TREATMENT OF HEPATIC AND**

**SPLENIC HYDATID DISEASE IN CHILDREN** – Ergun Ergun, MD, Gulnur Gollu, MD, Gonul Kucuk, MD, Aydin Yagmurlu, MD, Murat Cakmak, MD, Huseyin Dindar, MD, Meltem Bingol Kologlu, MD; ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY

**AIM:** To evaluate the safety and efficiency of laparoscopic approach in hepatic and splenic hydatid disease in children.

**MATERIALS AND METHOD:** From January 2006 to January 2014, 14 patients who had hepatic or splenic hydatid cysts underwent laparoscopic treatment. Only the following aspects were considered as selection criteria for laparoscopic surgery: liver hydatid cysts not located in segments 1 or 7 of the liver (Couinaud's segmentation), presence of corticalization on the surface of liver or spleen and having no evidence of intrabiliary rupture. The different stages of the procedure were the same as in open surgery: puncture, aspiration, injection of scolicalid agent, reaspiration, removal of germinative membrane and resection of the dome.

**RESULTS:** Twelve of the 14 patients had hepatic and two had splenic hydatid cysts. Four patients had multiple liver hydatid cysts. There were 2 (14.2%) conversions to open surgery because of technical difficulties. The patients' mean age was 8 years (range, 2–17 years). The mean cyst diameter was 7.8 cm (range, 3–20 cm). The mean operative time was 72 min (range, 60–150 min). The mean hospital stay was 3 days (range, 1–8 days). The mean follow-up period was 34 months (range, 9 months–94 months). There were no early or late complications and no recurrences were observed.

**CONCLUSION:** The laparoscopic management of hepatic and splenic hydatid cysts is a feasible, safe and effective approach in children. It also includes the advantages of abdominal laparoscopic operations such as good cosmesis. It can be used in selected hydatid cysts with corticalization on the surface of liver or spleen and no evidence of intrabiliary rupture.

### **P054: COMPARATIVE STUDY OF OPEN AND THORACOSCOPIC REPAIR FOR CONGENITAL DIAPHRAGMATIC EVENTRATION IN CHILDREN** Xinghai Yang, MD, Chen Haitao, MD; HUBEI WOMEN AND CHILDREN'S HOSPITAL

**BACKGROUND/PURPOSE:** At present, the surgical treatment of diaphragmatic eventration included open thoracotomy and thoracoscopic repair. It is still controversial for the result of procedure. We aim to compare the results of open and thoracoscopic repair for congenital diaphragmatic eventration in children and review the experience of thoracoscopic repair.

**METHODS:** From January 2008 to January 2014, 29 patients with congenital diaphragmatic eventration were repaired at department of pediatric surgery, Hubei women and children's hospital. These patients were divided into 2 groups. In group A, from January 2008 to January 2011, 16 patients were operated by open procedure. Thoracotomy was done for right-sided eventration and trans-abdominal repair for left-sided. In group B, from February 2011 to January 2014, 13 patients were treated by thoracoscopy. Operative time, blood loss, drainage, postoperative hospital stay and complications were analyzed retrospectively. Main outcome were dealt with statistics.

**RESULTS:** there were no difference between the two groups about Age, body weight, symptoms, and signs. The operative time in group A and group B was nearly the same [(65±18 vs. 71±17)min], but the postoperative stay in hospital was longer, the blood loss was higher, and the drainage duration was longer in group A than those in group B [(5.5±0.7 vs. 3.8±0.4)d; (18±4.5 vs. 5.5±1.5)ml and (3.3 ±1.1 vs. 1.8±0.5)d, respectively]. In group B, thoracoscopy was converted to thoracotomy in 1 case. There was no mortality and the patients were followed up for 3.6 and 2.1 years on average in group A and group B respectively. No recurrence was found in either group.

**CONCLUSIONS:** Thoracoscopic repair for diaphragmatic eventration is a safe and effective procedure and this minimally invasive procedure could take the place of open surgery. Hence, thoracoscopic procedure for diaphragmatic eventration was worthy to recommendation.

?Key words? Diaphragmatic eventration; Thoracoscopy; Thoracotomy.

### **P055: THE APPLICATION VALUE OF LAPAROSCOPY IN THE DIAGNOSIS AND TREATMENT OF PRIMARY OMENTAL TORSION IN CHILDREN** – Li GuiBin; The 5th central hospital of TianJin

**PURPOSE:** To explore the application value of laparoscopy in the diagnosis and treatment of primary omental torsion in children.

**METHODS:** The clinical data of 5 patients with primary omental torsion in our hospital from 2008 to 2013 were investigated retrospectively. Medical history, symptoms, preoperative examination, preoperative diagnosis and intraoperative situation was analyzed to discuss the advantage of laparoscopy in the diagnosis and treatment of children with primary omental torsion.

**RESULTS:** All the 5 cases were underwent laparoscopic exploration because of acute peritonitis, who were proved to be diagnosed of primary omental torsion and necrosis. The necrotic omentum was resected by laparoscopy at last in the operation. All patients were discharged 3–5 days after operation. No complications were observed in 1 month follow-up.

**CONCLUSION:** The patients with primary omental torsion showed no special clinical manifestations, and were easily misdiagnosed. Surgical exploration was considered to be the most effective method for diagnosis. Laparoscopic exploration for primary omental torsion has many advantages such as short operation time, micro-invasion and rapid recovery. It was worthy to be popularized.

## Poster Abstracts CONTINUED

### **P056: LAPAROSCOPIC ADRENALECTOMY FOR ADRENAL TUMORS IN CHILDREN** Qi Li, MD, Long Li, MD; Capital Institute of Pediatrics

**OBJECTIVE:** To review our experience of operation by laparoscopic technique for adrenal tumors in children recently.

**METHODS:** From Jan.2013 to Oct. 2014 6 children ( male 3 and female 3,age:6 months to 15years) were operated in our hospital because of adrenal tumor . 3of them was in left side ,3 was right . the diameter was 3~6cm.2 of them The clinical diagnosis before surgery was solid adrenal tumor (n = 2), mixed tumor (n = 1), cystic adrenal mass (n = 3). 2of them underwent retroperitoneal laparoscopic adrenalectomy ,4 of them did peritoneal laparoscopic adrenalectomy .

**RESULT:** All surgeries were completed laparoscopically without conversion and complications. The operative time ranged from 90 to160mins.Blood loss during operation was 2 to10 ml. None of the patient was reported with post-operation hemorrhage and hematoma.The postoperative hospital stay was 3 to 7 days. All patients were followed up in every 3 month postoperatively.

**CONCLUSIONS:** Retroperitoneal and peritoneal laparoscopic adrenalectomy is safe and feasible for adrenal tumors in children . retroperitoneal laparoscopic adrenalectomy is more suitable for the patients of adolescence

**KEY WORDS:** Laparoscopic adrenalectomy

### **P057: IRREDUCIBLE FEMORAL HERNIA – THE ROLE OF LAPAROSCOPY** – Laura Jackson, BMedSci, BMBS, MRCS<sup>1</sup>, Ashok Daya Ram, MBBS, FRCS, FRCPS<sup>2</sup>, Mohamed Shalaby, FRCS, FEBPS, MD<sup>1</sup>; <sup>1</sup>Bristol Royal Hospital for Children, <sup>2</sup>Birmingham Children's Hospital

**BACKGROUND:** Femoral hernias are rare in children and can prove a pre-operative diagnostic challenge. They account for approximately 0.5% of all groin hernias and are misdiagnosed in up to 65% of cases. Consequently unnecessary inguinal exploration may be undertaken with resultant risks of damage to structures within the inguinal canal. Additionally coincidental detection of a patent processus vaginalis during inguinal exploration may uphold the misdiagnosis.

Although laparoscopy is well described in adult practice both in diagnosis and repair of femoral hernias there is less evidence of regular utilisation in paediatric practice. We present the first report of laparoscopic-assisted surgery for an irreducible femoral hernia containing bladder and discuss the value of laparoscopy in such cases.

**CASE DESCRIPTION:** A 7 year old boy presented with a 12 hour history of a tender left groin swelling. After clinical examination lymphadenopathy and femoral hernia were the differential diagnoses. An ultrasound scan suggested a femoral hernia containing a viscus therefore laparoscopy was performed to confirm the diagnosis and reduce the viscus.

**SURGICAL PROCEDURE:** Standard laparoscopy with a 30 degree 5mm laparoscope demonstrated a closed left deep inguinal ring and a left femoral hernia containing bladder. A low groin incision was performed and the femoral hernia identified without opening the inguinal canal. Laparoscopic instruments were used to assist reduction of the bladder and then assess viability. An open sutured femoral hernia repair approximating the inguinal and pectineal ligaments was performed while simultaneously visualizing the femoral ring laparoscopically to ensure adequacy of the repair and prevent impingement on the femoral vein.

**DISCUSSION:** Laparoscopy is a simple procedure which provides many benefits in the operative management of paediatric femoral hernia. Excellent visualisation of the deep inguinal and femoral rings enables

an accurate diagnosis to be made and the presence of a viscus within the hernia to be established. Laparoscopic identification of viscus rather than pre-peritoneal fat within the hernia sac reduces the risk of iatrogenic injury to the viscus during hernia repair. Laparoscopy both facilitates and confirms complete reduction of the contents of the hernia and furthermore enables assessment of their viability.

Previous reports of irreducible bladder within a paediatric femoral hernia are relatively scarce. In this case the use of laparoscopy to supplement the pre-operative ultrasound scan was beneficial in avoiding accidental bladder injury.

We recommend laparoscopy in the operative management of suspected paediatric femoral hernias to establish the diagnosis, safely reduce the content and ensure adequacy of the repair.

### **P058: OUTCOME OF SPLENECTOMY IN HAEMATOLOGICAL DISEASE IN CHILDREN – SINGLE CENTRE EXPERIENCE** – Khalid Elmalik, MBBS, FRCS, Paed, Hetal Patel, MRCS, Sean Marven, Sheffield Children's Hospital

**AIMS:** Indications for splenectomy in children have evolved from trauma, staging in lymphoma to mainly haematological diseases. The aim of this study was to determine the outcome of splenectomy performed for haematological disease in our institute.

**METHODS:** This was a retrospective notes review of all consecutive cases of splenectomy performed for various haematological disorders between 2000 – 2014.

**RESULTS:** 53 cases were identified from histopathology records, majority were for hereditary spherocytosis 32, 6 for ITP, 8 autoimmune haemolytic anaemia, 6 various blood malignancies and one sickle cell disease. 35 cases received regular blood transfusions, 4 had transfusion related complications.

35/53 were performed laparoscopically 13 of them were below the age of 6 years. There were no conversions. Splenectomy was combined with a cholecystectomy in 6 laparoscopic cases and in one open case. Mean operative time was longer in the laparoscopic group 175 min Vs. 98 minutes however the mean hospital stay was shorter in the laparoscopic group 2.5 vs. 5.4 days. Mean splenic size was 13.1 cm (8.2–18.0). Six patients in the laparoscopic group developed complications early in the series namely, 3 cases of pneumonia, 1 splenosis, 1 late presenting diaphragmatic hernia and 1 colonic serosal injury repaired at the time of surgery on the other hand there was one case of hematoma in the open group managed conservatively. There was one presumed case of OPSI. Four cases of death, 3 due to leukaemia treatment related complications and one from a sagittal sinus thrombosis. Of the 4 deaths 2 were emergency rescue splenectomies.

**CONCLUSION:** splenectomy for haematological disease if performed laparoscopically has a longer operative time, shorter hospital stay and slightly more complications early in the experience. Rescue splenectomy is associated with higher mortality due to disease progression.

### **P059: ENDOSCOPIC MEMBRANECTOMY AND REMOVAL OF PROTEIN PLUGS IN CONGENITAL DUODENAL DIAPHRAGM AND SECONDARY PANCREATITIS** – Takeshi Yamaguchi, MD, Kan Suzuki, MD, PhD, Kenjiro Ogushi, MD, Hideki Yamamoto, MD, PhD, Akira Nishi, MD; Gunma Children's Medical Center

**AIM:** We report the successful endoscopic treatment of a very rare case of congenital duodenal diaphragm and pancreatitis it caused by.

**CASE REPORT:** A seven year old girl presented with abdominal pain, nausea and fever. Computed tomography revealed thickened pancreas and dilated main pancreatic duct within protein plugs.

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Upper gastrointestinal series revealed dilatation of the duodenum, and wind sock type membrane in second to third portion. Based on these findings, she was diagnosed as acute pancreatitis caused by duodenal diaphragm. She was treated medically until the symptoms disappeared. But protein plugs in the main pancreatic duct and hyperamylasemia remained unchanged.

Endoscopic retrograde cholangiopancreatography (ERCP) was performed two months later. Side-viewing duodenoscopy showed a membranous stricture distal to the Vater's papilla in the second portion of the duodenum. Pancreatography revealed normal view; there were no evidence of pancreaticobiliary maljunction or pancreas divisum. Endoscopic removal of protein plugs in main pancreatic duct was carefully performed with extraction balloon. Then, we performed an electro-incision using the insulation-tipped diathermic Knife-2 (IT-Knife-2) and electrocautery in the stricture until the lumen of the stenosis became double tract.

After that, she remains free of symptoms with normal blood amylase value.

**CONCLUSIONS:** In our experience this endoscopic technique can be safely and successfully performed with excellent short-term outcome.

### **P060: LAPAROSCOPIC SPLENECTOMY IN CHILDREN, WHEN IS IT FEASIBLE** Panagiotis Petropoulos, MD, MSc, MBA, Theodor Dionisis, MD; EUROCLINIC CHILDREN'S HOSPITAL

We present a case report of a 7 years old female with a big spleen, 14 cm long in the longitudinal axis, due to spherocytosis. The same patient had also enlarged intestine due to chronic constipation and symphyses due to open cholecystectomy. The splenectomy was performed laparoscopically. We present our case and a review of the literature.

### **P061: PEDIATRIC LAPAROSCOPIC SURGERY: FIRST 100 CASES: INITIAL EXPERIENCE FROM A DEVELOPING COUNTRY –**

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There is a growing trend towards laparoscopic (LS) surgery in children in the world. A developing country like Pakistan, its acceptance is poor, possibly because of increase cost or lack of expertise. It is an established fact that laparoscopic surgery offers better surgical treatment with shorter hospital stay and fewer complications. We have recently started LS in our center when one of the Pediatric Surgeon got formal training in LS from Beijing. We are sharing our initial experience

**OBJECTIVE:** To audit our first 105 cases performed by single surgeon.

**MATERIALS & METHODS:** It's a retrospective chart review conducted at our hospital from March 2012 to September 2014. A Performa was designed and filled after reviewing the medical records, interviewing patients in clinics and telephonic survey. We have assigned two groups, i.e. Group A, first year 38 LS performed and in Group B, remaining 67 cases were included. Data was entered in SPSS version 19 and analyzed.

**RESULTS:** A total of 105 LS were performed including 46 appendectomies, 06 cholecystectomies, 34 Orchidopexy, 06 Diagnostic, 05 ovarian detorsion, 2 liver biopsies, 1 gastric derotation, 1 laparoscopic repositioning of VP shunt and 1 congenital diaphragmatic hernia repair. 60% were boys. Mean age is 9 years

**CONCLUSION:** Our results are encouraging and show significant improvement with time. The satisfaction of the families indicates that Laparoscopic Surgery is the future. Trainees must be oriented with Laparoscopic Surgery in our country.

### **P062: MINIMALLY INVASIVE SURGERY OF PEDIATRIC TUMORS IN CHILDREN: NEW SELECTED INDICATIONS –** Philippe Chomette Pascale, MD; ROBERT DEBRE HOSPITAL

**BACKGROUND :** Minimally invasive surgery (MIS) is still not a well-accepted surgical approach to remove pediatric tumors. We aimed to assess the evolution of indications MIS in childhood tumors according to location in the seven last years in a specialised MIS pediatric center.

**PROCEDURE:** Between 2007 and 2014, 54 patients underwent MIS for pediatric tumors, using thoracoscopic (n= 19), retroperitoneoscopic (n=5) or laparoscopic approaches (n=30). Most of the tumors concerned neuroblastic tumors (n= 40) According to the INRG staging system, Image Defined Risk Factors were present in 28 patients.

**RESULTS :** Resection was macroscopically complete for 49 patients. The aim for 3 patients was only large biopsy. No conversion was necessary in this selected cohort of patients. No perioperative or postoperative complication due to the procedure occurred in patients.

**CONCLUSION :** beside the common advantages already described of MIS procedure, MIS procedure was an helpful approach for difficult anatomical locations or for large thoracic tumors. The description of IDRFs was not a criteria of exclusion and we propose new selected indications for MIS procedure in pediatric tumors.

### **P063: TEN-YEAR ANALYSIS OF A PEDIATRIC SURGERY INSTITUTE: ONE OF THE PIONEERS OF MINIMALLY INVASIVE SURGERY IN A COUNTRY –**

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**AIM:** The onset and development of minimally invasive surgery require a period of time. The aim of this study is to estimate the effects of varieties and increased number of surgical procedures on the development of minimal invasive surgery.

**MATERIALS & METHOD:** The variety, quantity and the rate of conversions of 1940 cases between 2003 and 2013 were retrospectively evaluated based on systems and years.

**RESULTS:** Minimal invasive surgery was introduced to this clinic in 2003. The beginning was with laparoscopic appendectomy and 38% of appendicitis cases were performed laparoscopically in this year. On the other hand, only 16% of the cases which would be performed by means of minimal invasive surgery were treated by this way in the first year. Five years later, this ratio has increased to 69,3%. At tenth year, there were 61 different procedures and 73,7% of the procedures which could be performed endoscopically were performed by means of minimal invasive surgery. At first year, there were two conversions in 49 cases (4%). At fifth year, there was only one conversion in 140 cases (0,7%) and at tenth year, there were 13 conversions in 243 cases (5,3%). According to system analysis, the conversion ratio was 3,8% in gastrointestinal surgery, 3,9% in urogenital surgery, 17% in thoracic surgery and 25% in oncological surgery.

**CONCLUSION:** The learning curve of minimally invasive surgery is usually completed in first five years. After this period, although there is an increase in the variety of cases and advanced-skill requiring procedures, the rate of increase in cases which can be performed minimal invasively does not increase proportionately.

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**P064: OLD DOGS, NEW TRICKS: THE ADAPTATION OF LAPAROSCOPIC-ASSISTED PERCUTANEOUS INGUINAL HERNIA REPAIRS IN PEDIATRIC SURGERY** – [Alexandra Argiroff, MD](#), Hillary Prince, MD, Joseph Blankush, BA, Erin Breshahan, BA, Tamar Mirensky, MD, Peter Midulla, MD, Aaron M Lipskar, MD; Mount Sinai Hospital

**INTRODUCTION:** Ease of adaptation of a new surgical technique can be a limiting factor to becoming standard of care. Pediatric inguinal hernias have traditionally been repaired with an open approach via high ligation of the hernia sac. Laparoscopic techniques for inguinal hernia repair without mesh in children have been evolving over the past decade. A laparoscopic-assisted percutaneous (LAP) closure with intentional anterior internal ring injury was recently described for pediatric inguinal hernia repairs (IHR). Potential benefits of this approach are the ease and accuracy of diagnosis and treatment of contralateral hernias and minimal trauma to the floor of the inguinal canal and the spermatic cord. This study aimed to describe the experience of a pediatric surgery division adapting and integrating this new technique in an urban teaching hospital system.

**METHODS:** A retrospective review of all inguinal hernia repairs performed in a single health system from March to September of 2014 was performed. One member of the group attended a one-day training course for LAP IHR prior to offering patients the LAP IHR. This approach was offered to all parents of male children presenting with an inguinal hernia. The decision of LAP IHR or laparoscopic inversion was left to the surgeon for female patients. Patients with a non-communicating hydrocele of the spermatic cord or testes were excluded and offered an open repair. Patients were collected from a preexisting pediatric surgery billing database. The electronic medical records of eligible children were reviewed.

All children were followed for a minimum of 30 days. Outcomes of interest were operative time and early post-operative complications. Additionally, the diagnostic potential of LAP IHR was described.

**RESULTS:** Over six months, 76 pediatric inguinal hernias were repaired laparoscopically in 63 children. Although offered in each case, no parents opted for the traditional open repair. The majority of children were male (81%). The average age was 50.9 months. 20 infants (32%) were under one year of age. Four surgeries were performed on inpatient NICU infants. Nine prematurely born patients under 60 weeks gestational age required admission and monitoring in the pediatric intensive care unit.

21 patients had combined procedures (with umbilical hernia repair (n=8), circumcision (n=7), other (n=3)). The average operative time per hernia for the 42 cases that were exclusively LAP IHR was 24 minutes, ranging from 18 to 58 minutes.

Minimum follow up time was 30 days. There were four early postoperative complications. Three children had a post-operative hydrocele, all managed nonoperatively. One child had an inguinal suture granuloma. There were no hernia recurrences over the follow up time period.

Laparoscopy found a contralateral hernia in 12 patients undergoing unilateral hernia repair (18.7%). One child suspected to have a hernia had none, so the operation was aborted. Two patients with suspected recurrent inguinal hernias were found to have a direct hernia on laparoscopy and were repaired with an open technique.

**CONCLUSION:** The LAP IHR has acceptable operative times and short-term outcomes, and it is easy to incorporate into a pediatric surgical practice following a one-day training course.

**P065: OUTCOMES OF SUBCUTANEOUSCOPIC SURGERY IN CHILDREN** – [Ashwin Pimpalwar, MD, FRCS, Ped, surg, MCh](#); Micheal E Debakey Department of Surgery, Baylor college of Medicine and Texas Children's Hospital

**BACKGROUND:** Subcutaneousoscopic surgery is the use of minimally invasive endoscopic approach for subcutaneous conditions. This cosmetic approach allows placement of incisions in locations remote to the lesion allowing it to be hidden from view. It also allows the advantage of endoscopic magnification and visualization to be used for subcutaneous dissection.

**PURPOSE:** To report our experience with the above technique.

**METHOD:** We retrospectively reviewed our experience in 22 patients. 6 patients had trans-axillary subcutaneousoscopic sternomastoid release for sternomastoid tumor/torticollis. 11 had subcutaneousoscopic excision of external angular dermoid cyst via a scalp incision, 2 had bilateral subcutaneousoscopic mastectomy for gynecomastia and 3 had a transaxillary subcutaneousoscopic excision of a fibroadenoma of the breast.

**TECHNIQUE:** Procedure is performed with 3mm instruments and telescope. Using a Kittner dissector and the foley balloon catheter space is created subcutaneously. Once adequate space is created we use 3mm step ports. CO2 insufflation was then used to create a subcutaneous space to perform the procedure. The mass is circumferentially dissected free using the hook electrocautery under vision. In lesions over the face only deeper retractors may be used.

**RESULTS:** There were no complications apparent. The final results at 3 month follow up revealed aesthetically pleasing skin incisions that healed well and were hidden from view.

**CONCLUSION:** Subcutaneousoscopic surgery in children is safe effective and cosmetic technique. It has the advantage of endoscopic visualization and magnification for subcutaneous dissection. It should be considered for excision of benign subcutaneous lesions in children.

**P066: WHO IS THE BEST CAMERA OPERATOR? : A QUESTIONNAIRE SURVEY ON ESSENTIAL REQUIREMENTS TO BE A GOOD CAMERA OPERATOR DURING PEDIATRIC ENDOSCOPIC SURGERY** – [Tetsuya Ishimaru, MD, PhD](#), Shinya Takazawa, MD, Kyoichi Deie, MD, Tadashi Iwanaka, MD, PhD; Department of Pediatric Surgery, The University of Tokyo Hospital

**AIM:** The camera operator plays a key role in endoscopic surgery, but a novice surgeon is often assigned its role without sufficient pre-operative training in clinical practice. There might be skills unique to camera navigation especially in pediatric endoscopic surgery where the small working space makes it easy to encounter intra-operative collisions between the surgeon's forceps and the camera. However, a training system focused on camera manipulation has not been established yet and studies on necessary skills to be a good camera operator are scarce compared to those to be a good surgeon. Prior to developing a training system, we administered a questionnaire survey on essential requirements to be a good camera operator.

**METHOD:** A questionnaire was sent to all 14 judges on the Pediatric Endoscopic Surgical Skill Qualification Board in The Japan Society for Endoscopic Surgery in July 2014. The questionnaire included the following items; (1) 5-point evaluation of 13 items on skills to be a good camera operator, (2) which procedures require a good camera operator, (3) which is more important, the camera operator or the assistant, and (4) whether a training system for camera operators would be useful.

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**RESULTS:** Answer sheets were collected from 13 judges (93%). In the 5-point evaluation, skills on movement or posture of the scope, such as ability to keep a horizontal line (mean score: 4.5), to center the target (4.5), and to move the scope smoothly (4.2) were ranked high on the list. Moreover, they rated that full understanding of the operative procedure was also required to be a good camera operator (4.3). The mean scores of the ability to avoid intra-corporeal or extra-corporeal collision were not as high (3.9, 3.5, respectively). They indicated that a skilled camera operator was needed in fundoplication, anorectoplasty, and repair of esophageal atresia or common bile duct dilatation. Nine (69%) of the thirteen judges answered that the camera operator was more important than the assistant and that a training system would be useful.

**CONCLUSIONS:** Experts of endoscopic surgery thought that being proficient in manipulating a camera as well as having adequate knowledge of operative procedures are essential requirements to be a good camera operator, and that its role is more crucial in a procedure that requires sophisticated techniques in a small working space. Based on these results, we are planning to develop a training system to improve camera navigation skills.

**P067: A STITCH IN TIME: INTRACORPOREAL SUTURING IN A PEDIATRIC MODEL** – [Victoria K Pepper, MD](#), [Laura A Boomer, MD](#), [Karen A Diefenbach, MD](#); Nationwide Children's Hospital

**PURPOSE:** Minimally invasive surgery (MIS) is becoming more prevalent in pediatric surgery. While basic skills labs and certification are now standard for general surgery training in the United States, the models used for these tasks are built to replicate the spatial constraints of adult-sized patients. Skills acquired in these simulators are not necessarily transferrable to pediatric trainers with significantly smaller working space. This study discusses the results for intracorporeal suturing from an international conference training course focused at improving critical skills.

**METHODS:** The participants in an international neonatal and infant minimally invasive skills course were tested at the beginning of the session on the fundamental skill of intracorporeal suturing in an infant-scaled model. Due to time constraints, several participants were unable to complete the entire knot, so all participants were evaluated based on the first two throws. In addition, several time points through the procedure were recorded including: needle positioning, suture placement, and each throw of the knot. The data were analyzed for mean and standard deviation. Mean total time to completion was also compared to the proficient performance time of 112 seconds or less outlined in the Fundamentals of Laparoscopic Surgery (FLS) Technical Skills Proficiency-Based Training Curriculum.

**RESULTS:** All participants were self-proclaimed novices to pediatric minimally invasive surgery. There were 13 participants, 6 of whom (46%) completed the entire task. Seven (54%) performed a slip knot and two surgeons (15%) performed the suturing left-handed. The mean time to perform each task was: needle positioning 35±22 seconds (s), suture placement 72±24s, first throw 82±59s, and second throw 102±44. The average total time was 283±83s, more than 2.5 times the FLS proficiency time.

**CONCLUSION:** Opportunities to aid in acquisition of basic skills such as intracorporeal suturing in pediatric minimally invasive surgery are still needed. The use of appropriately scaled models is necessary to develop these skills.

**P069: SINGLE-PORT LAPAROSCOPIC NEPHRECTOMY IN INFANTS** – [Yury Kozlov](#), [Vladimir Novozhilov, MD](#), [Polina Baradieva](#); Pediatric Hospital Irkutsk

**BACKGROUND:** Laparoscopic renal procedures have been increasingly used for the treatment of many pediatric urologic conditions and can be considered the standard of care for nephrectomy of non-functioning kidneys. Technological advances have expanded the surgical options for laparoscopic nephrectomy and led to single incision laparoscopic surgery or “stealth” surgery. The aim of this study was a demonstration of possibility of the single-incision laparoscopic nephrectomy in infants.

**MATERIALS & METHODS:** Between January 2013 and August 2014 were performed 7 laparoscopic nephrectomy using single-port technique in small babies. Indications for unilateral nephrectomy were multicystic dysplastic kidney in 6 cases (85.71%) and terminal stage of ureteropelvic junction obstruction in 1 case (14,29%). We used a multi-channel access system ASC TriPort™ (Advanced Surgical Concepts, Dublin, Ireland), 5 mm 30° telescope 40 cm long, vessel sealing system ERBE VIO 300D (Erbe Elektromedizin GmbH, Tuebingen, Germany) and standard instruments of various length. Initially, the large colon was medially reflected from the lateral abdominal wall. After colon mobilization, the non-functioning kidney was identified. The kidney was detached from the surrounding tissue and the atretic ureter was divided. The renal vein and artery supplying the dysplastic kidney were clipped using metal clips and then divided with a BiClamp mode of vessel sealing device ERBE VIO 300D. The kidney was retrieved via the umbilical wound. We did not perform additional laparoscopic trocar placement for organ retraction. For nephroureterectomy, the ureter was dissected to the level of the bladder after completion of the nephrectomy. We made the analysis of efficiency of these operations, early and late postoperative outcomes.

**RESULTS:** Median age at operation was 90 ± 22 days (66-119), and median weight was 5,49± 0,11 kg (5,41-5,56). The mean operative time was 55 ± 6 min (50-60) and mean postoperative hospital stay was 36 h. All procedures were performed successfully without conversion in multi-port laparoscopy. There were no early postoperative complications. Recovery was uneventful in all patients. There were no long-term complications at the mean follow-up of 8 months (range 2-18 months).

**CONCLUSION:** The experience described in this study confirms that single-port laparoscopic nephrectomy can be applied for treatment of non-functioning kidneys in small babies with good outcomes. However, we need further accumulation of experience and performing of the comparative studies to make judgment about advantage of operations with using single-incision laparoscopic surgery.

**P070: ROBOTIC SINGLE SITE CHOLECYSTECTOMY IN CHILDREN** – [Nicholas J Ahn, MD](#), [Gary A Signor](#), [Tejinder P Singh, MD](#), [Steven Stain, MD](#), [Christina M Whyte, MD](#); Albany Medical Center

**BACKGROUND:** Elective cholecystectomy is a high-volume, simple procedure, well suited for the development of a pediatric robotic surgery program. Surgical robot software, by “reversing” the surgeon's hands, simplifies single site cholecystectomy through a single incision at the umbilicus.

**METHODS:** Data were reviewed on the first 9 children who had robotic cholecystectomy, with the DaVinci (Intuitive Surgical Inc, Sunnyvale, CA) device, at our institution. All cases were performed by a single surgeon, proctored by an experienced robotic general surgeon.

**RESULTS:** There were nine patients: the first four patients had robotic multiport cholecystectomy, and the last five had robotic single-site

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cholecystectomy. Eight were girls. They were aged 10–18, median 14 years. Diagnoses were biliary dyskinesia (5), symptomatic gallstones (4). Mean Body Mass Index was 29.6 (range 20.2–43.8) kg/m<sup>2</sup>. Mean anesthesia time for multiport cholecystectomy was 140 (range 120–162) minutes; mean anesthesia times for single site cholecystectomy was 157 (range 122–180) minutes. Mean console time for multiport cholecystectomy was 49 (range 44–58) minutes; mean console time for single site cholecystectomy was 69 (range 66–86) minutes. Eight of the nine patients went home on the day of surgery and one stayed overnight. Patients were seen at 13–20 days after surgery (median 14 days). There were no complications. There were no conversions to open surgery and none from single site to multiport surgery.

**CONCLUSIONS:** Robotic cholecystectomy is safe and efficacious, and is a suitable introductory procedure for pediatric surgeons considering a robotic surgery program. Single site robotic cholecystectomy is a cosmetically attractive option but takes longer than multiport robotic cholecystectomy.

**P071: SINGLE INCISION LAPAROSCOPY: EXPERIENCE WITH RECONSTRUCTIVE PROCEDURES IN PEDIATRICS** – [Sandra M Farach, MD](#), [Paul D Danielson, MD](#), [Nicole M Chandler, MD](#); All Children's Hospital Johns Hopkins Medicine

**PURPOSE:** There is a large body of evidence supporting the safety and efficacy of single incision laparoscopic surgery for procedures of resection in pediatric patients. However, studies focusing on more complex, reconstructive procedures remain sparse. We report our experience with complex, reconstructive single incision laparoscopic cases in pediatric patients.

**METHODS:** A retrospective review patients who underwent single incision laparoscopic surgery from August 2009 to June 2014 was performed. Thirteen patients who underwent complex, reconstructive procedures were selected for further review. Demographic, clinical, and outcome measures were analyzed.

**RESULTS:** Single incision laparoscopic procedures performed are listed in Table 1. Mean age was 8.5 ± 5.2 (1.7–17) years, mean weight was 36.4 ± 31 (10–99) kilograms, and females comprised 61.5% of patients. Mean hospital length of stay was 2.5 ± 2.4 (0–9) days and mean operative time was 80.7 ± 30.5 (21–119) minutes. Ten patients (76.9%) required post-operative intravenous narcotics for pain with 5.1 ± 9.6 mean number of doses given; while 7 (53.8%) received intravenous ketorolac. There were 2 complications (15.4%) which included a re-do myotomy with anterior fundoplication takedown and an umbilical surgical site infection. There was one conversion (7.7%) to Pfannenstiel incision for peritoneal bleeding. Eleven patients (84.6%) presented for outpatient follow-up evaluation.

**CONCLUSION:** Advancements in instrument, port technology, and technique continue to allow for more the wide spread application of single incision laparoscopy to numerous surgical procedures. Single incision laparoscopy for complex, reconstructive procedures in pediatric patients is feasible and safe with a low conversion rate and low incidence of complication.

Single Incision Laparoscopic Procedures
Ovarian detorsion, cystectomy, oophorectomy (left), paratubal cystectomy (right)
Ovarian detorsion, cystectomy (left), bilateral oophorectomy
Ovarian detorsion and oophorectomy (right) (n=2)
Salpingo-oophorectomy (right), oophorectomy (left), appendectomy
Bilateral ovarian transposition and oophorectomy
Diaphragmatic hernia repair (right anterior hernia) (n=2)
Nissen fundoplication
Heller myotomy, anterior fundoplication (n=2)
Re-do myotomy, takedown anterior fundoplication
Perforated peptic ulcer repair with omental patch

Table 1: Single incision laparoscopic procedures performed

**P072: SINGLE INCISION LAPAROSCOPIC GASTROSTOMY BUTTON PLACEMENT: A SIMPLE, EFFECTIVE, AND INEXPENSIVE TECHNIQUE** – [Michael J Leinwand, MD<sup>1</sup>](#), [Kelsey S Berndt, MD<sup>2</sup>](#); <sup>1</sup>Bronson Children's Hospital, <sup>2</sup>Western Michigan University School of Medicine

**INTRODUCTION:** Gastrostomy tube (G-tube) placement is a common procedure used to facilitate enteral feedings in children who cannot obtain adequate calories orally. The procedure has evolved from an open operation to one that is commonly done using minimally invasive techniques. Since it was first described in 1996, the “U-stitch” laparoscopic primary placement of a gastrostomy button (G-button) has become a popular technique. More recently, Ponsky described single incision laparoscopic surgery (SILS) G-button placement utilizing an operative hysteroscope. We present a new SILS procedure that is based on this technique, but with several modifications that simplify the operation. This study is a retrospective review of our first 12 patients to undergo SILS G-button placement with these modifications.

**METHODS:** We retrospectively evaluated the first 12 patients (August, 2013 to October, 2014) to undergo SILS G-button placement with our modifications. Data regarding operative time, hospital cost of disposable equipment, and complications were collected.

**PROCEDURE:** A 5 mm incision is made in the left upper quadrant. A combination of blunt and sharp dissection is used to enter the peritoneal cavity. A 5 mm operative hysteroscope (Richard Wolf, Vernon Hills IL) is placed without the use of a trocar. Insufflation is achieved via a side channel of the scope. The mid-portion of the greater curvature is grasped using the flexible cup biopsy forceps inserted via the working channel of the hysteroscope. This segment is brought out through the incision as the hysteroscope is removed. A gastrostomy is made sharply, and 3-0 Vicryl (Ethicon, Cincinnati OH) suture is used on four points to secure the gastrostomy in an open position. The G-button is then inserted, and its balloon inflated with water. Thirty milliliters of air is injected into the stomach via an orogastric red rubber catheter. The air is withdrawn from the G-button confirming correct placement.

This technique does not utilize a trocar, through-and-through abdominal wall sutures, electrocautery, or a dilator kit. There is no wound to close, and no need for a dressing.

**RESULTS:** The mean age of this cohort was 25 months (0.5–95 months) with an average weight of 9.2 kg (2.9–20 kg). The mean operative time was 18.6 minutes (12–36 min). There was a learning curve. The mean operative time for the first four cases was 20.3 minutes, compared to 12.8 minutes for the last four cases (p-value: 0.03). There was no need to add additional trocars, nor were there conversions to an open approach. To date, there have been no complications. At our institution, the total cost of the disposable equipment needed to perform our SILS G-button placement was \$16.75, compared to \$158.63 for that of our previously employed “U-stitch” laparoscopic technique.

**CONCLUSION:** Our SILS G-button technique is inexpensive, fast, and safe. The disposable equipment needed was less expensive than that used for the “U-stitch” laparoscopic G-button procedure. The operative time was short and decreased with experience. There were no complications.

**P073: SINGLE-INCISION LAPAROSCOPIC EXCISION OF PANCREATIC TUMOR IN CHILDREN** – [Jinshan Zhang](#), [Long Li](#); Capital Institute of Pediatrics

**PURPOSE:** Single-incision laparoscopic surgery (SILS) as a surgical approach in treatment of pancreatic disease has recently been reported in adults. However, its application in pancreatic surgery in children is limited. In this article, we report our preliminary experience of SILS in children with pancreatic disease.

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**METHODS:** Three children with pancreatic tumor underwent single-incision laparoscopic partial pancreatectomy between July 2011 and August 2013. Two of three children were girls, and one was a boy. The ages ranged from 2 to 10 months, with an average age of 6.7 months.

**RESULTS:** All operations were successfully performed. There was no conversion to the conventional multi-incision surgery. The mean operation time of the 3 cases was 153.3 minutes (range 120–200 minutes). The postoperative hospital stay was 7 days. The drainage tubes were kept for 3 to 4 days after surgery. There was no pancreatic juice leak in this case series. All patients were followed up and there was no recurrence.

**CONCLUSIONS:** Single-incision laparoscopic partial pancreatectomy for children with pancreatic tumor is feasible.

**P074: SINGLE-INCISION LAPAROSCOPIC FENESTRATION OF A SPLENIC CYST IN TWO CHILDREN** – Kim Vanderlinden, MD, Kristel De Vogelaere, MD, PhD, Nele Van De Winkel, MD, Antoine De Backer, MD, PhD, Delvaux Georges, MD, PhD; UZ Brussel

**INTRODUCTION:** Splenic cysts are relatively rare lesions traditionally treated by splenectomy. With the advent of advanced laparoscopic techniques, a more conservative surgical approach can be done to treat non parasitic splenic cysts. Spleen-preserving alternatives to the treatment of splenic cysts have been proposed, which include aspiration, unroofing, decapsulation and partial splenectomy. Following literature, splenic cysts with a diameter larger than 5 cm should be managed surgically even when asymptomatic, because of the increased risk of complications such as bleeding, rupture, and infection.

Single-incision laparoscopic surgery (SILS) is a minimally invasive technique used for several intra-abdominal surgical procedures in adults as well as in children. Safety and feasibility are proven and published in literature. Few cases are described for the surgical treatment of splenic pathology in children.

**CASES:** We describe our experience with SILS for the decapsulation of a huge splenic epidermoid cyst in two children. An 11-year old girl presented with severe bleeding diathesis, purpura and a palpable mass in the left higher quadrant. Computed tomography (CT) of the abdomen revealed a mass with a maximal diameter of 12 cm, containing liquid and encapsulated by an epithelial wall. A 16-year old boy had an incidental finding of a splenic cyst, a CT of the abdomen revealed a mass with a maximal diameter of 15 cm.

**SURGICAL APPROACH:** In both cases we unroofed the splenic cyst by SILS: first the cyst was punctured to evacuate the content. Then defenestration of the cyst was started until the whole cyst was deroofed. The cyst wall was resected by electrocoagulation and ultracision and extracted via the SILS port.

**RESULTS:** Intra- and postoperative courses were uneventful in both cases. The anatomopathological examination revealed a primary epithelial splenic cyst in both cases. The patients are asymptomatic on a follow-up of 6 months with no recurrence on ultrasonography.

**CONCLUSION:** Both cases proof that single-incision laparoscopic fenestration of a splenic cyst is a feasible and safe procedure in children. However, this technique should be performed by surgeons experienced in laparoscopic surgery. Patients should be carefully selected and more reports should proof this preliminary experience.

**P075: SINGLE-INCISION LAPAROSCOPIC REPAIR OF CONGENITAL DUODENAL OBSTRUCTION IN NEONATE** – Jinshi Huang; Jiangxi provincial Children's Hospital

**OBJECTIVE:** Single-incision laparoscopy has recently become popular in pediatric surgery. The current study is to evaluate the safety and efficacy of single-incision laparoscopic surgery treatment of congenital duodenal obstruction (CDO), such as web or annular pancreas, in neonate.

**METHODS:** Thirteen neonates with CDO who underwent single-incision laparoscopic surgery were analyzed retrospectively from April 2014 to September 2014. The Outcomes of interest were operative time, postoperative leaks, and postoperative full time of feeding.

**RESULTS:** The laparoscopic procedures were completed without intraoperative complication in 13 neonates. (7 with web, and 6 with annular pancreas). No patients need to conversions. Operating time was 79–140 minutes. There were no duodenal anastomotic leaks. Time to initial feeding 5–11 days, and time to full oral intake 9–17 days. The hospitalization time was 11–22 days. Follow-up upper gastrointestinal tests show no evidence of stricture or obstruction.

**CONCLUSION:** The single-incision laparoscopic surgery treatment of CDO is safe and efficacious.

**INDEX WORDS:** Single-incision Laparoscopy, congenital, duodenal obstruction

**P076: COMPARISON OF SINGLE INCISION PEDIATRIC ENDOSCOPIC SURGERY (SIPES) WITH A GLOVE ACCESS TECHNIQUE AND MULTIPOINT LAPAROSCOPY FOR THE TREATMENT OF COMPLEX APPENDICITIS** – Maria C Mora, MD<sup>1</sup>, Kyle Douglas<sup>2</sup>, Kaitlyn E Wong, MD, MPH<sup>1</sup>, Jennifer Friderici, MSPH<sup>2</sup>, Gregory T Banever, MD<sup>3</sup>, Kevin P Moriarty, MD<sup>3</sup>, David B Tashjian, MD<sup>3</sup>, Michael V Tirabassi, MD<sup>3</sup>; <sup>1</sup>Baystate Medical Center, Tufts University School of Medicine, <sup>2</sup>Baystate Medical Center, <sup>3</sup>Baystate Children's Hospital, Tufts University School of Medicine

**PURPOSE:** Acute appendicitis is the most common emergency surgical disease of childhood. About 25% of adolescent cases present with ruptured appendicitis; however, this increases to about 80% in children under 5 years of age. The purpose of this study was to compare outcomes and cost between single incision pediatric endoscopic surgery (SIPES) with a glove access technique (Figure 1) and multipoint laparoscopy for the treatment of complex appendicitis.

**METHODS:** Following IRB approval (BH-14-056), the medical records of patients 18 years of age and younger who underwent a laparoscopic appendectomy between July 2012 and December 2013 at our institution were evaluated. Only patients with a diagnosis of complex or ruptured appendicitis based on surgical findings were included in this study.

Patient demographics including age, gender, BMI, and race were extracted. Procedure time (defined as skin to skin time), PACU length of stay (LOS), total hospital LOS, and costs were evaluated. In order to assess for pain levels, the average PACU pain score, average first 24-hour pain score, and total analgesic amount required were determined. Outcomes such as intra-abdominal abscess rate, wound infection, and bowel obstruction were compared.

**RESULTS:** A total of 48 patients were identified to have complex appendicitis; 17 (35.4%) were in the SIPES group. Age, and gender were comparable between groups ( $p > 0.30$ ). There was no significant difference in the total procedure time (SIPES 78 min vs. MPL 84 min,  $p = 0.51$ ) between groups. Average PACU pain scores were significantly lower in the SIPES group compared to MPL group (median 0, vs. 1,

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$p=0.05$ ); average post-operative scores were similar ( $p=0.40$ ). Pre-operative nerve block use was only used in the SIPES group (29.4% vs. 0.0%,  $p=0.004$ ). Procedure cost was significantly lower in the SIPES (\$1527 vs. \$3048,  $p<0.001$ ). LOS, PACU LOS, and post-operative complications between groups were similar.

**CONCLUSION:** SIPES with glove access is a feasible and safe approach for the management of children with complex appendicitis. We observed a significantly lower procedure cost for the SIPES approach compared to the MPL, and found no significant difference in LOS or postoperative complication rates. Although not statistically significant, we observed that the mean procedure time in the SIPES group was 6 minutes shorter. In conclusion, management of complex appendicitis in children has comparable outcomes to the standard MPL; and with increasing concern for healthcare cost this technique may be more financially acceptable for the treatment of complex appendicitis.

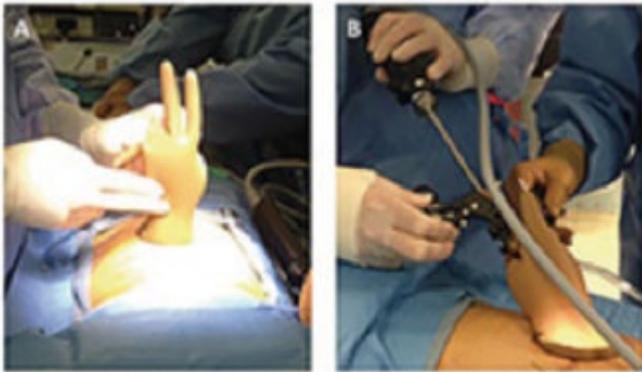


Figure 1: Single Incision Laparoscopy with Glove Access Technique  
A. Pneumoperitoneum achieved. B. Fingers used for port access.

### **P077: SINGLE-PORT LAPAROSCOPIC APPROACH FOR INGUINAL HERNIA IN MALE CHILDREN: A DURABLE REPAIR WITH DOUBLE COMPLETELY EXTRAPERITONEAL ENCLOSING SUTURES** – Yu-Tang Chang, Jaw-Yuan Wang, Kaohsiung Medical University Hospital

**BACKGROUND:** Several studies have demonstrated that single-port laparoscopic surgery is safe and effective for inguinal hernia in children. The aim of this study was to evaluate the result of single-port laparoscopic approach for inguinal hernia in male children with two completely extraperitoneal enclosing sutures.

**METHODS:** From April 2010 to December 2011, 88 consecutive male children with inguinal hernia (body weight range, 2280gm-78 kg) were included in this study. Under a 5-mm laparoscopic guidance, the hernia defect was completely enclosed by two extraperitoneal sutures, which were introduced sequentially into the abdomen by the percutaneous introducer kits and withdrawn simultaneously by a hook-pin through a skin puncture wound. Extracorporeal knots were tied respectively. During the procedure, isotonic saline solution was infused into the preperitoneal space to lift up the peritoneum of the vas deferens and testicular vessels. Simultaneously, we reviewed and recorded the same data of another consecutive 88 male children who underwent single-port laparoscopic surgery with one knot-tying between November 2004 and March 2010. The two groups were compared regarding operation time, length of hospital stay (LOS), and complications.

**RESULTS:** A total of 38 procedures were performed and the mean operating time was 31.4 minutes. An assistant instrument through the umbilicus alongside the telescope was necessary in one omentum-sliding hernia. The mean follow-up period was 14.5 months. No recurrence was observed during this period.

**CONCLUSIONS:** Both of the sutures could completely enclose the hernia defect without peritoneal gaps and leave strong tensile strength behind to reduce the risk of short-term recurrence. It is therefore recommended for inguinal hernia in male children.

### **P078: SINGLE INCISION LAPAROSCOPIC HERNIOTOMY WITH INTRACORPOREAL LIGATION IN PEDIATRIC INGUINAL HERNIAS** – Yoon Jung Boo, MD, PhD<sup>1</sup>, Yoon Lee, MD<sup>2</sup>, Eun Hee Lee<sup>2</sup>, Ji Sung Lee<sup>3</sup>; <sup>1</sup>Division of Pediatric Surgery, Korea University College of Medicine, Seoul, Korea, <sup>2</sup>Department of Pediatrics Korea University College of Medicine, Seoul, Korea, <sup>3</sup>Department of Medical Statistics, Asan Medical Center, Seoul, Korea

**BACKGROUND:** We previously reported that laparoscopic hernia sac transection and intracorporeal ligation can be a safe alternative for conventional pediatric hernia repair. On the other hand, three-port surgery may leave tiny scars on the abdomen. Single incision surgery can provide a better cosmetic outcome with the same surgical outcomes. The aim of this study was to introduce a new technique for single incision laparoscopic herniotomy with intracorporeal ligation in pediatric inguinal hernias.

**METHODS:** Between 2011 and 2014, 103 patients were treated with a single incision laparoscopic herniotomy with intracorporeal ligation. In the single incision laparoscopic herniotomy, one glove port was introduced through the umbilicus and a 5 mm camera and two 3 mm instruments were inserted. The operative time, complications, recurrence rate, and learning rate with this technique were reviewed and analyzed.

**RESULTS:** The mean operation time was 35 minutes. Learning curve analysis revealed a learning rate of 6.02%, which is comparable to that of the previous three-port technique (6.02% vs. 10.60%;  $p=0.23$ ). No intraoperative- or postoperative complications were found in the single incision surgery group during the follow-up period (mean 11.5 months).

**CONCLUSIONS:** A single incision laparoscopic herniotomy with intracorporeal ligation in pediatric inguinal hernias can be used as a safe treatment option. This procedure provides better cosmetic results without increasing the technical difficulty of the operation.

### **P079: SINGLE-INCISION VERSUS CONVENTIONAL LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE FOR INGUINAL HERNIA IN CHILDREN: A SINGLE-INSTITUTION EXPERIENCE** – Satoshi Obata<sup>1</sup>, Satoshi Ieiri<sup>1</sup>, Takahiro Jinbo<sup>1</sup>, Ryota Souzaki<sup>1</sup>, Makoto Hashizume<sup>2</sup>, Tomoaki Taguchi<sup>1</sup>; <sup>1</sup>Department of Pediatric Surgery, Faculty of Medical Sciences, Kyushu University, <sup>2</sup>Department of Advanced Medicine and Innovative Technology, Kyushu University Hospital

**BACKGROUND AND AIMS:** Laparoscopic percutaneous extraperitoneal closure (LPEC) for pediatric inguinal hernia is a very simple and reliable method in Japan. Recently, single-incision laparoscopic percutaneous extraperitoneal closure (SILPEC) was developed to improve safety and reduce the invasiveness of the conventional LPEC procedure. These procedures are often performed by inexperienced pediatric surgeons with the assistance of an expert attending surgeon as a means of introducing and training physicians to conduct endoscopic surgical procedures. At our institution, the SILPEC procedure was introduced as a reduced-port surgical approach in January 2011. This study aimed to verify the reliability and risks of SILPEC performed by inexperienced pediatric surgeons versus conventional LPEC.

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**METHODS:** A randomized prospective study was conducted among patients undergoing the SILPEC (n=37 patients, 16 unilateral- and 21 bilateral-opened processus vaginalis peritonei operations) and LPEC (n=72, 39 unilateral- and 33 bilateral-opened operations) procedures between January 2011 and December 2012. At our institution, inexperienced pediatric surgeons performed inguinal hernia repair with the assistance of an expert pediatric surgeon. Laparoscopic repair of pediatric inguinal hernias was performed in girls only, whereas the groin incision approach was employed in boys. For SILPEC, a laparoscope was placed through a transumbilical incision by the inexperienced pediatric surgeon with the aid of the expert surgeon, and a trocar for the grasper was inserted through the same transumbilical incision using a different entrance by the expert surgeon only in order to prevent erroneous puncture of the intestines, inferior epigastric artery or lower lateral abdomen during LPEC. Using a special needle, the hernial sac was closed extraperitoneally by the inexperienced surgeon. We subsequently surveyed the mean age at operation, mean operating time, length of postoperative hospital stay, intra- and postoperative complications and recurrence in the SILPEC and LPEC groups.

**RESULTS:** Overall, there were no significant differences in the mean age at operation (SILPEC vs. LPEC;  $4.55 \pm 2.74$  vs.  $4.19 \pm 2.68$  years,  $p=0.509$ ), mean operating time ( $45.16 \pm 13.37$  vs.  $50.97 \pm 19.23$  minutes,  $p=0.103$ ) or postoperative hospital stay ( $1$  vs.  $1.03 \pm 0.24$  days, N.S.). During the follow-up period (range: one week to one year after surgery), the total number of postoperative complications was lower in the SILPEC group than in the LPEC group (SILPEC: 1 and LPEC: 8 ( $p=0.0707$ )). There were no intraoperative complications or episodes of recurrence in either the SILPEC or LPEC groups (Table 1). The same results were obtained for both the unilateral and bilateral subgroups ( $p>0.05$ , respectively, Table 1).

**CONCLUSIONS:** Our findings showed that SILPEC achieves equivalent outcomes to LPEC when performed by an inexperienced pediatric surgeon with the assistance of an expert surgeon. However, in the SILPEC group, the trocars for the grasper had to be inserted in almost a blind manner, which is risky for inexperienced doctors, thus increasing the possibility of erroneous puncture of the intestines or inferior epigastric artery. Considering this risk and the efficacy in improving endoscopic surgical skills using instruments specialized for SILPEC, even inexperienced surgeons can perform the SILPEC procedure safely, with reduced invasiveness versus conventional LPEC.

**Table 1. Comparison of pediatric inguinal hernia characteristics in the SILPEC and LPEC groups**

	Total			Unilateral			Bilateral			
	SILPEC (n=37)	LPEC (n=72)	p-value	SILPEC (n=16)	LPEC (n=39)	p-value	SILPEC (n=21)	LPEC (n=32)	p-value	
Age (y.a.)	4.55 $\pm 2.74$	4.19 $\pm 2.68$	0.5091	5.28 $\pm 2.41$	4.35 $\pm 2.84$	0.2568	4.00 $\pm 2.91$	4.01 $\pm 2.51$	N.S.	
Operating time (min)	45.16 $\pm 13.37$	50.97 $\pm 19.23$	0.1032	41.19 $\pm 12.80$	46.31 $\pm 16.31$	0.3130	46.19 $\pm 13.29$	56.48 $\pm 19.16$	0.0881	
Postoperative hospital stay (day)	1	1.03 $\pm 0.24$	N.S.	1	1.05 $\pm 0.32$	N.S.	1	1	N.S.	
Postoperative complications	Total	1	8	0.0707	1	6	0.3632	0	2	0.2586
	Surgical-site infections	1	6	0.1881	1	5	0.4869	0	1	0.4303
	Unilateral problems	0	2	0.1587	0	1	0.5269	0	1	0.4303
Recurrence	0	0	N.S.							

**P080: SINGLE INCISION VERSUS CONVENTIONAL 3-PORT LAPAROSCOPIC APPENDECTOMY IN CHILDREN WITH COMPLICATED APPENDICITIS: PRELIMINARY SUBSET ANALYSIS FROM A PROSPECTIVE RANDOMIZED TRIAL** – Tae Ah Kim, MD, Soo Min Ahn; Pediatric Specialized Center, Hallym University Sacred Heart Hospital

**INTRODUCTION:** Laparoscopic appendectomy through a single umbilical incision in children is an emerging approach supported by several randomized controlled trials. However, to date, prospective

comparative data on single incision laparoscopic appendectomy in complicated appendicitis are lacking.

**SUBJECTS & METHODS:** We recently completed a prospective randomized trial comparing single incision laparoscopic appendectomy (SLA) with conventional three-port laparoscopic appendectomy (CLA) in children with acute appendicitis. This dataset was used to examine the outcomes single incision appendectomy compared to conventional laparoscopic appendectomy for complicated appendicitis.

**RESULTS:** We performed a preliminary analysis of the dataset of 61 appendectomy patients who presented with perforated appendicitis or periappendiceal abscess, 23 in SLA and 38 in CLA, collected in a prospective, randomized trial. There were no differences in patient characteristics at presentation between two groups. Two patients needed additional trocar insertion in SLA during the operation. There was no difference in length of hospital stay, post-operative pain score, use of analgesics and cosmetic result score. Postoperative intra-abdominal collection rate and wound complication were similar in both study groups (SLA vs. CLA=10.5% vs. 13.0% and 8.7% vs. 21% vs. 8.7%, intra-abdominal fluid collection and wound complication;  $p=0.504$  and  $0.184$ ). Also, the mean operative time was 12 minutes longer for the single incision group ( $p=0.02$ ).

**CONCLUSION:** The single incision laparoscopic approach to appendectomy could be performed safely even for the children with complicated appendicitis despite longer operative times.

**P081: FIRST-TIME PAEDIATRIC PRIMARY SPONTANEOUS PNEUMOTHORAX: IS CT SCAN MANDATORY IN GUIDING MANAGEMENT?** – Giampiero Soccorso<sup>1</sup>, Ravindar Anbarasan<sup>1</sup>, Michael Singh<sup>1</sup>, Richard Lindley<sup>2</sup>, Sean Marven<sup>2</sup>, Dakshesh Parikh<sup>1</sup>; <sup>1</sup>Birmingham Children's Hospital NHS Foundation Trust UK, <sup>2</sup>Sheffield Children's Hospital NHS Foundation Trust UK

**AIMS & OBJECTIVES:** In the absence of large paediatric data, primary spontaneous pneumothorax (PSP) is managed according to the adult British Thoracic Society guidelines. We looked at our experience with children (<16 years old) with PSP focusing on the management with chest CT to detect bullae, best surgical treatment and the radiological and surgical correlation with pathological results.

**MATERIALS & METHODS:** Review of two UK tertiary Paediatric hospitals, identifying patients presenting with PSP between 2004 and 2014.

**RESULTS:** Forty-two children with spontaneous pneumothoraces were identified: two children were excluded because chest CT scan identified other lung lesions causing secondary pneumothorax. Overall 40 children (mean age 14 years, range 5–16 years) had 45 true PSP (5 bilateral). Nine PSP (20%) were associated with visible bullae on the initial chest X-ray: one patient underwent surgery without further investigations. Forty-four PSP were assessed with CT: bullae were seen in 35 (80%). Overall, surgical management was performed in 38 patients (43 PSP): 2 children opted for no intervention. Thoracoscopy showed macroscopically visible bullae in 42 PSP (98%). Histology of apical lung wedge resection confirmed bullae in 43 (100%). Thoracoscopic stapled wedge resection and pleurectomy (TSWRP, Group A = 28 children, 33 PSP) had best outcome: 9% recurrence versus 33% if only resection with Ligasure® or Stapler was performed (Group B = 9 children with unilateral PSP).

**CONCLUSION:** To reduce morbidity, we advocate prompt referral to a Paediatric Thoracic Service after the first PSP episode. TSWRP is the best surgical option with minimal morbidity, complications and recurrence. Chest CT scan should be considered to confirm bullae and rule out other conditions presenting with pneumothorax; however, if bulla is visible on presenting chest X-ray, thoracoscopy could be offered as primary option.

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### **P082: THORACOSCOPIC VERSUS OPEN REPAIR OF ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA WITH CARDIAC ANOMALIES** – Masaya Yamoto, Koji Fukumoto, Hiroshi Nouse, Hiromu Miyake, Masakatsu Kaneshiro, Hideaki Nakajima, Mariko Koyama, Naoto Urushihara, Shizuoka Children's Hospital

**PURPOSE:** Thoracoscopic repair (TR) of esophageal atresia and tracheoesophageal fistula (EA/TEF) in newborns is increasing in popularity. However, minimally invasive surgery is avoided in infants with heart defects. Because of carbon dioxide insufflation in laparoscopic and thoracoscopic procedures causes physiological changes, and the immature cardiovascular system of neonates is particularly prone to cardiorespiratory effects. The potential benefits and contraindication of TR of EA/TEF with cardiac anomalies in particular of atrial septal defect (ASD) and ventricular septal defect (VSD) are still unclear. The aim of this study was to clarify whether EA/TEF with ASD/VSD are the potential benefits and reasonable contraindication to thoracoscopic surgery in newborns, perioperative outcome after undergoing TR versus open repair (OR) for EA/TEF with cardiac anomalies.

**PATIENTS AND METHODS:** A retrospective chart review was conducted of 36 consecutive neonates who underwent EA/TEF repair between 2001 and 2013 in our clinic. Patients in this study were with ASD/VSD, birth weight > 2000 g, and did not have chromosomal aberrations. Of the 12 newborns who met the selection criteria, 5 patients underwent attempts at TR compared to 7 patients who underwent OR. All cases were followed one year after operation at least. OR procedures were performed by different residents and fellows under the supervision of attending surgeons. TRs were performed by a single surgeon.

**RESULTS:** Repair was successfully completed thoracoscopically in all 5 patients in whom it was attempted. Mean gestational age was 39.2 weeks (range, 38–40) versus 38.1 weeks (range, 37–40); age at operation was 1.0 days (range, 0–2) versus 3.1 days (range, 0–10); and weight at the time of surgery was 2.8 kg (range, 2.4–3.1) versus 2.7 kg (range, 2.2–3.1) in the TR and OR groups, respectively. Overall, the mean operative time was 180.5 minutes (range, 160–230) in the TR group, versus 159.3 minutes (range, 120–186) in the OR group in the TR and OR groups, respectively, the difference between them being significantly different ( $P < .005$ ). There were no intraoperative complications or deaths in either group. The stricture rate was 20% in the TR group versus 28% in the OR group. The anastomotic leak rate was 0% in the TR group versus 28% in the OR group. All leaks resolved spontaneously. 20% versus 28% patients in the TR and OR groups, respectively, required fundoplication for severe gastroesophageal reflux. No patients in the each groups were diagnosed with recurrence of the tracheoesophageal fistula. The median intraoperative values of pCO<sub>2</sub>, pO<sub>2</sub>, pH, BE, EtCO<sub>2</sub>max and EtCO<sub>2</sub>min were not significantly different between the two groups. There were no significant differences between intra- and perioperative complications in the two groups. We didn't found eating disorder, respiratory disorder, and failure of growth in all cases.

**CONCLUSION:** In our study, the thoracoscopic approach appeared to be favorable and safe for EA/TEF with ASD/VSD.iii

### **P083: ANATOMIC THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA (ATREA): AN EVOLUTION OF TECHNIQUE** – Jorge

Correia-Pinto<sup>2</sup>, Ana Raquel Silva, MD<sup>1</sup>, João Moreira-Pinto, MD, PhD<sup>2</sup>, Angélica Osório, MD<sup>1</sup>, José Luís Carvalho, MD<sup>1</sup>; <sup>2</sup>Pediatric Surgery, Hospital de Braga and University of Minho, Braga, Portugal, <sup>1</sup>Pediatric Surgery, Hospital de Braga, Braga, Portugal

**AIM OF THE STUDY:** During the last decade, the thoracoscopic repair of esophageal atresia with distal tracheoesophageal fistula has gained progressive acceptance among pediatric surgeons. The magnified and well-illuminated view provided by thoroscopes opens an opportunity to evolve the technique. Herein, we report our experience with anatomic thoracoscopic repair of esophageal atresia (sparing azygos vein and performing the anastomosis at left side of the azygos vein).

**METHODS:** Three consecutive newborns with esophageal atresia with distal tracheoesophageal fistula were proposed to thoracoscopic repair. Patients were operated in Cuschieri position at 45° using three trocars under CO<sub>2</sub> insufflation (up to 4 mmHg at 1L/min). The upper pouch was dissected and isolated from the trachea through the 'spaghetti maneuver'. The azygos vein was kept untouched during all the procedure, whereas the tracheoesophageal fistula was dissected under the vein and ligated with two titanium clips. The esophageal stumps were approximated and the anastomosis performed medially to the azygos vein in a way to preserve the normal anatomic relations between azygos vein and esophagus.

**MAIN RESULTS:** Main outcomes are reported in table. The anatomic thoracoscopic repair of esophageal was feasible in all patients. None of them presented post-operative leakage or had recurrent fistula with a follow up post-operative between 4 and 12 months. Until now, the patient 2 required a single esophageal dilatation.

**CONCLUSION:** The anatomic thoracoscopic repair of esophageal atresia is feasible and might represent a step-forward in technique, minimizing sequelae from repair of the malformation.

	Weight (g)	Associated malformations	Operative time (min)	Ventilation (days)	First oral feeding (days)	C-reactive protein (max. value; mg/dL)	Total length of admission (days)
Newborn 1	2750	C. callosum hypoplasia; Synostosis C5-C6	165	2	6	13.5	10
Newborn 2	2516		125	2	5	8.1	12
3	2910	foramen ovale	145	3	6	12.2	16

### **P084: THORACOSCOPIC EXCISION OF A COMPLEX MEDIASTINAL MATURE TERATOMA** – Anatole M Kotlovsky,

MD, Sergei B Bondarenko, MD, Timur A Sharoev, MD; Solntzevo Clinical Research Center for Children's Medical Care, Moscow, Russian Federation

**INTRODUCTION:** The thoracoscopic approach to a mediastinal mass is undoubtedly advantageous, although the dissection of the anatomical structures involved can potentially be challenging. We present a case of a thoracoscopic approach to a mature teratoma intimately adhered to the aortic arch the dissection of which was facilitated with the use of a vessel/ tissue-sealing device.

**CASE & METHODS:** A 14 year old male, otherwise healthy, having developed chest pains and associated fevers, was found to have a mediastinal widening on the chest X-ray. The following CT chest

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demonstrated an anterior mediastinal mass of oval shape, 65 x 53 x 42 mm in size, the imaging features of which were consistent with a mature teratoma. The lower pole of the tumour was located on the aortic arch with no clear plane of demarcation of the aortic wall. At the transition from the ascending aorta to aortic arch there was the site of some extramural tumour contents that pointed to a spontaneous rupture of the tumour. Laboratory evaluations confirmed the levels of AFT and b-HCG within the normal range.

The thoracoscopic excision was carried out via three 5 mm ports – inserted in the 4th and 6th intercostal spaces, using instruments of corresponding diameter. Monopolar diathermy and blunt dissection maneuvers were utilized for enucleating the well-defined tumor walls from the parietal pleura and mediastinal tissues. Care was taken to avoid damage to the diaphragmatic nerve located in proximity to the posterior tumor border. A bipolar vessel/ tissue-sealing device (Erbe) was utilized for division of dense and vascular adhesions encountered at the lower pole to separate it from the aortic wall. Some spillage of the tumor content, which appeared at the site of the previously noted spontaneous rupture, was evacuated with copious washouts. The excised tumor was removed in an endobag via a mini-thoracotomy incision made in the 4th intercostal space.

**RESULTS:** The procedure was successfully completed sparing vital anatomical structures in the proximate locality. The blood loss was almost negligible. The total operative time was 125 minutes. The patient postoperative recovery was prompt and uneventful. Only non-narcotic analgesia was required for pain relief. The patient was discharged on postoperative day 4. Finally, the patient maintained healthy status with no pathologic changes on the chest X-ray at 3 and 9 months follow-up. The histopathology confirmed the diagnosis of a mature teratoma.

**CONCLUSION:** Thoracoscopic excision of mature teratoma can be performed safely and effectively even in a complex case of intimate tumor adherence to the aorta and even when compounded by a spontaneous tumor rupture at that site. The use of a vessel/tissue-sealing device renders accurate, almost bloodless dissection in a critical zone of dense, vascular adhesions with the aortic wall.

**P085: THE ROLE OF THORACOSCOPY IN TRAUMATIC DIAPHRAGMATIC HERNIA A CASE REPORT** – Marco Ghionzoli, Roberto Lo Piccolo, Alessandra Martin, Giorgio Persano, [Antonio Messineo](#); Meyer Children's Hospital – University of Florence

**BACKGROUND:** Diaphragmatic laceration is an uncommon but well-recognized complication of thoraco-abdominal traumas, occurring in 1-5.8% of all admissions to a pediatric trauma unit (PTU). In conservatively managed children, the rate of initially underestimated diaphragmatic injuries ranges from 12 to 66% and such injuries may even be missed at emergency laparotomy. We present a case of a child with a diaphragmatic rupture secondary to blunt abdominal trauma in which a definite diagnosis could be established only at thoracoscopy.

**MATERIALS & METHODS:** A five year-old boy was admitted to PTU following a low speed car crash in which the boy was secured at the posterior car seat with an adult seat belt. Initially, vital parameters were normal and at physical examination only several ecchymotic lesions were present on the abdominal wall. Total body CT scans revealed multiple contusions of the right lung with pleural effusion, elevation of the right portion of the diaphragm and a concurrent hepatic hematoma without clear signs of diaphragmatic rupture. Admitted to our Pediatric Intensive Care Unit, the boy after 48 hours of clinical stability, presented respiratory distress and became hemodynamically unstable. A new CT scan was inconclusive thus we decided for a surgical exploration in the suspicion of diaphragmatic rupture.

**RESULTS:** A 5mm 30° thoracoscope was introduced through the fourth intercostal at the midaxillary line and, after suctioning the fluid present in the thoracic cavity, the upper surface of the liver herniated in the right hemithorax was visualized. The procedure was converted to thoracotomy: a complete laceration of the right hemidiaphragm, from the intact pericardial edge to the costal insertion was identified. The liver was therefore manually reduced in the abdomen and the diaphragmatic laceration sutured with several non-adsorbable stitches. Post-operative course was uneventful; the child was discharged home ten days after the trauma.

**CONCLUSIONS:** A high level of suspicion of diaphragmatic injuries is necessary in all those patients who sustain thoraco-abdominal traumas. In most cases, when clinical observation and radiological examinations are inconclusive, we advocate the use of thoracoscopy.

**P086: ARE THERE FACTORS IN CHILDREN THAT PREDICT RECURRENCE OF SPONTANEOUS PNEUMOTHORAX AFTER PLEURODESIS?** – Radhames E Lizardo, MD, Simone Langness, MD, [Kathrine P Davenport, MD](#), Stephen W Bickler, MD, Julia Grabowski, MD; Rady Children's Hospital San Diego

**INTRODUCTION:** Primary spontaneous pneumothorax (PTX) is a considerable clinical problem in the pediatric and adolescent population. Numerous strategies have been studied and applied for management. Many studies have suggested that video-assisted thoracoscopic surgery (VATS) with pleurodesis is the most effective intervention, however ipsilateral recurrence rates after this procedure remain significant. We sought to identify patient factors which may predispose to recurrence after pleurodesis. Understanding which factors predict recurrence in this population could lead to lower recurrence rates, shorter hospital stays and reduced cost.

**MATERIALS & METHODS:** We performed a retrospective review of all patients who presented to with spontaneous pneumothorax and underwent video-assisted thoracoscopic surgery (VATS) with pleurodesis from September 2009 to November 2013 at a free standing pediatric hospital. Patient demographics, body mass index (BMI), history of asthma, size of the pneumothorax at time of presentation (~10% per rib), radiographic evidence of resolution at time of discharge and ipsilateral recurrence rates were recorded. Data analysis was performed using direct binomial logistic regression with  $p < 0.05$  considered statistically significant.

**RESULTS:** Fifty-two patients underwent VATS with pleurodesis for spontaneous pneumothorax. Ipsilateral recurrence occurred in 11 of 52 patients (21.2%). Age (15.7 vs 15.5 years,  $p = 0.651$ ), BMI (18.0 vs 18.95,  $p = 0.213$ ), history of asthma (18% vs 17%,  $p = 0.748$ ), size of the original pneumothorax (40% vs 45%,  $p = 0.751$ ) and radiographic evidence of residual PTX upon discharge (91% vs 80%,  $p = 0.851$ ) did not predict recurrence.

**CONCLUSIONS:** Approximately one in five patients in our series developed a recurrent pneumothorax following pleurodesis for treatment of spontaneous pneumothorax. Age, history of asthma, BMI, size of the pneumothorax at time of presentation and radiographic evidence of residual pneumothorax at discharge ultimately did not prove to be significant factors in predicting recurrence. Research is needed to define whether there are other factors (e.g. operative methods, surgical technique and postoperative management) that predict recurrence of pneumothorax in this group of patients.

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### **P087: CONGENITAL DIAPHRAGMATIC HERNIA; INITIAL EXPERIENCE WITH MINIMALLY INVASIVE SURGERY REPAIR IN NEONATAL** – Long Li, MD, Ma Lishuang; Capital Institute of Pediatrics

**OBJECTIVE:** The aim of this study was to evaluate outcome of neonatal with congenital diaphragmatic hernia undergoing minimally invasive surgery.

**METHODS:** 19 neonatal congenital diaphragmatic hernia cases collected from June. 2002 to February. 2014. 10 cases were repaired by thoracoscopy, 9 cases were repaired by laparoscopy. Clinical data including preoperative data, treatments, postoperative management were retrospectively reviewed.

According to the operation period, 19 patients underwent MIS are divided into two groups: 11 patients operated in the last five years surgery group (2009.3–2014.2) and 8 patients operated in previous surgery group (2002.6–2009.2), they are compared in the aspects the above-mentioned.

**RESULTS:** The operative duration of patients with MIS was 115.6±31.2 min, less blood loss were 1.53±0.22 ml, antibiotics consumption time was 2.8±0.2 d, the in-hospital time 14.2±2.7 d, postoperative duration of mechanical ventilation time was 1.8±0.2d, the survival rate was 94.7% , recurrence rate was 15.8%.

Compared with the patients underwent MIS in previous surgery group, the last five years surgery group had a shorter operative duration (103.2±21.4 min vs 121.8±35.3 min), shorter the in-hospital time (13.8±2.1 d vs 15.2±2.7 d), recurrence rate (9% vs 25%), but the above indicators between the two groups had no significant statistical differences ( $P < 0.05$ ).

**CONCLUSION:** The minimally invasive surgery repair is safe and valid. Shorter operative duration and less blood loss can be found in minimally invasive surgery with the advance of operative technology. It indicates that enhancing minimally invasive surgery training can raise the operative quality and is favourable to the applying of minimally invasive surgery in Congenital diaphragmatic hernia.

### **P088: DELAYED NUSS BAR INFECTION: AN UNUSUAL POSTOPERATIVE OCCURRENCE** – William E Raible, MD, Elizabeth J Renaud, MD, M Christine Whyte, MD; Albany Medical Center

**BACKGROUND:** The Nuss procedure, or the minimally invasive placement of a chest wall stabilization bar, is the preferred operative correction for pectus excavatum. One feared complication of the prosthetic implant is infection. Nuss bar infections reported in the surgical literature occur early in the postoperative period and require prolonged antibiotic treatment or bar removal. There are no reports of Nuss bar infection beyond 6 months post-insertion. The authors of this report describe a case of a 16-year-old boy with a Nuss bar infection that occurred 30 months after placement and subsequent to a minor office incision and drainage procedure.

**MATERIALS & METHODS:** A 14-year-old otherwise healthy boy with pectus excavatum (Haller index 3.7) underwent the Nuss procedure. Postoperatively, he did well for the next 24 months without bar displacement or other complication. Twelve months prior to anticipated bar removal, he had an incision and drainage of an erythematous posterior auricular inclusion cyst. Cultures were not obtained. He did not receive antibiotic prophylaxis for the procedure. Two months later he developed swelling, erythema, and fluctuance on his anterior right chest overlying the Nuss bar. Aspiration of the fluid collection revealed *Staphylococcus epidermidis*. One week later he underwent Nuss bar removal with drainage of purulent fluid present throughout the bar tract, which also grew *S. epidermidis*. He was treated with clindamycin and rifampin for 2 weeks.

**RESULTS:** The patient has since recovered without signs of local or systemic infection. His correction of the pectus excavatum has persisted despite early bar removal.

**CONCLUSION:** Infection of a Nuss bar can occur at any time after placement. Antibiotic prophylaxis should be considered in patients undergoing minor procedures who have a bar in place in order to avoid superinfection of the prosthesis. A national database for Nuss procedure outcomes may be helpful for monitoring this and other bar complications.

### **P089: COMPARISON OF CURATIVE EFFECT BETWEEN VATS PERICARDIAL WINDOW DRAINAGE AND PARTIAL PERICARDIAL DRAINAGE IN THE TREATMENT OF PEDIATRIC PERICARDIAL EFFUSION** – Hongbo Li, Yonggang Li, Chun Wu, Zhenxia Pan; Department of Cardiothoracic Surgery, Children's Hospital of Chongqing Medical University

**OBJECTIVE:** To explore the application value of video-assisted thoracoscopy (VATS) in the treatment of pediatric pericardial effusion and compare the curative effect with traditional surgery.

**MATERIALS & Methods:** Collect the 38 cases with pediatric pericardial effusion which accepted surgical treatment during January 2012 to June 2014, of which 18 cases were treated with video-assisted thoracoscopy (VATS) (thoracoscopic treatment group), 20 patients with partial pericardial drainage (conventional treatment group), then compare the surgical effect of the aforementioned two groups.

**RESULTS:** All patients were cured without relapse and deaths, there is no significant difference in the operative time and overall treatment effect between the two groups, but compared with the conventional therapy group, the intraoperative blood loss, postoperative pain-time and intensity, postoperative hospitalization days of the thoracoscopic treatment group which with more beautiful incision are significantly shortened.

**CONCLUSION:** As Video-assisted thoracoscopic surgery has the advantages of less trauma, quick recovery and satisfied effects, this method is supposed an effective way to cure pediatric pericardial effusion.

### **P090: BRONCHOPULMONARY SEQUESTRATION: THE EFFECT OF PRE-NATAL DIAGNOSIS AND MINIMALLY INVASIVE SURGERY** – Andrea Volpe, MD, Paola Midrio, MD, Francesca Grandi, Enrico La Pergola, MD, Piergiorgio Gamba, Prof; Pediatric Surgery – University of Padova, Padova, Italy

**INTRODUCTION:** bronchopulmonary sequestration (BPS) is a lung malformation defined as a mass of pulmonary parenchyma, not connected to tracheobronchial tree and supplied by systemic, arterial vessels. Often diagnosed during fetal ultrasound, BPS mostly remains asymptomatic both prenatally and after birth. Clinical evidence could occur at any age as respiratory distress, heart failure, recurrent pneumonia or malignant transformation. Surgical resection is definitive treatment in both symptomatic and asymptomatic patients, to prevent further complications.

**AIM:** to investigate the effect of prenatal diagnosis and minimally invasive surgery in the postoperative course of BPS surgical treatment.

**METHODS:** all patients operated for BPS in our department from 1992 to 2014 were reviewed. Length of surgery, hospital stay, chest tube stay, antibiomatic therapy duration, and occurrence of postoperative complications were analyzed.

**RESULTS:** 20 patients with BPS were collected. Diagnosis was pre-natal in 16 and post-natal in 4 cases, the former all asymptomatic

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up to surgery, the latter all presenting with recurrent pneumonia. Seventeen BPS were intra-thoracic (5 intra-lobar, 12 extra-lobar), 3 extra-thoracic (2 intra-diaphragmatic, 1 intra-abdominal). Seven patients underwent open surgery (4 lobectomies, 3 sequestrectomies), 12 video assisted thoracoscopic surgery (VATS) (11 sequestrectomies, 1 atypical resection). Mean length of surgery was 128.6 minutes, hospital stay 5.72 days, chest tube stay 1.66 days, antibiotic therapy duration 3.05 days. The same parameters were grouped and compared on the base of surgical method (open/VATS) and time of diagnosis (pre/post-natal), respectively. VATS approach and pre-natal diagnosis showed a significant reduction in most parameters (table1). To compare consistent procedures, the same analysis was repeated considering sequestrectomies and open surgery alone, respectively (table1, round and square brackets respectively). VATS confirmed significant reduction in most examined parameters, while only weak differences were observed in pre-natal diagnosed BPS.

TABLE 1: Post-operative course: \*=minutes, mean; \*\*=days, mean; mean values for sequestrectomies and open surgery alone are in round and square bracket respectively.

	Surgery length*	Hospital Stay**	Chest tube**	Antibiotics**
Open	156.7 (113.3)	9.14 (6.66)	2.42 (2.66)	6 (3.33)
VATS	114 (104.1)	3.54 (3.5)	1.18 (1.2)	1.18 (1.2)
p	0.17(0.81)	<0.001(0.028)	<0.001(0.014)	<0.001(0.012)
Pre-natal diagnosis	117.5 [113.3]	4.68 [6.66]	1.4 [2.66]	2.43 [3.33]
Post-natal diagnosis	200 [200]	9.4 [11]	2.25 [2.25]	6.6 [8]
p	0.033 [0.1]	0.024 [0.049]	0.033 [0.82]	0.034 [0.047]

Post-operative complications (atelectasis, pneumothorax, pleural effusion, bleeding) occurred in 4 patients, all after open surgery and none requiring reintervention.

CONCLUSION: prenatal diagnosis allow prompt treatment of BPS, preventing recurrent infections and subsequent parenchymal alterations. VATS consistently ensures shorter and safer postoperative course. Combination of early diagnosis and minimally invasive approach reduces the load of major thoracic surgery in children.

### P091: COMPARISON OF CURATIVE EFFECT BETWEEN VATS AND RIBS BED DRAINAGE IN THE TREATMENT OF ACUTE PEDIATRIC PLEURAL EMPYEMA

– Yonggang Li, Hongbo Li, Chun Wu, Zhenxia Pan; Department of Cardiothoracic Surgery, Children's Hospital of Chongqing Medical University

OBJECTIVE: To compare the application value of video-assisted thoracoscopy (VATS) and ribs-bed drainage in the treatment of acute pediatric pleural empyema.

MATERIALS & Methods: Collect the 54 cases with pediatric pleural empyema which accepted surgical treatment during November 2011 to August 2014, of which 26 cases were treated with video-assisted thoracoscopy (VATS) (thoracoscopic treatment group), 28 patients with ribs-bed drainage (conventional treatment group), then compare the surgical effect of the aforementioned two groups.

RESULTS: All patients were cured without relapse and deaths, there was no significant difference in the overall treatment effect between the two groups. Compared with the conventional therapy group, the thoracoscopic treatment group had less bleeding, significant shorter time of postoperative drainage, antibiotics usage and postoperative hospital stay.

CONCLUSION: Video-assisted thoracoscopic surgery has the advantages of less trauma, adequate drainage, quick recovery and satisfied result, for the reason that this method is an effective way to cure acute pediatric pleural empyema

### P092: A CASE OF BRONCHOPULMONARY MALFORMATION DIAGNOSED PRENATALLY: THE ROLE OF MAGNETIC RESONANCE IMAGING AND THORACOSCOPIC EXCISION ON MANAGEMENT

– Cungor Karaguzel, MD<sup>1</sup>, Yasemin Kocabas-Koksal, MD<sup>2</sup>, Irem Hicran Ozbudak, MD<sup>3</sup>, Kamil Karaali, MD<sup>2</sup>, Cem Boneval, MD<sup>1</sup>, Mustafa Melikoglu, MD<sup>1</sup>; <sup>1</sup>Akdeniz University School of Medicine Department of Pediatric Surgery, <sup>2</sup>Akdeniz University School of Medicine Department of Radiology, <sup>3</sup>Akdeniz University School of Medicine Department of Pathology

Fetal malformations have been defining more accurately with the use of magnetic resonance imaging (MRI) in prenatal period. Herein, we aimed to discuss the management of a patient with bronchopulmonary malformation diagnosed prenatally, with special regard to applied diagnostic and therapeutic approaches.

A 20-year old primi gravida was referred to our hospital at 24 weeks of gestation because of suspected pulmonary/mediastinal mass in the fetus. Initial ultrasonography (US) showed a well-defined echogenic mass in the posterior mediastinum on the left side. Magnetic resonance imaging (MRI) at 25th gestational week revealed a cystic/nodular mass (21x15x14mm) at postero-medial aspect of left lower lobe, suggesting extralobar bronchopulmonary sequestration (BPS) or congenital pulmonary airway malformation (CPAM). No significant enlargement was determined in serial USs. The mother delivered a 3.220g, female baby by C/S at 38 weeks of gestation. The baby was asymptomatic at birth and followed-up with routine clinical examinations, chest x-rays and MRIs. Control MRIs at postnatal first and sixth months showed that there was no significant increase in the size of the mass. Surgical excision was planned after the age of one year. The last MRI before the surgery (at the age of 18 months old) showed a mild increase in size, and the patient underwent thoracoscopic exploration. A cystic/nodular mass originating from posterior mediastinum at intra/supradiaphragmatic location was found. The mass was removed thoracoscopically after dividing its vascular pedicle. No chest tube was inserted. Histopathologic examination reported as BPS with CPAM characteristics. The postoperative course was uneventful, and the baby was doing well without any respiratory symptom at three years of follow-up.

From radiological, surgical and pathological perspectives, this case represents a hybrid of BPS and CPAM. MRI provides high-quality and reproducible information both in prenatal and postnatal periods. Timing for excision can be planned under the guidance of close clinical follow-up and MRI findings. Midterm outcome of this case encourages us to apply a tailored approach based on symptoms, MRI findings, and thoracoscopic excision.

### P093: ELECTIVE FOGARTY CATHETER OCCLUSION OF THE TRACHEOESOPHAGEAL FISTULA

– Victoria K Pepper, MD, Laura A Boomer, MD, Jonathan M Grischkan, MD, Arlyne K Thung, MD, Karen A Diefenbach, MD; Nationwide Children's Hospital

INTRODUCTION: Perioperative management of tracheoesophageal fistula (TEF) may be complicated by abdominal distention and respiratory compromise. The compression or retraction of the lung during surgery can further compromise pulmonary function. Traditional teaching emphasizes maintaining spontaneous ventilation

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and positioning the endotracheal (ET) tube to minimize ventilation of the fistula. Attempts to place the ET tube distal to the fistula is not possible in most cases because the fistula is often located at the carina. All of these factors can impair the successful completion of a minimally invasive approach and lead to longer operative times during open approaches. Use of a Fogarty catheter has been described for emergent occlusion of the fistula, reoperative procedures, and H-type fistulas, but has not been reported as a standardized technique. Our purpose was to describe a case series during which elective Fogarty catheter occlusion of the tracheoesophageal fistula was employed.

**METHODS:** In order to provide full laryngeal and tracheal evaluation, a formal operative laryngoscopy and rigid bronchoscopy is performed to completely evaluate the airway, identify the location of the fistula, and rule out a proximal fistula. Spontaneous breathing is maintained during the endoscopy, and a Fogarty catheter (3–5 Fr) is placed under direct vision into the fistulous tract. The balloon is inflated and gentle traction is applied to confirm occlusion. The Fogarty is secured in a manner to allow for expeditious removal and an endotracheal tube is placed in a mid-tracheal location without concern for relationship to the fistulous tract (parallel to the Fogarty in the trachea). Once the airway is secured, line placement and positioning is completed. Surgery then proceeds in standard fashion and the Fogarty catheter is removed at the time of fistula ligation.

**RESULTS:** Six patients underwent elective Fogarty catheter occlusion of the tracheoesophageal fistula. Patient demographic data showed average gestational age of 38±2 weeks and average birth weight of 2499±399 g. Associated anomalies or significant comorbidities occurred in two of six patients (33%). Five (83%) had an esophageal atresia with distal tracheoesophageal fistula, all of whom underwent surgical intervention before day of life (DOL) 2. One patient had an H-type fistula and underwent surgical intervention on DOL 48. One patient underwent elective open repair and one underwent a cervical approach. Three of the four remaining patients were successfully managed thoracoscopically, while one required conversion to an open approach due to bleeding. Average time required for both bronchoscopy and Fogarty placement was 11±4 minutes. Moderate tracheomalacia was identified in 2 patients. There were no complications associated with Fogarty catheter placement and catheter dislodgement did not occur during any of the cases.

**CONCLUSION:** Elective Fogarty catheter occlusion of tracheoesophageal fistula can be performed safely and expeditiously. This technique alleviates many of the perioperative challenges of tracheoesophageal fistula, increasing the chance of completing the procedure with a minimally invasive approach.

**P094: NEONATAL BRAIN OXYGENATION DURING THORACOSCOPIC CORRECTION OF ESOPHAGEAL ATRESIA –** Stefaan Tytgat, MD<sup>1</sup>, Maud van Herwaarden<sup>1</sup>, Lianne Stolwijk<sup>1</sup>, Kirstin Keunen<sup>1</sup>, Manon Benders<sup>1</sup>, Jurgen de Graaff<sup>1</sup>, Dan Milstein<sup>2</sup>, David van der Zee<sup>1</sup>, Petra Lemmers<sup>1</sup>; <sup>1</sup>Wilhelmina Children's Hospital, <sup>2</sup>Department of Oral & Maxillofacial Surgery, Academic Medical Center

**INTRODUCTION:** Neonates undergoing surgery for congenital anomalies are at risk of adverse neurodevelopmental outcomes, possibly due to perioperative cerebral damage. Near infrared spectroscopy (NIRS) can be applied to measure perioperative regional cerebral oxygen saturation (rScO<sub>2</sub>). Little is known about the effects of carbon dioxide (CO<sub>2</sub>)-insufflation on rScO<sub>2</sub> during thoracoscopy in neonates.

**AIMS:** To evaluate the effects of CO<sub>2</sub>-insufflation on rScO<sub>2</sub> during thoracoscopic esophageal atresia repair.

**METHODS:** Observational study of thoracoscopic esophageal atresia repair, with 5 mmHg CO<sub>2</sub> pressure and flow of 1 L/min. During surgery the arterial saturation (aSat), pH, PaCO<sub>2</sub>, mean arterial blood pressure (MAP) and the rScO<sub>2</sub> were monitored. Seven representative periods of 10 minutes were selected: Baseline, directly after anaesthesia induction, after CO<sub>2</sub>-insufflation, at end of CO<sub>2</sub>-insufflation and postoperatively at 6, 12 and 24 hours.

**RESULTS:** 15 neonates were eligible for analysis. Median time of anaesthesia was 221 minutes [126–387] and of insufflation 156 minutes [74 – 460]. After CO<sub>2</sub>-insufflation aSat decreased from 95.1% to 90.4%, pH decreased from 7.32 to 7.25 and PaCO<sub>2</sub> increased from 44.3 to 53.8 mmHg (p<0.05). MAP and rScO<sub>2</sub> did not show significant changes after CO<sub>2</sub>-insufflation (rScO<sub>2</sub> (%): 78 [61–91] to 73 [60–92]). All parameters remained stable during the 24 hours postoperatively.

**CONCLUSION:** Intrathoracic CO<sub>2</sub>-insufflation decreases arterial saturation and pH and increases PaCO<sub>2</sub>. Cerebral oxygenation remained stable. Thoracoscopic esophageal atresia repair under insufflation of CO<sub>2</sub> with 5 mmHg seems to be safe for preserving cerebral oxygenation in neonates.

**P095: THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA WITH TEF OPERATIVE TECHNIQUE AND EARLY OUTCOME –** Ravi P Kanojia, MD, Deepak Diwedi, MD, Sajan Joshi, MD, Neeraj Bharadwaj, MD, Ram Samujh, MD, Kln Rao, MD; PGIMER

**AIM:** to review the operative technique of Thoracoscopic repair of esophageal atresia and study the early outcome.

**PATIENTS & METHODS:** Total of 22 patients (8 females) operated. Age range was 2–6 d (mean 2.5d). Weight 1.8 – 3.0 kg mean 2.2 kg. All patients with upper pouch shadow seen at T3 or below on x ray were chosen for thoracoscopic repair. All patients anticipated for long gap, low birth weight and poor GC at admission/ pneumonia were excluded. Single lung ventilation was done by fogarty technique. The technique involves a single lung ventilation with lung isolation aided by fogarty placement and this is followed by esophageal anastomosis using a esophageal hitch while preserving azygous vein. Early results were observed.

**RESULTS:** Three neonates converted to open. Nineteen patients completed thoracoscopically. Anastomotic leak in 3 patients. Mortality in 3 patients. All patients under went contrast esophagogram at 3 months post repair. Nineteen patients are doing well and have completed mean follow up duration of 12 months.

**CONCLUSIONS:** Single lung ventilation using fogarty helps to maintain a relatively stationary operative area. Esophageal hitch is very effective for dissection and ligation of fistula. Azygous can be easily spared. Post operative outcome in terms of esophageal stricture and functionality is comparable to open surgery.

**P096: OUR EXPERIENCE WITH MINIMALLY INVASIVE NUSS REPAIR OF PECTUM EXCAVATUM IN CHILDREN –** Damir Jenalaye, MD<sup>1</sup>, Bulat Nagymanov, MD<sup>1</sup>, Bulat Jenalaye, MD<sup>2</sup>, Vladislav Orlovsky, MD<sup>1</sup>, Mels Tegizbayev, MD<sup>1</sup>, Adil Turehanov, MD<sup>1</sup>; <sup>1</sup>National Research Center for Mother and Child Health, <sup>2</sup>West Kazakhstan State Medical University

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 pectus excavatum that underwent thoracoscope-assisted Nuss procedures in our department from January 2013 were analyzed retrospectively. Surgical technique, operation duration and

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blood loss were analyzed. Postoperative complication, hospital stay length and recovery were evaluated.

There were 83 cases, 54 boys and 29 girls, from 3 to 17 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 signs during operation. The operative times ranged from 30 to 75 minutes and 5 ml to 15 ml blood loss were recorded. 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 3 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.

### **P097: THORACOSCOPIC CYSTOSTOMY OF PULMONARY HYDATID CYST IN CHILDREN IS IT REASONABLE? –**

Ergun Ergun, MD, Gulnur Gollu, MD, Murat Cakmak, MD, Aydin Yagmurlu, MD, Huseyin Dindar, MD, Meltem Bingol Kologlu, MD; ANKARA UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF PEDIATRIC SURGERY

**BACKGROUND:** Echinococcosis is still an important health problem throughout the world, particularly in the Mediterranean area. In human, the lungs are the second most commonly affected sites. The disease may affect children and its treatment may be challenging. In children, small hydatid cysts of the lungs respond favorably to the medical treatment. Surgery is the standard option for the treatment of large and complicated cysts. In current practice, thoracotomy and parenchyme-saving procedures such as cystostomy and capitonage remain the standard surgical approach for pulmonary hydatid cysts in children. However surgical experience with thoracoscopy is limited. The aim is to present the experience in thoracoscopic management of pulmonary hydatid cysts in children.

**PATIENTS & METHODS:** Medical records of children who underwent thoracoscopic cystostomy and capitonage of pulmonary hydatid cysts between January 2008 and September 2014 were reviewed. Surgical treatment is recommended for patients who remained symptomatic on medical treatment and when the cyst size is larger than 6 cm in diameter. Parenchyme-saving surgery is preferred which included cystostomy, removal of germinative membrane and control of air leaks. Capitonage was not preferred because of the risk of deterioration in lung capacity.

**RESULTS:** Fourteen patients underwent 15 thoracoscopy procedures for pulmonary hydatid cysts. One of the patients had bilateral complicated pulmonary hydatid cysts. There were conversion to mini-thoracotomy in 3 (20%) procedures because the air leaks could not be controlled safely. The procedure was completed thoracoscopically in 12 patients. Prolonged air leak (over a week) occurred in 3 (25%) patients and one of them underwent thoracotomy to control bronchopulmonary fistula. One of the patients underwent laparoscopic cystostomy and capitonage for associated liver hydatid cyst. There were no recurrences during 40 months of mean follow-up time and all patients are doing well.

**CONCLUSION:** Parenchyme-preserving surgery for pulmonary hydatid cysts has some limitations and even in thoracotomy there are difficulties in controlling bronchial air leaks. Controlling air leaks is even more difficult in thoracoscopy because lung inflation

is necessary to locate the bronchial openings. It is technically very challenging to close these openings when the working space is reduced by lung inflation. Although lobectomy or complete excision of the cyst by wedge resections is the safest way to control air leaks, it is not recommended in children because there is a significant risk of deterioration in postoperative functional capacities of the lungs. Thoracoscopic management is recommended according to these experiences in children with uncomplicated hydatid cyst. In complicated hydatid cysts, thoracoscopic wedge resection is recommended, if possible and conversion to mini-thoracotomy when there is difficulty in controlling bronchial openings.

### **P098: STRIVING FOR CONSENSUS: THE MANAGEMENT OF CONGENITAL LUNG LESIONS –**

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**AIM:** A review of current literature mirrored our institutional dilemmas regarding the management of Congenital Lung Lesions (CLLs). The aim of this study was to review our recently established approach to the management of CLLs via a National Multidisciplinary Clinic (MDC) over a 30-month period.

**METHODS:** The three tertiary paediatric surgical centres developed this collaborative service with 6-weekly CLL MDCs conducted via telemedicine. Antenatally diagnosed patients were referred to the MDC following consultation with a respiratory paediatrician who stated equipoise with respect to conservative or surgical management of asymptomatic patients. The MDC group incorporating surgeons, respiratory physicians, radiologists and pathologists facilitated discussion regarding the relative merits of surgical versus conservative management. Immediately following this meeting, clinicians met with the parents and together reached a consensus on appropriate management. A prospectively collected database of all patients from our institution reviewed at the CLL MDC was examined to appraise outcomes and additional data gained from case-note review.

**RESULTS:** 30 patients were identified under the MDC. 26 were antenatally diagnosed: 21 had a neonatal CXR, of which 4 were normal. 1 patient presented incidentally on MRI, all others had CT (1 non-diagnostic, followed by diagnostic MRI).

Of 14 patients under surgical management, 12 have undergone surgery (age range at operation 10–40 months) and 2 are awaiting surgery. 7 of these 14 patients were symptomatic (tachypnoea or chest infections). 8 of the 12 procedures have been completed thoracoscopically. There were no intraoperative complications. Post-operative pathology identified: 6 CPAM, 4 sequestration, 1 bronchogenic cyst, 1 sequestration with CPAM, 1 lobar emphysema and 1 aspergilloma. 5 patients have had issues with recurrent upper respiratory tract infections (self resolving, not requiring admission) postoperatively.

Of the remaining 16 patients: 2 await initial MDT review, 1 awaits parental decision regarding surgery, 3 have been discharged and 10 are being followed conservatively. All patients discharged had complete resolution of lesions on CT scanning (2 of which had a normal neonatal CXR). For the 10 currently undergoing conservative management, 8 remain asymptomatic (age range 2–17 years) and 2 have respiratory issues (age range 1–6 years). The reasons for not progressing to surgery for the 2 symptomatic patients are: 1 patient's parents have declined surgery and 1 is currently undergoing investigations for asthma.

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**CONCLUSION:** Establishment of our CLL MDC has facilitated a thorough process whereby the pros and cons of surgery versus conservative management can be fully conveyed to parents. There have been no adverse events in patients managed conservatively and our surgical outcomes (predominantly thoracoscopic) to date are without complications. While no data exists on the long-term outcome of patients with CLLs, we feel that we can assist parents in making an informed decision without bias towards either option. In this situation of doubt regarding optimum management of asymptomatic CLLs both options need to be openly acknowledged as good parental decisions and the parents should make the decision. We do not believe that centres should favour one option above the other.

**P099: CLINICAL IMPACTS OF COUNTERMEASURES TO PREVENT ADVERSE EVENTS IN THORACOSCOPIC REPAIR FOR CONGENITAL DIAPHRAGMATIC HERNIA** – Mikihiro Inoue, MD, Keiichi Uchida, MD, Yuka Nagano, MD, Kohei Matsushita, MD, Yuhki Koike, MD, Kohei Otake, MD, Masato Kusunoki, MD, PhD; Mie University Graduate School of Medicine

**BACKGROUND:** Thoracoscopic repair has recently become the treatment of choice in relatively mild cases with congenital diaphragmatic hernia. Meanwhile, adverse events related to thoracoscopic repair such as intraoperative injury of herniated viscera, hypercapnia due to carbon dioxide insufflation and high incidence of postoperative recurrence rate have been reported. The purpose of this study is to evaluate the efficacy of our countermeasures for preventing these complications.

**METHODS:** All patients with congenital diaphragmatic hernia undergoing thoracoscopic repair from January 2010 to October 2014 were retrospectively evaluated. The countermeasures include, (1) use of the endoscopic surgical spacer SECUREA™, which is an elliptical sponge made of polyurethane with a radiopaque marker, for preventing the injury of viscera, (2) use of intrapulmonary percussive ventilation (IPV) for avoiding hypercapnia, (3) carbon dioxide insufflation pausing for reduction of the tension during the defect closure, (4) prefer to repair with prosthetic patch if there is much tension at attempting primary closure for preventing the postoperative recurrence.

**RESULTS:** Eight patients met our selection criteria underwent thoracoscopic repair during the study period. All cases were left-sided hernias and 7 cases were neonates. The long diameter of diaphragm defect was ranged from 2.5 to 5.0 cm and there were 4 cases repaired with patch. Median operative time was 213 (range 172–258) min. Although 2 of 5 cases had intraoperative hypercapnia without the use of IPV, no patient showed hypercapnia after the introduction of IPV. There was no intraoperative complication or conversion to laparotomy. There were 2 postoperative chylothorax successfully treated conservatively. The postoperative follow-up averaged 33.6 (range 1–56) months and no recurrence have been encountered.

**CONCLUSION:** Our countermeasures may contribute to safety thoracoscopic repair for congenital diaphragmatic hernia with less intraoperative complications and reduction in recurrence.

**P100: THE ROLE OF LAPAROSCOPY IN THE SURGICAL TREATMENT OF DISORDERS OF SEXUAL DEVELOPMENT (DSD)** – C Burgmeier, MD, C Leriche, MD; Department of General and Pediatric Surgery, University Medical Center Ulm

**INTRODUCTION:** Disorder of sexual development (DSD) is a rare condition and there are only few reports in the literature. Exact diagnosis and prevention of germ cell tumors is essential. The aim of this study was to evaluate the role of laparoscopy in the surgical treatment in this inhomogeneous group of patients.

**METHODS:** Over a four-year-period, all patients presenting with DSD who underwent laparoscopic surgery at our institution were retrospectively reviewed. Operative procedure, intraoperative findings, age at the time of surgery and histopathological results were evaluated. Additionally we investigated karyotype and phenotype of the patients.

**RESULTS:** Altogether, 12 patients undergoing 14 laparoscopic procedures were included. Median age at the time of surgery was six years with a range from nine months to seventeen years.

Explorative laparoscopy was performed in all patients. In seven of them laparoscopic gonadectomy was necessary due to the intraoperative findings or histopathological results after gonadal biopsies. Inguinal exploration was performed in four patients and led to removal of gonadal remnants in one case and gonadopexie in three cases. In two patients presenting with repeated urinary tract infections laparoscopic removal of an utriculus was performed.

Histopathologic examination revealed tumors in four of seven patients who underwent laparoscopic gonadectomy. In two patients a gonadoblastoma was identified, in two patients a dysgerminoma was found. Analysis of the karyotype and phenotype revealed different combinations and included rare genomic conditions.

**CONCLUSIONS:** Laparoscopic surgery improves exposure and evaluation of the internal genitalia in patients presenting with DSD. Additionally, laparoscopy enables gonadal biopsies and gonadectomy. In this study germ cell tumors could be removed completely. In summary, laparoscopic surgery is superior in the diagnosis and surgical treatment of DSD and provides the advantages of faster recovery as well as improved cosmetic results for this special group of patients.

**P101: METHODS OF ELONGATION OF PYELOURETERAL COMPLEX DURING LAPAROSCOPIC PYELOPLASTY OF CONGENITAL HYDRONEPHROSIS IN CHILDREN**

– V Kotlobovsky, PhD, Professor<sup>1</sup>, A Mirmanov, MD<sup>1</sup>, B Dzhenalayev, PhD, Professor<sup>1</sup>, O Kurmangaliyev, PhD<sup>2</sup>, R Bishmanov, MD<sup>3</sup>; <sup>1</sup>Endoscopic Surgery Department of the Regional Children's Clinical Hospital, Aktobe, <sup>2</sup>Urology Department of M Ospanov West Kazakhstan State Medical University, Aktobe, <sup>3</sup>Urology Department of the Scientific Center of Pediatrics and Pediatric Surgery

**RELEVANCE:** Early detection and surgical treatment of congenital hydronephrosis (CH) remain a topical problem of pediatric urology. Frequency of CH among congenital malformation of urinary system is 4.7%. Surgery of CH makes about 30-35% of the total number of surgical procedures in pediatric urology. Unsatisfactory results of surgery are often associated with excessive tension in pyeloureteral anastomosis that may result in suture failure.

Research objective is to explore the suitability of elongation of pyeloureteral complex during laparoscopic pyeloplasty (LP) in children.

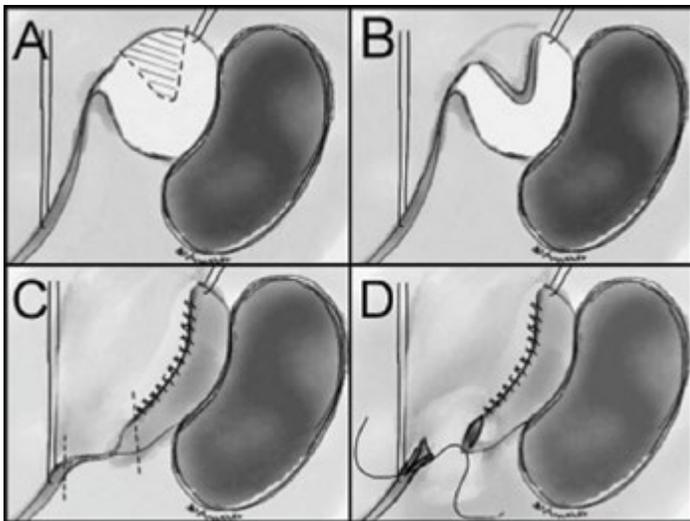
**MATERIALS & METHODS:** All children underwent a number of diagnostic tests: ultrasound with kidney Doppler, VCUG, pyelogram, 3D CT and MRT. Anesthetic technique: combined endotracheal anesthesia. The patient's position – on the healthy side, tilted at 45 degrees. The first 11 or 6 mm trocar was placed over the umbilical ring to introduce 30 degree viewing system. Two 6 mm manipulation trocars were fixed from the affected side at the edge of the abdominal rectus muscle. Pneumoperitoneum was maintained at 12–14 mm Hg. Karl Storz high-resolution endoscopic video camera, instruments and equipment were used. Kidney was accessed by mobilizing the hepatic or splenic angle of the colon. After exposure

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of the kidney, the renal pelvis and ureter were mobilized to identify the cause for obstruction. Then the upper pole of the renal pelvis was fixed to the anterior abdominal wall by Hitch stitch with a monofilament thread. The resection of ureteropelvic junction and pyeloplasty Hannes-Andersen were performed with loop sutures using suture filament VICRIL 5/0. After suturing the posterior wall of the anastomosis, an intra-ureteral "double J" stent was installed, and then the anterior wall was sutured. Usually it allowed establishing a complete suture. However, in some cases an excessive tension in anastomosis was noted. In two cases we received a persistent eruption of the first suture between the pelvis and the ureter. There was a need to elongate the ureteropelvic complex what was done using varied techniques. First we mobilized the whole ureter then sutured it in the proximal third using 5-0 nontraumatic suture filament and fixed it to the anterior abdominal wall with a moderate tension toward the pelvis. Finally we elongated the renal pelvis by cutting it crosswise in the middle third and suturing it lengthwise. All that allowed creating pyeloureteral anastomosis without any tension. Then we removed the 5-0 suture filament that suspended the urethra and tightly sutured the peritoneum leaving one drainage lumbar stoma. (Fig. 1A-D).

**RESULTS:** In 2012-2014, 6 children aged 5 to 16 (4 boys and 2 girls) with CH (2 left, 4 right) underwent LP with no complications requiring conversion or re-laparoscopy. The surgery lasted 100 to 240 minutes. Children were discharged 3-5 days after surgery.

**CONCLUSION:** Methods of laparoscopic elongation of pyeloureteral complex include mobilization of the ureter, its suspensory traction towards the renal pelvis, mobilization of the kidney, and elongating plastic of the renal pelvis. This allows a successful laparoscopic pyeloplasty of congenital hydronephrosis in cases of excessive tension in the area of the anastomosis.



### **P102: THE PRELIMINARY EXPLORATION OF SINGLE INCISION LAPAROSCOPIC SURGERY IN PYELOURETEROPLASTY OF CHILDREN** – Li GuiBin; The 5th central hospital of Tianjin

**PURPOSE:** To explore the application value of single incision laparoscopic pyeloureteroplasty in children with ureteropelvic junction obstruction.

**METHODS:** The clinical data of 14 patients with ureteropelvic junction obstruction in our hospital from October 2010 to June 2014 were investigated retrospectively.

**RESULTS:** All the 14 cases with ureteropelvic junction obstruction were successfully underwent single incision laparoscopic

pyeloureteroplasty. The average operation time was 110 minutes, and the postoperative hospital stay was average 4-7 days. The double J tube was withdrawn by using cystoscopy. Urinary tract infection was found in 1 case and disappeared after the remove of double J tube. 1 cases occurred anastomotic stricture achieved a satisfactory result after the treatment of ureteroscopic dilatation. urinary stone occurred in 1 patient was finally relieved by adequate procedure. There were no complications of urine leakage and bleeding. No significant scar was observed on the surface of umbilicus after operation. Pyelectasis was significantly reduced in postoperative Ultrasound follow-up in 12 cases. 2 cases were lost to follow-up.

**CONCLUSION:** Single incision aparoscopic pyeloureteroplasty has many advantages such as safety, effectivity, small trauma, rapid recovery, no visible abdominal wall scar. It has better cosmetic effect than traditional laparoscopic surgery.

### **P103: SIMULTANEOUS BILATERAL LAPAROSCOPIC ANDERSON-HYNES PYELOPLASTY FOR URETEROPELVIC JUNCTION OBSTRUCTION IN CHILDREN** – Dawei He, Xing Liu, Tao Lin, Guanghui Wei; Department of Urology, Children's Hospital of Chongqing Medical University, Chongqing

**OBJECTIVE:** To evaluate the feasibility, safety, efficacy and advantages of Simultaneous Bilateral laparoscopic Anderson-Hynes pyeloplasty for the treatment of ureteropelvic junction obstruction ( UPJO).

**METHODS:** We retrospectively reviewed 15 patients who underwent simultaneous bilateral laparoscopic Anderson-Hynes pyeloplasty for UPJO by the same surgeon in our hospital. 15 patients, aged from 1 year to 14 years, was waist abdomen pain in 7 cases, urinary tract infections (UTI) in 2 cases, bilateral abdomen mass in 4 cases, unilateral abdomen mass in 4 cases, giant hydronephrosis in 2 cases. The follow-up period was 12-24 months, B ultrasonography was used to follow the degree of the hydronephrosis, intravenous urography (IVU) for the UPJO when necessary, urinalysis for the urinary tract infection. The conversion rate, operative time, blood loss, length of hospitalization, complications, reoperation rate, the level of hydronephrosis remission were evaluated.

**RESULTS:** The procedure was completed successfully in all, no case converted to open surgery and add extra trocars or incision. The operation time was (180±60)min, the blood loss was (21.6±13.9)ml, the length of hospitalization was (10.1±2.0) days, 1 incomplete ureteral duplication, 1 bilateral ureteral polyps, 1 unilateral ureteral polyps, 1 bilateral aberrant vessels were found during operation. 1 case was temporary ileus because of urinary extravasation led by drainage tube jam without urinary tract infection 3 days after procedure. It was remissioned after fasting and gastrointestinal decompression. 3 cases were haematuria after 24 hours and the haematuria disappeared when the hemostatics was enhanced. No hypercapnia and internal environment disturbance happened, no other gastrointestinal motility or mechanical obstruction complications were observed. There were no Clavien III complications observed. 10(66.7%) cases was followed after 12 months, complete remission rate and portion remission rate were 50%(10 kidneys) and 50%(10 kidneys), while 24 months after procedure, the ratio above was 70%(14 kidneys) and 30%(6 kidneys). no one need secondly surgery intervention.

**CONCLUSIONS:** Simultaneous Bilateral Laparoscopic Anderson-Hynes pyeloplasty is safe, effective and have an excellent outcome and minimal invasion.

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### **P104: TWO-SITE TROCAR PLACEMENT OF LAPAROSCOPIC ANDERSON-HYNES PYELOPLASTY** – Deying Zhang, Dawei He, Xing Liu, Tao Lin; Department of Urology, Children's Hospital of Chongqing Medical University, Chongqing

**OBJECTIVE:** To describe the clinical efficacy of two-site trocar placement of laparoscopic Anderson-Hynes pyeloplasty for the treatment of UPJO in children.

**METHODS:** A total of 149 children (from 2010 to 2013) with UPJO were enrolled in this study. The patients were divided into two-site and three-site group according to the pattern of the trocar placement. two-site group(69 cases),including 53 males and 16 females, were made up of 3 bilateral and 66 unilateral. three-site group(80 cases),including 71 males and 9 females, were made up of 4 bilateral and 76 unilateral. All the patients underwent laparoscopic Anderson-Hynes pyeloplasty by the same surgeon. The follow-up period was 12 months, B ultrasonography was used to follow the degree of the hydronephrosis, urinalysis for the urinary tract infection. Comparison in terms of operative duration, complication rate, reintervention rate and therapeutic efficacy was made.

**RESULTS:** The procedure was completed in all, no case converted to open surgery and add extra trocars or incision. Significant difference was found in operative time [(95±41)min vs (122±42)min P=0.000], But no significant difference was found in Anterior-Posterior [(1.5±1.2)cm vs (1.2±0.9)cm P=0.167] between the two groups. Complication rate were 17.4% and 13.8%, complete remission rate was 40.6% and 42.5%, 2 cases in two-site group were reintervened one year later.

**CONCLUSIONS:** Two-site trocar placement of laparoscopic Anderson-Hynes pyeloplasty is clinical efficacy and, moreover, improved cosmesis.

### **P105: LAPAROSCOPIC PYELOPLASTY FOR ECTOPIC KIDNEY IN CHILDREN** – Peng Lu, Dawei He, Tao Lin, Guanghui Wei; Department of Pediatric Urology, Children's Hospital of Chongqing Medical University

**PURPOSE:** Laparoscopic Anderson-Hynes pyeloplasty for ureteropelvic junction obstruction associated with ectopic kidney has been seldom described in young children. We describe our experience in 4 children treated successfully with laparoscopic dismembered pyeloplasty.

**MATERIALS & METHODS:** Laparoscopic Anderson-Hynes pyeloplasty was applied to treat 4 patients (three boys and one girl) diagnosed with ectopic kidney combined hydronephrosis caused by ureteropelvic junction obstruction (UPJO) between January 2013 and April 2014. The chief complaint was abdominal pain in 2 cases, abdominal mass in 2 case. Definite diagnoses were established in all the cases by ultrasound, intravenous urography (IVU), cystoscope, CT, magnetic resonance urography (MRU) and radionuclide imaging before the surgery. Mean patient age was 7.5 years (aged 7 month to 14 year). The ectopic kidneys were left sided in 1 patient, right sided in 3. The mean anteroposterior diameter (AP) was 5.7±2.8cm. The anastomosis was done by running or interrupted 6-zero resorbable sutures and drained by a Double-J stent. Postoperative followup consisted of ultrasound, excretory urography and urinalysis.

**RESULTS:** A total of 4 patients were successfully treated with Laparoscopic Anderson-Hynes pyeloplasty. Mean operative time was 156 minutes (range 115 to 195). Two cases with contralateral renal malrotation, one ipsilateral renal malrotation and one ipsilateral renal duplication were found during operation. Mean hospital stay was 4 days. Followup ranged from 11 to 19 months. All patients were asymptomatic with significant improvement of dilatation.

**CONCLUSIONS:** Laparoscopic management of ureteropelvic junction

obstruction associated with ectopic kidney in children can be considered as a safe and effective minimally invasive surgical option. However, further studies with larger cohorts are necessary to confirm this finding.

### **P106: LAPAROSCOPIC ANDERSON-HYNES PYELOPLASTY FOR PEDIATRIC GIANT HYDRONEPHROSIS CAUSED BY URETEROPELVIC JUNCTION OBSTRUCTION** – Dawei He, Xing Liu, Jie Gao, Tao Lin, Guanghui Wei; Department of Pediatric Urology, Children's Hospital of Chongqing Medical University

**OBJECTIVES:** To describe our experience with laparoscopic Anderson-Hynes pyeloplasty for pediatric Giant Hydronephrosis(GH) caused by ureteropelvic junction obstruction.

**METHODS:** From April 2008 and May 2014, 83 GH patients(84 kidneys) caused by UPJO who underwent laparoscopic Anderson-Hynes pyeloplasty performed by a single surgeon were retrospectively analyzed. Patient age ranged from 2 months to 15.5 years (mean 3.3 years), GH were left sided in 60 patients, right sided in 22 and bilateral in 1. All the patients were divided into internal drainage group and external drainage group. The patients were followed up for 3-24 months with ultrasound, intravenous urography (IVU) and CTU when necessary. Success was defined as both symptomatic relief and radiographic resolution of obstruction at last follow-up. The conversion rate, operative time, length of hospitalization, complications, reintervention rate, the ratio of hydronephrosis remission were evaluated between the two different pattern of drainage.

**RESULTS:** All cases were successfully completed laparoscopically. All the 84 kidneys contained greater than 24 hours urinary. Postoperatively, a total of 18(21.7%) cases had different complications, 14(16.9%) of them was Clavien-Grade? complications, the rest of the 4(4.8%) cases were Clavien-Grade? complications. All the clinical features were disappeared. All the kidneys showed a decreased degree of hydronephrosis on ultrasound. the success rate is 100%.

**CONCLUSIONS:** Outcomes after laparoscopic Anderson-Hynes pyeloplasty for GH were satisfactory. In children with GH caused by UPJO, early relief of obstruction allows comparable nephron sparing.

### **P107: THE POSTOPERATIVE MANAGEMENT OF LAPAROSCOPIC PYELOPLASTY FOR URETEROPELVIC JUNCTION OBSTRUCTION IN CHILDREN** – Jie Gao, Dawei He, Xing Liu, Youqun Lu, Tao Lin; Department of Pediatric Urology, Children's Hospital of Chongqing Medical University

**PURPOSE:** To explore the experience of nursing care of laparoscopy for pyeloplasty for Ureteropelvic Junction Obstruction (UPJO) in children.

**METHODS:** 428 patients with UPJO underwent Anderson-Hynes laparoscopic pyeloplasty, age ranged from 2 months to 16 years (mean 4.6 years). The data of postoperative complications care and follow-up status were analyzed.

**RESULTS:** 426 patients received successful laparoscopy for pyeloplasty. 2 (0.47%) patients were transfer open. 85(19.9%) cases had complications, 68(15.9%) of them was Clavien-Grade I complications, and 17(3.9%) cases were Clavien-Grade II complications. There were no Clavien III complications observed. The main complications were Hypercapnia 34 cases caused by carbon dioxide in 6 hours postoperation, subcutaneous emphysema 4 cases, drainage stent blocked 6 cases, haematuria 63 cases after 48 hours postoperation and urine extravasation 4 cases caused by drainage stent blocked. The patients were followed up for 3-72 months. All the complications were cured with non-surgical except 2 (0.47%) cases redo operation with UPJ stricture after 6 months and 46 months.

## Poster Abstracts CONTINUED

CONCLUSIONS: Postoperative closely observation, early detection and timely treatment of complications is an important part of the guarantee the long-term efficiency.

**P108: URETEROSCOPIC LITHOTRIPSY FOR THE TREATMENT OF URINARY CALCULI IN CHILDREN** – Ngoc Thach Pham, MD, Van Thao Tran, MD; Children hospital number 2

INTRODUCTION & OBJECTIVE: To evaluate the clinical efficacy and safety in ureteroscopic lithotripsy for the treatment of urinary calculi in children.

MATERIALS & METHODS: We retrospectively reviewed the clinical data of 15 cases with urinary calculi from Octobre 2008 to February 2012. These children underwent ureteroscopic lithotripsy with Holmium:YAG laser lithotripter. Mean patients age was 38 months (range 32 to 58) and male to female ratio was 2:1. Left-side ureteral calculi were found in 8 cases and right-side in 7. The positions of ureteral calculi were 1 in upper, 1 in middle and 13 in lower ureter. All the urinary calculi were confirmed by X ray and ultrasound examination.

RESULTS: The operations were performed successfully in all patients. The stone free rate was 100%. Mean operative time was 39 minutes (range 28 to 67). No major complications like hemorrhage, perforation and organic injury were noted. The urethral catheters were pulled out after 2 to 4 days. The postoperative hospital stays were 3 to 5 days. All cases were followed

UP for 3 to 18 months. Calculus had no recurrence. Hydronephrosis and hydroureterosis disappeared or lightened. Growth and development were normal.

CONCLUSIONS: Ureteroscopic lithotripsy for the treatment of urinary calculi was safe and effective in children.

**P109: LAPAROSCOPIC OPERATION IN CHILDREN WITH RECURRENT INGUINAL HERNIA** – Zai Song, Kuiran Dong; Children's Hospital of Fudan University

OBJECTIVE: To investigate the value of transumbilical laparoscopic operation in children with recurrent inguinal hernia.

METHODS: From November 2013 to February 2014, 31 patents with recurrent inguinal hernia received operation in children's hospital of Fudan University. Among them, 17 patients were treated with traditional open operation and 14 patients received laparoscopic operation. The data of the operation time, operation cost, and the complications after operation were collected to evaluate the advantage and disadvantage of laparoscopic operation.

RESULTS: The operation time of the open operation and transumbilical laparoscopic operation were 28±7 min and 25±5 min., there existed no significant difference between them ( $p=0.071, p>0.05$ ). In patients received open operation, 11 patients were found with scrotal edema (64.7%) and 2 patients with hematoma (11.8%). The incidence of scrotal edema and hematoma were much lower in patients received laparoscopic operation. Only 2 cases (14.3%) appeared scrotal edema and no hematoma were found. After one year's follow-up of, on relapse were found in both groups. However, the cost of open operation (4537±258 yuan,CNY) is much cheaper than those with laparoscopic operation (8943±953 yuan,CNY)

CONCLUSIONS: in children with recurrent inguinal hernia, compared with traditional open surgery, transumbilical laparoscopic operation has the almost the same operation time and less incidence of scrotal edema and hematoma. However, it cost much than open operation.

KEY WORDS: recurrent inguinal hernia, open operation, laparoscopic operation

**P110: LAPAROSCOPIC PYELOPLASTY IN CHILDREN- TIPS & TRICKS AND LESSONS LEARNT** – Balamourougane Paramasamy, MS; SRMC & RI, Chennai, INDIA

AIMS: to report on the successful management of 2 cases with Ureteric abnormalities by Laparoscopy.

METHODS: 25 children diagnosed with antenatally diagnosed PUJ obstruction or by evaluation of their symptoms, were planned for Surgical correction due to their symptomatic status. The ages ranged from 27 days to 12 years. The majority were male children and right sided in 4, bilateral in 3. They were subjected to Surgery under GA, in lateral position. Standard 3 port technique was used, and Transperitoneal dismembered Pyeloplasty performed.

RESULTS: All patients were started on feeds on POD-1, catheter removed on POD-2, drain removed on POD-3 and discharged on the same day. The mean operative time ranged from 3-4 hours. All patients underwent stent removal after 6 weeks and post op DTPA/ LLEC scan at 3 months. All patients are doing well on follow up. One patient developed a stricture, which required revision of the anastomosis.

CONCLUSION: The feasibility of Laparoscopic Pyeloplasty in infants, with the added advantage of better cosmesis and less pain and comparable results, may soon become the preferred modality of treatment for PUJ obstruction. The tips and tricks along with the lessons learnt are also discussed.

**P111: ENDOSCOPIC TREATMENT FOR BULBAR URETHRAL STRICTURE** – Lisandro A Piaggio, MD<sup>1</sup>, Nestor H Piaggio<sup>2</sup>; <sup>1</sup>Hospital IGA Dr J Penna de Bahia Blanca, <sup>2</sup>Hospital Italiano Regional del Sur

INTRODUCTION: Endoscopic treatment for urethral strictures in the adult population is not the standard of care since its low effectiveness. We present a pediatric series of patients treated endoscopically for urethral stricture with good results at medium and long term follow up

MATERIALS & METHODS: retrospective chart review of patients treated endoscopically for bulbar urethral stricture between 2007-2013. Exclusion criteria were congenital obstruction and urethral stricture after hipospadias repair. Demographic data, etiology, radiologic findings, timing of urethral catheterization, type of presentation, number of procedures and outcome were recorded.

RESULTS: 6 out of 36 identified patients were included. Median age at presentation (range) was 10,9 years (1-16). Type of presentation follows: dysuria with high post voided residual volume (3) urinary retention (2), perineal trauma (1). Two patients had associated urinary tract infection. Urethral catheterization with a Foley catheter that remained indwelling for a medium of 12 days (range 4-30 days) was the etiology for urethral stricture in 5 patients and perineal impalement in 1. Retrograde urethrography showed urethral bulbar stricture of less than 2 cm in all cases (1 false track). Procedures were internal urethrotomy and dilatation (2), dilatation alone (4). Number of procedures for patient were 1 (4), 4 (1) and 5 (1) (mean 2,2 median 1). The patient needing 5 procedures relapsed requiring open surgery (end-to-end urethral anastomosis). The rest of the patients did well and are symptoms free with normal uroflowmetry, endoscopy or both with a median follow up of 48 months since last procedure (range 28-83 months)

CONCLUSIONS: in our experience endoscopic treatment for urethral bulbar stenosis secondary to prolonged urethral catheterization or perineal trauma had a success rate of 66 % with one procedure and 83 % with more than one procedure. Since its simplicity and low morbidity we think is a reasonable approach for urethral bulbar

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stenosis reserving open surgery for those who failed after more than one urethral dilatation.

**P112: HERNIA REPAIR IN CHILDREN, TO LAP OR NOT TO LAP?**  
– Panagiotis Petropoulos, MD, MSc, MBA, Theodor Dionisis, MD; EUROCLINIC CHILDREN'S HOSPITAL

There is a great debate in hernia repair in children because of the high incidence of recurrences, more than 4% in some series. With the evolution of new techniques this is surpassed. Our team is presenting the preliminary results of two techniques, needle – assisted laparoscopic repair in males and eversion technique in females with low rate of recurrences. We also present, with a review of the literature, the advantages of minimal invasive surgery in hernia repair in children

**P113: MINIMALLY INVASIVE TECHNIQUE – PERCUTANEOUS INTERNAL RING SUTURING – FOR INGUINAL HERNIA REPAIR IN CHILDREN** – Damir Jenalayev, MD<sup>1</sup>, Bulat Jenalayev, MD<sup>2</sup>, Omar Mamlin, MD<sup>1</sup>, Dulat Mustafinov, MD<sup>1</sup>; <sup>1</sup>National Research Center for Mother and Child Health, <sup>2</sup>West Kazakhstan State Medical University

Since January 2013, 72 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 34 boys with 42 hernias (28% bilateral) and 38 girls with 30 hernias (32% bilateral). In 3 of 8 (37,5%) boys and 5 of 8 (62,5%) 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 33 ± 11.24 minutes. The mean operative time was 14.12±4.20 minutes for unilateral hernia and 21.20±4.34 minutes for bilateral hernias, from the beginning of 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 not 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.

**P114: PERSISTENT MULLERIAN DUCT SYNDROME: LAPAROSCOPIC EVALUATION AND MANAGEMENT** – Cristen Litz, MD<sup>1</sup>, Mark Splittgerber, MD<sup>1</sup>, Drew A Rideout, MD<sup>2</sup>; <sup>1</sup>Tampa General Hospital/University of South Florida, <sup>2</sup>All Children's Hospital/Johns Hopkins Medicine

**BACKGROUND:** Persistent Mullerian duct syndrome (PMDS) is a rare disorder of sexual differentiation, with about two hundred cases being reported over the past fifty years. Patients have normal external male genitalia with a 46 XY karyotype; however, they also have internal Mullerian duct structures including a uterus, cervix, fallopian tubes and the upper two thirds of the vagina. PMDS is due to a lack of Mullerian inhibitory substance or a problem with its receptor, resulting in failure of the Mullerian duct remnants to regress. Because the disorder is asymptomatic, it is frequently discovered incidentally during procedures for undescended testes or inguinal herniorrhaphy. In order to effectively management this condition, it is important to understand the anatomical relationship of the involved structures and carefully consider functional and malignant risks. Herein, we describe a case of PMDS and illustrate the laparoscopic technique of evaluation and management of the condition.

**CASE PRESENTATION:** A fourteen month old male initially presented with a difficult-to-reducible right inguinal hernia and bilateral non-palpable testicles. He had normal external male genitalia with bilateral tense hydroceles, resulting in a well-developed scrotum and likely contributing to the delay in diagnosis of undescended testicles. At diagnostic laparoscopy, he was discovered to have bilateral inguinal hernias, bilateral intraabdominal testes, and Mullerian duct remnants. Biopsies were taken bilaterally from the testes and fimbria (which had a similar appearance as streak ovaries). The right inguinal hernia was repaired given the risk of incarceration and karyotype and hormonal levels were sent. All structures were initially left in situ with the plan to return to the operating room once the pathology, karyotype and lab results were reviewed. Two months later, the child underwent laparoscopic-assisted bilateral orchiopexies and left inguinal hernia repair. The Mullerian structures were densely adherent to the vas on each side and were not fully removed out of concerns for increasing the risk of infertility.

**CONCLUSION:** Persistent Mullerian duct syndrome is historically a rare condition; however, with the use of diagnostic laparoscopy becoming a routine procedure for non-palpable testes an increasing number of cases are being discovered. It is important to include this anomaly in the differential diagnosis of undescended testicles, given its impact on fertility and risk for future malignancy. In the management of this problem, consideration is given to preserving hormonal function and fertility, while weighing the risks of testicular and Mullerian cancer. Age at diagnosis must also be factored in to the decision tree. Laparoscopy provides an effective approach to the evaluation and management of PMDS and is becoming the gold standard for treatment of this anomaly.

**P115: SINGLE PORT ASSISTED HERNIORRHAPHY WITH THE YEUNG HOOK – OUR EXPERIENCE IN FEMALE PATIENTS OVER THE LAST SEVEN YEARS** – Fabian Potthast, Robin Wachowiak, MD, Ulf Bühligen, MD; Department of Pediatric Surgery, University Medical Center Leipzig, Germany

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**BACKGROUND:** Laparoscopically assisted repair of inguinal hernia in children has become more and more frequent over the last years; We now present our experience with inguinal herniorrhaphy using a modified technique of the one first described by CK Yeung. From 2007 to 2014 37 patients underwent this laparoscopically assisted operation.

**MATERIAL&METHODS:** Our technique is a modification of the laparoscopically assisted herniorrhaphy with the Yeung hook. Using a single umbilical port an operating laparoscope of 5mm ('Ei Optik', 0° lense by Wolf®, Germany) with a 3.5mm working channel is placed into the abdomen. Afterwards we use the Yeung hook to insert a nonabsorbable suture abdominally, which is then grabbed laparoscopically and pulled out with the hook on the opposite side of the internal inguinal ring. By knotting extracorporally the herniorrhaphy is then performed. In combined inguinal and umbilical hernias the port was placed in the umbilical gap and it could be repaired afterwards without any further incision being necessary.

**RESULTS:** All 37 operations were performed without conversion to open surgery. Mean age was 4.3y (2m-14y). In 11 patients bilateral hernias were found, 26 had unilateral hernia (15 right, 11 left). 9 patients had an additional umbilical hernia. Mean operation time was 37min (32-51min) for unilateral inguinal hernia and 55min (49-70min) for bilateral inguinal hernia (each including umbilical hernia repair if necessary). We found one recurrence of inguinal hernia and one new umbilical hernia as a complication. 26 children were outpatients and discharged on the day of operation.

**CONCLUSION:** Laparoscopic repair of inguinal hernia with a single umbilical port is as save and feasible in children as via inguinal incision. Furthermore, by using an umbilical port both inguinal regions can be inspected and if necessary repaired within the same operation without any further incisions.

### **P116: PERIOPERATIVE COMPLICATIONS OF TRANSPERITONEAL LAPAROSCOPIC PYELOPLASTY: EXPERIENCE AT A SINGLE CENTER – Dehua Wu, Chang Tao, Daxing Tang, Shan Xu; Department of Pediatric Surgery Children's Hospital Zhejiang University School of Medicine**

**OBJECTIVE:** To investigate and analyze perioperative complications of transperitoneal laparoscopic pyeloplasty.

**METHODS:** We made a retrospective analysis of 67 patients with ureteropelvic junction obstruction from July 2012 to September 2014. 48 cases were male and other 19 cases were female. Their average age was 4.3y (10Mo-12.2y). All cases accepted examination such as ultrasound, MRU, diuretic renogram, etc, and hydronephrosis with APD>2cm in all of them. All patients were performed transperitoneal laparoscopic pyeloplasty as primary operation. We took two approaches for different cases, that is transmesocolic approach for 50 left side laparoscopic pyeloplasties and laterocolic approach for 17 with right side disease. Total 58 cases received follow-up and postoperative follow-up average time was 11months (2-25mo). We investigated and analyzed intraoperative complications and recent postoperative complications (<3mo) of this procedure.

**RESULTS:** 66 cases were performed transperitoneal laparoscopic pyeloplasty of which 1 case gave up laparoscopic procedure because of bleeding. The mean operative time was 163 minutes (117-296 minutes). The average postoperative hospital stay was 8.5d (5-13 d). Intraoperative complications: 1) Injure renal pedicle: we injured renal pedicle in a boy when we reduce the volume of renal pelvis because the renal pelvis high towing point was close to the renal pedicle. We have to turn to open surgery to repair. Fortunately, this boy didn't need transfusion. 2) The double J couldn't be put into the bladder in two cases. They were believed to have obstruction of ureterovesical

junction and external drainage of the renal pelvis and ureteral stent placement were put into. 3) Anastomotic tension: The abnormal ureter we cut is too long result in anastomotic tension in a boy, so we had to mobilize the whole kidney to reduce tension. Postoperative complications: 1) Urine leakage: About 20 patients complained of abdominal pain and abdominal distension at different levels after operation and urine could be found in drainage tube. The maximum volume was 300ml in 24 hours. Most patients become better 3 days later, but the longest drainage time was eight days. Most of them occurred in the early days of this procedure and the complication rates declined over the past year. 2) UTI: About 32 patients (48%) suffered from UTI without fever at different levels before removal of double J and 7 cases(10%) suffered from UTI without fever after removal of double J. Symptoms of these patients is not obvious and anti-infection treatment is effective. 3) Double J shift: Double J shift to within the ureter in 2 cases at the time of removing it. We used stone retrieval basket to remove it by the help of ultrasound successfully. 4) Anastomotic stenosis: 2 patients complained of abdominal pain and fever after removal of double J, ultrasound showed hydronephrosis is aggravating. They were believed to have anastomotic stenosis, so percutaneous nephrostomy were performed by guiding of ultrasound.

**CONCLUSION:** Transperitoneal laparoscopic pyeloplasty need skilled laparoscopic techniques. Quality of anastomosis need to assure. The tight, oblique, no tension, no torsion anastomosis could reduce the complications of this procedure.

### **P117: LAPAROSCOPIC HERNIECTOMY: PRESENTATION OF A NOVEL MINIMALLY INVASIVE APPROACH TO INGUINAL HERNIA REPAIR WITH SHORT-TERM FOLLOW-UP – Robert Kanard, MD; University of Illinois at Chicago**

**INTRODUCTION:** Inguinal herniorrhaphy is one of the most common surgeries performed. For years the open high ligation has been the gold standard. Over the past several years laparoscopy has led to new techniques, and has led to improved diagnosis, better cosmesis, and, in some series, fewer complications. The minimally invasive approaches mostly recapitulate the open repair with some variation on suture ligation of the inguinal ring. Recurrences in healthy children following the open repair have historically been quoted as 1%, and most laparoscopic repair series quote up to 3% recurrence rate. Presented in this study is a series of patients undergoing laparoscopic herniectomy without suture ligation of the internal ring with nearly three years follow-up.

**METHODS:** A retrospective review was conducted of male patients undergoing inguinal hernia repair by a single surgeon. The surgeries were completed using the sutureless laparoscopic herniectomy. The surgery was conducted through a 3-mm camera port at the umbilicus and stab incisions on either side of the umbilicus. The internal ring was circumferentially incised and the hernia sac was inverted into the abdomen, dissected free of the spermatic cord, and excised. No sutures were placed across the internal ring. Short-term follow-up was conducted in clinic, whereas the longer-term follow-up was conducted by phone interview.

**RESULTS:** In total 32 inguinal hernias were repaired in 24 boys. The average age at the time of herniorrhaphy was 6-years old (range 3 months-13 years). All patients were seen within one month after surgery, and longer follow-up was obtained for 15 patients with 22 hernias. The average length of follow-up was 22.4 months (range 7-35 months). No patients suffered recurrence, chronic pain, wound complications, hydroceles, testicular atrophy, or acquired undescended testes. The average length of operative time was 32.7 minutes for unilateral hernias and 42.5 minutes for bilateral hernias.

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**CONCLUSIONS:** The sutureless technique of laparoscopic resection of the processus vaginalis offers a minimally invasive option for repairing inguinal hernias in boys without increased risk of recurrence or other complications. Since standard laparoscopic instruments are utilized, this technique is widely accessible.

**P118: LAPAROSCOPY ASSISTED PERINEAL VAGINOPLASTY AND REDO SURGERY IN AN ADOLESCENT GIRL WITH HYDROMETROCOLPOS, VAGINAL ATRESIA AND THE HISTORY OF ANOPLASTY** – Hikmet Hassa<sup>1</sup>, Yunus Aydin<sup>1</sup>, Ahmet Topaloglu<sup>2</sup>, Surhan Arda<sup>2</sup>, [Baran Tokar](#)<sup>2</sup>, <sup>1</sup>Eskisehir OGU Medical School, Department of Obstetrics and Gynaecology, <sup>2</sup>Eskisehir OGU Medical School, Department of Pediatric Surgery

Cloacal malformation may appear with variations. Beside well known pathologies such as persistent cloaca or urogenital sinus, variations caused by defect of contact of the structures with lumen to cloacal membrane may occur without any common sinus or fistula.

**CASE PRESENTATION:** A 13 year-old girl was admitted with amenorrhea and hydrometrocolpos. She had a history of anoplasty due to anal atresia during newborn period. Diagnosis and management plan was conducted by both O&G and Pediatric Surgery departments. Perineal examination together with cystoscopy, ultrasound and MRI examination revealed that urinary system, anus and sphincter do not have any current pathology. Hydrometrocolpos and isolated 2 to 3 cm distal vaginal atresia were determined. Proximal vagina, cervix, uterus and ovaries were looking normal. Since the patient had a history of anoplasty, laparoscopic exploration of the pelvis and exposure of proximal vagina and neighboring structures was planned. Laparoscopic exploration showed hydrometrocolpos, proximal vagina and pelvic endometriosis. To delineate the border of the rectum, Air was pumped from the rectum. A long bougie was introduced from a suprapubic incision into the posterior wall of the vagina to push for a bulging of distal vaginal tip at the perineal end. The bougie was palpated between labia minora and then an incision was made at that point with a special care to closely related rectal and urethral wall. Vaginal mucosa was exposed circumferentially with stay sutures, and then vaginoplasty was performed with 4/0 polyglactin sutures at the medial side of the labia minora. In postoperative follow up, orifice of the vagina was closed. Redo surgery was performed, a stent was placed and a long term dilatation program was planned. She did well following the re-operation.

**CONCLUSION:** In patients who had previous perineal surgery, laparoscopic exploration may be needed for distal vaginal atresia operation. Laparoscopy provides a well exposure of the neighboring structures of the proximal vagina and laparoscopy assisted perineal vaginoplasty could be performed with a better anatomic exposure. A long term dilatation program is needed to prevent redo surgery.

**P119: LAPAROSCOPIC AND CYSTOSCOPIC ASSISTANCE FOR TREATMENT OF A RARE CASE OF ANORECTAL MALFORMATION WITH FISTULA TO PROSTATIC UTRICLE** – [Katherine P Davenport, MD](#)<sup>1</sup>, Michael Yap, MD<sup>2</sup>, George Chiang, MD<sup>2</sup>, Julia Grabowski, MD<sup>1</sup>, <sup>1</sup>Rady Children's Hosp San Diego, Dept of Pediatric Surgery, <sup>2</sup>Rady Children's Hosp San Diego, Dept of Urology

**BACKGROUND:** The prostatic utricle is an epithelium-lined diverticulum of the prostatic urethra and is a normal anatomic variant representing persistent Müllerian duct tissue in males. Deficient secretion or resistance to Müllerian inhibitory factor may result in an enlarged, or cystic, utricle. Though often asymptomatic, an enlarged utricle may present clinically with urinary tract infection, stone formation, or voiding dysfunction. Enlarged utricles are

most commonly associated with hypospadias, but have been seen in patients with anorectal malformations. Despite the previous described association with anorectal malformations, there are no reports of patients with a fistula between rectum and prostatic utricle. Herein, we describe such a patient.

**RESULTS:** We report the case of a 10 month old male with history of caudal regression syndrome, solitary kidney and imperforate anus who underwent colostomy in the neonatal period. At 6 months of age, in preparation for his posterior sagittal anorectoplasty, he underwent distal colostogram. This study revealed a large prostatic utricle which was confirmed with follow-up VUCG. Due to the size and position of the utricle, the location of the rectal fistula could not be clearly identified.

**METHODS:** In the operating room, he first underwent cystoscopy for fistula localization. After passing the membranous urethra, we identified the prostatic utricle. The neck of the utricle was large, extending from the verumontanum and spanning half of the length of the posterior urethra. We advanced the scope into the bladder where no rectal fistula was observed. Two catheters were placed: one within the bladder and another within the prostatic utricle.

After cystoscopy, laparoscopy was performed with a 5mm laparoscope placed through the umbilicus and 2 additional 5mm working ports. We mobilized the rectum and inspected for a bladder neck fistula, which was not noted. The patient was then placed in the prone jackknife position, an electric muscle stimulator was utilized to identify the sphincter complex and a midline incision was made. The parasagittal and muscle complex fibers were divided and carried to the rectum which was located at the level of the coccyx. By tracing the rectum to its most distal extent and using preoperative radiographs as guidance, we identified what appeared to be a confluence of the fistula, utricle, and urethra. The rectum was then incised with electrocautery. The colon was then dissected and freed proximally off the utricle. The utricle was then incised along the midline and this incision extended distally into the urethra. Both urethral catheters were identified confirming the anatomic landmarks. The utricle was excised off of the urethra which was then reconstructed with interrupted absorbable sutures. Verumontanum and bilateral vas deferens were preserved. The rectum was then further mobilized and anoplasty was performed. The patient had an uneventful postoperative course.

**CONCLUSION:** Diagnosis and excision of a prostatic utricle can be challenging when seen in conjunction with an anorectal malformation. Management of these cases can be facilitated with the use of cystoscopy and laparoscopy.

**P120: IF POLYORCHIDISM IS ASSOCIATED WITH INTRA-ABDOMINAL TESTIS, POSSIBILITY OF FINDING THE TYPE IV POLYORCHIDISM IS HIGH IN COMBINED LAPAROSCOPIC&INGUINAL EXPLORATION OF NON-PALPABLE TESTIS** – [Baran Tokar](#), Mehmet Ciftci, Huseyin Ilhan, Surhan Arda, Umut Alici, Cigdem Arslan; Eskisehir Osmangazi University, School of Medicine, Department of Pediatric Surgery, Turkey

Polyorchidism has been described as a rare pathology with a few reports in the literature. There are 4 types and type IV is the rarest one which is a complete duplication of the testis, epididymis and vas. We determined 4 patients with polyorchidism type IV in 92 patients with nonpalpable testis (NPT).

**METHODS:** Laparoscopic exploration was performed for 92 patients with NPT. Intraabdominal and inguinal exploration findings were recorded.

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**RESULTS:** All patients had both laparoscopic and inguinal exploration except one with testicular agenesis. By laparoscopic exploration, 32 testes were found in abdomen. In 4 patients, type IV polyorchidism was found. In those 4 patients, testicular pedicle of all intraabdominal testes was long enough for inguinal orchidopexy. Inguinal explorations showed an associated nubbin testis for all 4 patients. All these 4 cases had type IV polyorchidism on the left side. Inguinal nubbin testes were removed. In two patients, orchidopexy was done for intraabdominal testes. In the third patient, both intraabdominal and inguinal testes were nubbin and orchiectomy was done for both testes. In the last case, the intraabdominal testis had vas deferens atresia, and the vas of the nubbin inguinal testis was transplanted to intraabdominal testis and orchidopexy was performed.

**CONCLUSION:** This study may suggest that polyorchidism is not as rare as though, especially in patients having intraabdominal testis. A combined laparoscopic and inguinal exploration should be considered in such patients. If polyorchidism is associated with intra-abdominal testis, possibility of the type IV is high.

**VP001: UNIQUE RETRIEVAL OF INGESTED MAGNETS VIA LAPAROSCOPIC APPENDECTOMY** – [Toghrul Talishinskiy, MD](#), [Sabina Siddqui, MD](#), [Samir Gadepalli, MD](#); University of Michigan, Mott Children's Hospital

Gastrointestinal magnet ingestions and ingestion related injuries appear to be on the rise. Multiple magnets pose the unique danger of being able to attract each other through the different loops of bowel, arresting their movement, and potentially causing mural pressure necrosis. This eventually can lead to bowel perforation, fistula formation, volvulus and obstruction.

We present 2 recent cases from our institution of ingested magnets which were treated via laparoscopic appendectomy. Patient 1 is an 11 years old male with no significant medical history who presented 5 days after ingestion of earth magnets. Abdominal XR was obtained which revealed magnets in the cecum, however due to lack of progression of the magnets in the cecum patient was taken to operating room.

Laparoscopic enterotomy in the appendix was made, magnets were removed from the cecum and appendectomy was performed.

Patient 2 is an 11 years old female with no significant medical history who presented 1 day after ingestion of magnets. Abdominal XR was obtained and due to concern of possible magnets being separate from each other, patient was taken to operating room. Intraoperative fluoroscopic image was obtained which confirmed foreign object in the cecum.

Laparoscopic enterotomy in the appendix was made, magnets were removed from the cecum and completion appendectomy was performed. Off note enterotomy in the appendix should be far enough from the base to allow sufficient distance for stapling. Magnet attraction to the instruments adds another challenge during this procedure.

Magnets beyond the stomach pose challenge to the clinician and retrieval of the magnets can be accomplished via simple appendectomy with low morbidity to the patient. Thank you for your attention.

**VP002: LAPAROSCOPIC AND TRANSANAL REPAIR FOR RECTAL ATRESIA** – [Joanne Baerg, MD](#), [Erin Perrone, MD](#); Loma Linda University Children's Hospital

**BACKGROUND:** Rectal atresia comprises 1% of anorectal malformations. Externally, the anus appears normal, but a blind ending web can be palpated at 2-3 cm from the anal verge. The anal

canal, external sphincter and internal sphincter are well developed. There is typically no fistula between the rectum and the urethra or vagina. Few reports exist regarding investigation and repair of this anomaly. A satisfactory procedure should preserve the normally formed sphincters and anoderm and achieve postoperative continence.

**OBJECTIVE:** The objective of this video is to present the details and outcome of a laparoscopic and transanal repair for rectal atresia.

**CASE PRESENTATION:** A one-day-old, 3.5 kg male presented with abdominal distension and failure to pass meconium. Plain radiographs were consistent with a distal bowel obstruction. On perineal inspection, the genitalia and anus appeared normal. Digital rectal exam, however, revealed a blind ending web at 2 cm from the anal verge. This was confirmed with a contrast enema. Further imaging did not reveal a presacral mass or genitourinary anomalies. Sacral ratio was normal.

The patient underwent colostomy and mucous fistula. The perineal muscle stimulator was used to confirm the anal opening within the sphincter muscle complex.

Post-operative mucous fistulogram confirmed the anatomy of the web and absence of a fistulous connection or duplication.

**SURGICAL TECHNIQUE:** At 6 weeks of age, the infant underwent laparoscopic and transanal repair of the rectal atresia. Laparoscopic technique proceeded under general anesthesia, in mild Trendelenburg position with a foley catheter in place. Three 5 mm ports were inserted: one above the umbilicus and one at the right and one at the left iliac fossa.

Carbon dioxide insufflation was maintained at 8 mm Hg. A bladder suture was placed for better exposure of the pelvis. The web was clearly identified by gently placing a Hegar dilator into the anus. Circumferential dissection proceeded around the rectal and peritoneal attachments until the rectum was completely mobilized.

The anal canal was exposed with the Lonestar retractor. A circumferential incision was made 1-1.5 cm above the dentate line in order to preserve the anoderm. The dissection proceeded in the submucosal plane. The web was resected and an anastomosis was performed with interrupted 4-0 vicryl sutures at 1.5 cm above the dentate line in one layer. The operative time was 90 minutes.

**POSTOPERATIVE COURSE:** The patient was discharged on the second postoperative day. Anal dilation was started at 2 weeks after the operation and continued for 6 weeks. The colostomy was closed 2 months later. At 18 months follow-up evaluation, the patient has 2 stools daily with no fecal incontinence and the anastomosis has normal caliber.

**CONCLUSION:** The laparoscopic and transanal repair for rectal atresia is an ideal approach. The sphincters and anoderm, all elements that contribute to continence, are preserved. The laparoscopic dissection allows excellent pelvis visualization with minimal trauma. Our patient achieved a satisfactory outcome.

**VP003: HERNIOSCOPY: A USEFUL TECHNIQUE FOR EVALUATION OF PEDIATRIC CONTRALATERAL INGUINAL HERNIA** – [Rami Maarouf, MD](#), [Shannon F Rosati, MD](#), [Dan Parrish, MD](#), [Claudio Oiticica, MD](#), [Patricia Lange, MD](#), [David Lanning, MD, PhD](#); Virginia Commonwealth University Health System

**INTRODUCTION:** The incidence of clinically evident bilateral inguinal hernias in infants ranges from 5-10%. This is too low to justify the routine exploration of the asymptomatic contralateral inguinal region. Since 2010, to avoid a separate incision, our institution has introduced

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hernioscopy to evaluate the contralateral side. We aim to describe this minimally invasive technique and review our experience in performing hernioscopies, as well as success rates of identification of contralateral hernias and recurrence rates.

**TREATMENT AND METHODS:** A retrospective case-review was conducted, from 2010 through 2014. We identified patients younger than 18, who underwent open inguinal hernia repair with contralateral hernioscopic evaluation through the ipsilateral hernia sac. All patients with inguinal hernia were identified from the work of three surgeons performing open inguinal hernia repair in the standard fashion. No patients had the presence of an incarcerated inguinal hernia, cardio-respiratory instability, sepsis, or bleeding disorders. Patients were placed in Trendelenberg position and pneumoperitoneum was created, using CO<sub>2</sub>, through a step trocar placed into the distal end of the open hernia sac (pressures of 8 – 10 mmHg and flow rates 0.5 – 2 lpm were used). A scope was placed through the trocar into the peritoneal cavity. The use of 3mm and 5mm trocar or 70 and 30-degree scope was left to the preference of the operating surgeon. Direct visualization of a patent processus vaginalis, inguinal hernia, or air bubbles coming out of the canal was considered a positive exam. If any of these findings were identified, the pneumoperitoneum was evacuated and a contralateral inguinal hernia repair was performed. In all cases a standard high-ligation of any identified hernia sac was performed. All children were followed regardless of laparoscopic findings and clinical follow-up using chart review was performed to determine the development or recurrence of inguinal hernia.

**RESULTS:** A total of 31 patients underwent open inguinal hernia repair with contralateral hernioscopy. The male to female ratio was 2:1 and 35% of the patients were neonates. Hernioscopy identified 6 (19%) patients that were considered to have an open contralateral deep inguinal ring and underwent open bilateral inguinal hernia repair with either PDS (83%) or vicryl (17%) suture. No serious intraoperative surgical complications occurred. After an average follow-up period of 1 month (median 16 days), 23 children were clinically examined. There was 1 patient (3%) who presented 7 weeks after initial operation with a contralateral hernia requiring operative repair. There was no obvious hernia or scrotal enlargement on hernioscopy. None of the patients in the group in which hernioscopy detected a defect recurred on either side.

**CONCLUSIONS:** Hernioscopy through the ipsilateral hernia sac offers a safe, simple and useful alternative to avoid contralateral exploration in inguinal hernia repair. This is a minimally invasive technique that allows for identification of contralateral hernias being utilized at our institution which has proven an effective technique with no recurrences over a four year period. Additional studies may be needed to standardize the technique used to minimize missed contralateral hernias.

**VP004: SINGLE INCISION LAPAROSCOPIC REMOVAL OF GASTRIC BEZOAR** – Sandra M Farach, MD, Paul D Danielson, MD, Nicole M Chandler, MD; All Children's Hospital Johns Hopkins Medicine

**PURPOSE:** Gastric bezoars are defined as a foreign body resulting from the accumulation of ingested material. Trichobezoars result from the accumulation of hair within the gastrointestinal tract. We present a case of single incision laparoscopic removal of gastric trichobezoar with a focus on intracorporeal gastrostomy closure using traditional laparoscopic instruments.

**METHODS:** This is a retrospective case review of a four year old female patient presenting with a gastric trichobezoar who underwent single incision laparoscopic removal.

**RESULTS:** A curvilinear incision was made at the inferior edge of the umbilicus. The fascia was opened transversely and a single incision port inserted. The abdomen was insufflated and once adequate pneumoperitoneum was achieved, a 5 millimeter (mm) 30 degree laparoscope was inserted. Inspection of the stomach showed it to be quite full. A vessel sealing device was then used to open the stomach along the anterior wall midway between the greater and lesser curvatures. The trichobezoar was delivered from the stomach into a specimen retrieval bag. It was noted to be too large to fit into a single bag and a second specimen retrieval bag was inserted. The bezoar was divided using the scissors between the two bags with minimal spillage. Once divided, the trichobezoar was delivered using the two bags through the umbilical incision and removed in a piecemeal fashion. The gastrostomy incision was then closed using a running 3-0 absorbable polyglactin suture. The minimal hair spilled in the abdomen was retrieved using the adhesive side of the laparoscopic lens cleaner pad. Total operative time was 119 minutes. The patient did well post-operatively and was discharged on post-operative day 6. Pathology revealed a trichobezoar.

**CONCLUSION:** Single incision laparoscopy is a safe method for removal of gastric trichobezoars. It is feasible to perform intracorporeal gastrostomy closure using traditional laparoscopic instruments with this technique.

**VP005: LAPAROSCOPIC DUODENOJEJUNOSTOMY FOR SUPERIOR MESENTERIC ARTERY SYNDROME IN A 12 YEAR OLD GIRL** – Paul S Cullis, Maeve Gallagher, Philip J Hammond, Atul J Sabharwal; Royal Hospital for Sick Children Glasgow, UK

**BACKGROUND:** Superior mesenteric artery (SMA) syndrome is a rare condition whereby the abnormally acute angle formed by the branching of the SMA from the aorta compresses the third part of the duodenum, which results in vomiting, postprandial pain, anorexia and weight loss. Conservative management is advocated, focusing on optimising nutrition until resolution occurs. Nevertheless, where medical therapy fails, surgical intervention is warranted. Traditionally, open surgery was performed but laparoscopic techniques have become feasible. Few reports of SMA syndrome exist in children and fewer still managed surgically.

**CASE REPORT:** A 12 year old girl presented to the paediatric gastroenterology service for symptoms of weight loss, early satiety and vomiting. Of note, she had undergone single stage spinal fusion (T2 to L4) for scoliosis 12 months previously. SMA syndrome was suspected on a combination of duodenoscopy, contrast meal and ultrasonography. Conservative management was attempted but failed as oral and nasogastric feeds were poorly tolerated and attempts at siting a nasojejunal feeding tube were unsuccessful. Further CT imaging confirmed the diagnosis and aided pre-operative planning. After multi-disciplinary discussion, a laparoscopic duodenojejunostomy was undertaken. The procedure was performed successfully using a laparoscopic stapler and intra-corporeal sutures. A contrast study four days post-operatively demonstrated satisfactory transit through the bypassing duodenojejunostomy. The patient has been discharged, now two weeks post-operative, with a healthy appetite and exhibiting modest weight gain.

**DISCUSSION:** Based on the results of a systematic search of the published literature, there have been only two cases of laparoscopic duodenojejunostomy reported for management of SMA syndrome in children. Both reports document 14 year olds operated in Indian paediatric centres. We believe therefore that this represents the youngest and first child reported outwith India to undergo this minimally-invasive procedure for SMA syndrome.

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### **VP006: LAPAROSCOPIC MANAGEMENT OF SEQUELAE OF MECKEL'S DIVERTICULUM** – [Sonja Kern](#), Julia Syed, Roman T Carbon; Department of Pediatric Surgery

**BACKGROUND:** A Meckel's diverticulum is a remnant of the omphaloenteric duct. It is located in the distal ileum, usually within about 100 cm of the ileocecal valve. It runs antimesenterically and has its own blood supply from the former yolk sac vessels (A. vitellina dextra). Because of growing up by pluripotent cell lining, the Meckel's diverticulum may harbor abnormal tissues like gastric mucosa or pancreatic tissue. It also can be attached to the umbilical region by the vitelline ligament with the possibility of vitelline cysts or fistula. Around that intestinal stalk ("clothesline") a torsion of the bowel ("strangulation") may appear, leading to obstruction, ischemia and necrosis.

**CASE REPORT:** We report a case of a 5 year old boy presenting with acute abdominal pain and vomiting since the previous day. In the physical examination there was a muscular defence in the middle of the abdomen. The blood test showed a high increase of inflammation parameters. Around the umbilicus the ultrasonic exploration showed a cystic anechoic structure, about 3x2x2cm, with two echoic parts in it. A helical vessel was seen from the upper pole of the cyst. Next to the formation, there was a part of small bowel with suggested volvulus. In conjunction with the examination results, we decided to perform an emergency laparoscopy. During the operation we could find a distinct peritonitis. There was a volvulus in the small bowel under the vitelline clothesline. In the middle of the torsion you could see a diverticulum, twisted around two times with a big cyst at the end. There was also a strangulation ileus because of the vitelline vessel strained from the cyst through the right abdomen. During the detorsion there was another twisted part of the intestine according to the appendix, which was also inflamed. The volvulus had been resolved by retosion by smooth clamps. The diverticulum and the appendix were resected by a stapler device. Even the vitelline vessel has been resected to resolve the strangulation of small bowel.

**RESULT:** The postoperative course was uneventful. Mobilization and defecation were without any problems. The histopathologic result confirmed the Meckel's diverticulum with gastric and pancreatic tissue. Laparoscopic technique is due to abdominal exploration and definitive surgical treatment of embryologic sequelae.

### **VP007: LAPAROSCOPIC SPLENIC SALVAGE IN MONSTROUS CYST** – [Sonja Kern](#), Julia Syed, Roman T Carbon; Department of Pediatric Surgery

**BACKGROUND:** After traumatic splenic rupture and consecutive conservative treatment, a splenic cyst can develop, probably because of osmotically active debris and destruction of the normal splenic architecture. The clinical manifestation depends on the size and location of the cyst. Most patients present with local epigastric pain, abdominal distension and vomiting or constipation. Knowing about multiple functions and the importance of the spleen, especially in children, splenic salvage has absolute priority. So, unroofing of the cyst, total cystectomy in combination with partial splenectomy has to be performed.

**CASE REPORT:** We report a case of a 14 year old boy presenting with abdominal pain two days after a knock into the left abdominal edge. Ultrasonic examination showed plenty of abdominal liquid in the small pelvis and abdomen resulting from a splenic rupture near to the pedicle (Shackford IV).

The rupture has been treated conservatively by strict bed rest for one week. The patient's vital signs were stable all over the time, no blood transfusion was necessary.

4 weeks after discharge from the hospital, an ultrasound follow-up showed the formation of a posttraumatic splenic cyst. Because of the absence of symptoms, we decided to do a further conservative management and ultrasonic surveillance in intervals of 4 weeks.

After a few months the cyst was still growing up and the patient had a feeling of very early satiety and recognized a huge epigastric mass. The CT scan showed the monstrous splenic cyst with a size of 15x18x18cm, measuring from the upper pole to the pedicle. Aim of treatment should be laparoscopic partial splenectomy including adjacent cyst and preservation of the lower pole which fortunately has been perfused by an accessory polar vessel. The parenchymal resection was performed by a piezoelectric device. After that, the cyst had been punctured through the abdominal wall by a cystofix-catheter to purge the complete fluid from the cyst. After that, tremendous adhesions in the perisplenic area after the traumatic rupture especially to the diaphragm, left hepatic lobe and the pancreas were obvious and had to be divided for a complete removal of the cyst. Splenic position showed a stable storage in the left upper abdomen.

**RESULT:** The postoperative course was uneventful. After 3 days of bed rest to gain a kind of adhesion of the spleen to the left peritoneal flank and to avoid wandering or torsion, the mobilization of the patient has been initiated. Clinical and ultrasonic follow-up showed the spleen fixed in anatomical position with a regular perfusion. Laparoscopic partial splenectomy with adherent monstrous cyst is feasible after puncture of the mass and concise adhesiolysis. Withdrawal of the huge tissue mass is smartly administered by an umbilical BIANCHI access and consecutive cosmetic reconstruction of the periumbilical area.

### **VP008: LAPAROSCOPIC LADD'S PROCEDURE FOR MIDGUT VOLVULUS IN A 13 DAY OLD** – [Marty Knott, DO, PhD](#), Shawn D St. Peter, MD; Children's Mercy Hospital

A 13-day-old, adjusted gestational age of 34 weeks, male was transferred to our institution with intermittent green aspirates since day 4 of life. After an episode of bilious emesis, an upper gastrointestinal series was performed and demonstrated malrotation with midgut volvulus. Contrast passed through. He was sent to our facility where he was hemodynamically stable with normal labs and a benign abdomen. His weight at the time of operation was 1.79 kg. He was scheduled for laparoscopic Ladd's procedure which was performed without complication. Feeds were started the following day and progressively advanced. His parents requested transfer back to the referring hospital closer to home on postoperative day 5. The included video demonstrates that laparoscopic Ladd's procedure can be performed in selected neonates even in the presence of volvulus.

### **VP009: PERCUTANEOUS GASTROPEXY: A NOVEL APPROACH TO A FEARED COMPLICATION OF PERCUTANEOUS GASTROSTOMY TUBE PLACEMENT** – [Daniel M Relles, MD](#), Pilyung S Oh, MD, Jeffrey Zitsman, MD; Morgan Stanley Children's Hospital of New York Presbyterian, Columbia University

Percutaneous endoscopic gastrostomy (PEG) tubes are commonly placed due to the ease and safety of the technique. Although uncommon, complications of this routine procedure can be catastrophic.

A 13 month old former premature male developed peritonitis several hours after PEG placement. Following resuscitation, he was brought to the operating room where he was found to have diffuse peritonitis with ascites on initial laparoscopy. The PEG tube was in the stomach; we felt we could salvage the PEG by performing a gastropexy laparoscopically.

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In addition to the 5mm laparoscope port, two additional 4 mm ports were used to place 3 percutaneous sutures through the anterior abdominal wall. These were bolstered to the skin, and the patient did well post-operatively. The sutures were removed 15 days following the procedure. This video demonstrates a novel approach to addressing a complication of gastrostomy tube placement.

**VP010: LAPAROSCOPIC EXCISION OF CHOLEDOCHAL CYST WITH HEPATICODUODENOSTOMY IN 2-MONTH OLD BABY** – Chandrasekharam Vvs, M, Ch; rainbow hospitals for women and children

### CASE REPORT

A 2-month old baby boy presented with obstructive jaundice. Soon after birth, he had physiologic jaundice that subsided by 15 days. At 40 days of age, the parents noticed that the baby had jaundice again, with high-coloured urine and pale stool. He was thriving well, and weighed 4.5 kg. His labs showed direct hyperbilirubinemia, elevated liver enzymes and a normal INR (1.2). Ultrasound and MRCP revealed a large type 1 choledochal cyst with only minimal dilatation of proximal ducts. He was taken up for laparoscopic excision and reconstruction of choledochal cyst

Laparoscopy was performed with 4 ports. The cyst was excised completely and hepaticoduodenostomy was performed with interrupted 5/0 polyglycolic acid stitches. For this, the duodenum was partly Kocherised and the anastomosis with common hepatic duct was performed at the junction of the first and second parts of duodenum. The operation took 157 minutes, and the estimated blood loss was 10ml. The child had an uneventful postoperative recovery. He was started on oral feeds on postoperative day 4, the tube drain was removed on postoperative day 5 and he was discharged home on post-operative day 6. His liver biopsy showed changes of cholestasis with no fibrosis.

At 3-month follow-up, the child is asymptomatic, thriving well and jaundice-free, with normal liver function. His cosmetic result is very good.

Laparoscopic surgery for choledochal cyst is an advanced reconstructive procedure, especially so in a small infant. In general, surgery for choledochal cyst is not commonly done at such a small age. Our technique involves using the right lateral port to hold the gall bladder and push it anterosuperiorly, so that visualization of the cyst and the porta hepatis is excellent. There is no need of a special liver retractor as others have described earlier.

**VP011: BILATERAL DUPLICATED PATENT PROCESSUS VAGINALIS FOUND IN A PEDIATRIC LAPAROSCOPIC INGUINAL HERNIA REPAIR** – Yoon Jung Boo, MD, PhD<sup>1</sup>, Yoon Lee, MD<sup>2</sup>, Eun Hee Lee, MD<sup>2</sup>; <sup>1</sup>Division of Pediatric Surgery, Korea University College of Medicine, Seoul, Korea, <sup>2</sup>Department of Pediatrics Korea University College of Medicine, Seoul, Korea

**BACKGROUND:** A patent processus vaginalis (PPV) is an important factor related to the development of a pediatric indirect inguinal hernia. In the laparoscopic era, there have been many reports describing the internal view of inguinal hernias and contralateral patent processus vaginalis.

**OBJECTIVE:** This report describe an anatomical variant of the internal ring in a child who was diagnosed with a bilateral duplicated PPV who presented with a right side indirect inguinal hernia.

**CASE:** A 16-month-old male presented with an incarcerated right inguinal hernia. Manual reduction was successful, and 2 days later, laparoscopic hernia repair was performed. Under the general

anesthesia, a 5 mm optical port was inserted into the abdomen and a 30-degree 5mm camera was introduced. The other two 3mm instruments were placed along the lateral border of the rectus muscle. In the laparoscopic view, the edematous and thickened internal ring was found showing evidence of incarceration in the right side. Another hole was found very close to the internal ring, which had the same direction and a shared wall of the inguinal canal. On the contralateral side, there was also a duplicated patent processus vaginalis. The internal ring was dissected carefully and a herniotomy and intra-corporeal suture ligation of the internal ring was performed. The duplicated PPV on the contralateral side was also repaired using the same method.

**RESULTS:** The operative time was 28 minutes and there were no complications. The patient was followed-up for 24 months, during which time, there was no recurrence.

**CONCLUSIONS:** Laparoscopic hernia repair in children has the additional benefit of enabling the accurate diagnosis of a hernia and the detection of any unexpected anatomical variants.

**VP012: SINGLE INCISION PEDIATRIC ENDOSCOPIC SURGERY (SIPES): INTERVAL APPENDECTOMY PERFORMED USING GLOVE ACCESS TECHNIQUE** – Kaitlyn E Wong, MD, MPH, Maria C Mora, MD, Kevin P Moriarty, MD, Michael V Tirabassi, MD; Baystate Children's Hospital

**BACKGROUND:** The purpose of this video abstract is to present a case of an interval appendectomy performed using single incision pediatric endoscopic surgery (SIPES) with a glove access port technique. The patient is a 17 year old otherwise healthy female who presented with five days of abdominal pain, nausea, vomiting, and diarrhea. Abdominal exam revealed tenderness in the right lower quadrant (RLQ) without rebound or guarding. The patient had a leukocytosis of 15,000. Abdominal ultrasound revealed a blind ending tubular structure in the RLQ with surrounding fluid suspicious for appendicitis. A CT was performed to evaluate for a drainable collection revealed a partially walled off 34X58mm abscess in the posterior pelvis with surrounding inflammatory changes adjacent to the appendix. This collection was deemed not amenable to drainage by interventional radiology. The patient was admitted and treated with intravenous antibiotics. Her symptoms improved, leukocytosis resolved and she was discharged home on hospital day six with plans to undergo an interval appendectomy.

**METHODS:** Approximately six weeks following onset of symptoms, the patient underwent a SIPES interval appendectomy utilizing a glove access port. An infra-umbilical incision was made and following entry into the abdominal cavity, an extra small wound protector was placed within the incision. A sterile glove was placed over the wound protector. Insufflation was established and the camera and instruments were inserted through the fingers of the glove.

An abscess cavity containing a fecalith and mirky fluid in the right lower quadrant was observed and was suctioned and irrigated. Adhesiolysis was performed to separate the rectum, terminal ileum, mesentery of the ileum and the fallopian tube, which had all become adherent to this cavity. Once the appendix was freed from all scarred attachments, it was noted to be healed as two separate sections. The mesentery of the appendix was divided with a single firing of a 5mm endo-GIA stapler which is capable of reticulating up to 80 degrees. An additional firing of this stapler was performed to amputate the appendix at it's base from the cecum.

**RESULTS:** Upon inspection of the cecum, the staple line was noted to be intact and excellent hemostasis was observed. The patient tolerated the procedure well. She was discharged home on post-operative day one and was doing well two weeks post-operatively.

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**CONCLUSIONS:** Through this case we have shown that SIPES procedures utilizing a glove port can be performed in technically challenging cases that require extensive adhesiolysis and dissection.

Other commercially available single incision ports provide some fixation in the space outside the abdomen which impede effective range of motion, making procedures more challenging to perform via a single incision. The glove access technique demonstrated here avoids this problem as the glove has a low profile and is flexible. This allows for improved maneuverability and decreased technical difficulty when performing complex procedures through a single incision.

### **VP013: SINGLE UMBILICAL ACCESS FOR LAPAROSCOPIC REPAIR OF INCARCERATED INGUINAL HERNIA IN NEONATES**

– Ana Raquel Silva, MD<sup>1</sup>, Jorge Correia-Pinto, MD, PhD<sup>2</sup>;  
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**INTRODUCTION:** Laparoscopic inguinal hernia repair in pediatric patients has been gaining ground as the procedure of choice for younger and more complex cases, such as incarcerated hernias. In the other hand, there is a tendency for simple percutaneous suturing and diminished use of ports and instruments. Herein we report in video our recent experience with single umbilical access and PIRS technique to repair incarcerated inguinal hernias in neonates.

**METHODS AND RESULTS:** Five newborn girls (ages between 20 and 27 days-old) presented with irritability and an incarcerated round mass in the inguinal region (three right and two left inguinal hernias). Laparoscopic assisted reduction of the incarcerated ovary and internal ring percutaneous closure was accomplished. The access to the abdominal cavity was through a single umbilical incision in which a 5mm camera port and a 3 mm instrument (without trocar) were placed. The incarcerated content was then reduced under vision, using both external pressure and the instrument. Inguinal ring closure was completed, leaving no peritoneal gaps. The 3mm instrument was used to soft coagulate the upper external peritoneal fold and to pull the ovarian ligament while tying the knots, maneuvers that we believe will help to avoid recurrence. In one case there was a contralateral hernia that was also repaired.

**CONCLUSION:** Laparoscopy plays an important role in the treatment of inguinal hernia in children, and is feasible and safe even in the newborn period and in incarcerated hernias. The trend towards single access surgery can also be safely applied to neonates with excellent surgical and cosmetic results.

### **VP014: THORACOSCOPIC RESECTION OF A BRONCHOGENIC CYST IN A PREMATURE INFANT**

– Shannon F Rosati, MD<sup>1</sup>, Rami Maarouf, MD<sup>1</sup>, Dan Parrish, MD<sup>1</sup>, Miki Nishitani, BS<sup>2</sup>, Claudio Oiticica, MD<sup>1</sup>, David Lanning, MD, PhD<sup>1</sup>; <sup>1</sup>Virginia Commonwealth University Health System, <sup>2</sup>Virginia Commonwealth University School of Medicine

**INTRODUCTION:** Bronchogenic cysts are benign congenital anomalies of the embryonic foregut and belong to a class known as foregut duplications cysts that includes esophageal duplications, bronchopulmonary sequestrations, and congenital pulmonary airway malformations. Bronchogenic cysts represent the most common type of intrathoracic foregut cyst and often present in the mediastinum. Cyst excision can be delayed beyond the newborn period unless there is respiratory distress due to compression of local structures. A thoracoscopic approach in the removal of a bronchogenic cyst allows for improved visualization, avoids the morbidity of a thoracotomy, and has been associated with shorter post-operative courses.

**PATIENT:** This patient is a 5-week old former 30-week premature infant that required intubation at birth and was transferred to our Neonatal ICU after failing several extubation attempts. A chest CT scan showed a 3.2 x 1.8 x 1.7 cm posterior mediastinal cyst. Due to compression of the left main stem bronchus, there was significant air trapping in the left lung and rightward deviation of the mediastinum. After failing extubation in our NICU, we proceeded with thoracoscopic cyst resection in this 1.7kg infant.

**TREATMENT:** The patient was placed in left lateral decubitus / prone position at 45-degrees. A 3 mm trocar was placed in the right axilla and a pneumothorax (4 mm Hg) was created. An additional 5 mm step trocar was placed just posterior to the tip of the right scapula and as well as a 3mm incision in the 5th intercostal space, also in the mid axillary line, and another 3 mm incision through the 7th intercostal space just posterior to the posterior axillary line. With gentle retraction of the lung anteriorly, the esophagus, vagus nerves, and azygous vein were easily visualized and dissected off of the cyst using hook cautery and gentle blunt dissection. The cyst was somewhat adherent to the posterior wall of the trachea and the right bronchus but was able to be dissected free with minimal difficulty. Decompression of the cyst (clear and viscous fluid) allowed for an easier dissection and removal through the 5mm trocar. No chest tube was placed and, on the postoperative chest x-ray, the patient's mediastinum had returned to its normal position with good aeration of both lungs and no pneumothorax. The patient tolerated the procedure well without any postoperative complications, had minimal blood loss, and was extubated on post-operative day 2.

**CONCLUSION:** Congenital mediastinal cysts may cause airway compression requiring early surgical intervention. Even in premature infants with a significant mediastinal shift, a thoracoscopic approach should be considered, which can provide excellent visualization and avoid the morbidity of a thoracotomy.

### **VP015: THORACOSCOPIC REPAIR OF A CONGENITAL DIAPHRAGMATIC HERNIA IN A 4 KG INFANT**

– Shannon F Rosati, MD, Dan Parrish, MD, Rami Maarouf, MD, David Lanning, MD, PhD, Claudio Oiticica, MD; Virginia Commonwealth University Health System

**INTRODUCTION:** Congenital diaphragmatic hernia (CDH) is a condition in which the diaphragm fails to form properly, resulting in a defect through which abdominal contents can herniate into the thoracic cavity. A thoracoscopic approach has been suggested for the repair of small CDH (<3cm) defects, in hemodynamically stable infants, as it allows for improved visualization, avoids the morbidity of an open operation, and has been associated with shorter post-operative courses; shorter time courses on the ventilator post operatively, and lower post-operative mortality. Identifying which infants have smaller defects can be difficult as they can present with a significant amount of abdominal organ herniation and mediastinal shift.

**PATIENT:** This patient is a 3 day-old old infant male, born at 38 weeks gestational age weighing 3.95kg, who required intubation at birth due to significant respiratory distress. He was then transferred to our Neonatal ICU at fifteen hours of life. A chest radiograph showed a left-sided CDH with mediastinal shift. A transthoracic echo showed no signs of pulmonary hypertension or cardiac anomalies. We subsequently proceeded with thoracoscopic CDH repair on day-of-life three in this 3.95 kg infant.

**TREATMENT:** The patient was placed in right lateral decubitus position at 45-degrees. A 3 mm trocar was placed in the left axilla and a pneumothorax (4 mm Hg) was created. An additional 3mm incision was made in the 4th intercostal space, also in the mid axillary line, through which an additional 3mm trocar was placed, and another 3

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mm incision through the 5th intercostal space just posterior to the posterior axillary line, through which a 3mm instrument was directly placed. A large amount of small and large intestine was slowly reduced into the abdominal cavity through an anterior diaphragmatic defect. The defect was repaired primarily with interrupted silk suture. There was a small amount of healthy appearing lung present in the left chest, which inflated normally. No chest tube was placed and by the third post-operative day, on chest x-ray, the patient's mediastinum had returned to its normal position with good aeration of both lungs and no pneumothorax. The patient tolerated the procedure well without any postoperative complications, had minimal blood loss, and was extubated the evening of surgery.

**CONCLUSION:** Congenital diaphragmatic hernias often require early surgical intervention. Even with significant bowel herniation into the chest and mediastinal shift, we recommend starting thoroscopically, as some patients will have a small defect and can be repaired successfully in a minimally-invasive manner, thus avoiding the morbidity of an open approach.

**VP016: THORACOSCOPIC LIGATION OF THE THORACIC DUCT FOR INTRACTABLE POST-OPERATIVE CHYLOTHORAX IN A NEONATE FOLLOWING REPAIR OF OESOPHEAGEAL ATRESIA WITH TRACHEOESOPHAGEAL FISTULA** – [D Kufeji](#), N J Wright, D Drake, N Bouhadiba; Evelina London children's Hospital, Guys & St Thomas' NHS Foundation Trust, London UK

**INTRODUCTION:** Neonatal chylothorax is usually spontaneous or due to congenital causes. However, it is a rare but well documented complication following esophageal atresia and tracheo-esophageal fistula repair in neonates. The vast majority of such patients respond to non-operative management including total parenteral nutrition, chest tube drainage and administration of somatostatin or its analogue octreotide. In cases where conservative management has failed, surgical management to repair or ligate the thoracic duct is necessitated. We describe a case of the successful thoroscopic management of this exceedingly rare condition.

**CASE REPORT:** A 2.6kg term neonate who underwent right thoracotomy and repair of oesophageal atresia and tracheoesophageal fistula on day 2 of life suddenly developed a right sided pleural effusion on the 6th post-operative day having done well initially and on full enteral feeds. The fluid was confirmed to be chyle by biochemistry and microscopy. He was treated conservatively with total parenteral nutrition, nil enteral, chest tube drainage with replacement of losses (with albumin) and octreotide. The chylothorax persisted without response to all medical treatment. At 6 weeks of age the infant underwent successful thoroscopic ligation of the thoracic duct using a single (5mm) camera port and 2 (5mm) working ports. The thoracic duct was identified and divided after applying titanium surgical clips. The response to thoroscopic ligation was immediate with the baby being extubated within 24 hours of surgery and chest drain removed within 48 hours. Enteral feeds were re-commenced on day 2 following thoracoscopy. The infant was discharged home on the 11th post-operative day. There were no complications following the procedure.

**CONCLUSION:** For intractable chylothorax following thoracotomy for repair of oesophageal atresia with tracheoesophageal fistula the thoroscopic approach is a safe and effective technique for thoracic duct ligation. The resolution of symptoms is immediate and complete. Although there are cases in the literature that have been managed conservatively, this represents the first description in the literature of the thoroscopic approach to thoracic duct ligation for chylothorax following oesophageal atresia with tracheoesophageal fistula repair.

**VP017: THORACO-LAPAROSCOPIC REPAIR OF DIAPHRAGMATIC HERNIA WITH PERICECAL HERNIATION AND ACUTE APPENDICITIS** – [Jorge Correia-Pinto](#), Ana Raquel Silva, MD, Andreia Felizes, MD; Pediatric Surgery, Hospital Braga; ICVS/3B's – Associate Lab, University of Minho, Braga, Portugal

**INTRODUCTION:** Delayed diagnosis of congenital diaphragmatic hernia in adolescence might surprise by their clinical presentation. Minimally invasive repair is possible but we might be aware that sudden onset of symptoms might be caused by unexpected conditions as this case illustrates.

**CASE REPORT:** We present a case of a previously healthy girl with 10 years-old, who was admitted with sudden pleuritic pain on left hemithorax and tachypnea. The thoracic X-ray complemented by CT scan revealed a left diaphragmatic hernia. She underwent a thoracoscopy on day 2, where it was confirmed the intra-thoracic presence of the large and small bowel which were covered by a sac independent of the diaphragmatic defect and also an inflamed appendix. The visceral content was reduced and the diaphragmatic defect was closed with interrupted sutures. Afterwards, we proceeded to a laparoscopy in order to remove the appendix and to understand the bowel position and the sac origin. We confirmed that the small bowel was herniated under the large bowel ligaments suggesting a huge pericecal hernia. We reduced the small bowel, whereas an appendectomy was performed through the umbilicus. The follow up was uneventful and she was discharged home on day 4 post-operative.

**DISCUSSION:** This case illustrates a rare combination of delayed presentation of diaphragmatic hernia, (thoracic) acute appendicitis and internal pericecal herniation. The thoraco-laparoscopic approach revealed a good decision in this case.

**VP018: FIRST THORACOSCOPIC PULMONARY SEGMENTECTOMY: POSSIBLE BUT DIFFICULT** – [Anna Poupalou](#)<sup>1</sup>, Karim Khelif<sup>2</sup>, Henri Steyaert<sup>2</sup>; <sup>1</sup>Pediatric Surgery Huderf – Saint Pierre Brussels, <sup>2</sup>Pediatric Surgery Huderf Brussels

Congenital Cystic Adenomatoid Malformation (CCAM) is the main indication for pulmonary resection in children. This is the case of a 6-year-old female patient presenting with CCAM of the posterior segment of the left upper pulmonary lobe. The lesion was found after a CT-scan in the setting of recurrent pulmonary infections. A totally endoscopic segmentectomy was performed and is demonstrated. The role of the 5mm stapler during vascular or bronchus division and parenchymal dissection is herein evaluated.

**VP019: INITIAL EXPERIENCE WITH TRANSVESICOSCOPIC COHEN URETERIC REIMPLANTATION FOR PRIMARY VESICoureTERAL REFLUX (VUR)** – [Benaired Amine Mouloud](#), M Houbeddine, Khelifaoui Ahmed; central hospital of the army Algeria

**PURPOSE:** Evaluate the effectiveness and benefits of transvesicoscopic Cohen ureteric reimplantation in children with primary vesicoureteral reflux.

**PATIENTS & METHODS:** From January 2011 to October 2014 Forty five (45) children underwent transvesicoscopic Cohen ureteric reimplantation for primary vesicoureteral reflux in pediatric surgery center of Algerian military hospital.

20 Boys and 25 girls.

25 Patients underwent bilateral and 20 unilateral transvesicoscopic reimplantation "a total of 70 units".

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Three trocars 03mm are inserted suprapubically into the bladder under cystoscopic control, one for a camera and two working ports.

The same steps of Cohen's open surgery are reproduced by pneumovesicoscopic approach.

RESULTS: 36 patients had VUR grade III, 34 grade IV. All patients had a well circumscribed scar on DMSA scintigraphy.

The procedure was successfully completed in all patients.

Operative time has taken 240 minutes in our first fifteen patients has been reduce to 90 minutes for unilateral reimplantation and from 360 minutes to 135mn for bilateral reimplantation.

Only one patient with bilateral VUR grade IV had unilateral reflux grade II on postoperative cystogram, giving a success rate of 97%.

CONCLUSION: Transvesicoscopic Cohen ureteric reimplantation in children with primary vesicoureteral reflux can be safely performed with high success rate and less morbidity.

### VP020: LAPAROSCOPIC NEPHRECTOMY FOR WILMS' TUMOR

– Lisandro A Piaggio, MD<sup>1</sup>, Juan M Martorelli, MD<sup>1</sup>, Guillermo Granada, MD<sup>1</sup>, Horacio Caferri, MD<sup>2</sup>; <sup>1</sup>Hospital Privado Dr Raul Matera de Bahia Blanca, <sup>2</sup>Hospital Italiano Regional del Sur

INTRODUCTION: Duarte et al. pioneered laparoscopic nephrectomy for Wilms' tumor in patients with preoperative chemotherapy. Here we present a video of laparoscopic nephrectomy in a patient with no previous chemotherapy. MATERIALS & METHODS: 2 year old boy with history of intussusceptions underwent abdominal ultrasound for abdominal pain. A 48 mm right solid midrenal mass was found. Contrast CT of abdomen and thorax confirmed a confined solid renal mass with contrast enhancement compatible with Wilms tumor.

TECHNIQUE: With the patient in 45 degree lateral position a transperitoneal approach with 4 trocars (5mm and 3 mm two each) was performed. A radical nephroureterectomy with standard technique was performed after right colon mobilization. A tissue sealant was used for hemostasis as well as monopolar coagulation with grasper, scissors and hook. The renal artery was ligated with Hem-o-lock™ clips. The renal veins was secure with 2-0 polypropylene extracorporeal Roeder knot and Hem-o-lock™ clips. The specimen was bagged and exteriorized intact through an augmented umbilical incision. A tubular drain and a Foley catheter were left indwelling for 48 hours.

RESULTS: Operative time was 150 minutes with minimal blood loss. There were no intra or postoperative complications nor need for transfusions. Patient was discharged home on postoperative day three. There was no need for narcotics for pain control. Patient resumed normal activity one week postoperative. Histopathological report of the specimen was stage I Wilms tumor with favorable histology. At 6 month follow up patient is disease free with no evidence of metastasis. He continues on standard oncologic follow up. At this point surgical scars are almost imperceptible.

CONCLUSION: In our experience laparoscopic radical nephrectomy for Wilms tumor with no previous chemotherapy was a safe operation following the principles of oncologic surgery. We did not change our usual protocol for



renal tumors nor take shortcuts to apply a minimal invasive approach given the patient the benefit of a less invasive surgery. We think laparoscopic nephrectomy is a reasonable option for a small size tumor in the scenario of a trained surgical team. Care should be taken in patient selection and extensive follow up is mandatory.

### VP021: LAPAROSCOPIC PYELOPLASTY IN A 2-MONTH OLD INFANT: DESCRIPTION OF TECHNIQUE – Chandrasekharam Vvs, M, Ch; rainbow hospitals for women and children

Laparoscopic pyeloplasty for pelviureteric junction (PUJ) obstruction is a technically demanding operation, especially in infants. With the advent of routine antenatal ultrasound, many cases of hydronephrosis are being diagnosed early. Some cases with severe hydronephrosis and obstruction with compromised ipsilateral renal function require early surgery in infancy.

CASE REPORT: A 2-month old baby boy had antenatally detected and postnatally confirmed severe hydronephrosis in the left kidney. Serial antenatal and postnatal ultrasound scans revealed worsening hydronephrosis; ultrasound 6 weeks after birth showed left SFU grade 4 hydronephrosis, with AP diameter of renal pelvis 39mm, and thinning of renal parenchyma. Diuretic renogram revealed severe PUJ obstruction in left kidney with compromised ipsilateral renal function (differential function 30% in the left kidney. The right kidney was normal. The baby was taken up for laparoscopic pyeloplasty.

OPERATIVE TECHNIQUE: For the surgery, the baby was positioned in semi-lateral position with left side elevated by 60 degree. Three ports were used; 5mm telescopic port at umbilicus and two 3mm working ports in epigastrium and hypogastrium. Pneumoperitoneum was maintained at 8mm Hg. A small opening was made in the avascular part of the mesocolon directly over the dilated renal pelvis. The PUJ was dissected and the pelvis was stabilized with a percutaneous 'hitch' stitch. The pelvis was transected proximal to the PUJ and the PUJ was dismembered. The ureter was spatulated on its lateral wall until a normal distal ureter was seen. Pelviureteric anastomosis was performed with 2 running sutures of 5/0 polyglycolic acid, starting distally and running proximally. After completion of the posterior wall, a 3F, 12cm double J stent was placed antegrade into the bladder across the anastomosis. The upper coil of the stent was positioned in the renal pelvis. The anterior wall suturing was then completed and the remaining incision the pelvis was closed. The hitch stitch was removed and the neo-PUJ was allowed to drop into its natural retroperitoneal position. The small mesocolic defect was closed with a purse-string stitch, thus completely retroperitonealizing the anastomosis. The excised specimen of PU and pelvis was removed and the port sites were closed. A Foley catheter was inserted into the bladder at the end of surgery.

Post operatively, oral feeds were allowed after 2 hours. The Foley catheter was removed after 48 hrs and the child discharged home. The stent was removed at cystoscopy after 6 weeks. Follow-up ultrasound after 3 months revealed mild residual hydronephrosis (SFU grade 2) with renal pelvic AP diameter of 11mm. Diuretic renography 6 months after surgery revealed non-obstructive drainage from the left kidney with improved differential function to 42%. The cosmetic result is excellent with no visible scar on the abdomen.

This video illustrates our technique of laparoscopic pyeloplasty in infants. Till date, over the past 5 years, we performed over 180 laparoscopic pyeloplasties in infants < 1 year of age with 99% success.



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