

IPEG's 26th Annual Congress *for* Endosurgery *in* Children



Held in conjunction with the British Association of Paediatric Surgeons

July 19–22, 2017

London, England

THE HILTON LONDON METROPOLE



FINAL PROGRAM **2017**

IPEG's 26th Annual Congress for Endosurgery in Children

July 19–22. 2017
London, England

THE HILTON LONDON METROPOLE
225 Edgware Road, W2 1JU, United Kingdom
T: +44-207-407-4141 ■ F: +44-207-616-7313

International Pediatric Endosurgery Group (IPEG)

11300 W. Olympic Blvd, Suite 600
Los Angeles, CA 90064
T: +1 310.437.0553 ■ F: +1 310.437.0585
E: info@bscmanage.com
www.bscmanage.com

*International Pediatric Endosurgery Group (IPEG)
is managed by BSC Management, Inc.*

*Please note: The official language
of the meeting is English.*

TABLE OF CONTENTS

General Information	3
Meeting Hours	3
Accreditation	4
2017 Program Chairs	4
2017 CME Chairs	5
Commercial Supporter Listing	5
2016 Award Winners	6
2017 Meeting Leaders	7
2017 Meeting Faculty	8
Learning Center Highlights	9
Schedule-at-a-Glance	10
CME Worksheet	11
Faculty & Presenter Disclosures	13
Exhibitor Listing	14
Floor Plan	16
Complete Schedule	17
Quickshot Schedule	32
LTRF Donors	40
New Membership	41
Accommodations	42
Registration Form	44
Innovations Abstracts	45
Quickshots Abstracts	52
Oral Abstracts	120
Video Abstracts	174

Welcome Message



Dear Colleagues & Friends:

On behalf of the IPEG Leadership and myself, I personally invite you to attend the 26th IPEG Congress for Endosurgery in Children, held in conjunction with the British Association of Pediatric Surgeons (BAPS), in London July 19–22, 2017, at the Hilton Metropole.

IPEG will feature:

- Presidential address & Lecture: The Future is You.
- Launch of Mastery Learning Hands On Course (Full day)
- Formerly the poster sessions now quick shots with focused presentation times and meeting app visibility
- Committee meetings meet on Tuesday- We welcome all members to get involved!

This year the Annual Congress will also feature many Joint IPEG/BAPS Activities such as:

- Karl Storz Lecturer: Michael Sjoog (Surgeon and SAS Pilot)
- Keynote Lecturer: Whit Holcomb, MD, Journal of Pediatric Surgery Editor
- Keynote lecture by Richard Branson (CEO, Virgin Airlines)
- Welcome reception and Exhibits
- Launch of a learning center within the exhibit area open to all participants
- Joint half- day IPEG/BAPS session on Thursday and Friday
- Wednesday Trainee Day
- Registration access to both IPEG & BAPS General Sessions
- Joint closing party – Who will participate in the dance off this year?

I am excited at the many developments and extended offerings at this year's annual congress and look forward to seeing each of you at the IPEG family reunion (Congress).

Warm wishes,

David van der Zee
IPEG President



General Information

Who Should Attend?

The 26th 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.

2017 Meeting Objectives

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

Specific Objectives include:

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

Event Dress Code

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

Registration Hours

Tuesday, July 18

Wednesday, July 19

Thursday, July 20

Friday, July 21

Saturday, July 22

1st Floor, Foyer

2:00 pm – 5:00 pm

7:00 am – 5:00 pm

7:00 am – 5:00 pm

7:00 am – 5:00 pm

8:00 am – 1:00 pm

Quickshot Viewing

Friday, July 21

Meeting Room 1-6

7:30 am – 5:00 pm

General Session Speaker Prep

Wednesday, July 19

Thursday, July 20

Friday, July 21

Saturday, July 22

Praed Room

2:00 pm – 5:00 pm

6:30 am – 6:30 pm

6:30 am – 5:00 pm

7:00 am – 11:00 am

Exhibit Hours

Wednesday, July 19

Thursday, July 20

Friday, July 21

Monarch

6:00 pm – 8:00 pm

9:30 am – 4:30 pm

9:30 am – 4:30 pm

Why IPEG?

Now is an excellent time to become an IPEG member.

IPEG Member Benefits

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

- ◇ **Network** – A network of over 800 pediatric Surgeons Worldwide, and opportunities to meet and discuss pediatric minimally invasive surgery with leaders and innovators in the field
- ◇ **Access to State-of-the-Art Hands On Courses and Learning Center**
- ◇ **Continuing Education**
 - Innovation Opportunities
- ◇ **Registration Discounts** – 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** – Affordable dues for surgeons and surgeons-in-training in any country.
- ◇ **Awards** – As an IPEG member you can enter to win Awards such as:
 - IPEG Research Grant
 - IRCAD Award
 - Basic Science Award

For more information on awards and to see the 2016 winners please go to page 7.

To become an IPEG member visit us online at:

www.ipeg.org/member/memberapplication.

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 **17.5 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Date	Total Credits
Thursday, July 21, 2017	8.25
Friday, July 22, 2017	6.25
Saturday, July 23, 2017	3
TOTAL Meeting Credits	17.5

2017 Program Chairs



Simon Clarke, BSC. MBBS. FRCS (Eng) FRCS Paed Surg | PROGRAM CHAIR

Simon Clarke has served as Clinical Director at the Chelsea children's Hospital, London for children's surgical services for the past 3 years as well as honorary senior lecturer at Imperial College London. He has been at the institution as a consultant since 2005 having worked previously at Great Ormond street as well as an Associate Professor in the minimal access training unit at the Chinese University of Hong Kong. Simon received his medical degree and completed his surgical training in Oxford and London.

Simon has served on the educational committee at IPEG for over 7 years and now leads the evidence based guidelines group. Simon has an interest in simulation, model development, education and more recently robotics. Simon is currently chairman of the Education Committee for British association of Paediatric Surgeons and also serves as simulation lead for the UK national training committee. Simon established and serves as course director for the UK's first national facilitating simulation course for Paediatric Surgeons

as well as being course director for an advanced minimal access training course. Simon has helped establish one of only two robotic surgical programs for children in the UK and regularly lectures in UK and Europe on this as well as simulation and minimal access surgery. Simon has published over 60 peer reviewed articles, abstracts and book chapters and has been awarded 8 clinical Excellence awards during his consultancy.



Shawn D. St. Peter, MD | PROGRAM CO CHAIR

Shawn D. St Peter, M.D., has been on staff in the Department of Surgery at Children's Mercy Hospital since 2006. He is currently the Katherine Berry Richardson Surgeon-in-Chief, the Program Director of the Pediatric Surgery Fellowship Program at Children's Mercy Hospitals and Clinics, where he is also the Program Director of the Surgical Scholars Program and the Director of the Center for Prospective Trials.

Along with numerous past national and local professional responsibilities, Dr. St. Peter currently serves on committees for APSA, IPEG, AAP and ACS. He is the recipient of several honors and awards, the including the Golden Apple Mercy Mentor Award.

Dr. St. Peter has coauthored over 300 original publications, in addition to the extensive publication of reviews, chapters, abstracts, posters, and the national and international contribution of lectures and presentations.



Munther Haddad, MBBCH FRCS (Glasg) FRCS (Eng) FRCPCH | PROGRAM CO CHAIR

Senior Consultant Paediatric & Neonatal Surgeon

Chelsea & Westminster Hospital NHS Foundation Trust and St. Mary's Hospital

Honorary Senior Lecturer Imperial College School of Medicine

Past President of the British Association of Paediatric Endoscopic Surgeons BAPES
London, England

2017 CME Chairs



Samir Pandya, MD | CME CHAIR

Dr. Samir Pandya was awarded his Bachelor's of Science with honors in Biomedical Engineering at the University of Miami. He completed his medical training at the Medical College of Virginia and then General Surgery residency at the New York Medical College / Westchester Medical Center Campus. He went on to train in Pediatric General Surgery at Emory University / Children's Healthcare of Atlanta. Upon completion of his fellowship training in 2011 he returned to his residency program as Assistant Professor in the Department of Surgery and Pediatrics where he further developed and vastly improved the pediatric minimally invasive pediatric surgery program. Academically he enjoys working with medical students, residents and fellows and has received numerous teaching awards during his career. As a result, he was appointed to be the Associate Program director of the General Surgery residency.

His clinical focus is on advanced minimally invasive pediatric surgery with minilaparoscopy and single-incision procedures. He has a strong interest in thoracic diseases as related to pediatric patients such as chest wall anomalies, congenital lung lesions as well as surgical oncology.

In 2017, he was recruited to join the faculty at University of Texas Southwestern at Children's Medical Center in Dallas, Texas as an Associate Professor of Surgery. He will be the surgical director for the pediatric intestinal failure program as well as the associate program director of the pediatric surgery fellowship.

Dr. Pandya is actively on the IT and Emerging Technology committees of IPEG and also serves as the CME Co-Chair. Outside of pediatric surgery, Dr. Pandya enjoys running, skiing, diving, digital photography and target shooting.



Matthew Clifton, MD | CME CO CHAIR

Dr. Matthew Clifton earned his undergraduate degree in Physiology from the University of California, Los Angeles. He completed medical school at Georgetown University and returned to California for his adult general surgery residency at the University of California, San Francisco. During his residency he spent two years as a research resident in the Fetal Treatment Center at UCSF. He completed his pediatric surgery fellowship at Emory University in Atlanta.

Dr. Clifton is currently an Associate Professor of Surgery and Pediatrics at Emory University/ Children's Healthcare of Atlanta. He assumed the role of fellowship program director in 2013, which has dovetailed nicely with his interest in surgical education, simulation, and clinical research.

He has received multiple awards for teaching. He serves on the editorial board of *The Journal of*

Laparoendoscopic and Advanced Surgical Techniques, Part B Videoscopy and is an ad hoc reviewer for several other journals. His interests include advanced minimally invasive surgery, hepatobiliary surgery, and surgical oncology.

Commercial Supporters

IPEG would like to thank the following for their support of our 2017 Congress:

DIAMOND LEVEL

Karl Storz Endoscopy

PLATINUM LEVEL

HCA Healthcare

Teleflex

GOLD LEVEL

Stryker

Additional Support: Applied Medical

2016 Award Winners

Best Science Award

The Best Science Award winner is awarded a complimentary registration to IPEG's 26th Annual Congress and IPEG 3 year membership, total value of over \$1000. It is based on a blind review and the winner will be selected by the IPEG Program Committee.

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 2017 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.

Research Grant

The purpose of the Research Grant is to stimulate and support high quality original research from IPEG members in basic and clinical science. Junior faculty are encouraged to apply and the proposal should place an emphasis on basic science research. One winner will receive a certificate of award and a \$5,000 grant. The deadline to submit your application is May 1, 2017.



BASIC SCIENCE
Andreas Oberbach, MD



COOLEST TRICKS
Carolina Millan, MD



IRCAD
Fanny Yeung, MD



RESEARCH
Ioan Sarbu, MD, MSc

"It has been a great experiences for me to learn laparoscopic and minimally invasive surgery from prominent international experts and have chances to practice and sharpen the laparoscopic skills on live tissue."

– Fanny Yeung, MD (2016 IRCAD Winner)



2017 Meeting Leaders

PROGRAM COMMITTEE

Aayed R. Al-Qahtani, MD
Maria Marcela Bailez, MD
Katherine Barsness, MD
Ciro Esposito, MD
Alan W. Flake, MD
James D. Geiger, MD
Miguel Guelfand, MD
Anna Gunnarsdottir, MD
Munther J. Haddad FRCS
Carroll M. Harmon, MD, PhD
George W. Holcomb III, MD
Celeste Hollands, MD
Satoshi Ieiri, MD
Saleem Islam, MD
Tadashi Iwanaka, MD
Pablo Laje, MD
Marc A. Levitt, MD
Sean S. Marven FRCS

John J. Meehan, MD
Go Miyano, MD
Oliver J. Muensterer, MD
Daniel J. Ostlie, MD
Todd A. Ponsky, MD
Olivier Reinberg, MD
Fred Rescorla, MD
Steven Rothenberg, MD
Atul J. Sabharwal, MD
Ryota Souzaki, MD
Philipp O. Szavay, MD
Tomoaki Taguchi, MD
Benno Ure, MD, PhD
Kenneth K. Wong, MD
Mark L. Wulkan, MD
Atsuyuki Yamataka, MD
C.K. Yeung, MD

EXECUTIVE COMMITTEE

PRESIDENT: David van der Zee, MD, PhD
PRESIDENT-ELECT: Daniel J. Ostlie, MD
1st VICE PRESIDENT: Aayed R. Al-Qahtani, MD
2nd VICE PRESIDENT: Holger Till, MD, PhD
SECRETARY: Todd A. Ponsky, MD
TREASURER: Shawn St. Peter, MD
WORLD-AT-LARGE REPRESENTATIVE: Miguel Guelfand, MD

WORLD-AT-LARGE REPRESENTATIVE: Satoshi Ieiri, MD
WORLD-AT-LARGE REPRESENTATIVE: Suad Abul, MD
EUROPE REPRESENTATIVE & ESPES Liaison:
Philipp Szavay, MD
CME CHAIRS: Samir Pandya, MD & Matthew Clifton, MD
IMMEDIATE PAST PRESIDENT: Maria Marcela Bailez, MD

PAST PRESIDENTS

Maria Marcela Bailez, MD (2016)
Mark Wulkan, MD (2015)
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)

2017 Faculty

Niyi Ade-Ajayi, MD – London, United Kingdom
Naved Alizai, MD – Leeds, United Kingdom
Georges Azzie, MD – Toronto, Ontario, Canada
Maria Marcela Bailez, MD – Buenos Aires, Argentina
Colin Baillie, MD (BAPS) – Liverpool, United Kingdom
Katherine A. Barsness, MD – Chicago, IL, USA
Mike K. Chen, MD – Birmingham, AL, USA
Simon A. Clarke, MD, FRCS, PA – London, United Kingdom
Matthew Clifton, MD – Atlanta, GA, USA
David Crabbe, MD (BAPS) – Leeds, United Kingdom
Peter Cuckow, MD (BAPS) – London, United Kingdom
Joe Curry, MD (BAPS) – London, United Kingdom
Eleri Cusick, MD (BAPS) – Bristol, United Kingdom
Mark Davenport, MD (BAPS) – Beckenham, United Kingdom
Dafydd A. Davies, MD – Halifax, Nova Scotia, Canada
Carl Davis, MD (BAPS) – Glasgow, United Kingdom
Karen A. Diefenbach, MD – Columbus, OH, USA
Alexander Dzakovic, MD – Chicago, IL, USA
Ciro Esposito, MD, PhD – Naples, Italy
Oliver Gee, MD (BAPS) – London, United Kingdom
Hugh Grant, MD – London, United Kingdom
Miguel Guelfand, MD – Santiago, Chile
Munther J. Haddad, MD – London, United Kingdom
Carroll M. Harmon, MD – Buffalo, NY, USA
George Holcomb III, MD – Kansas City, MO, USA
Celeste Hollands, MD – Spanish Fort, AL, USA
Satoshi Ieiri, MD – Kagoshima, Japan
Thomas H. Inge, MD, PhD – Aurora, CO, USA
Bruce Jaffray, MD (BAPS) – Newcastle upon Tyne, United Kingdom
Roger Kneebone, MD (BAPS) – London, United Kingdom
Martin Lacher, MD – Leipzig, Germany
Pablo Laje, MD – Philadelphia, PA, USA

Charles M. Leys, MD – Madison, WI, USA
Long Li, MD – Beijing, China
Manuel Lopez, MD – Barcelona, Spain
Maximiliano Maricic, MD – Buenos Aires, Argentina
Sean Marven, MD – Sheffield, United Kingdom
Merrill C. McHoney, PhD – Edinburgh, United Kingdom
Milissa A. McKee, MD – Phoenix, AZ, USA
John J. Meehan, MD – Seattle, WA, USA
Carolina A. Millan, MD – Buenos Aires, Argentina
Go Miyano, MD – Tokyo, Japan
Oliver J. Muensterer, MD – Mainz, Germany
Nathan Michael Novotny, MD – Royal Oak, MI, USA
Evelyn Ong, MD (BAPS) – London, United Kingdom
Matthijs W.N. Oomen, MD – Amsterdam, The Netherlands
Daniel J. Ostlie, MD – Phoenix, AZ, USA
Samir Pandya, MD – New York, NY, USA
Dariusz Patkowski, MD – Wroclaw, Poland
Lena Perger, MD – Salado, TX, USA
J. Duncan Phillips, MD – Raleigh, NC, USA
Todd Ponsky, MD – Akron, OH, USA
Giuseppe Retrosi, MD – Winnipeg, Manitoba, Canada
Aixa Reusmann, MD – Buenos Aires, Argentina
Drew Rideout, MD – Tampa, FL, USA
Steven Rothenberg, MD – Denver, CO, USA
Atul J. Sabharwal, MD – Glasgow, United Kingdom
Sameh Shehata, MD – Alexandria, Egypt
Michael Sjöo, MD – Åkersberga, Sweden
Shawn St. Peter, MD – Kansas City, MO, USA
Philipp O. Szavay, MD – Lucerne, Switzerland
Holger Till, MD – Graz, Austria
David C. Van der Zee, MD, PhD – Utrecht, The Netherlands
Mark Wulkan, MD – Atlanta, GA, USA
Atsuyuki Yamataka, MD – Tokyo, Japan

Learning Center

OPEN DURING EXHIBIT HALL HOURS IN MONARCH ROOM THURSDAY & FRIDAY 9:30 am – 4:30 pm

**NEW THIS
YEAR!**

LEARNING CENTER COORDINATORS

Education Committee Chairs: Celeste Hollands, MD & Georges Azzie, MD

Suad Abul
Eva Amerstorfer
Fernando Bello
Ewan Brownlee
Joel Cazares
Nicole Chandler
Salvatore Fabio Chiarenza

Simon Clarke
Mahmoud Elfiky
Takahiro Jimbo
Przemyslaw Korzeniowski
Aaron Lipskar
Martin Metzelder
Ivan Molina

Vincent Mortellaro
Ram Nataraja
Tolu Oyetunji
Shabnam Parkar
Eduardo Perez
Duncan Phillips
Saqib Hamid Qazi

Fernando Rabinovich
Drew Rideout
Aly Shalaby
Bethany Slater
Yew-Wei Tan
Luzia Toselli

IPEG acknowledges in-kind support for this course from 3DMed, The Chamberlain Group, Ethicon, Karl Storz Endoscopy, Laprosurge, Stryker Endoscopy, and Teleflex

FEATURED STATIONS

Pediatric Laparoscopic Pyeloplasty

This novel simulator of pyeloplasty is unique because it allows an exchange between three different models of this pathology in the same training box (MT-BOX1). 1-Intrinsic pyeloureteral stenosis 2-Abnormal ureteral insertion 3-Pyeloureteral stenosis per polar vessel. It is portable, low cost (~10USD), it is lightweight ergonomic and animated and it uses 3mm 20cm instruments.

This simulator targets the acquisition of cognitive and psychomotor skills necessary in the performance of a pediatric laparoscopic pyeloplasty



Inanimate Neonatal Duodenal Atresia (DA) and Hepaticojejunostomy (HY) Models

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.

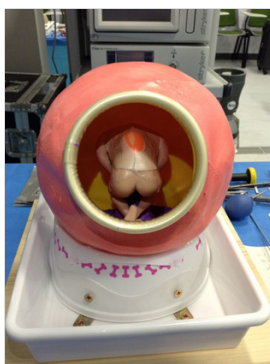
Models Features:

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



Neonatal Minimally Invasive Surgery Trainers

This simulator targets the development of skills required in the performance of neonatal laparoscopic and thoracoscopic procedures. It is the perfect tool to help develop, perfect and maintain the psychomotor skills necessary for such advanced procedures.



FETOSCOPIC MODEL OF MYELOMENINGOCELE REPAIR

This model is an example of how a simulator can be developed and used to target both cognitive and psychomotor aspects of a procedure which is rarely done. This model will provide participants unique insight into a rare but relevant fetal intervention. While the target audience is one with an existing level of expertise in fetal intervention, all interested participants can benefit from exposure to this model.

Would you like to practise Laparoscopic Paediatric Inguinal Hernia Repair?

We invite you to try our state-of-the-art prototype Virtual Reality simulator developed in collaboration between Imperial College London and Chelsea & Westminster NHS Trust. Combining high fidelity graphics and advanced tissue and suture deformation modelling with standard laparoscopic tools, the simulator allows surgeons to train skills in a safe environment, providing them with objective feedback on their performance.



Schedule-at-a-Glance



PRE-MEETING COURSE

Wednesday, July 19th

8:00 am – 5:00 pm	MASTER CLASS & LECTURE NON CME
9:00 am – 12:30 pm	JOINT Trainee Presentation Session NON CME
6:30 pm – 8:00 pm	Welcome Reception in conjunction with BAPS NON CME

IPEG'S 26th ANNUAL CONGRESS

Thursday, July 20th

7:30 am – 8:20 am	SCIENTIFIC SESSION: Video I – Coolest Tricks and Extraordinary Procedures
8:20 am – 8:25 am	IPEG Welcome Address NON CME
8:30 am – 9:30 am	SCIENTIFIC SESSION: Basic Science and Simulation
9:30 am – 10:00 am	PRESIDENTIAL ADDRESS & LECTURE “The Future is You”
10:00 am – 10:30 am	Break & LEARNING CENTER RIBBON CUTTING CEREMONY
10:30 am – 12:00 pm	EXPERT PANEL: “Here We Go Again” – MIS Revisional Surgery: Indications & Outcomes
12:00 pm – 1:30 pm	Lunch
1:30 pm – 2:30 pm	JOINT SCIENTIFIC SESSION: Gastrointestinal
2:30 pm – 4:00 pm	JOINT EXPERT PANEL: “Oh Lets Just Do It Open” – MIS vs. Open Debate
4:00 pm – 4:15 pm	Break
4:15 pm – 5:00 pm	JOINT KARL STORZ LECTURE: Michael Sjo, SAS Pilot and Swedish Surgeon
5:00 pm – 6:00 pm	JOINT SCIENTIFIC SESSION: Thoracic
6:00 pm – 6:30 pm	JOINT JOURNAL OF PAEDIATRIC SURGERY KEYNOTE LECTURER: Whit Holcomb, MD NON CME

Friday, July 21st

7:30 am – 8:30 am	SCIENTIFIC VIDEO SESSION II
8:30 am – 9:30 am	JOINT SCIENTIFIC SESSION: Colorectal & Hepatobiliary
9:30 am – 10:00 am	Break
10:00 am – 11:30 am	JOINT EXPERT PANEL: Pediatric Surgical Training
11:30 am – 12:00 pm	JOINT KEYNOTE PRE RECORDED LECTURE: Richard Branson, CEO Virgin NON CME
12:00 am – 1:15 pm	Lunch
1:15 pm – 2:00 pm	SCIENTIFIC SESSION: Robotic – Single Site
2:00 pm – 3:00 pm	INNOVATIONS SESSION NON CME
3:00 pm – 4:00 pm	SCIENTIFIC SESSION (JOINT WITH BAPES & ESPES): Urology Minimally Invasive Surgery
4:00 pm – 4:30 pm	Break
4:30 pm – 5:30 pm	SCIENTIFIC SESSION: Colorectal & Hepatobiliary Minimally Invasive Surgery II
8:00 pm – Midnight	Friday Night Main Event NON CME

QUICKSHOT CONCURRENT PRESENTATIONS WILL TAKE PLACE THOUGHOUT THE DAY IN MEETING ROOMS 1-6

Saturday, July 22nd

8:00 am – 9:30 am	SCIENTIFIC SESSION: Miscellaneous
9:30 am – 10:15 am	General Assembly NON CME
10:15 am – 10:30 am	IPEG Awards NON CME
10:30 am – 11:00 am	EVIDENCE BASED SURGERY: Hypertrophic Pyloric Stenosis
11:00 am – 12:00 pm	VIDEO SESSION WITH EXPERT PANEL DISCUSSION: “My Worst Nightmare” – The Management of Unexpected Complications and Strategies for Future Avoidance
12:00 pm	Closing Remarks

CME Worksheet

TIME	ACTIVITY	Credits	Hours
WEDNESDAY, JULY 19, 2017			
8:00 am – 5:00 pm	HANDS-ON LAB: Innovations in Simulation Based Education for Pediatric Surgeons	0	
9:00 am – 12:30 pm	JOINT Trainee Presentation Session	0	
6:30 pm – 8:00 pm	Welcome Reception in conjunction with BAPS	0	
Total credits available for Wednesday		0	
THURSDAY, JULY 20, 2017			
7:30 am – 8:20 am	SCIENTIFIC SESSION: Video I – Coolest Tricks and Extraordinary Procedures	1	
8:20 am – 8:25 am	IPEG Welcome Address	0	
8:30 am – 9:30 am	SCIENTIFIC SESSION: Basic Science and Simulation	1	
9:30 am – 10:00 am	PRESIDENTIAL ADDRESS & LECTURE “The Future is You”	.5	
10:30 am – 12:00 pm	EXPERT PANEL: “Here We Go Again” – MIS Revisional Surgery: Indications & Outcomes	1.5	
1:30 pm – 2:30 pm	JOINT SCIENTIFIC SESSION: Gastrointestinal	1	
2:30 pm – 4:00 pm	JOINT EXPERT PANEL: “Oh Lets Just Do It Open” – MIS vs. Open Debate	1.5	
4:15 pm – 5:00 pm	JOINT KARL STORZ LECTURE: Michael Sjojo, SAS Pilot and Swedish Surgeon	.75	
5:00 pm – 6:00 pm	JOINT SCIENTIFIC SESSION: Thoracic	1	
6:00 pm – 6:30 pm	JOINT JOURNAL OF PAEDIATRIC SURGERY KEYNOTE LECTURER: Whit Holcomb, MD	0	
Total credits available for Thursday		8.25	
FRIDAY, JULY 21, 2017			
7:30 am – 8:30 am	SCIENTIFIC VIDEO SESSION II	1	
8:30 am – 9:30 am	JOINT SCIENTIFIC SESSION: Colorectal & Hepatobiliary	1	
10:00 am – 11:30 am	JOINT EXPERT PANEL: Pediatric Surgical Training	1.5	
11:30 am – 12:00 pm	JOINT KEYNOTE LECTURE: Richard Branson, CEO Virgin	0	
1:15 pm – 2:00 pm	SCIENTIFIC SESSION: Robotic – Single Site	.75	
2:00 pm – 3:00 pm	INNOVATIONS SESSION	0	
3:00 pm – 4:00 pm	SCIENTIFIC SESSION (JOINT WITH BAPES & ESPES): Urology MIS	1	
4:30 pm – 5:30 pm	SCIENTIFIC SESSION: Colorectal & Hepatobiliary Minimally Invasive Surgery II	1	
8:00 pm – Midnight	Friday Night Main Event	0	
Total credits available for Friday		6.25	
SATURDAY, JULY 22, 2017			
8:00 am – 9:30 am	SCIENTIFIC SESSION: Miscellaneous	1.5	
9:30 am – 10:15 am	General Assembly	0	
10:15 am – 10:30 am	IPEG Awards	0	
10:30 am – 11:00 am	EVIDENCE BASED SURGERY: Hypertrophic Pyloric Stenosis	.5	
11:00 am – 12:00 pm	VIDEO SESSION WITH EXPERT PANEL DISCUSSION: “My Worst Nightmare” – The Management of Unexpected Complications and Strategies for Future Avoidance	1	
12:00 pm	Closing Remarks	0	
Total credits available for Saturday		3	
TOTAL POSSIBLE CREDITS		17.5	

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

- Please visit www.ipeg.org/cme
- CME Contact: Nicole Von Husen/IPEG-CME Department
11300 W. Olympic Blvd. Suite 600, Los Angeles, CA, 90064
EMAIL: nicolevh@ipeg.org

*An additional charge of US\$25.00 will be assessed for requests received after **Monday, September 4, 2017.***

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)

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

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

Commercial Bias about: (check all that apply)

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

Please return this form to Nicole Von Husen at nicolevh@ipeg.org or fax to +1 310.437.0585.

Faculty & Presenter Disclosures

The following presenters, faculty, IPEG Program and Executive Committee Members provided information indicating they have a financial relationship with a commercial interest, which is defined as any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on patients. (Financial relationships can include such things as grants or research support, 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

DISCLOSURES

NAME	COMMERCIAL INTEREST	WHAT WAS RECEIVED	ROLE
Robert J. Obermeyer, MD	Biomet Zimmer, LLC	Consulting Fee	Consultant
Evelyn Ong, MD	Halyard	Consulting Fee	Advisory Committee
Todd Ponsky, MD**	Conmed	Consulting Fee	Board Member
	Conmed	Consulting Fee	Advisory Committee

Exhibitors

Baxter

BOOTH # 2

Our surgical care portfolio is comprised of clinically differentiated products used in the operating room and in critical care settings. The portfolio offers a variety of devices and pharmaceuticals including haemostats and sealants. Baxter looks to transform surgical efficiency, safety and recovery.



Eido Healthcare Ltd

BOOTH #11

www.eidohealthcare.com

EIDO Healthcare's BAPS-endorsed consent information documents support patients and protect clinicians. EIDO's documents explain the alternatives, benefits and risks of proposed treatment, to allow patients to make fully-informed decisions about their care.

Visit Stand 11 to find out more.



Eizo Limited

BOOTH Foyer F4

www.eizo.co.uk

EIZO is a visual technology company that develops and manufactures high-end display solutions. Building on its established healthcare range, 2017 sees the launch of its CuratOR endoscopy range of monitors. This new line offers high-definition, high-brightness, 3D display capability with the depth and stereoscopic effects required in the medical field.



GENICON

BOOTH #4

www.geniconendo.com

GENICON is an emerging leader in the design, production and global distribution of patented innovative minimally invasive products and solutions designed to deliver better patient outcomes. GENICON is driven to meet the needs of modern day healthcare through harmonization of clinical, ecologic and economic demands of a global healthcare system.



Halyard Health

BOOTH #10

www.halyardhealth.co.uk

Halyard Health is a medical technology company that delivers clinically-superior products and solutions in infection prevention, surgical solutions, respiratory health, digestive health and pain management.



HCA Healthcare

BOOTH #12

www.practicewithus.com

HCA owns and operates over 170 hospitals across the United States, which makes us one of the nation's leading providers of healthcare services. We believe exceptional patient outcomes only come through a dedicated community of care, placing our physicians at the forefront.



JustRight Surgical

BOOTH #6

<http://www.JustRightSurgical.com>

JustRight Surgical™ manufactures instruments right-sized for pediatric surgery. Our 3mm Sealer is the only electro-surgical device to have FDA clearance for pediatrics and our 5mm Stapler uses classic B-shaped staples. These instruments enable surgeons to perform minimally invasive procedures with greater access, visibility, and efficiency; promoting better patient outcomes.



Karl Storz Endoscopy

BOOTHS #7 & 8

www.karlstorz.com

KARL STORZ is a renowned manufacturer that is well established in all fields of endoscopy. The still family held company has grown to one with a worldwide presence and 7100 employees. KARL STORZ offers a range of both rigid and flexible endoscopes for a broad variety of applications.



LaproSurge

BOOTH #1

www.laprosurge.com

LaproSurge manufactures and supplies hospitals worldwide with high quality single use devices for laparoscopic surgery. LaproSurge is showcasing their comprehensive range of products for paediatric surgery, including the mini retrieval bag deployed through a 5mm trocar and the 5mm balloon trocar designed for atraumatic fixation in thin abdominal walls.



Limbs n Things Ltd

BOOTH #9

www.limbsandthings.com

Collaborating with clinicians and healthcare professionals, Limbs & Things creates and manufactures innovative, relevant task trainers to enable competent and confident learning, which in turn leads to improved patient outcomes and reduces medical error.



Exhibitors continued...

Mary Ann Liebert Publishers 
FOYER F2

Journal of Laparoendoscopic & Advanced Surgical Techniques (JLAST), Official Journal of IPEG, is the leading international peer-reviewed journal for practicing surgeons who want to keep up with latest thinking and advanced surgical technologies in laparoscopy, endoscopy, NOTES, and robotics. JLAST – first journal focusing both in general and pediatric surgery.

Meril Endo-Surgery Pvt. Ltd

BOOTH 4A

www.merillife.com



Meril has an extensive product portfolio comprising of absorbable & non-absorbable surgical sutures, tissue sealants, absorbable hemostats, hernia repair (mesh), intra-uterine devices (Cu-T), energy devices and mechanical closure devices (staplers).

Olympus

BOOTH#2

www.olympus.co.uk

OLYMPUS

Olympus is one of the world's leading manufacturers of innovative optical and digital equipment such as endoscopes and microscopes for medical, scientific and industrial use as well as cameras and voice recorders. Founded in Japan in 1919, Olympus has stood for pioneering spirit and innovation for more than 90 years.

Pelican Healthcare

FOYER F3

Pelican Healthcare is a leading supplier in ostomy and wound care products.



Richard Wolf

BOOTH 8A

www.richard-wolf.com



spirit of excellence

As a pioneer in endoscopy, Richard Wolf defines progress. Our passion for high-performance medical technology has its roots in the company's history.

Teleflex

BOOTH# 3

www.teleflex.com



Teleflex is a global provider of medical technologies designed to improve the health and quality of people's lives. We apply purpose driven innovation – a relentless pursuit of identifying unmet clinical needs – to benefit patients and healthcare providers.

Wise Press Medical Bookshop



FOYER F1

www.wisepress.com

Wisepress.com, Europe's leading conference bookseller, attend around 200 conferences every year. We have an extensive range of books and journals relevant to the themes of this conference available at our booth. We also have a comprehensive range of STM titles available on our online bookshop. Follow us on Twitter @Wise-pressBooks

Exhibit Hours

Monarch

Wednesday, July 19

Welcome Reception

6:00 pm – 8:00 pm

Thursday, July 20

Break

9:30 am – 4:30 pm

Lunch

10:00 am – 10:30 am

Break

12:00 pm – 1:30 pm

4:00 pm – 4:15 pm

Friday, July 21

Break

9:30 am – 4:30 pm

Lunch

9:30 am – 10:00 am

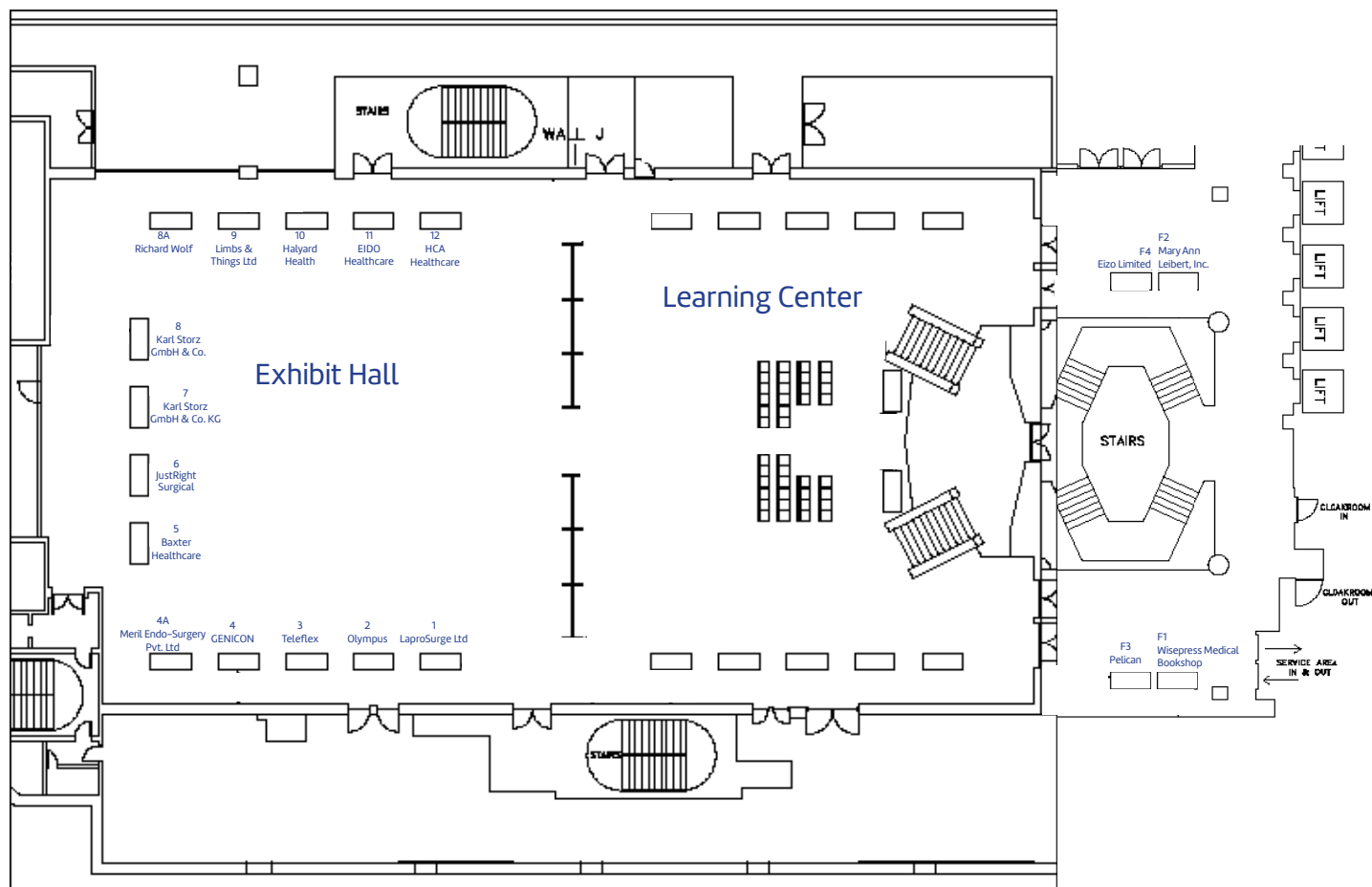
Break

12:00 pm – 1:15 pm

4:00 am – 4:30 pm

Floor Plans

Monarch Suite



King Suite



Complete Schedule



PRE-MEETING COURSE

Wednesday, July 19th

8:00 am – 5:00 pm

MASTERY LEARNING* HANDS ON CLASS & LECTURE NON CME

VISCOUNT 2

Thoracoscopic Lobectomy and Thoracoscopic Esophageal Atresia with Tracheoesophageal Fistula Repair

CHAIR: Katherine Barsness, MD

CO-CHAIR: Atul Sabharwal, MD

DESCRIPTION: This course is designed for pediatric surgeons seeking advanced minimally invasive skills for thoracoscopic lobectomy and tracheoesophageal fistula repair. Participants will dive deep into the specific skills and techniques of expert minimally invasive pediatric surgeons – spending a total of 8 hours concentrating on two advanced operations. Participant to faculty ratio will be 2:1 – and all participants will receive personalized instruction, feedback and debriefing – according to their individual knowledge and skills. Participants will be provided with a detailed curriculum prior to the course – including relevant videos of specific skills and techniques. At the end of the all-day course, participants will discuss opportunities to continue advancing their skills with their instructors – with individualized plans provided to each participant.

*Mastery learning is an educational approach that has two central tenets, first, educational excellence is expected and can be achieved by all learners, and second, little or no variation in measured outcomes will be seen among learners in a mastery environment. While achievements are expected to be equivalent among learners, the time to achieve mastery is not uniform. Some learners will take longer than others to achieve a mastery level of performance.

FACULTY: Sean Marven, MD; Matthew Clifton, MD; Samir Pandya, MD; Sameh Shehata, MD; Karen Diefenbach, MD; Darius Patkowski, MD; Charles M. Leys, MD; Matthijs Oomen, MD; Manuel Lopez, MD; Maximiliano Maricic, MD; Go Miyano, MD; Nathan Novotny, MD; Alex Dzakovic, MD; Aixa Reusmann, MD; Carolina Millan, MD; Philipp Szavay, MD; Holger Till, MD; Maria Marcela Bailez, MD; Daniel J. Ostlie, MD



IPEG acknowledges in-kind support for this course from Ethicon, JustRight Surgical, Laprosurge, Karl Storz Endoscopy, and Stryker Endoscopy

9:00 am – 12:30 pm

JOINT Trainee Presentation Session NON CME

MODERATORS: Pablo Laje, MD (IPEG) & David Drake, MD (BAPS)

6:30 pm – 8:00 pm

Welcome Reception in conjunction with BAPS NON CME

MONARCH SUITE

Complete Schedule

IPEG'S 26th ANNUAL CONGRESS

Thursday, July 20th

7:30 am – 8:20 am

SCIENTIFIC SESSION: Video I – Coolest Tricks and Extraordinary Procedures

SANDRINGHAM 1

MODERATORS: Carroll M. Harmon, MD, Carolina Millan, MD & Matthijs W.N. Oomen, MD

V001: TWO-PORT ENDOSCOPIC FETAL CLOSURE OF MYELOMENINGOCELE [Jacob Cherian, MD](#), Michael A Belfort, MD, PhD, Alireza A Shamshirsaz, MD, Jimmy Espinoza, MD, Olutoyin A Olutoye, MD, Darrell L Cass, MD, Oluyinka O Olutoye, MD, PhD, William E Whitehead, MD; Baylor College of Medicine

V002: CYSTOSCOPIC-ASSISTED LAPAROSCOPIC EXCISION OF PROSTATIC UTRICLE [Ibrahim A Mostafa, IMRCS, MS](#), Mark N Woodward, FRCS, paed surg, Mohamed Shalaby, FRCS, paed surg; Bristol Royal Hospital For Children

V003: THORACOSCOPIC CERVICOTHORACIC SYMPATHECTOMY [Sophia Abdulhai, MD](#), Ian C Glenn, MD, Todd A Ponsky, MD; Akron Children's Hospital

V004: LAPAROSCOPIC DISTAL SPLENO-ADRENAL SHUNT FOR THE TREATMENT OF PORTAL HYPERTENSION IN CHILDREN WITH CONGENITAL HEPATIC FIBROSIS [Long Li](#), Jinshan Zhang; Capital Institute of Pediatrics

V005: LAPAROSCOPIC GASTROESOPHAGEAL DISSOCIATION IN NEUROLOGICALLY IMPAIRED CHILDREN WITH SEVERE, RECURRENT GASTROESOPHAGEAL REFLUX [Jonathan H DeAntonio, MD](#), Dan W Parrish, MD, Shannon F Rosati, MD, Claudio Oiticica, MD, David A Lanning, MD, PhD; Children's Hospital of Richmond at Virginia Commonwealth University

V006: MALROTATION WITH ISOMERISM: LAPAROSCOPIC LADD PROCEDURE [Jordan Krieger, BS](#), Justin Cardenas, BS, Ashwin Pimpalwar, MD; Baylor College of Medicine

V007: THE THORACIC RESECTION OF A MATURE MEDIASTINAL TERATOMA [Alexander Sterlin, MD](#), Jan Goedeke, MD, Oliver J Muensterer, MD, PhD; University Medicine Mainz

V008: BRONCHIAL INJURY DURING RESECTION OF FOREGUT DUPLICATION CYST [Katherine J Baxter, MD, MS](#), Erik G Pearson, MD, Matthew S Clifton, MD; Emory University, Children's Healthcare of Atlanta

V009: ENDOSCOPIC TRANSORAL DIVERTICULOSTOMY FOR POST-TRAUMATIC ESOPHAGEAL DIVERTICULUM USING 5MM STAPLER IN A CHILD [Keith A Kuenzler, MD¹](#), Jason C Fisher, MD¹, Huma A Quraishi, MD², Luciana D Roman, APN²; ¹New York University School of Medicine, ²Hackensack University Medical Center

8:20 am – 8:25 am

IPEG Welcome Address NON CME

SANDRINGHAM 1

David van der Zee, MD, 2017 President

8:30 am – 9:30 am

SCIENTIFIC SESSION: Basic Science and Simulation

SANDRINGHAM 1

MODERATORS: Georges Azzie, MD & Martin Lacher, MD

S001: DEVELOPMENT OF SIMULATION MODELS TO TEACH ADVANCED PROCEDURAL SKILLS IN NEONATAL

MINIMALLY INVASIVE SURGERY [Dominic Papandria, MD¹](#), Robert Strouse, MFA², Patterson Jeremy², Karen Diefenbach, MD¹;

¹Department of Pediatric Surgery, Nationwide Children's Hospital, ²Research Information Solutions & Innovation, The Research Institute at Nationwide Children's Hospital

S002: 3-D LUNG MODEL FOR SURGICAL EVALUATION AND SIMULATION OF CONGENITAL PULMONARY AIRWAY MALFOR-

MATIONS [Tal Koppelman, MD¹](#), Brandon Smith², David Mathews², Ilan Maizlin, MD¹, Robert Russell, MD, MPH¹, Mike Chen, MD¹, Vincent Mortellaro, MD¹; ¹Children's of Alabama, ²University of Alabama at Birmingham

S003: CHARACTERISTICS AND PRECISENESS OF NEEDLE DRIVING FOR RIGHT HANDED PEDIATRIC SURGEON COMPARING

RIGHT DRIVING WITH LEFT DRIVING USING INFANT LAPAROSCOPIC DIAPHRAGMATIC HERNIA REPAIR MODEL [Motoi Mukai, MD, PhD](#), Shun Ohnishi, MD, Takamasa Ikee, MD, Kouji Yamada, MD, Takafumi Kawano, MD, Waka Yamada, MD, Ryuta Masuya, MD, Seirou Machigashira, MD, Kazuhiko Nakame, MD, Tatsuru Kaji, MD, PhD, Satoshi Ieiri, MD, PhD, FACS; Department of Pediatric Surgery, Kagoshima University

S004: MAINTENANCE OF SKILLS SIMULATION (MOSS) CURRICULUM IN ROBOT ASSISTED LAPAROSCOPIC SURGERY: CORRELATION WITH AVERAGE CASE TIME AND CLINICAL OUTCOMES [Daniel B Herz, MD](#); Children's Hospital at Erlanger

Complete Schedule

S005: MEASUREMENT OF MAS TOOL FORCES DURING AN INTRACORPOREAL SUTURING TASK Justin W Wee, BASc¹, Georges Azzie, MD², James Drake, MD², Justin T Gerstle, MD²; ¹University of Toronto, ²The Hospital for Sick Children

S006: LEARNING LAPAROSCOPIC SKILLS: LOOKING OR PRACTICING? Françoise Schmitt, MD, PhD¹, Aurora Mariani, MD², Emilie Eyssartier, MD¹, Jean-Claude Granry, MD, PhD¹, Guillaume Podevin, MD, PhD¹; ¹University Hospital of Angers, ²Robert Debré Hospital, Paris

S007: THE SENSE OF TOUCH – HAPTIC PERCEPTION IN SURGERY: A QUALITATIVE STUDY Giuseppe Retrosi, MD, MEd¹, Simon Clarke, BSc, MBBS, FRCS², Munther Haddad, MBBCH, FRCS², Fernando Bello, PhD³; ¹Division of Pediatric Surgery, Winnipeg Children's Hospital, Winnipeg, MB, Canada, ²Division of Pediatric Surgery, Chelsea & Westminster Hospital NHS Foundation Trust, London, UK, ³Surgical Computing and Simulation Centre for Engagement and Simulation Science, Imperial College London, London, UK

S008: DEVELOPMENT OF SKILL EVALUATION SYSTEM FOR A CAMERA ASSISTANT USING AN INFANT-SIZED LAPAROSCOPIC BOX TRAINER Tetsuya Ishimaru, MD, PhD¹, Kyoichi Deie, MD¹, Atsushi Nakazawa², Kanako Harada, PhD², Shinya Takazawa, MD, PhD³, Jun Fujishiro, MD, PhD¹, Naohiko Sugita, PhD², Mamoru Mitsuishi, PhD², Tadashi Iwanaka, MD, PhD⁴; ¹Dept. of Pediatric Surgery, The University of Tokyo, ²Dept. of Mechanical Engineering, The University of Tokyo, ³Dept. of Pediatric Surgery, Gunma Children's Medical Center, ⁴Saitama Children's Medical Center

S009: THE APPENDICEAL MICROBIOME IN PEDIATRIC PATIENTS WITH ACUTE APPENDICITIS Sara Schölin, Nadine Schlichting, Carlotta Blod, Anne Suttus, Martin Lacher, MD, PhD, Ulf Bühligen, MD, Steffi Mayer, MD; Department of Pediatric Surgery, University of Leipzig, Germany

S010: THE SPAM PROJECT (STUDYING THE PEDIATRIC AIRWAY MICROBIOME): CAN WE FIND GENETIC FOOTPRINTS OF MICROORGANISMS IN CONGENITAL PULMONARY AIRWAY MALFORMATIONS (CPAM)? Holger Till, MD¹, Karl Kashofer, PhD², Pablo Laje, MD³, Stephan Kellnar, MD⁴, Gert Warncke, MD¹, Gregor Gorkiewicz, MD², Georg Singer, MD¹; ¹Department of Paediatric and Adolescent Surgery, Medical University of Graz, Austria, ²Institute of Pathology, Medical University of Graz, Graz, Austria, ³The Children's Hospital of Philadelphia, The University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA, ⁴Department of Paediatric Surgery, Klinikum Dritter Orden, Munich, Germany

9:30 am – 10:00 am

PRESIDENTIAL ADDRESS & LECTURE: The Future is You

SANDRINGHAM 1

SPEAKER: David van der Zee, MD, 2017 President

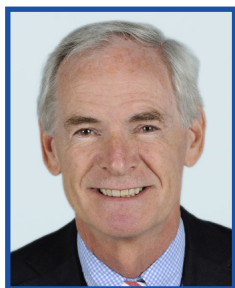
INTRODUCTION: Munther Haddad, MD

DESCRIPTION: IPEG is dependent of the new generation to take it into the next decade. Not only minimal invasive surgery is changing rapidly, but also society is with new modes of communication and interaction. The new generation will have to take the lead in guiding IPEG into the new decade.

OBJECTIVES

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

- The user will be more active to select its participation in society activities, convey surveys and manage activities within the society.



David C. van der Zee MD., PhD., has been a pediatric surgeon since 1991. He has been involved in minimal invasive surgery in children and neonates as of the late 1980s and has published over 150 peer reviewed papers, many of them on endoscopic surgery.

Education in endoscopic surgery has always been an important issue in his career. He is involved in education and training in IPEG, EAES, the Dutch Society of Endoscopic Surgery and his University Hospital. The Department is an internationally recognized Centre of Expertise for Esophageal Atresia.

He gave Keynote Lectures at JSES in Japan, at ELSA in Taiwan, and in Buenos Aires, Argentina. He gave lectures and held hands-on courses all around the world

including Hawaii, Bali, Singapore, Myanmar, Buenos Aires, Sydney, Bangkok and Beijing. He gave the Storz lecture at BAPS in Amsterdam in July 2016.

10:00 am – 10:30 am

Break & Learning Center Ribbon Cutting Ceremony

MONARCH SUITE

Complete Schedule

10:30 am – 12:00 pm	EXPERT PANEL: “Here We Go Again” MIS Revisional Surgery: Indications & Outcomes SANDRINGHAM 1 CHAIR: Steven Rothenberg, MD CO-CHAIR: Whit Holcomb III, MD DESCRIPTION: This session will review the indications, techniques, and outcomes for re-operative surgery for a number of complex pediatric surgical conditions. Participants will learn the indications for re-operative procedures, MIS approaches and tricks, and potential benefits and complications of this approach. OBJECTIVES At the conclusion of this session, participants will be able to: • Identify the indications for re-operative surgery in a number of common pediatric surgical conditions. • Assess the potential benefits and hazards to an MIS approach for re-operative cases. • Identify techniques to enable them to plan a successful MIS re-operative procedure.
10:30 am	Re-operative laparoscopic Nissen fundoplication – <i>Carroll M. Harmon, MD & Pablo Laje, MD</i>
11:00 am	Recurrent Congenital Diaphragmatic Hernia Laparoscopic vs. Thorascopic – <i>Mark Wulkan, MD & Darius Patkowski, MD</i>
11:30 am	Re-operative MIS approaches to Choledochocyst & in Management of Bile Duct Injuries – <i>Long Li, MD & Naved Alizai, MD</i>
11:50 am	Re-operative MIS surgery for ano-rectal malformations, UPJ and ureteral re-implantat complications – <i>Maria Marcela Bailez, MD & Holger Till, MD</i>
12:00 pm – 1:30 pm	Lunch MONARCH SUITE JOINT SCIENTIFIC SESSION: Gastrointestinal KING SUITE MODERATORS: Milissa McKee, MD (IPEG) & David Crabbe, MD (BAPS)

S011: EVOLUTION OF RESPIRATORY SYMPTOMATOLOGY FOLLOWING LAPAROSCOPIC NISSEN FUNDOPLICATION IN CHILDREN *Carlos García-Hernández, Dr, Lourdes Carvajal-Figueroa, Dra, Sergio Landa-Juárez, Dr; Hospital Infantil Privado*

S012: SMALL BOWEL OBSTRUCTION FOLLOWING OPEN OR LAPAROSCOPIC SURGERY IN INFANTS AND CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS. *Giuseppe Lauriti, MD, PhD¹, Vincenzo Davide Catania, MD², Pierluigi Lelli Chiesa, MD¹, Agostino Pierro, OBE, MD, FRCSEngl, FRCSEd, FAAP², Augusto Zani, MD, PhD²; ¹Pediatric Surgery Department, “Spirito Santo” Hospital, Pescara, and “G. d’Annunzio” University, Chieti-Pescara, Italy, ²Division of General and Thoracic Surgery, The Hospital for Sick Children, Toronto, ON, Canada*

S013: ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA WITH RIGHT-SIDED AORTIC ARCH. A SURVEY ABOUT IPEG AND ESPES MEMBERS’ EXPERIENCE *Montserrat Aguilera Pujabet, MD, Jose Andres Molino Gahete, MD, Gabriela Guillén Burrieza, MD, Sergio López Fernández, MD, Marta Pilar Martín Gimenez, MD, Josep Lloret Roca, MD, Manuel López Paredes, MD, PhD; Hospital Universitari Vall d’Hebron, Barcelona, Spain*

S014: TEN-YEAR FOLLOW-UP OF PROSPECTIVE, RANDOMISED STUDY COMPARING LAPAROSCOPIC NISSEN FUNDOPLICATION WITH LAPAROSCOPIC THAL FUNDOPLICATION IN CHILDREN *C Skerrett¹, C Kwok, MRCS¹, R Kubiak, MD¹, C M Rees, MD, FRCSpaed, Surg², H W Grant, MD, FRCS¹; ¹Oxford Children’s Hospital, ²Great Ormond Street Hospital*

S015: OPEN VERSUS LAPAROSCOPIC APPROACH FOR MORGAGNI’S HERNIA IN INFANTS AND CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS. *Elke Zani-Ruttenstock¹, Vincenzo D Catania¹, Giuseppe Lauriti², Lina Antounians¹, Pierluigi Lelli Chiesa², Agostino Pierro¹, Augusto Zani¹; ¹The Hospital for Sick Children, ²Spirito Santo Hospital, Pescara*

080: FACTORS PREDICTING DEATH OR MULTIPLE READMISSIONS IN THE FIRST YEAR AFTER NISSEN FUNDOPLICATION IN CHILDREN AT A PAEDIATRIC HOSPITAL IN SOUTH AFRICA *Karen Milford¹, Alp Numanoglu¹, Tamer Ali Sultan², Juan Kloppe³, ¹Department of Paediatric Surgery, Red Cross War Memorial Children’s Hospital, University of Cape Town, Cape Town, South Africa, ²Paediatric Surgery Unit, Department of General Surgery, Menoufia University, Al Minufya, Egypt, ³Department of General Surgery, Groote Schuur Hospital, University of Cape Town, Cape Town, South Africa*

081: SURGICAL MANAGEMENT OF GORD IN INFANTS: SURGICAL JEJUNOSTOMY VS PRIMARY LAPAROSCOPIC FUNDOPLICATION *Andre Cardoso Almeida¹, John Bowen¹, Gillian Humphrey¹, David Wilkinson^{1,2}, ¹Royal Manchester Children’s Hospital, Manchester, UK, ²University of Liverpool, Liverpool, UK*

082: STRUCTURAL AIRWAY ANOMALIES CONTRIBUTE TO DYSPHAGIA IN CHILDREN WITH ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA *Katherine J. Baxter¹, Mark L. Wulkan¹, Amina M. Bhatia⁰, ¹Division of Pediatric Surgery, Department of Surgery, Emory University School of Medicine, Children’s Healthcare of Atlanta, Atlanta, GA, USA*

Complete Schedule

083: UTILITY OF SURVEILLANCE ENDOSCOPY EXAMINATIONS IN PATIENTS FOLLOWING REPAIR OF OESOPHAGEAL ATRE-SIA [Fiona Murphy](#)¹, Maryam Haneef¹, Felicity Arthur¹, Joanne Minford¹, Matthew Jones¹, Paul Losty^{1,2}, ¹Department of Paediatric Surgery, Alder Hey Children's NHS Foundation Trust, Liverpool, UK, ²Institute of Child Health, University of Liverpool, Liverpool, UK

084: BARIATRIC SURGERY FOR PAEDIATRIC OBESITY: ARE WE REPLACING ONE SET OF PROBLEMS WITH ANOTHER? A SYSTEMATIC REVIEW OF THE LITERATURE [Jennifer Billington](#)^{1,2}, Lauren Stroud¹, Varadarajan Kalidisan¹, ¹Royal Alexandra Children's Hospital, Brighton, UK, ²Imperial College London, London, UK

2:30 pm – 4:00 pm

JOINT EXPERT PANEL: “Oh Let's Just Do It Open” – MIS vs. Open Debate

KING SUITE

CHAIR: Carroll M. Harmon, MD (IPEG) & Mark Davenport, MD (BAPS)

DESCRIPTION: This session will be beneficial to any pediatric general surgeon or pediatric urologist. The panel will provide expert opinion regarding the pros and cons of 4 common pediatric surgical procedures comparing open versus laparoscopic approaches.

OBJECTIVES

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

- More clearly appraise the potential benefits of both open and laparoscopic approaches to 4 common pediatric operations.
- More clearly appraise the potential risks of both open and laparoscopic approaches approaches to 4 common pediatric operations.
- Select which approach, open or laparoscopic, that they will choose to promote in their pediatric surgery practice.

2:30 pm Intussusception – Eleri Cusick, MD (BAPS) & Shawn St. Peter, MD (IPEG)

2:55 pm Inguinal Hernia – Bruce Jaffray, MD (BAPS) & Todd Ponsky, MD (IPEG)

3:20 pm Pyeloplasty – Peter Cuckow, MD (BAPS) & Holger Till (IPEG)

3:45 pm Orchidopexy – Oliver Gee, MD (BAPS) & Philipp Szavay, MD (IPEG)

4:00 pm – 4:15 pm

Break

MONARCH SUITE

4:15 pm – 5:00 pm

JOINT KARL STORZ LECTURE: What can Surgeons Learn from Aviation

KING SUITE

SPEAKER: Michael Sjö – Scandinavian Airlines Systems Pilot and Surgeon

INTRODUCTION: David van der Zee, MD, 2017 President

DESCRIPTION: This lecture will highlight the safety culture in healthcare and compare and contrast it to that of the aviation industry. Participants will learn the impact of human factors on safe healthcare and strategies on how to improve healthcare safety as a whole. Topics discussed will be applicable to all participants engaged in healthcare.

OBJECTIVES

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

- Highlight aspects of safety culture in healthcare and compare them to the aviation industry
- Demonstrate the influence of human factors on health care safety and illustrate how influential these may be.
- Recommend strategies to improve the safety culture in health care.



Michael Sjö from Sweden is a Captain in Scandinavian Airlines Systems (SAS), where he was employed in 1989. He was flying the DC-9 until Januari 2002, thereafter he flew the MD-80 until 2009 and since then the Boeing-737.

During 1995-1999 he mixed his flying with being a flight instructor on the DC-9 at SAS Flight Academy. He was there the projectleader for the Human Factors office creating courses for pilots in this topic and also educating pilots in aviation medicine.

In 1999 he left SAS Flight Academy when he was recruited to SAS quality department. where he was auditing within SAS as well as other airlines. He was assigned as the Vice President and Quality Manager for the entire company

between 2003-2007 and responsible for all quality issues and all investigations within the company. Since he quit that position he has continued flying for SAS.

Michael is also a Medical Doctor specialized as a flight surgeon with civil and military competence. He has his own company and educates different groups in safety and quality issues mainly for the health care industry.

Complete Schedule

5:00 pm – 6:00 pm

IPEG/BAPS/BAPES JOINT SCIENTIFIC SESSION: Thoracic Surgery

KING SUITE

MODERATORS: Niyi Ade Ajayi, MD (IPEG/BAPES) & Carl Davis, MD (BAPS)

S016: SPONTANEOUS PNEUMOTHORAX IN CHILDREN: NATIONAL MANAGEMENT STRATEGIES, OUTCOMES AND TIMING OF SURGERY Tolulope Oyetunji¹, Kibileri Williams², Grace Hsiung², Richard J Hendrickson³, Timothy Lautz¹; ¹Ann & Robert H Lurie Children's Hospital of Chicago, ²Northwestern University, ³Children's Mercy Hospital – University of Missouri, Kansas City

S017: FIBRIN GLUE FOR RECURRENT TRACHEOESOPHAGEAL FISTULA: SHOULD BRONCHOSCOPIC TREATMENT BE CONSIDERED AS THE FIRST CHOICE? I Miró, E Carazo, C Gutiérrez, V Ibáñez, R Fonseca, Je Barrios, M Couselo, P Ortolá, Jj Vila; Hospital Universitari i Politecnic La Fe, Valencia

S018: MEDIUM TERM PULMONARY FUNCTION TEST AFTER THORACOSCOPIC LOBECTOMY FOR CONGENITAL PULMONARY AIRWAY MALFORMATION: A COMPARATIVE STUDY WITH NORMAL CONTROL Ct Lau, Kky Wong, P Tam; Department of Surgery, The University of Hong Kong, Queen Mary Hospital

S019: THORACOSCOPIC VS. OPEN CONGENITAL DIAPHRAGMATIC HERNIA REPAIR: A SINGLE TERTIARY CENTER REVIEW Anna F Tyson, MD, MPH, Richard Sola Jr., MD, Michael Arnold, MD, Graham H Cosper, MD, Andrew M Schulman, MD; Carolinas Medical Center

S020: THORACOSCOPIC ANATOMIC SEGMENTECTOMY FOR BENIGN LUNG LESIONS: IS IT SAFE, SUITABLE AND WORTH-WHILE? X Tarrado, MD, PhD, L Saura, MD, P Palazón, MD, I de Haro, MD, J Prat, MD, PhD, A Soria, MD, V Julià, MD, PhD; Hospital Sant Joan de Déu. Barcelona

085: PATCH ESOPHAGOPLASTY USING AN IN-BODY-TISSUE-ENGINEERED COLLAGENOUS CONNECTIVE TISSUE MEMBRANE, "BIOSHEET", IN A BEAGLE MODEL: A NOVEL ESOPHAGEAL SCAFFOLD Hiroomi Okuyama¹, Satoshi Umeda¹, Yuichi Takama¹, Takeshi Terasawa², Yasuhide Nakayama², ¹Osaka University Graduate School of Medicine, Suita, Osaka, Japan, ²National Cerebral and Cardiovascular Centre Research Institute, Suita, Osaka, Japan

086: CONGENITAL BRONCHOPULMONARY MALFORMATIONS: IS INFECTION A RISK WITH CONSERVATIVE MANAGEMENT? Mahmoud Marei^{1,2}, Ewan Brownlee¹, Fraser Munro¹, ¹Royal Hospital for Sick Children, Edinburgh, UK, ²Cairo University, Faculty of Medicine, Cairo University Specialized Pediatric Hospital, Department of Pediatric Surgery, Cairo, Egypt

087: ORTHOTIC BRACING FOR PECTUS CARINATUM; EARLY EXPERIENCE FROM A SINGLE UK CENTRE Christos Kaselas¹, Rebecca Lisseter¹, Helen McCormack¹, Sion Barnard², Hany Gabra¹, ¹Department of Paediatric Surgery, Great North Children Hospital, Newcastle Upon Tyne, UK, ²Department of Cardiothoracic surgery, Royal Freeman Hospital, Newcastle Upon Tyne, UK

088: SELECTIVE VERSUS ROUTINE PATCH METAL ALLERGY TESTING TO SELECT BAR MATERIAL FOR THE NUSS PROCEDURE IN 932 PATIENTS OVER 10 YEARS Robert Obermeyer^{1,2}, Sheema Gaffar², Robert Kelly^{1,2}, M. Ann Kuhn^{1,2}, Frazier Frantz^{1,2}, Margaret McGuire^{1,2}, James Paulson^{1,2}, Cynthia Kelly^{1,2}, ¹Children's Hospital of The King's Daughters, Norfolk, VA, USA, ²Eastern Virginia Medical School, Norfolk, VA, USA, ³Old Dominion University, Norfolk, VA, USA

089: TRACHEAL SIZE AFTER FETAL ENDOSCOPIC TRACHEAL OCCLUSION FOR CONGENITAL DIAPHRAGMATIC HERNIA: MEDIUM-TERM FOLLOW-UP Anna Morandi¹, Francesco Macchini¹, Isabella Fabietti², Fabrizio Ciralli³, Fabio Mosca³, Nicola Persico², Ernesto Leva¹, ¹Department of Pediatric Surgery, Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, Milano, Italy, ²Department of Obstetrics and Gynecology 'L. Mangiagalli', Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, Milano, Italy, ³NICU, Department of Clinical Sciences and Community Health, Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, University of Milan, Milano, Italy

Complete Schedule

6:00 pm – 6:30 pm

JOINT JOURNAL OF PAEDIATRIC SURGEON KEYNOTE LECTURE NON CME

KING SUITE

SPEAKER: George “Whit” Holcomb, III, MD, MBA

INTRODUCTION: Mark Davenport, MD



Dr. George W. Holcomb, III was born in Osaka, Japan on December 11, 1953. He was raised in Nashville, Tennessee and attended elementary and high school in Nashville. He attended the University of Virginia for college and then Vanderbilt University School of Medicine. His general surgery training was at Vanderbilt and his pediatric surgery training was at the Children’s Hospital of Philadelphia. He began his pediatric surgery practice in 1988 as an Assistant and subsequently Associate Professor of Surgery in the Department of Pediatric Surgery at Vanderbilt. In 1999, he was recruited to replace Dr. Keith Aschraft as Surgeon-in-Chief and the Katharine B. Richardson Professor of Surgery at Children’s Mercy Hospital in Kansas City, Missouri. From 1999–2011, he also served as the Program

Director of the Pediatric Surgery Residency Training Program. In addition to being the Surgeon-in-Chief, he is also Senior Vice-President and Director of the Center for Minimally Invasive Surgery. In 2002, he was awarded an Masters in Business Administration (MBA) from the Henry Bloch School of Business at the University of Missouri-Kansas City.

Dr. Holcomb is a member of the American Pediatric Surgical Association, the American Surgical Association, the British Association of Pediatric Surgeons, and the European Pediatric Surgeons Association, among others. From 2008–14, he served on the Residency Review Committee for Surgery which accredits the general surgery and pediatric surgery residency training programs in the United States. He is best known for his interest in minimally invasive surgery in infants and children and his emphasis on evidence-based medicine. He is the author of over 240 peer-reviewed publications and 50 book chapters, and has been the editor of 5 textbooks. In addition, he has recently been selected to be Editor-in-Chief of The Journal of Pediatric Surgery.

Friday, July 21st

7:30 am – 8:30 am

SCIENTIFIC VIDEO SESSION II

KING SUITE

MODERATORS: Satoshi Ieiri, MD & Merrill C. McHoney, MD

V010: TRANSPERITONEAL LAPAROSCOPIC NEPHRO–SPARING SURGERY OF A RENINOMA TUMOR Javier Ruiz, Juan Corbetta, MD, Santiago Weller, Gustavo Villoldo, MD, Ramiro Perea, MD, Enrique Lago, MD, Cristian Sager, MD, Carol Burek, MD, Victor Duran, MD, Juan Carlos Lopez, MD; Hospital de Pediatría J. P. Garrahan Buenos Aires Argentina

V011: LAPAROSCOPIC RADICAL NEPHRECTOMY IN AN ADOLESCENT WITH NEOPLASTIC DISEASE AS INITIAL THERAPY Jefrey W Gander, MD, Sara K Rasmussen, MD, PhD; University of Virginia Children’s Hospital

V012: LAPAROSCOPIC NEOAPPENDICOSTOMY Steven Z Lu, DO, MPH¹, Michael J Leinwand, MD²; ¹Western Michigan University School of Medicine, ²Bronson Children’s Hospital

V013: THORACOSCOPIC REPAIR OF STRICTURE FOLLOWING ESOPHAGEAL ATRESIA REPAIR: EXPERIENCE WITH 2 CASES Ravi P Kanojia, MD, MRCS; PGIMER Chandigarh India

V014: LAPAROSCOPIC URETEROVESICAL ANASTOMOSIS FOR ECTOPIC URETER AND SMALL BLADDER. CASE REPORT. Tomas Ferraris, MD, Luciana Lerendegui, MD, Jimena Esnaola, MD, Anahi Salomon, MD, Francisco de Badiola, MD, Juan Moldes, MD; Hospital Italiano de Buenos Aires

V015: EMBOLIZATION FOLLOWED BY THORACOSCOPY AS AN APPROACH FOR SAFE AND MINIMALLY INVASIVE RESECTION OF A CONGENITAL PULMONARY MALFORMATION Tiago A Tuna¹, Mariana B Dias¹, Jorge Moreira², Tiago Henriques-Coelho, PhD¹, José Estevão-Costa, PhD¹; ¹Pediatric Surgery Department, Hospital São João, Faculty of Medicine, Porto, Portugal, ²Pediatric Cardiology Department, Hospital São João, Porto, Portugal

V016: MRI-OR GUIDED LAPAROSCOPIC ANORECTOPLASTY UTILIZING A NOVEL PATIENT POSITIONING APPARATUS Cory N Criss, MD, Marcus D Jarboe, MD; C.S. Mott Children’s Hospital

Complete Schedule

V017: INFANT ROBOTIC URETEROURETEROSTOMY FOR UPPER URINARY TRACT DUPLICATION ANOMALIES Brendan Caprio¹, Paul H Noh, MD²; ¹University of Cincinnati, ²Cincinnati Children's Hospital Medical Center

V018: A NOVEL TECHNIQUE OF POSTEROLATERAL SUTURING IN THORACOSCOPIC DIAPHRAGMATIC HERNIA REPAIR Yoon Jung Boo, MD, PhD¹, Stephan Rohleder, MD², Oliver J Muensterer, MD, PhD²; ¹Department of Pediatric Surgery, Korea University College of Medicine, ²Department of Pediatric Surgery, University Medicine of the Johannes Gutenberg University Mainz

V019: SIDE-TO-SIDE TRANSPERITONEAL URETERO-URETEROSTOMY FOR FUNCTIONING AND NON-DILATED ECTOPIC URETER IN A DUPLEX SYSTEM KIDNEY Javier Ruiz, MD, Juan Corbetta, MD, Santiago Weller, MD, Ramiro Perea, MD, Enrique Lago, MD, Cristian Sager, MD, Carol Burek, MD, Victor Duran, Juan Carlos Lopez, MD; Hospital Pediatria J. P. Garrahan Buenos Aires Argentina

8:30 am – 9:30 am

JOINT SCIENTIFIC SESSION: Colorectal & Hepatobiliary Surgery
MODERATORS: Daniel J. Ostlie, MD (IPEG) & Evelyn Ong, MD (BAPS)

KING SUITE

S021: OUTCOMES OF LAPAROSCOPIC-ASSISTED TRANSANAL ENDORECTAL PULL-THROUGHS WITH SHORT MUSCLE CUFF FOR CLASSIC HIRSCHSPRUNG'S DISEASE Bo Xiang, PhD; West China Hospital, China

S022: VASCULAR MALFORMATIONS INVOLVING ANORECTUM AND SIGMOID COLON: COMBINED ENDOSCOPIC AND LAPAROSCOPIC APPROACH FOR MANAGEMENT Zhibao Lu, MD¹, Jiangbin Liu¹, Xianmin Xiao²; ¹Shanghai Children's Hospital, ²Children's Hospital of Fudan University

S023: THE SHORT TERM OUTCOME OF MODIFIED LAPAROSCOPIC KASAI PORTOENTEROSTOMY FOR BILIARY ATRESIA WITH 140 CASES Xu Zhicheng; The department of Pediatric surgery, West China Hospital of Medicine, Sichuan University

S024: ASSESSING THE LONG TERM MANOMETRIC OUTCOMES IN PATIENTS WITH PREVIOUS LAPAROSCOPIC ANORECTO-PLASTY (LARP) AND POSTERIOR SAGGITAL ANORECTOPLASTY (PSARP) Patrick Ho Yu Chung, Carol Wing Yan Wong, Kenneth Kak Yuen Wong, Paul Kwong Hang Tam; The University of Hong Kong

S025: APPLICATION OF LAPAROSCOPY IN PERFORATED CHOLEDOCHAL CYSTS Mei Diao, Professor, Long Li, Professor; Department of Pediatric Surgery, Capital Institute of Pediatrics

090: LAPAROSCOPIC VERSUS OPEN APPENDICECTOMY: POSTCODE LOTTERY IN ENGLAND Arun Kelay¹, Mark Davenport¹, ¹Paediatric Surgery, Kings College Hospital, London, UK

091: TRANSUMBILICAL EXTRACORPOREAL LAPAROSCOPIC-ASSISTED APPENDECTOMY: THE BEST OF BOTH WORLDS? Lindsey A Perea¹, William H Peranteau¹, Pablo Laje¹, ¹The Children's Hospital of Philadelphia, Philadelphia, PA, USA

092: IMPLEMENTATION OF AN ENHANCED RECOVERY PROTOCOL IN PEDIATRIC COLORECTAL SURGERY Heather L. Short¹, Kurt F. Heiss¹, Katelyn Burch¹, Curtis Travers¹, John Edney¹, Claudia Venable¹, Mehul Raval¹, ¹Emory University School of Medicine, Atlanta, Georgia, USA

093: MANAGEMENT OF INFANTILE HEPATIC HAEMANGIOMAS IN THE PROPRANOLOL ERA Natalie Durkin¹, Katja Doerry¹, Alexander MacDonald¹, Erica Makin¹, Mark Davenport¹, ¹Dept: Paediatric Surgery, Kings College Hospital, London, UK

094: CRITICAL ANALYSIS OF BILIARY ATRESIA PATIENTS SURVIVING WITH NATIVE LIVERS FOR MORE THAN 3 YEARS AFTER LAPAROSCOPIC PORTOENTEROSTOMY Atsuyuki Yamataka¹, Joel Cazares¹, Hiroki Nakamura¹, Hiroshi Murakami¹, Geoffrey Lane¹, Hiroyuki Koga¹, Go Miyano¹, Manabu Okawada¹, Takashi Doi¹, ¹Department of Pediatric General and Urogenital Surgery, Juntendo University School of Medicine, Tokyo, Japan

9:30 am – 10:00 am

Break

MONARCH SUITE

Complete Schedule

10:00 am – 11:30 am

JOINT EXPERT PANEL: Pediatric Surgical Training

KING SUITE

CHAIR: Joe Curry, MD (BAPS)

CO-CHAIR: Celeste Hollands, MD (IPEG)

DESCRIPTION: This session looks at some of the challenges facing paediatric surgeons who are involved in education and training.

OBJECTIVES

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

- Understand in more detail the challenges faced by the modern surgeon educator.
- To be aware of potential methodology and practical points to improve the trainers involvement in surgical selection and education.

10:00 am Free Paper

S026: DEVELOPMENT AND IMPLEMENTATION OF A MANDATORY SIMULATION-BASED NATIONWIDE PEDIATRIC LAPAROSCOPIC TRAINING PROGRAM

jean Breaud, PhD¹, Isabelle Talon, MD², Philine De Vries, MD³, Laurent Fourcade, PhD⁴, Julien Rod, MD⁵, Guillaume Podevin, PhD⁶; ¹Hopitaux Pédiatriques de Nice CHU-Lenval – Université de Nice Sophia Antipolis (France), ²Hopitaux Universitaires de Strasbourg (France), ³Hopitaux Universitaires de Brest (France), ⁴Hopitaux Universitaires de Limoges (France), ⁵Hopitaux Universitaires de Caen (France), ⁶Hopitaux Universitaires d'Angers (France)

S027: PEDIATRIC SURGICAL EDUCATION: THE VALUE OF BASELINE SKILLS' ASSESSMENTS FOR EDUCATIONAL COURSES

Katherine A Barsness, MD¹, Holger Till, MD², Philipp Szavay, MD³, Maria Marcela Bailez, MD⁴; ¹Lurie Children's Hospital of Chicago, ²LKH-Univ. Klinikum Graz, ³Kinderspital Luzern, ⁴J. P. Garahan Pediatric Hospital

095: FEEDBACK DELAYS IN PROCEDURE BASED ASSESSMENTS: TRAINER OR TRAINEE? Robert Miller¹, Stavros Loukogeorgakis¹, Simon Clarke¹, ¹Chelsea and Westminster Hospital, London, UK

096: COMPARABLE OUTCOMES OF TRAINEE VS CONSULTANT OPERATING FOR OESOPHAGEAL ATRESIA

Ceri E Jones¹, Rachel O Smyth¹, Nigel J Hall^{1,2}, Simon C Keys¹, Ori Ron¹, Michael Stanton¹, Lara Kitteringham¹, Henrik Steinbrecher¹, D Mervyn Griffiths¹, David Burge¹, ¹Department of Paediatric Surgery & Urology, Southampton Children's Hospital, Southampton, UK, ²University Surgical Unit, Faculty of Medicine, University of Southampton, Southampton, UK

097: PAEDIATRIC SURGICAL TRAINING IN THE UK – HOW SATISFIED ARE WE? Hemanshoo Thakkar¹, Mark Powis², ¹Evelina Children's Hospital, Guy's and St. Thomas's NHS Foundation Trust, London, UK, ²Leeds Children's Hospital, Leeds, UK

10:35 am What Should We Look For When Selecting Trainees in Pediatric Surgery?

Georges Azzie, MD (IPEG) & Colin Baillie, MD (BAPS)

10:50 am What is the Evidence that Simulation Makes a Better Surgeon

Hugh Grant, MD (BAPS) & Katherine Barsness, MD (IPEG)

11:05 am The Surgeon as Surgeon and Educator – Is the Apprenticeship Model Relevant to Surgery in 2017?

Roger Kneebone, MD (BAPS)

INTERESTED IN JOINING A COMMITTEE?

Sign up here : <https://www.ipeg.org/ipeg-committee-interest/>

Please submit by August 31st to join an IPEG committee for the 2017–2018 year

Complete Schedule

11:30 am – 12:00 pm

JOINT KEYNOTE LECTURE: A Pre Recorded Message from Sir Richard Branson NON CME

KING SUITE

SPEAKER: Richard Branson, CEO Virgin

INTRODUCTION: Simon Clarke, MD, 2017 Program Chair



Richard Branson started Virgin as a mail order record retailer in 1970, Branson founded Virgin Records and opened a record shop on Oxford Street, London. Virgin Records went on to sign household names from the Sex Pistols to The Rolling Stones, becoming the biggest independent label in the world. There are now more than 100 Virgin companies worldwide, employing approximately 60,000 people in over 50 countries.

Since Branson founded Virgin Atlantic in 1984, it has established itself as a leading global airline. Expansion elsewhere has seen Branson become the only person to build eight billion dollar companies in eight different sectors.

Branson has challenged himself with many record breaking adventures, including the fastest ever Atlantic Ocean crossing, a series of hot air balloon adventures and kitesurfing across the English Channel. Branson was awarded a knighthood in 1999 for services to entrepreneurship. He lives on Necker Island with his wife Joan and two children, Holly and Sam.

12:00 pm – 1:15 pm

Lunch

MONARCH SUITE

1:15 pm – 2:00 pm

SCIENTIFIC SESSION: Robotic & Single Site Surgery

SANDRINGHAM 1

MODERATORS: John Meehan, MD & Oliver Muensterer, MD

S028: UMBILICAL INCISION COMPLICATION RATES FOLLOWING SINGLE INCISION PEDIATRIC ENDOSURGERY – LONG TERM FOLLOW-UP

Ilan I Maizlin, MD, Laura V Bownes, MS, Elizabeth A Beierle, MD, Robert T Russell, MD, MPH, Mike K Chen, MD, David A Rogers, MD, MHPE, Colin A Martin, MD, Scott A Anderson, MD, Vincent E Mortellaro, MD; Children's Hospital of Alabama, University of Alabama at Birmingham

S029: SINGLE-SITE ROBOTIC VS. MULTIPORT LAPAROSCOPIC CHOLECYSTECTOMY IN PEDIATRICS

Astrid R Soares Medina, MD, Dominic Papandria, MD, Victoria K Pepper, MD, Marc P Michalsky, MD, Karen A Diefenbach; Nationwide Children's Hospital

S030: ONE-TROCAR LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE OF PEDIATRIC INGUINAL HERNIA USING AN INNER TWO-HOOKED CANNULA WITH HYDRODISSECTION

Suolin Li, MD, Xuelai Liu, PhD, Chuan Fei, MD, Yongting Zhang, MD; The Second Hospital of Hebei Medical University

S031: INTERNATIONAL SURVEY ON ROBOT-ASSISTED SURGICAL TECHNIQUES UTILIZATION IN PEDIATRIC SURGERY

Ilan I Maizlin, MD¹, David C Yu, MD², Colin A Martin, MD¹, Mike K Chen, MD¹, Robert T Russell, MD, MPH¹; ¹Children's Hospital of Alabama, University of Alabama at Birmingham, ²Louisiana State University Health Sciences Center

S032: LONG-TERM OUTCOMES OF TRANSORAL INCISIONLESS FUNDOPLICATION IN A HIGH-RISK PEDIATRIC POPULATION

Jason O Robertson, MD, MS, Marcus D Jarboe, MD; University of Michigan/C.S. Mott Children's Hospital

S033: ROBOT-ASSISTED LAPAROSCOPIC DISMEMBERED URETERAL REIMPLANT WITH AND WITHOUT URETERAL TAPERING FOR THE REPAIR OF PEDIATRIC PRIMARY OBSTRUCTED MEGAURETER: ANALYSIS OF TECHNIQUE AND COMPARISON OF SURGICAL OUTCOMES WITH AN OPEN COHORT

Daniel B Herz, MD; Children's Hospital at Erlanger

S034: DEVELOPMENT OF A SURGICAL ROBOT SYSTEM TO SUPPORT PEDIATRIC MINIMALLY INVASIVE SURGERY IN NARROW SPACE

Satoshi Ieiri, MD, PhD, FACS¹, Yo Kobayashi, PhD², Tomoaki Taguchi, MD, PhD, FACS³, Masakatsu Fujie, PhD², Makoto Hashizume, MD, PhD, FACS⁴; ¹Department of Pediatric Surgery, Kagoshima University, ²Faculty of Science and Engineering (Research Institute of Science and Engineering), Waseda University, ³Department of Pediatric Surgery, Kyushu University, ⁴Department of Advanced Medicine and Innovative Technology, Kyushu University

S035: COMPLICATIONS AFTER APPENDECTOMY FOR APPENDICITIS: DOES BMI PERCENTILE OR LAPAROSCOPIC APPROACH MATTER?

Joseph R Esparaz, MD¹, Breanna M Elger, BS², Melissa G Medina, MD¹, Robert C Kanard, MD², Mark J Holterman, MD, PhD¹, Benjamin Kindred, BS³, Erlena Josifi, MS³, Carley E Demchuk, BA³, Jeremy S McGarvey, MS⁴, Richard H Pearl, MD¹, Charles J Aprahamian, MD¹; ¹Department of Surgery, University of Illinois College of Medicine at Peoria, ²Children's Hospital of Illinois at OSF Saint Francis Medical Center, ³University of Illinois College of Medicine at Peoria, ⁴Healthcare Analytics, OSF Innovation

Complete Schedule

2:00 pm – 3:00 pm

SCIENTIFIC SESSION: Innovations NON CME

SANDRINGHAM 1

MODERATORS: Atul Sabharwal, MD & Thomas Inge, MD

ET001: INFRARED SURFACE SCANNING OF PECTUS DEFORMITIES: NEW INDEXES AND PREDICTIVE MODELING Kevin N. Johnson, MD, Jon Campbell, MS, Matthew W Ralls, MD, James D Geiger, MD; University of Michigan

ET002: MACHINE LEARNING AND TARGETED IMAGE GUIDANCE FOR AIRWAY MANAGEMENT Ruchi Amin, MD¹, Sabina Siddiqui¹, Laura McCormick, PhD², Hong Lak Lee, PhD³; ¹Children's Hospital of Wisconsin, ²Brio Device, LLC, ³University of Michigan

ET003: SURGTRAC: A NEW PARADIGM IN SKILLS TRAINING. Roland W Partridge¹, Paul M Brennan², Mark A Hughes², Iain A Hennessey³; ¹Royal Hospital for Children, Glasgow. UK., ²Department of Clinical Neurosciences, Edinburgh. UK., ³Alder Hey Children's Hospital, Liverpool. UK.

ET004: NEW INANIMATE MODEL FOR TRAINING LOWER LEFT LOBECTOMY. Maximiliano Maricic, Maria Marcela Bailez; Garrahan Children's Hospital

ET005: NO SCAR SURGERY: APPLICATION OF AUXILIARY LAPAROSCOPIC NEEDLE DEVICE IN TREATING PEDIATRIC INGUINAL HERNIA Cui Qingbo, Li Zhaozhu, Lu Wenjun, Xu Bo, Ma Mingdi; Department of Pediatric Surgery, the Second Hospital Affiliated to Harbin Medical University

ET006: ESOPHAGEAL LENGTHENING AND ANASTOMOTIC DEVICE Donald D Potter, MD, Stephanie Polites, MD; Mayo Clinic

ET007: MICROSENSORS ENSURE SAFE COUPLING OF MAGNAMOSIS RINGS Colin Brahmstedt, BS, Claire E Graves, MD, Dillon Kwiat, BS, Catherine Co, MD, Brandon Gaston, BS, Philip Fullante, MD, Anupama Arun, PhD, Michael R Harrison, MD; University of California, San Francisco

ET008: THORACOSCOPIC REPAIR OF LONG GAP ESOPHAGEAL ATRESIA BY ADJUSTABLE INTERNAL TRACTION Charles J. Smithers, MD, Thomas E Hamilton, MD, Benjamin Zendejas-Mummert, MD, Ali Kamran, MD, Susannah Clark, PA, Peter Ngo, MD, Michael Manfredi, MD, Russell W Jennings, MD; Boston Children's Hospital

ET009: THE FLEXDEX: A MECHANICAL ARTICULATING LAPAROSCOPIC INSTRUMENT Cory N Criss, Kevin N Johnson, MD, Matthew W Ralls, MD, Marcus D Jarboe, MD, James D Geiger, MD; Michigan Medicine

3:00 pm – 4:00 pm

SCIENTIFIC SESSION: Urology MIS – JOINT with BAPES and ESPES

SANDRINGHAM 1

MODERATORS: Maria Marcela Bailez, MD & Ciro Esposito, MD

S036: SURGICAL OUTCOME ANALYSIS OF PNEUMOVESICOSCOPIC URETERAL REIMPLANTATION AND ENDOSCOPIC DEXTANOMER / HYALURONIC ACID (DX/HA) INJECTION FOR PRIMARY VESICoureteral REFLUX IN CHILDREN – A 12-YEAR MULTICENTRE REVIEW Kly Chung, Dr¹, Jdy Sihoe², Jws Hung¹, Ycl Leung², Pyh Tam³, Kh Lee³, Nsy Chao², Mwy Leung¹; ¹Queen Elizabeth Hospital, ²United Christian Hospital, ³Prince of Wales Hospital

S038: COMPARISON OF ROBOTIC AND LAPAROSCOPIC PYELOPLASTY IN INFANTS: A MULTI CENTER STUDY Amos Neheman, md¹, Abd Elhalim Darawsha, md², Paul Noh, md³; ¹Asaf – Harofeh medical center, Zerifin, Israel, ²Meir medical center, Kfar-Saba, Israel, ³Cincinnati childrens hospital medical center, Ohio, USA

S040: FLEXIBLE URETERORENOSCOPY IS EFFECTIVE FOR TREATING RENAL STONES IN CHILDREN Ahmed Suliman, Mr, Tariq Burki, Massimo Garriboli, Jonathan Glass, Mr, A Taghizadeh, Mr; Evelina London Children's Hospital

S041: ADVANTAGES OF LAPAROSCOPY IN THE SURGICAL MANAGEMENT OF COMPLEX VAGINAL ANOMALIES Alex Cuenca, Fellow¹, Lesley Breech², Deborah Morse², Belinda Hsi Dickie¹; ¹Boston Children's Hospital, ²Cincinnati Children's Hospital

S042: TRANSINGUINAL LAPAROSCOPIC EXPLORATION FOR IDENTIFICATION OF CONTRALATERAL INGUINAL HERNIAS IN PEDIATRIC PATIENTS. Gulnur Gollu, Ufuk Ates, Kutay Bahadir, Ergun Ergun, Aydin Yagmurlu, Murat Cakmak, Tanju Aktug, Huseyin Dindar, Meltem Bingol-Kologlu; Ankara University Faculty of Medicine Department of Pediatric Surgery

Complete Schedule

S043: MINIMALLY INVASIVE SURGERY AND ITS ROL IN CLOACAL RECONSTRUCTION . EXPERIENCE IN A SINGLE CENTER

Maria M Bailez, MD, Natalia Ordonez, MD, Lucila Alvarez, MD, Victor Dibenedetto, MD; Garrahan Childrens hospital

S044: A COMPARISON BETWEEN LAPAROSCOPIC AND RETROPERITONEOSCOPIC APPROACH FOR PARTIAL NEPHRECTOMY IN CHILDREN WITH DUPLEX KIDNEY. RESULTS OF A MULTICENTRIC SURVEY.

Ciro Esposito¹, Go Miyano², Paolo Caione³, Maria Escolino¹, Francois Varlet⁴, Fabio Chiarenza⁵, Giovanna Riccipetiti⁶, Alessandra Farina¹, Atsuyuki Yamataka², Mariapina Cerullo¹, Francesco Turrà¹, Dariusz Patkowski⁷, Alessandro Settimi¹, Marco Castagnetti⁸, Holger Till⁹, Jean-Stephane Valla¹⁰; ¹Federico II University of Naples, Naples, Italy, ²Juntendo University School of Medicine, Tokyo, Japan, ³Bambino Gesù Children Hospital, Rome, Italy, ⁴Hopital Nord, University Medical Center, Saint-Etienne, France, ⁵San Bortolo Hospital, Vicenza, Italy, ⁶Buzzi Children Hospital, Milan, Italy, ⁷Wroclaw Medical University, Wroclaw, Poland, ⁸University of Padua, Padua, Italy, ⁹Medical University of Graz, Graz, Austria, ¹⁰CHU Lenval, Nice, France

S045: CLINICAL EXPERIENCE OF LAPAROSCOPIC PYELOPLAST ON 466 CASES URETEROPELVIC JUNCTION OBSTRUCTION(UPJO)

Aiwu Li; Department of Pediatric Surgery, Qilu Hospital, Shandong University

4:00 pm – 4:30 pm

Break

MONARCH SUITE

4:30 pm – 5:30 pm

SCIENTIFIC SESSION: Colorectal & Hepatobiliary Minimally Invasive Surgery II

SANDRINGHAM 1

MODERATORS: Long Li, MD & Atsuyuki Yamataka, MD

S046: LAPAROSCOPIC HEPATICOJEJUNOSTOMY VS HEPATICODUODENOSTOMY FOR CHOLEDOCHAL CYST

Ravindra Ramadwar, Dr; Bombay Hospital

S047: A LONG-TERM FOLLOW-UP OF A NEW SURGERY METHOD (LAPAROSCOPE-ASSISTED HEART-SHAPED ANASTOMOSIS) FOR HIRSCHSPRUNG'S DISEASE

Chunlei Jiao, PhD, Jie xiong Feng, Professor; Department of Pediatric Surgery, Tongji hospital

S048: EARLY OUTCOMES OF ROBOTIC SURGERY FOR CHOLEDOCHAL CYST (CYST EXCISION AND ROUX EN Y HEPATICOJEJUNOSTOMY ANASTOMOSIS) WITH 39 PATIENTS

Pham D Hien¹, Nguyen T Liem², Vu M Hoan¹; ¹Central Children's Hospital, ²Vinmec International Hospital

S049: THE INCIDENCE AND MANAGEMENT OF CBD STONES IN A PEDIATRIC SERIES

Mohannad Alghammas, MD, Osama A Bawazeer, MD, Abdullah Bamajboor, MD, Salman Almalki, Nadeem Kausar Hussain, MD, Anies Mahomed, MD; King Faisal Specialist Hospital & Research Center

S050: LAPAROSCOPIC-ASSISTED DUODENAL PROCEDURE WITH EX-ANAL RECTAL TRANSECTION FOR TOTAL COLONIC AGANGLIOSIS

Shaotao Tang, Xi Zhang, Li Yang; Union Hospital, Tongji Medical College, Huazhong University of Science and Technology

S051: LAPAROSCOPIC KASAI PORTOENTEROSTOMY IN INFANTS WITH BILIARY ATRESIA: OUR PRELIMINARY OUTCOMES

Hiroo Uchida, MD, Yujiro Tanaka, MD, Takahisa Tainaka, MD, Wataru Sumida, MD, Chiyo Shirota, MD, Naruhiko Murase, MD, Kazuo Oshima, MD, Kazuki Yokota, MD, Ryo Shirotuki, MD, Kosuke Chiba, MD; Department of Pediatric Surgery, Nagoya University Graduate School of Medicine

S052: COMBINED-LAPAROSCOPIC-ENDOSCOPIC-PROCEDURES IN THE TREATMENT OF TYPE I CHOLEDOCHAL CYST IN CHILDREN

Jiangbin Liu, PhD, Zhibao Lv; Shanghai Children's Hospital

S053: APPLICATION OF DIAGNOSTIC AND THERAPEUTIC ERCP IN CHOLEDOCHAL CYST OF CHILDREN

Yeming Wu, Junqi Zhang; Shanghai Xinhua Hospital

S054: THE EFFECTIVENESS OF THE LONG TERM BIOFEEDBACK THERAPY IN THE PATIENTS WHO TREATED FROM ANORECTAL MALFORMATION AND HIRSCHSPRUNG DISEASE AND DEVELOPED FECAL INCONTINANCE

Farid Khanmammadov, Ufuk Ates, Gulnur Gollu, Murat Cakmak, Aydin Yagmurlu, Tanju Aktug, Huseyin Dindar, Meltem Bingol-Kologlu; Ankara University Faculty of Medicine Department of Pediatric Surgery

8:00 pm – Midnight

Friday Night Main Event & Dance Off! NON CME

KING SUITE

Complete Schedule

Saturday, July 22nd

8:00 am – 9:30am

SCIENTIFIC SESSION: Miscellaneous

SANDRINGHAM 1

MODERATORS: Miguel Guelfand, MD & Lena Perger, MD

S056: FETOSCOPIC SURGERY FOR AMNIOTIC BAND SYNDROME: A 10-YEAR SINGLE CENTER EXPERIENCE. Jose L Peiro, MD, PhD¹, Enrique Gil-Guevara, MD¹, Ramiro Diaz, MD¹, William J Polzin, MD¹, Timothy M Crombleholme², Aimen F Shaaban, MD¹, Foong Y Lim, MD¹; ¹Cincinnati Fetal Center. CCHMC. Cincinnati, OH. USA., ²Children's Hospital Colorado. Aurora, CO. USA.

S057: ENDOSCOPIC PILONIDAL SINUS TREATMENT IN ADOLESCENTS: A MINIMALLY INVASIVE SOLUTION. Joana Barbosa Sequeira, Ana Coelho, Ana Sofia Marinho, Fátima Carvalho, João Moreira-Pinto; Centro Hospitalar do Porto

S058: THE DIAGNOSTIC AND THERAPEUTIC ROLE OF MINIMALLY INVASIVE SURGERY IN PEDIATRIC SURGICAL ONCOLOGY: THE EXPERIENCE OF A SINGLE PEDIATRIC CANCER INSTITUTION Abdelhafeez H Abdelhafeez, John A Sandoval, Bhaskar N Rao, Stephen J Shochat, Andrew M Davidoff, Israel Fernandez-Pineda; Department of Surgery, St. Jude Children's Research Hospital, Memphis, TN, United States

S059: THE ROLE OF MINIMALLY INVASIVE SURGERY (MIS) IN NEUROBLASTIC TUMORS: A SINGLE CENTER EXPERIENCE. Claudia Filisetti, MD, Francesca Destro, Claudio Vella, Sara Costanzo, Marcello Carlucci, Giovanna Riccipetoni; Department of Pediatric Surgery- Buzzi Children's Hospital - Milan - Italy

S060: PERCUTANEOUS TRACHEOSTOMY BY GRIGGS TECHNIQUE UNDER RIGID BRONCHOSCOPIC GUIDANCE IS SAFE AND FEASIBLE IN CHILDREN. Gulnur Gollu, MD¹, Ufuk Ates¹, Ergun Ergun¹, Ozlem Selvi Can², Tanil Kendirli³, Aydin Yagmurlu¹, Murat Cakmak¹, Tanju Aktug¹, Huseyin Dindar¹, Meltem Bingol-Kologlu¹; ¹Ankara University Faculty of Medicine Department of Pediatric Surgery, ²Ankara University Faculty of Medicine Department of Pediatric Anesthesiology, ³Ankara University Faculty of Medicine Department of Pediatric Intensive Care

S061: DECREASING PAIN AND ANALGESIC REQUIREMENTS AFTER LAPAROSCOPIC HERNIA REPAIR IN CHILDREN Eilidh Bruce, Merrill McHoney, PhD; Royal Hospital for Sick Children

S062: ALGORITHM OF LAPAROSCOPIC TECHNIQUE IN PEDIATRIC INGUINAL HERNIA: RESULTS FROM EXPERIENCE OF TEN YEARS Sherif M Shehata, MCh, CST, MD, PhD, Mohamed A Attia, MD, Ashraf A El Attar, MD, MRCS, Akram M ElBataany, MD, MRCS, Mohamed M Shalaby, MD; Section of Pediatric Surgery, Faculty of Medicine, Tanta University, Tanta, Egypt

S063: FETOSCOPIC LASER ABLATION FOR FETAL TRACHEAL PERMEABILIZATION IN CONGENITAL HIGH AIRWAY OBSTRUCTION SYNDROME (CHAOS): A NOVEL APPROACH. Jose L Peiro, MD, PhD, Amir Alhajjat, MD, Ramiro Diaz, MD, Enrique Gil-Guevara, MD, Sammy M Tabbah, MD, Aimen F Shaaban, MD, Foong Y Lim, MD; Cincinnati Fetal Center. CCHMC. Cincinnati, OH. USA.

S064: SCROTAL/TESTICULAR STATUS AFTER REPAIR OF RECENT SEVERE INCARCERATED INGUINAL HERNIA IN MALE INFANTS LESS THAN 12 MONTHS OLD. LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE VERSUS CONVENTIONAL OPEN REPAIR. Go Miyano, MD, Hiroki Nakamura, MD, Katsunori Tabata, MD, Soichi Shibuya, MD, Takanori Ochi, MD, Hiroshi Murakami, MD, Manabu Okawada, MD, Takashi Doi, MD, Hiroyuki Koga, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD; Juntendo University School of Medicine

S065: COMPARISON OF OPERATIVE PROCEDURE FOR INGUINAL HERNIA IN INFANTS YOUNGER THAN 3 MONTHS: CONVENTIONAL OPEN APPROACH VERSUS LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE. Soichi Shibuya, MD, PhD¹, Yoshie Toba, MD, PhD², Eiji Miyazaki, MD, PhD³; ¹Department of Pediatric General and Urogenital Surgery, Juntendo University Hospital, ²Department of Anesthesiology, Seirei Hamamatsu General Hospital, ³Department of Pediatric Surgery, Seirei Hamamatsu General Hospital

S066: FETOSCOPIC SURGERY OF NEURAL TUBE DEFECTS: EVOLUTION IN TECHNIQUES Carlos Giné¹, Silvia Arévalo¹, Anna Maroto¹, Nerea Maíz¹, José Andrés Molino¹, Carlota Rodó¹, Elida Vázquez¹, Ampar Cuxart¹, César G Fontecha¹, Susana Manrique¹, Antonia Poca¹, Manuel López¹, José L Peiró², Elena Carreras¹; ¹Hospital Univeritari Vall d'Hebron. Barcelona, ²Cincinnati Children's Hospital Medical Center

S067: ENDOSCOPIC CAUTERIZATION WITH PNEUMATIC DISTENSION FOR PIRIFORM FOSSA SINUS TRACTS. María Elena Carazo Palacios¹, Ignacio Miró Rubio¹, Georgina Sanchís Blanco², Carlos Gutiérrez SanRomán¹, Vicente Ibáñez Pradas¹, José Enrique Barrios¹, Juan José Vila Carbó¹; ¹Hospital La Fe, Valencia, Spain, ²Hospital universitario Son Espases Mallorca, Spain

Complete Schedule

S068: THE PITFALLS OF LAPAROSCOPIC EXTRAPERITONEAL CLOSURE IN RELATION TO METACHRONOUS CONTRALATERAL INGUINAL HERNIA Takahiro Jimbo, MD, PhD¹, Hori Tetsuo, MD, PhD¹, Aya Ushiyama, MD¹, Kouji Masumoto, MD, PhD²; ¹Tsuchiura Kyodo General Hospital, Jpn, ²Department of Pediatric Surgery, University of Tsukuba Hospital

S069: LAPAROSCOPIC OOPHORECTOMY FOR OVARIAN TISSUE CRYOPRESERVATION IN PREPUBERTAL AND YOUNG ADOLESCENT FEMALES: A REVIEW OF SURGICAL OUTCOMES Kristine Corkum, MD, Erin Rowell, MD; Ann & Robert H. Lurie Children's Hospital of Chicago

S070: CURRENT PRACTICES IN THE MANAGEMENT OF CONGENITAL DIAPHRAGMATIC HERNIA (CDH) PATIENTS REQUIRING EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO): RESULTS OF AN INTERNATIONAL SURVEY OF PEDIATRIC SURGEONS Sophia Abdulhai, MD, Ian C Glenn, MD, Todd A Ponsky, MD, Avraham Schlager, MD; Akron Children's Hospital

S071: MINIMALLY INVASIVE SURGERY REPAIR FOR CONGENITAL DIAPHRAGMATIC HERNIA USING A NOVEL TWO-HOOKED CORE HERNIA APPARATUS IN NEONATES AND INFANTS Suolin Li, MD, Xuelai Liu, Na Geng, Yongting Zhang; The Second Hospital of Hebei Medical University

9:30 am – 10:15 am	General Assembly NON CME COMMITTEE UPDATES: • CME • Program • Development • Research • Education • Information Technology • JLAST Pediatric Editorial Board • Membership • Latin American Chapter • Middle East Chapter • President – Presentation of IPEG's 2018 President	SANDRINGHAM 1
10:15 am – 10:30 am	IPEG Awards NON CME • Coolest Tricks • Basic Science/Innovation • IRCAD • 2016 Research Winner Update – Ioan Sarbu, MD • Research	SANDRINGHAM 1
10:30 am – 11:00 am	EVIDENCE BASED SURGERY: Hypertrophic Pyloric Stenosis CHAIR: Dafydd Davies, MD PRESENTERS: Giuseppe Retrosi, MD; Drew Rideout, MD; J. Duncan Phillips, MD; Karen Diefenbach, MD DESCRIPTION: This session aims to present the accumulated evidence regarding the management of infantile hypertrophic pyloric stenosis. Several controversies exist including: is minimal access surgery safer, faster and/or less costly than conventional approaches; is medical management effective and/or efficient; does open surgery remain the gold standard in the management of pyloric stenosis and if not, what is required to gain competency in the minimal access approach? These controversies will be discussed and the data will be presented focusing the the levels of evidence and graded recommendations. This session is relevant to all levels of clinicians involved in the management of hypertrophic pyloric stenosis. OBJECTIVES • Identify levels of evidence for management of hypertrophic pyloric stenosis. • Appraise the published evidence and apply levels of evidence. • Describe the evidence on risks, benefits and alternatives to conventional open pyloromyotomy.	SANDRINGHAM 1

Complete Schedule

11:00 am – 12:00 pm	VIDEO SESSION WITH EXPERT PANEL DISCUSSION: “My Worst Nightmare” The Management of Unexpected Complications and Strategies for Future Avoidance CHAIRS: Samir Pandya, MD & Mike Chen, MD DESCRIPTION: This session consists of video presentations of complications encountered in advanced MIS and a discussion of how the presenters managed them. Experienced MIS surgeons from different institutions around the world are asked to discuss their experiences and approach to these complications. This session is appropriate for pediatric surgeons who perform MIS OBJECTIVES • Plan strategies to manage complications encountered during advanced pediatric MIS. • Recognize situations where complications may occur in advanced pediatric MIS. • Identify techniques to manage complications encountered during advanced pediatric MIS.	SANDRINGHAM 1
12:00 pm	Closing Remarks SPEAKER: David van der Zee, MD	SANDRINGHAM 1

**Join us in Seattle for IPEG’s 27th Annual Congress
for Endosurgery in Children**

April 11–14, 2018 | Seattle, Washington USA | W SEATTLE

SAVE THE DATE!

QUICKSHOTS Schedule

NEW THIS
YEAR!

QUICKSHOT CONCURRENT PRESENTATIONS WILL TAKE PLACE IN MEETING ROOMS 1-6

Friday, July 21st

7:30 am – 8:20am

QUICKSHOTS 1 NON CME

MODERATORS: Duncan Phillips, MD

QS001: TO STUDY THE RESULTS OF LAPAROSCOPIC PANCREATICOJEJUNOSTOMY USING CYSTOSCOPE AND ENDOSCOPIC BASKET FOR CLEARANCE OF STONE IN BOTH HEAD AND THE TAIL REGION IN PAEDIATRIC POPULATION Manash R Sahoo, MS, SCB Medical College, Associate Professor, Department of Surgery, Odisha, India

QS002: LAPAROSCOPIC EXCISION OF AND OBSTRUCTING SOAVE CUFF IN HIRSCHSPRUNG'S DISEASE Kena Vyas, BA, Kaveer Chatoorgoon, MD; Saint Louis University

QS003: NOVEL APPLICATION OF PORCINE EXTRACELLULAR MATRIX IN RECURRENT STRICTURE AFTER REPAIR OF TRACHEO-ESOPHAGEAL FISTULA Sarah B Cairo, MD, MPH, Benjamin Tabak, MD, Kathryn Bass, MD; Women and Children's Hospital of Buffalo

QS004: NO HEMORRHAGE AND ULTRA-FINE DISSECTION OF LAPAROSCOPIC ANORECTOPLASTY FOR RECTO-BULBAR URETHRAL FISTULA USING 4K IMAGE AND 3.5MM BIPOLAR SCISSORS. Satoshi Ierii, MD, PhD, FACS¹, Makoto Hayashida, MD, PhD², Kouji Yamada, MD¹, Takafumi Kawano, MD¹, Kazuhiko Nakame, MD¹, Motoi Mukai¹, Tatsuru Kaji¹; ¹Department of Pediatric Surgery, Kagoshima University, ²Department of Pediatric Surgery, Miyazaki Prefectural Hospital

QS005: NEW COMBINED ENDOSCOPIC AND TRANSANAL APPROACH IN RECTAL ATRESIA. María Elena Carazo Palacios, Ignacio Miró Rubio, Carlos Gutiérrez Sanromán, José Enrique Barrios, Rosa Fonseca, Juan José Vila Carbó; Hospital La Fe, Valencia, Spain

QS006: SINGLE-STAGE REDUCED PORT LAPAROSCOPIC-ASSISTED TRANSANAL PULL-THROUGH WITHOUT LEAVING BEHIND A MUSCULAR CUFF FOR HIRSCHSPRUNG DISEASE Kazuki Yokota, MD, Hiroo Uchida, MD, PhD, Yujiro Tanaka, MD, PhD, Takahisa Tainaka, MD, PhD, Wataru Sumida, MD, PhD, Chiyo Shirota, MD, PhD, Naruhiko Murase, MD, PhD, Kazuo Oshima, MD, Ryo Shiotsuki, MD, Kosuke Chiba, MD; Department of Pediatric Surgery, Nagoya University Graduate School of Medicine

QS007: A SINGLE SURGEON LAPAROSCOPIC DUODENODUODENOSTOMY CASE SERIES FOR CONGENITAL DUODENAL OBSTRUCTION IN AN ACADEMIC SETTING Arturo Estrada, MD, Anne Kulungowski, MD, Stig Somme; Children's Hospital Colorado – University of Colorado

QS008: EFFECT OF LAPAROSCOPIC GASTROSTOMY ON APPEARANCE OF GASTROESOPHAGEAL REFLUX – RESULTS OF EXPERIMENTAL STUDY Yury Kozlov, MD¹, Polina Baradieva¹, Konstantin Kovalkov², Vladimir Novozhilov, MD¹, Oksana Hryachkova³, Evgeniya Polukonova², Lyudmila Malikova², Alexander Seliverstov², Marat Ilyasov², Nikita Shabaldin⁴, David Chubko⁵; ¹Pediatric Hospital Irkutsk, ²Kemerovo Clinical Pediatric Hospital, ³Kemerovo Research Institute for Complex Issues of Cardiovascular Diseases, ⁴Kemerovo State Medical Academy, ⁵Krasnoyarsk Regional Pediatric Hospital

QS010: INAPPROPRIATE USE OF PROPHYLACTIC ANTIBIOTICS FOR PYLOROMYOTOMY AMONG CHILDREN'S HOSPITALS Kibleri Williams¹, Timothy Lautz², Richard J Hendrickson³, Tolulope Oyetunji²; ¹Northwestern University, ²Ann & Robert H Lurie Children's Hospital of Chicago, ³Children's Mercy Hospital, University of Missouri Kansas City

QS011: LAPAROSCOPIC VERSUS LAPAROSCOPIC-ASSISTED EXCISION OF MECKEL'S DIVERTICULUM IN CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS Vincenzo D Catania¹, Giuseppe Lauriti², Elke Zani-Ruttenstock¹, Lina Antounians¹, Pierluigi Lelli Chiesa², Agostino Pierro¹, Augusto Zani¹; ¹The Hospital for Sick Children, ²Spirito Santo Hospital, Pescara

QS012: MAGNETIC COMPRESSION ANASTOMOSIS (MAGNAMOSIS) FOR FUNCTIONAL UNDIVERSION OF ILEOSTOMY IN PEDIATRIC PATIENTS. Luzia Toselli, MD¹, Claire Graves, MD², Marcelo Martinez-Ferro, MD¹, Guillermo Cervio, MD³, Dillon A Kwiat², Jill Imamura-Ching², Michael R Harrison, MD²; ¹Fundacion Hospitalaria, Private Children's Hospital, Buenos Aires, Argentina, ²University of California, San Francisco, ³Hospital de Pediatría S.A.M.I.C. Prof. Dr. Juan P. Garrahan

QUICKSHOTS Schedule

8:20 am – 9:10am

QUICKSHOTS 2 NON CME

MODERATOR: Salvatore Fabio Chiarenza, MD & Mahmoud El Fiky, MD

QS014: TRANSABDOMINAL VERSUS SUBCUTICULAR SUTURES TO SECURE A LAPAROSCOPIC GASTROSTOMY [Ashwini S Poola, MD](#), Katrina L Weaver, MD, Richard Sola, MD, Shiva Reddy, Angela Mundakkal, Fedra Fallahian, Harmeet Bawa, Rebecca M Rentea, Shawn D St.Peter, MD; Children's Mercy Hospital – University Of Missouri Kansas City

QS015: LAPAROSCOPIC EXCISION OF A CONGENITAL SPLENIC CYST IN AN ADOLESCENT FEMALE [Sarah B Cairo, MD, MPH](#), Benjamin Tabak, MD, David H Rothstein, MD, MS; Women and Children's Hospital of Buffalo

QS016: LAPAROSCOPY FOR ABDOMINAL SURGICAL CONDITIONS IN PREMATURE BABIES: ARE WE DOING GOOD? [P Clermidi, MD](#), F Bastard, MD, S Soudée, MD, C Farnoux, MD, V Biran, MD, PhD, M Bellon, MD, A Bonnard, MD, PhD; Robert Debre Children University Hospital

QS017: LAPAROSCOPIC EXAMINATION FOR NECROTIZING ENTEROCOLITIS [Weiwei Jiang, MD](#); Nanjing Children's Hospital Affiliated to Nanjing Medical University

QS018: EFFICACY OF METICULOUS INVESTIGATION MANEUVER FOR DISCOVERING CONTRALATERAL PATENT PROCESSUS VAGINALIS ON PREVENTING METACHRONOUS CONTRALATERAL INGUINAL HERNIA IN CHILDREN [Tae Ah Kim, MD](#), [Soo Min Ahn, MD](#); Hallym University Hospital

QS019: LAPAROSCOPIC NISSEN FUNDOPLICATION FOR GASTRO-ESOPHAGEAL REFLUX DISEASE WITH CONCOMITANT PERCUTANEOUS ENDOSCOPIC GASTROSTOMY TUBE INSERTION...FAILED! [P Clermidi, MD](#), A Mariani, MD, L Montalva, MD, Co Muller, MD, J Viala, MD, PhD, A Mosca, J Hilly, MD, E Gayat, A Bonnard, MD, PhD; Robert Debre Children University Hospital

QS020: LAPAROSCOPIC RESECTION OF PANCREATIC TUMORS IN CHILDREN: RESULTS OF A MULTICENTRIC SURVEY [Ciro Esposito, Prof¹](#), [Pascal De Lagausie²](#), [Maria Escolino¹](#), [Amulya Saxena, Prof³](#), [Francesco Turrà¹](#), [Mariapina Cerulo¹](#), [Alessandra Farina¹](#), [George W. Holcomb 3rd, Prof⁴](#), [Alessandro Settini, Prof¹](#), [Francois Becmeur, Prof⁵](#), [David van der Zee, Prof⁶](#); ¹University of Naples Federico II, ²Hôpital d'Enfants de La Timone, Marseille, France, ³Chelsea Children Hospital, London, UK, ⁴Children's Mercy Hospital, Kansas City, Missouri, USA, ⁵Hôpitaux Universitaires de Strasbourg, Strasbourg, France, ⁶Wilhelmina Children's Hospital, University Medical Centre, Utrecht, The Netherlands

QS021: SINGLE-PORT APPENDICECTOMIES: HOW OFTEN IS CONVERSION TO AN OPEN PROCEDURE NECESSARY – WHY AND HOW WE DID IT [Rebecca A Pohle, MD](#), Tobias Klein, MD, Thomas M Boemers, PhD; Children's Hospital of Cologne

QS022: LAPAROSCOPIC RESECTION OF A CONGENITAL PANCREATIC CYST [Caitlin A Fitzgerald, MD](#), [Sarah J Hill, MD](#), [Katherine J Baxter, MD, MS](#), [Matthew T Santore, MD](#); Emory University

QS023: FACTORS AFFECTING NON-OPERATIVE MANAGEMENT OF UNCOMPLICATED APPENDICITIS IN CHILDREN. SHOULD LAPAROSCOPIC APPENDECTOMY BE IMMEDIATE, INTERVAL, OR EMERGENCY? [Go Miyano, MD](#), Takanori Ochi, MD, Shogo Seo, MD, Hiroki Nakamura, MD, Manabu Okawada, MD, Takashi Doi, MD, Hiroyuki Koga, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD; Juntendo University School of Medicine

QS024: GASTROJEJUNOSTOMY FEEDING DEPENDENCE FOLLOWING PEDIATRIC FUNDOPLICATION [Ashwini S Poola, MD](#), Katrina L Weaver, MD, Rebecca M Rentea, MD, Shawn D St.Peter, MD; Children's Mercy Hospital – University Of Missouri Kansas City

QS025: ABDOMINAL EXPLORATION IN NEONATES USING TRANS-UMBILICAL EXPOSURE COMPARED TO TRANSVERSE LAPAROTOMIES [Hanna Alemayehu, MD](#), Richard Sola, MD, Shawn St. Peter, MD; Children's Mercy Hospital

QS026: EXPERIMENTAL STUDIES AND CLINICAL APPLICATION OF SINGLE-SITE LAPAROSCOPIC ONE-LAYER FULL-THICKNESS DUODENODUODENOSTOMY IN CHILDREN WITH CONGENIAL DUODENAL OBSTRUCTION [Xuelai Liu, PhD](#), Suolin Li, MD; The Second Hospital of Hebei Medical University

QS027: CONVERSION FROM ADOLESCENT LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING TO SLEEVE GASTRECTOMY [Jeffrey L Zitsman](#), Abraham Krikhely, MD, Aaron Roth, MD, Marc Bessler, MD; New York Presbyterian

QS028: NEONATAL OPERATING ROOM TABLE [Michael U Mallicote, MD](#), [Cathy E Shin, MD](#); Children's Hospital Los Angeles

QUICKSHOTS Schedule

9:10 am – 10:00am

QUICKSHOTS 3 NON CME

MODERATOR: Ali Raza Brohi, MD & Mike Chen, MD

QS029: INITIAL LEARNING CURVE IN ROBOTIC FUNDOPLICATION VERSUS LAPAROSCOPIC APPROACH. A SINGLE CENTER STUDY COMPARING PERFORMANCE AND COMPLICATIONS BY CLAVIEN DINDO. Carlos Leganés, Carlos Giné, Ana Laín, Laura García, Javier Güizzo, Eduardo Pérez, Manuel López; Hospital Universitari Vall d'Hebron

QS030: LAPAROSCOPIC VERSUS OPEN PROCEDURE FOR CONGENITAL DUODENAL ATRESIA AND STENOSIS (CDAS) REPAIR IN CHILDREN Tri T Tran, MD; Children Hospital No2

QS031: A SIMPLE TECHNIQUE FOR THE MANAGEMENT OF REFRACTORY GASTROSTOMY SITE COMPLICATIONS Rebecca M Rentea, MD, Ashwini S Poola, MD, Charles L Snyder, MD; Childrens Mercy Hospital

QS032: EFFECTIVE ENDOSCOPIC MAGNET RETRIEVAL IN CHILDREN Joanne Baerg, MD, Arul Thirumoorthi, MD, Rajaie Hazboun, MD; Loma Linda University Children's Hospital

QS033: THE EXPERIENCE OF THORACOSCOPIC TREATMENT FOR CHILDREN WITH CONGENITAL ESOPHAGEAL STENOSIS Li Xu, Ming Anxiao, Dong Ning, Chen Zhen; The capital institute of pediatrics

QS034: FEASIBILITY AND SHORT-TERM RESULTS OF ROBOTIC AND LAPAROSCOPIC TOTAL OESOPHAGO-GASTRIC DISSOCIATION. Girolamo Mattioli, Professor, Michela Cing Yu Wong, MD, Arrigo Barabino, MD; Giannina Gaslini Children's Hospital

QS035: INTRAOPERATIVE BIOPSY OF LAPAROSCOPIC PARTIAL PANCREATCTOMY FOR INFANTS WITH PERSISTENT HYPERIN-SULINEMIC HYPOGLYCEMIA Kuiran Dong, PhD, Baihui Liu, Yi Zhang, Wei Yao; Children's Hospital of Fudan University

QS036: APPROACH TO AN INCIDENTALLY-DISCOVERED ESOPHAGEAL DUPLICATION CYST DURING ROBOTIC-ASSISTED NISSEN FUNDOPLICATION Victoria K Pepper, MD, Dominic Papandria, MD, Astrid R Soares-Medina, MD, Karen A Diefenbach, MD, Marc Michalsky, MD; Nationwide Children's Hospital

QS037: COMPARATIVE OUTCOMES IN LAPAROSCOPIC PYLOROMYOTOMY TECHNIQUES Maja Raicevic, MD¹, Amulya K Saxena, MD, PhD, Dschon, FRCS, Glasg²; ¹Clinic for Pediatric Surgery and Orthopedic, Clinical Center Nis, Serbia, ²Chelsea Children's Hospital Chelsea and Westminster Hospital NHS Foundation Trust Imperial College London

QS038: EFFECTIVENESS OF CONTINUOUS SUTURE IN ESOPHAGOSHOPHAGOSTOMY FOR THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA WITH TRACHEOESOPHAGEAL FISTULA. Yusuke Yamane, Kurumi Mori, Toshio Shiraishi, Takuya Yoshida, Yasuaki Taura, Taiichiro Kosaka, Mitsuhisa Takatsuki, Susumu Eguchi, Takeshi Nagayasu, Masayuki Obatake; Department of pediatric surgery, Nagasaki university hospital

QS039: EVALUATING POSTOPERATIVE FEEDING REGIMENS AFTER LAPAROSCOPIC GASTROSTOMY PLACEMENT Eric H Ros-enfeld, MD, Yangyang Yu, MD, Timothy C Lee, MD, Bindi J Naik-Mathuria, MD, Mark V Mazziotti, MD, Monica E Lopez, MD, Sohail R Shah, MD, MSHA; Texas Childrens Hospital and Baylor College of Medicine

QS040: LAPAROSCOPIC CARDIOMYOTOMY IN CHILDREN WITH ACHALASIA Zorikto Mitupov, MD, Assistant Professor¹, Alexander Razumovsky, MD, Professor¹, Abdumanap Alkhasov, MD¹, David Chubko², Nikita Stepanenko, MD¹, Andrey Petrov¹; ¹Filatov Children Hospital, ²Regional Clinical Center

QS041: DEVELOPMENT AND IN VIVO TESTING OF LAPAROSCOPIC TOOLS FOR ENDOLUMINAL DELIVERY OF MAGNETIC ANASTOMOTIC RINGS Claire E Graves, MD, Catherine Co, MD, Philip Fullante, MD, Dillon Kwiat, Derek Smith, Brandon Gaston, Michaela W Merrill, Richard Fechter, Michael R Harrison, MD; University of California, San Francisco

QS042: DUODENAL STRICTURE AFTER PANCREATITIS TREATED WITH LAPAROSCOPIC DUODENODUODENOSTOMY Bethany J Slater, MD, Steven S Rothenberg, MD; Rocky Mountain Hospital for Children

QS043: LAPAROSCOPIC APPROACH TO INTA-ABDOMINAL LYMPHANGIOMAS Yuri Sokolov, PhD¹, Anatole Kotlovsky, PhD², Dmitri Donskoy, PhD¹, Dmitri Pykhiteev, MD³, Elizaveta Bibikova, MD¹, Anatole Kotlovsky, PhD², Yuri Sokolov, PhD¹; ¹St Vladimir Children's Hospital, ²St Luka's Clinical-Research Center for Children, Moscow, Russia, ³Central Children's Hospital named after Z.A. Bashlaeva

QS044: LAPAROSCOPIC REPAIR OF PERFORATED PEPTIC ULCER IN CHILDREN O Gil, MD, J Valero, MD, A Holguín, MD, P Jaimes, MD, I Molina, MD; Fundación Hospital de la Misericordia

QS045: A COOPERATIVE STUDY COLOMBIA-MEXICO ON THE MEASUREMENT OF THE GAP IN ESOPHAGEAL ATRESIA - A GUIDE TO ESTABLISH THE TREATMENT Carlos Garcia Hernandez, MD¹, Cristobal Abello-Munarriz, MD², Lourdes Carvajal-Figueroa, MD¹, Ricardo Cure-Dau, MD²; ¹Hospital Infantil Privado, ²Organización Clínica General del Norte Colombia

QUICKSHOTS Schedule

1:30 pm – 2:15pm

QUICKSHOTS 4 NON CME

MODERATOR: Bethany Slater, MD

QS046: LAPAROSCOPIC RESECTION OF AN ENTERIC DUPLICATION CYST IN A CHILD [Hanna Alemayehu, MD](#), Richard J Hendrickson, MD; Children's Mercy Hospital

QS047: SUCCESSFUL TREATMENT OF LAPAROSCOPIC LATERAL SEGMENTECTOMY FOR INTRA-HEPATIC PORT-SYSTEMIC SHUNT TRANSECTION IN AN INFANTILE CASE [Kouji Yamada, MD](#), Takafumi Kawano, MD, Tomoe Moriguchi, MD, Koushiro Sugita, MD, Ryuta Masuya, MD, Seirou Machigashira, MD, Shun Onishi, MD, Waka Yamada, MD, Kazuhiko Nakame, MD, Motoi Mukai, MD, PhD, Tatsuru Kaji, MD, PhD, Satoshi Ieiri, MD, PhD, FACS; Department of Pediatric Surgery, Kagoshima University

QS048: PREVENTION OF COMPLICATIONS IN CHOLEDOCHOCYST TREATMENT BY LAPROSCOPIC OPERATION [Zhaozhu Li, MD](#), Qingbo Cui, Bo Xu, Zenan Zhang; Department of Pediatric Surgery, the 2nd Affiliated Hospital of Harbin Medical University

QS049: THE USE OF NEUROENDOSCOPIC LAVAGE IN NEONATES [Viktor Petracke, PhD](#), Andrey Prityko, PhD, Boris Semernitzky, PhD, Ruslan Asadov, PhD, Denis Kovalev, PhD; St Luka's Clinical-Research Center of Medical Care for Children, Moscow

QS050: PUBLIC PERCEPTION OF TELEMEDICINE AND SURGICAL TELEMENTORING IN THE PEDIATRIC POPULATION [Sophia Abdulhai, MD](#), Dominic Craner, Edwin Chou, Ian C Glenn, MD, Todd A Ponsky, MD; Akron Children's Hospital

QS051: LAPAROSCOPIC PROCEDURE IN CELIAC ARTERY COMPRESSION SYNDROME IN CHILDREN [Zorikto Mitupov, MD](#), Assistant Professor¹, Alexander Razumovsky, MD, Professor¹, Abdumanap Alkhasov, MD¹, Said-Hassan Bataev, MD², Nikita Stepanenko, MD¹, Anatoly Pavlov, MD³, Roman Ignatiev, MD⁴; ¹Filatov Children Hospital, ²Pirogov Russian National Research Medical University, ³Republic Children Hospital, ⁴European Medical Center

QS052: LAPAROSCOPIC LOW PROFILE BALLOON BUTTON APPENDICOSTOMY FOR ANTEGRADE ENEMAS [David Grabski, MD](#), Yinin Hu, MD, Sara Rasmussen, MD, PHD, Eugene McGahren, MD, Jeffery Gander, MD; University of Virginia

QS053: LAPAROSCOPIC ABDOMINAL LIGATION OF THORACIC DUCT Rebecca M Rentea, MD, [Ashwini S Poola, MD](#), Walter S Andrews, MD; Children's Mercy Hospital

QS054: IN PURSUIT OF THE MOST COST EFFECTIVE LAPAROSCOPIC APPENDECTOMY: THE EFFECT OF DISPOSABLES ON OPERATIVE TIME AND SURGEON-CONTROLLABLE OPERATIVE COST [Emily E Abbott, DQ](#)¹, Jonathan Chan², Nathan M Novotny, MD, FACS³; ¹Beaumont Health, Royal Oak, MI, USA, ²Oakland University William Beaumont School of Medicine, Rochester, MI, USA, ³Beaumont Health, Royal Oak, MI, USA and Jordan University of Science and Technology, Irbid, Jordan

QS055: LAPAROSCOPIC APPROACH FOR A SACROCOCCYGEAL TERATOMA IN A NEWBORN WITH PRENATAL DIAGNOSIS. CASE REPORT. [Tomas Ferraris, MD](#), Gaston Elmo, Daniel Liberto, MD, Francisco de Badiola, MD, Juan Moldes, MD, Pablo Lobos, MD; Hospital Italiano de Buenos Aires

QS056: LAPAROSCOPIC RESECTION OF EXTRA-ADRENAL PARASPINAL PHEOCHROMOCYTOMA Rebecca M Rentea, MD, [Ashwini S Poola, MD](#), Walter S Andrews, MD; Children's Mercy Hospital

QS057: MODIFICATIONS TO EXPOSE PORTA HEPATIS AND MAKE THE LAPAROSCOPIC PORTOENTEROSTOMY EASIER IN THE TREATMENT OF BILIARY ATRESIA [Bing Li](#)¹, Lin S Xia¹, Bing W Chen¹, Nian F Zgang¹, Bo Y Wang²; ¹Huai'an Women and Children's Hospital, ²Department of General surgery, Huai'an First People's Hospital, Nanjing Medical University, 6 Beijing Road West, Huai'an, Jiangsu 223300, P. R. China

QS058: A NOVEL TECHNIQUE FOR SAFE LAPAROSCOPIC SUBTOTAL SPLENECTOMY IN CHILDREN WITH HEREDITARY SPHEROCYTOSIS [Jeffrey Lukish, MD](#), Daniel Levin, MD, Mark Kovler, MD; Johns Hopkins University, Baltimore, Maryland, USA

QUICKSHOTS Schedule

2:15 pm – 3:00pm

QUICKSHOTS 5 NON CME

MODERATOR: Drew Rideout, MD

QS059: A VALIDATION STUDY FOR A NOVEL LAPAROSCOPIC INGUINAL AND DIAPHRAGMATIC DEFECT (LIDD) MODEL. Damir Ljuhar, MBBSHons, BBioMedHons, MPHTM, DipAna, Sam Alexander, Sarah Martin, Ramesh M Nataraja, MBBS, BScHons, GCCSHD, FRCSEdPaeds; Monash Children's Hospital

QS060: ROLE OF SINGLE-SITE UMBILICAL LAPAROSCOPY IN THE TREATMENT FOR INGUINAL INCARCERATED HERNIA IN CHILDREN Li Gui Bin; The 5th central Hospital of Tianjin

QS061: ENGINEERING MEETS MEDICINE: AN INTER-UNIVERSITY STUDENT PROJECT TO DEVELOP AFFORDABLE ENDOSURGICAL EQUIPMENT FOR DEVELOPING COUNTRIES Oliver J Muensterer, MD, PhD¹, Claudius D Ries, MD¹, Susann Schweiger, MD, PhD¹, Marja Ahola, MSc², Samuel Schabel, PhD²; ¹University Medicine Mainz, Germany, ²Technical University Darmstadt

QS062: ADVANCED INTUSSUSCEPTION SIMULATOR FOR THE INTRODUCTION OF NOVEL TECHNOLOGY IN A RESOURCE LIMITED COUNTRY. Ramesh M Nataraja, MBBS, BSc, GCCS, FRCSEd¹, Stephanie Khoo, MBBS¹, Nathalie Webb, MB, BS, Hons, FRACS, Urol¹, Yin Mar Oo², Damir Ljuhar, MBBS, BBioMed, MPHTM, DipA¹, Nyo Nyo Win, MBBS, MMedSc, DrMedSc³, Aye Aye, MBBS, MMedSc, FRCSEd, DrMedSc, DipMedEd², Chris Kimber, MBBS, FRACS, FRCS, FAICD¹; ¹Monash Children's Hospital, ²Yangon Children's Hospital, ³Yankin Children's Hospital

QS063: TRANSANAL ENDOSCOPIC MICRO SURGERY (TEMS): THE WAY TO GO WITH SESSILE ENDORECTAL TUMORS. Fernando P Rabinovich, MD, Horacio Bignon, Carolina Millan, Soledad Valverde, Luzia Toselli, Gaston Bellia Munzon, Marcelo Martinez Ferro; Fundacion Hospitalaria Private's Children Hospital

QS064: POSTOPERATIVE RESOURCE UTILIZATION AFTER MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUM Yangyang R Yu, MD¹, Richard Sola Jr, MD², Tyler C Friske¹, Abdur R Jamal¹, Eric H Rosenfeld, MD¹, Mark V Mazziotti, MD¹, Shawn D St. Peter, MD², Sohail R Shah, MD, MSHA¹; ¹Texas Children's Hospital / Baylor College of Medicine, ²Children's Mercy Hospital

QS065: VALIDATION OF A PERFUSED SIMULATION-BASED TRAINING MODEL TO ACQUIRE COMPETENCIES IN ARTERIAL ANASTOMOSIS. P. Achurra¹, A. Torres¹, R. Tejos¹, R. Avila¹, R. Rebolledo¹, M. Sanhueza², N. Jarufe¹, J. Varas¹; ¹Pontificia Universidad Católica de Chile, ²Hospital Dr. Sótero del Río

QS066: SINGLE SITE LAPAROSCOPIC NISSEN FUNDOPLICATION FOR HIATAL HERNIA IN CHILDREN: TWO-CENTER-STUDY IN CHINA. Jiangbin Liu, PhD, Zhibao Lv, PhD; Shanghai Children's Hospital

QS067: LAPAROSCOPIC DIAGNOSIS OF THE ELUSIVE PEDIATRIC FEMORAL HERNIA Veronica F Sullins, MD, John J Aiken, MD, John C Densmore, MD; Medical College of Wisconsin

QS068: SINGLE INCISION LAPAROSCOPIC BILATERAL NEPHRECTOMY Margaret M McGuire, MD, Cristen N Litz, Paul D Danielson, MD, Nicole M Chandler, MD; Johns Hopkins All Children's Hospital

QS069: TOPICAL ANTIBIOTIC POWDER REDUCES THE RATE OF SURGICAL SITE INFECTIONS FOLLOWING SINGLE-INCISION LAPAROSCOPIC APPENDECTOMY FOR ACUTE APPENDICITIS IN CHILDREN Cristen N Litz, MD, Sandra Farach, MD, Gerry Tuite, MD, Paul D Danielson, Nicole M Chandler; Johns Hopkins All Children's Hospital

QS070: SINGLE INCISION LAPAROSCOPIC APPENDECTOMY VERSUS CONVENTIONAL LAPAROSCOPIC APPENDECTOMY IN CHILDREN: A RETROSPECTIVE STUDY Ryan Bly¹, Michael Leinwand, MD²; ¹Western Michigan School of Medicine, ²Bronson Children's Hospital

QS071: A DECADE OF SINGLE INCISION LAPAROSCOPY IN PEDIATRIC SURGERY TRAINING Ilan I Maizlin, MD, Stewart Carter, MD, Scott A Anderson, MD, Vincent E Mortellaro, MD, Mike K Chen, MD; Children's Hospital of Alabama, University of Alabama at Birmingham

QS072: PERORAL ENDOSCOPIC MYOTOMY (POEM) WITH ENDOFLIP AND DOUBLE-ENDOSCOPE: NOVEL TECHNIQUE FOR ACHALASIA IN PAEDIATRIC POPULATION Fanny Yeung, Dr, Patrick Ho Yu Chung, Dr, Kenneth Kak Yuen Wong, Dr, Paul Kwong Hang Tam, Professor; Queen Mary Hospital, Hong Kong

QS073: FIFTEEN YEARS' EXPERIENCE WITH LAPAROSCOPIC INGUINAL HERNIA REPAIR IN INFANTS AND CHILDREN Rafik Shalaby¹, Adham Al-Saied², Mohamad Abdel-Razek, MD¹, Maged Ismaiel¹, Mohamad Mahfouz, MD¹, Mohamad Maged¹; ¹Al-Azhar University, Cairo, Egypt, ²Mansoura University, Mansoura, Egypt

QUICKSHOTS Schedule

3:00 pm – 3:45 pm

QUICKSHOTS 6 NON CME

MODERATOR: Ram Nataraja, MD & Shabnam Parkar, MD

QS074: HYDROSURGERY FOR THORACOSCOPIC DEBRIDEMENT OF PLEURAL CAVITY IN CHILDREN WITH FIBRINOTHORAX. Said-khassan Bataev, Prof¹, Vladimir Rozinov, Prof¹, Nodar Zurbaev, Prof¹, Roman Ignatiev, Prof¹, Murat Afaunov, Dr¹, Alexandr Fedorov, Dr¹, Ruslan Molotov, Dr¹, Zoricto Mitupov, Prof¹, Svetlana Karpovich, Dr², Svetlana Smirnova, Dr²; ¹Russian state medical university, ²Speransky childrens Hospital

QS075: BARBED SUTURES IN THORACOSCOPIC EVENTRATION REPAIR Pradeep Johns¹, Nathan M Novotny, MD, FACS²; ¹Michigan State University College of Osteopathic Medicine, Michigan, USA, ²Beaumont Health, Michigan, USA and Jordan University of Science and Technology, Irbid, Jordan

QS076: RECURRENCE OF CONGENITAL DIAPHRAGMATIC HERNIA AFTER MINIMALLY INVASIVE REPAIR: ANALYSIS OF RISK FACTORS Ali Kamran, MD, David Zurakowski, MS, PhD, Charles J Smithers, MD; Boston Children's Hospital

QS077: THORACOSCOPIC REPAIR OF A TRAUMATIC DIAPHRAGMATIC HERNIA Anne-Lise D D'Angelo, MD, MS, Ed, Hau D Le, MD; University of Wisconsin Hospitals and Clinics

QS078: THORACOSCOPIC SYMPATHECTOMY IN CHILDREN – EXPERIENCE AND LONG TERM RESULTS IN 46 CASES Elisangela Mattos E Silva, Bruna Cecilia N De Carvalho, Carolina Talini, Leticia A Antunes, Paula Trintinalha, Jessica P Guerra, Giovana C De Almeida, João Carlos Garbers, Sylvio Gilberto A Avilla, Cesar C Sabbaga, Claudio Schulz, Fernando B Amado; HOSPITAL PEQUENO PRINCIPE

QS079: LUNG STEREOLOGY AND MORPHOMETRIC ANALYSIS, PRELIMINARY RESULTS OF FETOSCOPIC ABDOMINAL DECOMPRESSION FOR CONGENITAL DIAPHRAGMATIC HERNIA Felipe Fromm¹, Thomas F Krebs, MD², Christian Mühlfeld, PhD, MD³, Katharina Wenke, MD¹, Michael Boettcher, PhD, MD¹, Georg Eschenburg, Dr¹, Bastian Tiemann, DVM⁴, Beate Roth¹, Birgit Appl¹, Kurt Hecher, PhD, MD⁵, Konrad Reinshagen, PhD, MD¹, Robert Bergholz, PhD, MD¹; ¹Department of Pediatric Surgery, UKE: University Hospital Eppendorf, Martinistrasse 52, 20243 Hamburg, Germany, ²Kinder- und Jugendchirurgie, Ostschweizer Kinderspital Claudiusstrasse 6 9006 St.Gallen, ³Institute for Functional and Applied Anatomy, Hannover Medical School, Car-Neuberg-Strasse 1, 30625 Hannover, ⁴Department of Experimental Animal Research, UKE: University Hospital Eppendorf, UKE Main Campus, Martinistrasse 52, 20243 Hamburg, ⁵Department of Obstetrics and Fetal Medicine, UKE: University Hospital Eppendorf, UKE Main Campus, Martinistrasse 52, 20243 Hamburg

QS080: THORACOSCOPIC ULTRASOUND FOR IDENTIFICATION OF PULMONARY NODULE IN A PEDIATRIC PATIENT Sarah B Cairo, MD, MPH, Benjamin Tabak, MD, David H Rothstein, MD, MS; Women and Children's Hospital of Buffalo

QS081: THORACOSCOPIC LOBECTOMY. EXPERIENCE IN OUR CENTER. Aixa Reusmann, Carlos I Giuseppucci, Mariano M Boglione, Marcelo E Barrenechea; Hospital Garrahan

QS082: THORACOSCOPIC REMOVAL OF INCLUDED THORACO-AMNIOTIC SHUNT IN NEWBORNS. Sara Costanzo, Claudio Vella, Claudia Filisetti, Francesca Destro, Marcello Carlucci, Federica Marinoni, Giovanna Riccipetoni; Department of Pediatric Surgery-Buzzi Children's Hospital – Milan – Italy

QS083: THORACOSCOPIC ESOPHAGEAL ATRESIA REPAIR FIRST PAKISTANIAN STUDY EARLY LEARNING CURVE Prof. Ali Raza Brohi, MBBS, FCPS, FEBPS, FACS, DipMAS; peoples university of medical & health sciences Nawabshah sind Pakistan

QS084: THORACOSCOPIC DIAPHRAGM PPLICATION WITH PLEDGETS IN AN 8 KG INFANT AFTER CARDIAC SURGERY Jeffrey W Gander, MD; University of Virginia Children's Hospital

QS085: VATS RIGHT PARASPINAL NEUROBLASTOMA RESECTION Ryan K Schmocker, MD, MS, Hau D Le, MD; University of Wisconsin

QS086: LONG TERM FEEDING OUTCOMES IN THORACOSCOPIC REPAIR OF TRACHEOESOPHAGEAL FISTULA AND ESOPHAGEAL ATRESIA Katherine J Baxter, MD, MS, Amina M Bhatia, MD, MS, Mark L Wulkan, MD; Children's Healthcare of Atlanta, Emory University

QS087: THE “FLAT DIAPHRAGM ON CXR”: DOES TENSION ON POSTOPERATIVE CHEST X-RAY PREDICT CDH RECURRENCE? Avraham Schlager, MD¹, Heather L Short, MD², Kelly Arps, MD², Curtis Travers, MPH², Matthew S Clifton, MD²; ¹Akron Children's Hospital, ²Emory University School of Medicine

QS088: SEVERE TRACHEOMALACIES TREATED BY MINIMALLY INVASIVE APPROACH Eduardo Perez Etchepare, Ana Lain, Carles Gine, Laura Garcia, Carlos Leganes, Javier Güizzo, Manuel Lopez; University Hospital of Vall d'Hebron Barcelona-Spain

QUICKSHOTS Schedule

3:45 pm – 4:30 pm

QUICKSHOTS 7

NON CME

MODERATOR: Eduardo Perez, MD

QS089: TRANSVESICOSCOPIC URETERAL REIMPLANTATION IN CHILDREN UNDER 2-YEAR-OLD: A SINGLE-CENTER INITIAL EXPERIENCE. Makoto Suzuki, MD, PhD¹, Ryota Koyama, MD¹, Yasuyuki Uchida, MD¹, Kenjiro Ogushi, MD¹, Sayaka Otake, MD¹, Hiroyuki Kuwano, MD, PhD, FACS²; ¹Division of Pediatric Surgery, Integrative Center of General Surgery, Gunma University Hospital, Gunma, JAPAN, ²Department of General Surgical Science Gunma University Graduate School of Medicine, Gunma, JAPAN

QS090: LAPAROSCOPIC REPAIR AND OVARIAN SALVAGE OF AN INCARCERATED HERNIA CONTAINING A TORSSED OVARY Megha V Misra, MD, MS¹, Anthony Tsai, MD², Shefali Thaker, MPH¹, Douglas J Moote, MD¹; ¹Connecticut Children's Medical Center, ²Penn State Hershey Children's Hospital

QS091: POSTOPERATIVE PAIN MANAGEMENT WITH SUBPLEURAL INTERCOSTAL CATHETERS IN PATIENTS UNDERGOING MINIMAL-INVASIVE PECTUS EXCAVATUM REPAIR A. Alsweed, MD, J. Goedeke, MD, S. Rohleder, MD, Om Muensterer, PhD, MD; Department of Pediatric Surgery, University Medical Center Mainz, Germany

QS092: ROBOT-ASSISTED LAPAROSCOPIC VARICOCELE REPAIR FOR ADOLESCENT SCROTAL VARICOCELE: AN ANALYSIS OF TECHNIQUE AND SURGICAL OUTCOMES Daniel B Herz, MD; Children's Hospital at Erlanger

QS093: THORACOSCOPIC TREATMENT OF OESOPHAGEAL DUPLICATION C Vella, MD, M Carlucci, MD, F Destro, MD, L Maestri, MD, A Pansini, MD, G Riccipettoni, MD; V Buzzi Children's Hospital, Milan

QS094: MINIMAL INVASIVE SURGERY TYPE III ESOPHAGEAL ATRESIA WITH TRACHEOESOPHAGIC FISTULA REPAIR DONE BY TRAINEES IN A REFERRAL CHILDREN'S HOSPITAL. TENDENCE THROUGH THE YEARS. Julietta Strambach, Marcela Bailez, Aixa Reusmann, Martin Rubio, Mariano Boglione; Hospital Garrahan

QS095: THORACOSCOPIC APPROACH TO PAEDIATRIC MEDIASTINAL MASS Yuri Sokolov, PhD¹, Dmitriy Haspeckov, PhD¹, Oleg Topilin, PhD², Timur Sharoev, PhD³, Anatole Kotlovsky, PhD³; ¹St Vladimir Children's Hospital, ²Central Children's Hospital named after Z.A. Bashlaeva, Moscow, ³St Luka's Clinical-Research Center for Children, Moscow

QS096: TRENDS IN SURGICAL MANAGEMENT OF CONGENITAL LUNG MALFORMATIONS IN THE UNITED STATES Justin Lee, MD¹, Jason DeWitt², Erin Garvey, MD¹, Daniel Ostlie, MD¹; ¹Phoenix Children's Hospital, ²University of Arizona College of Medicine

QS097: THORACOSCOPIC POSTERIOR TRACHEOBRONCHOPEXY TO TREAT SEVERE TRACHEOMALACIA Eileen M Duggan, MD, MPH, Ali Kamran, MD, Thomas E Hamilton, MD, Russell W Jennings, MD, Charles J Smithers, MD; Boston Children's Hospital

QS098: REVISIONS OF DIAPHRAGM PACERS IN CONGENITAL CENTRAL HYPOVENTILATION SYNDROME: A SINGLE-INSTITUTION EXPERIENCE Yom Alemante, MS¹, Mubina Isani, MD², Sheila S Kun, RN³, Thomas G Keens, MD³, J Gordon McComb, MD⁴, Iris A Perez, MD³, Cathy E Shin, MD⁵; ¹University of Southern California Keck School of Medicine, ²Los Angeles County + University of Southern California Medical Center, Department of Surgery, ³Children's Hospital Los Angeles, Department of Pulmonology, ⁴Children's Hospital Los Angeles, Department of Neurosurgery, ⁵Children's Hospital Los Angeles, Department of Pediatric Surgery

QS099: VALIDATION OF A PROTOCOL OF FIBRINOLYSIS AS FIRST LINE TREATMENT FOR PEDIATRIC PLEURAL EMPYEMA IN 79 CONSECUTIVE PATIENTS A Laín, M Aguilera, L Garcia, C Giné, M Martín, G Guillén, C Rodrigo, M López, PhD; Hospital Universitari Vall d'Hebron. Barcelona

QS100: THORACOSCOPIC ESOPHAGOMYOTOMY FOR ACHALASIA IN THE PEDIATRIC POPULATION Eileen M Duggan, MD, MPH, Charles J Smithers, MD, Samuel Nurko, MD, MPH, Steven J Fishman, MD; Boston Children's Hospital

QS101: THORACOSCOPIC TREATMENT OF ANTERIOR MEDIASTINAL MASS M Carlucci, MD, C Vella, MD, F Destro, MD, G Riccipettoni, MD; V Buzzi Children's Hospital, Milan

QS102: THORACOSCOPIC APPROACH OF ISOLATED CONGENITAL TRACHEO-ESOPHAGEAL FISTULA Giorgio Farris, MD, Anna Morandi, MD, Francesco Macchini, MD, Andrea Zanini, Valerio Gentilino, Ernesto Leva; U.O.C. Chirurgia Pediatrica Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico Milano

QS103: ROBOTIC MINIMALLY INVASIVE SPINE SURGERY: A PROOF-OF-CONCEPT STUDY WITH APPLICABILITY TO SCOLIOSIS CORRECTION Abdalla E Zarroug, MD¹, Julien Abinahed², David L Sigalet, MD¹, Abdulla Al-Ansari³, Nikhil Navkar², Jason J Howard, MD¹; ¹Sidra Medical and Research Center, ²Qatar Robotic Surgery Centre, Qatar Science & Technology Park, ³Hamad Medical Corporation

QUICKSHOTS Schedule

4:30 pm – 5:00 pm

QUICKSHOTS 8

NON CME

MODERATOR: Cathy Shin, MD

QS104: LAPAROSCOPIC INGUINAL HERNIORRHAPHY IN CHILDREN: REPRODUCING THE OPEN APPROACH Anwar Abdul-Hadi, MD¹, Ahmed Nasr, MD¹, Kyle Cowan, MD¹, Hedyeh Ziai, BHSc², Marcos Bettolli, MD¹; ¹Children's Hospital of Eastern Ontario, ²University of Ottawa

QS105: LAPAROSCOPIC IPSILATERAL URETEROURETEROSTOMY FOR CHILDREN'S RENAL DUPLEX ANOMALIES WITH FUNCTIONAL ECTOPIC URETER Liangsheng Lu, Yunli Bi; Division of Pediatric Urology, Children's Hospital of Fudan University

QS106: LAPAROSCOPIC EXCISION OF PERSISTENT MULLERIAN DUCT REMNANT (PMDR) IN CHILDREN WITH 46XY- DSD AND SEVERE HYPOSPADIAS. Muhammad Anwar, MRCS, FCPS; National Institute of Child Health and JSMU Karachi

QS107: ANTE-GRADE LAPAROSCOPIC TESTICULAR VESSELS DISSECTION IN PROXIMAL INGUINAL UNDESCENDED TESTIS: A NOVEL APPROACH Sherif M Shehata, MCh, CST, MD, PhD; Section of Pediatric Surgery, Faculty of Medicine, Tanta University, Tanta, Egypt

QS108: DIAGNOSIS AND LONG-TERM OUTCOME OF RENAL CYSTS AFTER LAPAROSCOPIC PARTIAL NEPHRECTOMY IN CHILDREN Ciro Esposito¹, Bernardita Troncoso Solar², Maria Escolino¹, Roberta Iacona², Mariapina Cerulo¹, Francesco Turrà¹, Alessandra Farina¹, Alessandro Settimi¹, Imran Mushtaq²; ¹Federico II University of Naples, Naples, Italy, ²Great Ormond Street Hospital, London, UK

QS109: LAPAROSCOPIC REPAIR OF VAGINAL ATRESIA. Alex Cuenca, Belinda Hsi Dickie; Boston Children's Hospital

QS110: LAPAROSCOPIC ASSISTED EXTRAVESICAL URETERAL REIMPLANTATION AND EXTRACORPOREAL URETERAL TAPERING REPAIR FOR PRIMARY OBSTRUCTIVE MEGAURETER IN CHILDREN Eduardo Perez-Etchepare, Romy Gander, Gloria Royo, Marino Ascencio, Manuel López; University Hospital of Vall d'Hebron. Barcelona

QS111: RETROPERITONEOSCOPIC PYELOPLASTY FOR PELVIURETERIC JUNCTION OBSTRUCTION: TECHNIQUE AND RESULTS WITH FIRST 20 CASES. Vineet Binu, MD, Ravi Kanojia, MD, MRCS; PGIMER, CHANDIGARH

QS112: LAPAROSCOPIC TRANSPERITONEAL DISMEMBERED PYELOPLASTY BY UTILIZING V-LOC BARBED SUTURE: OUR FIRST RESULTS Omer Yilmaz¹, Halil Ibrahim Tanriverdi¹, Hasan Cayirli¹, Pelin Ertan², Can Taneli¹, Aydin Sencan¹, Abdulkadir Genc¹; ¹Celal Bayar University Medical School, Department of Pediatric Surgery, Manisa, Turkey, ²Celal Bayar University Medical School, Department of Pediatric Nephrology, Manisa, Turkey

QS113: ROBOTIC NON-DISEMBERED PYELOPLASTY FOR RARE VARIANT OF EXTRINSIC UPJ OBSTRUCTION Brendan Caprio¹, Paul H Noh, MD²; ¹University of Cincinnati, ²Cincinnati Children's Hospital Medical Center

QS114: AN EFFICIENT HOME-MADE SIMULATION MODEL OF LAPAROSCOPIC PYLOROMYOTOMY Quentin Ballouhey¹, Liviu Micle¹, Céline Grosos¹, Yohann Robert², Aurélien Binet³, Alexis Arnaud⁴, Olivier Abbo⁵, Hubert Lardy, Professor³, Bernard Longis¹, Jean Bréaud, Professor⁶, Laurent Fourcade, Professor¹; ¹CHU Limoges, ²CHU Grenoble, ³CHU Tours, ⁴CHU Rennes, ⁵CHU Toulouse, ⁶CHU Nice

Long Term Research Fund Donors

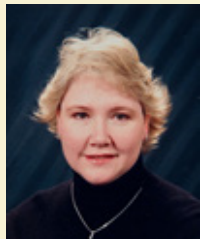
This year, IPEG members donated over \$17,000 to the Long Term Research Fund (LTRF), surpassing our previous year's numbers! We want to thank everyone for their generosity. The goal of the LTRF is to award grants to IPEG members for research, and you help to make that happen.

**DONATE
TODAY!**

A Special Thank You to our Top Donors!



Marcelo Martinez Ferro
\$2,600



Karen Diefenbach
\$2,000



Mark Wulkan
\$1,000



Maria Marcela Bailez
\$1,000

\$999 – \$500

Katherine Ferro
Charles Leys
Steven Rothenberg
Daniel Ostlie

\$499 – \$100

C.K. Yeung
Miguel Guelfand
George Holcomb
Lena Perger
Samir Pandya
Atsuyuki Yamataka
Wendy Su
Carlos Garcia Cueva
Sherif Emil
Fayza Haider
Mellissa Mckee
Go Miyano
Abdalla Zarroug
Suolin Li

Matthijs Oomen
Matthew Clifton
Celeste Hollands
Pablo Laje
Pierre Lingier
Rajeev Prasad
Axel Schneider
Henri Steyaert
Jeffrey Zitsman

\$99 – \$10

Simon Clarke
Dafydd Davies
Benjamin Del Rio Hernandez
Peter Esslinger
Satoshi Ieri
Takahiro Jimbo
Oleg Kleiner
Meltem Kologlu
Thomas Krebs
Aaron Lipskar
Ahn Soo Min

Oliver Muensterer
Ramesh Nataraja
Claudio Oiticica
Giuseppe Retrosi
Bethany Slater
Ravindra Vegunta
Dayang Anita Abdul Aziz
Cristobal Abello
Suad Abul
Sjoerd Beer
Charles Breau
Andreana Butter
Vinh Lam
Hau Le
Claudia Marhuenda
Thomas McGill
Mario Mendoza-Sagaon
Carolina Millan
Ivan Molina
Sadasivam Muthurajan
Satoshi Obata
Ravindra Ramadwar

Giovanna Riccitettoni
Jan Rutqvist
Douglas Tamura
Claudio Vella
Joaquin Villamizar
Rene Wijnen
Kenneth Wong
Christine Burgmeier
Catherine Cosentino
Michael Dingeldein
Alexander Dzakoric
Masayuki Kubota
Sang Lee
Osamu Segawa
Jeong-Meen Seo
Burak Tander
Benno Ure
David Lanning
Ioan Sarbu

Support IPEG Research

DONATE TO LTRF

To donate please visit our website at: <https://www.ipeg.org/about-ipeg/researchfund/>
or visit us at the registration desk

Welcome to our New Members!

Anwar Abdul-hadi MD – CANADA	Ana Laín Fernández MD. Pediatric surgeon. – SPAIN
Jennifer Cheong Ah Toy MBBS, FRACS – AUSTRALIA	Steven Xuelai Liu MD, PhD – CHINA
Waseem ahmad Al Meflh MD – JORDAN	Ilan Igor Maizlin MD – UNITED STATES
Mohammed Taha Al Mulaifi MD – JORDAN	Sherif Mamdouh Mansour M.Sc. – EGYPT
Ahmad Ebrahim Al Raymoony MD – JORDAN	Steffi Mayer MD – GERMANY
Munira Abdullah Al Suwailem al MD – SAUDI ARABIA	Margaret M Mcguire MD – UNITED STATES
Majid Mohd Alkhamis MD – SAUDI ARABIA	Jonathan Meisel MD – UNITED STATES
Turki DAKHIL Alofi MD – SAUDI ARABIA	Carlos Alberto Melo Hernandez MD – COLOMBIA
Motaip Hamad Alrawili MD – SAUDI ARABIA	Jorge Oswaldo Mier Araujo Dr. – ECUADOR
Carlos Roberto Alvarez-allende MD – PUERTO RICO	Christopher R. Moir MD – UNITED STATES
Edgar Dario Alzate MD – COLOMBIA	Mansour Mollaeian MD – IRAN
Hizuru Amano MD – JAPAN	Sofia Isabel Antunes Morão – PORTUGAL
Eva E Amerstorfer MD – AUSTRIA	Ibrahim A. Hassan Mostafa M.S, IMRCS – UNITED KINGDOM
Alireza Basharkhah MD – AUSTRIA	Adrianne Lee Myers-webb MD – UNITED STATES
Kagiso Batka-makwinja MD (MBChB) – SOUTH AFRICA	Maricarmen Paz Olivos Perez MD – UNITED KINGDOM
Paul R Bowlin MD – UNITED STATES	Caroline Choo Phak Ong MD – SINGAPORE
Sarah Beth Cairo MD, MPH – UNITED STATES	Lin Yin Ong MD – SINGAPORE
Adriana Calderon Urrieta MD – MEXICO	Maurizio Pacilli MBBS, MD(Res) – AUSTRALIA
Kaveer Chatoorgoon MD – UNITED STATES	Dominic J Papandria MD – UNITED STATES
Heidar Ali Davari MD – IRAN	Rebecca A Pohle MD – GERMANY
Guilherme Moraes Silva Simoes De Faria – BRASIL	Daniel Relles MD – UNITED STATES
Daniel Eismann, MD – GERMANY	Rebecca Rentea MD – UNITED STATES
Gamal Hassan El Tagy MD – EGYPT	Mohsen Rouzrokh Prof – IRAN
Takaki Emura MD – JAPAN	Subhasis Saha MD – INDIA
Kjetil Naess Ertresvaag MD – NORWAY	Mark Lewis Saxton MD – UNITED STATES
Ahmad Vaqas Faruque MBBS, MRCS, FCPS – AUSTRALIA	Pablo Gaston Scher MD – ARGENTINA
Sandra Flores Tapia – CHILE	Roger Paul Joseph Schroeder MD, PhD – THE NETHERLANDS
Jeffrey William Gander MD – UNITED STATES	Aly Ibrahim Shalaby MD – UNITED KINGDOM
Massimo Garriboli MD, FRCS(Eng), FEBPS – UNITED KINGDOM	Soichi Shibuya MD, PhD – JAPAN
Elsa Ossiris Gil Narvaez Medico – COLOMBIA	Sabina Siddiqui MD – USA
Carlos Giné MD – SPAIN	Charles Jason Smithers MD – UNITED STATES
Gabriela Ambriz Gonzalez PHD – MEXICO	Hesham A. A. Samie Soliman MD – UNITED ARAB EMIRATES
Krzysztof Granisz PhD – GERMANY	Feryal Gun Soysal Prof – TURKEY
Brian Gray MD – UNITED STATES	Sengey Vasilievich Stonogin – RUSSIA
Fabienne L Gray MD – UNITED STATES	Benjamin Tabak, MD – UNITED STATES
Fayza Haider MD – BAHRAIN	Yew-wei Tan MB ChB, FRCS (Paed Surg) – UNITED KINGDOM
Rajaie George Hazboun MD – UNITED STATES	Shao-tao Tang MD, PhD – CHINA
Tomomasa Hiramatsu MD – JAPAN	Anthony Tsai MD – UNITED STATES
John Daniel Horton MD – UNITED STATES	Kaveh Vali MD – UNITED STATES
Naweed Hussain MD – SAUDI ARABIA	Duarte Vaz Vaz Pimentel, MD – GERMANY
Sabine Irtan MD, PhD – FRANCE	Jenbin Wang MD – TAIWAN
Paula J Jaimes De La Hoz MD – COLOMBIA	Poliana Lie Watanabe MD – BRAZIL
Yang Jun PhD – CHINA	Jonathan Wells MBChB, MSc, FRCS – NEW ZEALAND
Hawkar A. Kak-Ahmed MBChB, FIBMS(Ped.Surg) – IRAQ	Zhicheng Xu MD – CHINA
Yousuf AZIZ Khan MBBS, FCPS-Paed. Surg, FICS – KUWAIT	Koji Yamada MD – JAPAN
Denise B Klinkner – UNITED STATES	Li Yang MD, PhD – UNITED STATES
Sunil Kumar MBBS MS MCh(Paed. Surg), MRCS Edn. – KUWAIT	Augusto Zani MD, PhD, Prof – CANADA
Catarina East Ladeira, MD – PORTUGAL	Sergio ENRIQUE Zavaleta Hernandez MD – COLOMBIA

TO BECOME A MEMBER:

1. ONLINE at <https://www.ipeg.org/member/memberapplication/>
2. FAX a completed application form to **+1 310.437.0585** forms available at the registration desk
3. EMAIL membership@ipeg.org
4. MAIL a complete application form to IPEG: 11300 W. Olympic Blvd, Suite 600, Los Angeles, CA 90064, USA Attention: Membership

If you have any questions, please contact the IPEG Membership Department at membership@ipeg.org or call **+1 310.437.0553, ext. 138**

Accommodations

IPEG's 26th Annual Congress for Endosurgery in Children

Held in Conjunction with BAPS

July 19–22, 2017

HEADQUARTER HOTEL

Hilton London Metropole

225 EDGEWARE ROAD, W2 1JU, UNITED KINGDOM

T: +44-207-402-4141 ■ F: +44-207-616-7313

Please book your rooms within the IPEG hotel block:

http://www.hilton.com/en/hi/groups/personalized/L/LONMETW-GIPEA-20170712/index.jhtml?WT.mc_id=POG

Single Occupancy Rate: £169 + VAT

Double Occupancy Rate: £179 + VAT

A 20% VAT charge will be added to the guest room rate. Room rates include:

- Breakfast per occupancy (If 2 people are staying in the same room, please select “double occupancy”)
- Wireless high-speed internet access in guest rooms
- Fitness Center
- Indoor Pool

Please note: Rooms booked outside of the IPEG room block are not guaranteed at the above rates or amenities. The special IPEG rates are on first-come-first served basis and we highly recommend you to make your reservation by Thursday, June 1, 2017 or earlier.

Cancellations

Any changes or cancellations are available through the online reservation page. You may be subject to cancellation fees. Check your hotel confirmation letter for individual hotel policy.

Terms & Conditions

The hotel reserves the right to cancel or modify reservations where it appears that a customer has engaged in fraudulent or inappropriate activity or under other circumstances where it appears that the reservations contain or resulted from a mistake or error. Please read carefully the individual hotel's policy publish on its website.

FROM HEATHROW AIRPORT

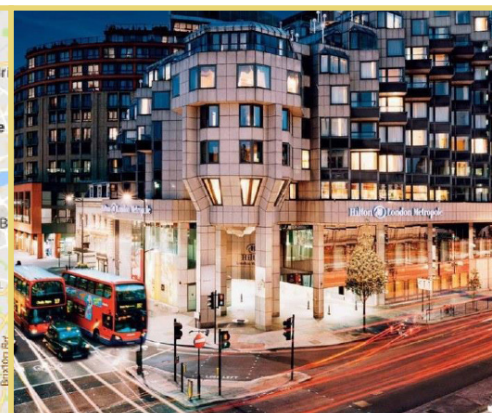
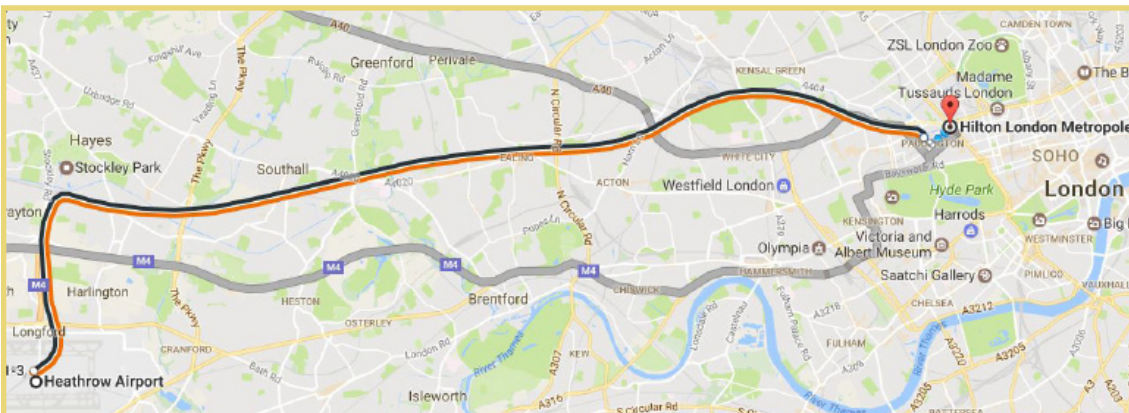
Distance from Hotel: 18 mi. ■ Drive Time: 40 min.

Nearest train stations: PADDINGTON ■ Travel Time: Aprox. 40 min

Via Heathrow Express towards London Paddington (nonstop) .5 mile walk to hotel

EDGEWARE ROAD STATION ■ Travel Time: Approx. 58 min

Take Piccadilly towards Cockfoster to Earl's Court Station, transfer to Green Line, Take District towards Edgware Road, exit Edgware Road Station, walk 2 min to hotel



2017 Registration Form

IPEG's 26th Annual Congress for Endosurgery in Children

Held in Conjunction with BAPS

July 19–22, 2017 ■ Hilton London Metropole ■ London, England



PERSONAL CONTACT INFORMATION

☐ MD ☐ DO ☐ PHD ☐ PROF ☐ OTHER

☐ CURRENT IPEG MEMBER ☐ CURRENT BAPS MEMBER

FIRST GIVEN NAME FAMILY LAST NAME TITLE

INSTITUTION

ADDRESS

CITY STATE ZIP COUNTRY

PHONE (including Country code) FAX EMAIL

MEMBERSHIP

Membership	1 YEAR	3 YEAR	
New Member (As a new member you may register at the member rates)	☐ US\$180 (reg. \$220)	☐ US\$540 (reg. \$660)	US\$
2017 Membership Renewal	☐ US\$220	☐ US\$600 (reg. \$660)	

REGISTRATION

IPEG/BAPS registration includes:

- Wednesday Welcome Reception
- Thursday–Friday IPEG/BAPS Scientific Sessions
- Thursday–Friday Learning Center & Exhibits
- Saturday IPEG sessions
- Joint Congress breaks and lunches
- Quickshot sessions
- Main Event
- Keynote Lectures

IPEG Master Course and Lecture will be charged additionally.

STEP 1 (required): Register under the appropriate category			
Registration Type	Member*	Non-Member	
Surgeon	☐ US\$520	☐ US\$650	US\$
Surgeon in Training & Allied Health	☐ US\$250	☐ US\$415	
One Day Rate (Thursday Only)	☐ US\$200	☐ US\$240	

***Membership will be verified; all registrations at the member rate without valid corresponding membership record will be charged the non member fee.**

STEP 2: Register Guests (US\$150 per ticket; Complimentary for children under 14)			US\$
Guest ticket includes opening reception and main event			
Guest 1 (Full Name): _____	☐ US\$150		
Guest 2 (Full Name): _____	☐ US\$150		
*Guests cannot be eligible for regular registration and will not receive a certificate of attendance			

STEP 3: Register for Master Course & Lecture– SPACE IS LIMITED!			
"Mastery Learning for Neonatal Minimally Invasive Surgery"	Member*	Non-Member	
Wednesday, July 19, 2017 ■ 8:00 am – 5:00 pm Dive deep into two operations, thoracoscopic TEF repair and thoracoscopic lobectomy. Didactics will focus on specific cognitive, technical and professional skills.	☐ US\$900	☐ US\$1,200	US\$

2017 Registration Form

CONTINUED



STEP 4: RSVP For Social Events (Included in Registration Fee)

- ☐ **Opening Reception:** Wednesday, July 19, 2017 ■ 5:00 pm – 7:00 pm
- ☐ **Main Event:** Friday, July 21, 2017 ■ 8:00 pm – Midnight

STEP 5: IPEG Contribution

- ☐ **Yes**, I would like to make contribute to the IPEG's Long Term Research Fund (LTRF). I understand that my contribution will be acknowledged in the final program. I authorize IPEG to charge this amount to my credit card listed below.

- ☐ US\$75
☐ US\$150
☐ US\$250
☐ US\$500
☐ OTHER

US\$

TOTAL AMOUNT DUE: \$ _____

PAYMENT INFORMATION

I authorize IPEG to charge the following card number for a total amount of US\$ _____

☐ Visa ☐ MasterCard ☐ Am. Express

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

CARD NUMBER

Exp. Date: _____ Billing Zip Code: _____ Security Code: _____ (A 3 or 4 digit number printed on the front or back of the card)

Cardholder's Full Name: _____

Authorized Signature: _____

TERMS & CANCELLATION

- All accepted abstract presenters are required to register for the full meeting in order to be published in the program and journal.
- Payment in full must accompany registration form.
- Early Bird registration ended **Monday, May 1, 2017**.
- Registration closes **Monday, July 10, 2017**, after this date attendees must register on-site.
- Cancellations must be submitted in writing before **July 10, 2017** to receive a refund minus a US\$75 administrative fee.
- No refunds will be granted after **July 10, 2017** for no-shows of the conference; Master Course & Lecture; or unused portions of the meeting.

MEETING REGISTRATION

There are various ways to register for the 26th Annual Congress for Endosurgery in Children

1. ONLINE at <http://www.cvent.com/d/cvq4p1>
2. FAX a completed registration form to **+1 310.437.0585**
3. SCAN a complete registration form and email it to registration@ipeg.org
4. MAIL a complete registration form to IPEG: 11300 W. Olympic Blvd, Suite 600, Los Angeles, CA 90064, USA Attention: Registrar

If you have any questions, please contact the IPEG Registrar at registration@ipeg.org or call **+1 310.437.0553, ext. 128**.

Innovations Abstracts

(ET001) INFRARED SURFACE SCANNING OF PECTUS DEFORMITIES: NEW INDEXES AND PREDICTIVE MODELING

Kevin N Johnson, MD, Jon Campbell, MS, Matthew W Ralls, MD, James D Geiger, MD, University of Michigan

Objective of the technology or device: Use of surface scanning for pectus deformities has been described at several centers, however the utility of this technology has been unclear and to date only crude tools have been used to analyze these images. Our objective was to create new types of indexes based on these scans, which are more descriptive and have a higher utility in assisting a surgeon's pre-surgical assessment. Additionally, use of a comparison between pre- and post-operative scans, combined with a machine-learning algorithm allowed for creation of a program to predict what a patient will look like post-operatively based on their pre-operative scan.

Description of the technology and method of its use or application: For our institution we use the Structure Sensor (Occipital Inc., San Francisco, CA), which uses infrared light to create 3-D models in the form of .obj files. Using novel programs created through the University of Michigan Department of Computer Engineering new indexes and a predictive algorithm were created. The new indexes comprise analysis of the main defect, with a comparison of the volume of the defect in comparison to the volume of the entire chest, and an asymmetry index, which compares the volumes of the two halves of the chest. The predictive algorithm creates 3-D models that predicts what a patient might look like post-operatively based on machine learning that has processed dozens of comparison pre- and post-operative scans.

Preliminary results if available: Once the programs are completed in the next 2 months the program for the new indexes will be compared to existing indexes to determine congruence between the two. Our belief is that these indexes will prove to be more predictive of repairs that will be difficult or that result in a poor cosmetic outcome than standard indexes such as the Haller. Additionally, the predictive algorithm will improve over time as more scans are accrued and entered into the program.

Conclusions / future directions: Use of these technologies in the evaluation of pectus deformities allows for a thorough evaluation of pectus deformities without the cost and risk of radiographic imaging. Use of these technologies, combined with the expertise of the surgical community, will allow for safe, cost-effective evaluation and monitoring of pectus deformities in the future.

Figure 1 – Initial prototype of automatic indexing program

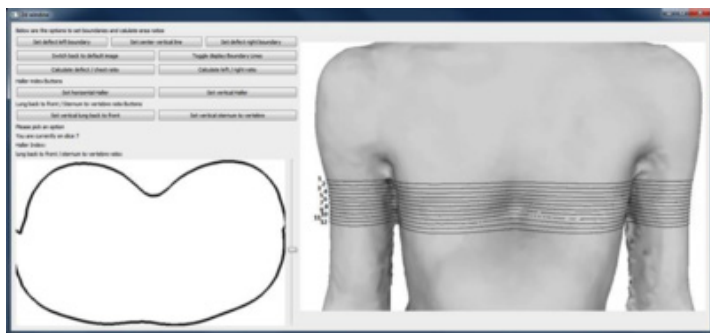
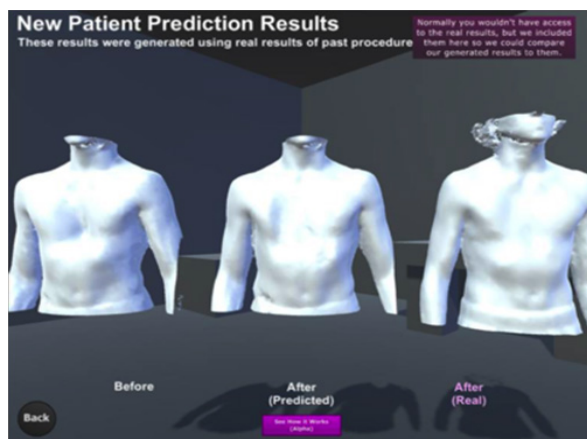


Figure 2 – Initial predictive modeling program



Innovations Abstracts

(ET002) MACHINE LEARNING AND TARGETED IMAGE GUIDANCE FOR AIRWAY MANAGEMENT

Ruchi Amin, MD¹, Sabina Siddiqui¹, Laura McCormick, PhD², Hong Lak Lee, PhD³, ¹Children's Hospital of Wisconsin, ²Brio Device, LLC, ³University of Michigan

Purpose: The pediatric airway presents a challenge. Depending on the setting and provider skill level, failure rates can approach 40% resulting in approximately two million airway failures annually. We present a 'smart' intubation device, which integrates anatomic structure recognition algorithms, with visual guidance feedback in an articulating video stylet.

Methods: Through hundreds of hours of primary and secondary research, we identified three key factors that limit intubation success, and designed a solution addressing these factors. Our software-enhanced video articulating stylet employs structure recognition algorithms, to visually guide the user in achieving intubation success.

Results: The guidance software uses machine learning and computer vision algorithms to recognize the anatomy, and guide the user to the correct target during intubation. We were able to achieve detection of the epiglottis, vocal cords, trachea, and carina with a mean average precision (mAP) score of 63%. At 30 frames per second, this mAP score appears as a continuous detection to the human eye. In the field of computer vision, anything above 50% is considered a good detection signal, that translates to a continuous positive signal to the human perception.

Conclusions: Guided software using machine learning and computer vision algorithms is a potential solution to improved airway management. Machine learning applications to human anatomy is a platform technology which can be applied to other image guided medical interventions, including endoscopy and laparoscopy.

(ET003) SURGTRAC: A NEW PARADIGM IN SKILLS TRAINING.

Roland W Partridge¹, Paul M Brennan², Mark A Hughes², Iain A Hennessey³, ¹Royal Hospital for Children, Glasgow. UK., ²Department of Clinical Neurosciences, Edinburgh. UK., ³Alder Hey Children's Hospital, Liverpool. UK.

Objective: SurgTrac is a distance-learning surgical skills training platform. The concept of take-home surgical simulators remains relatively new, and the challenge is how to deliver effective targeted training and instruction in this context. Successful training requires a curriculum of skills with defined learning objectives, objective performance feedback to guide improvement, and demonstration of skills progression. It is difficult to deliver these elements remotely. The provision of objective performance feedback is particularly challenging in an at-home setting. SurgTrac is a software package for take-home laparoscopic simulators that addresses these problems.

Description: SurgTrac guides users through a tiered curriculum of increasingly difficult tasks (18 Modules in 3 Courses). It uses innovative instrument tracking technology to measure the movement of instruments as each task is performed. Blue and red markers on the instrument tips are tracked by image analysis software using the simulator's camera. No additional cameras or hardware is required. Tracking data is converted into different performance metrics for each instrument. SurgTrac then generates natural language feedback to help users understand movement metrics and highlight areas for improvement. The metrics are then automatically uploaded to an online cloud-based portfolio (SurgTrac.com). Once all modules of a course are completed a certificate is generated. This certificate is increasingly being used for annual reviews and revalidation purposes around the world.

Preliminary results: The system has been designed and developed by a trainee-led initiative. There are now active users over 30 countries worldwide. This includes individuals working through the 18 modules on their own, and institutions using the system to remotely deliver training and monitor the progress of their trainees. Consultants and attendings are also engaged with the system to maintain and develop skills, and use the online portfolio and certificates for continuing professional development and revalidation purposes. The number of users and tasks completed is growing month by month, with (at time of submission) 6,974 tasks completed and 293 hours, 9 minutes spent training with the system.

Conclusions / future directions: SurgTrac has potential to significantly enhance surgical skills training. It provides distance-learning of surgical skills in a training framework based on Kolbs experiential learning cycle of conceptualisation (online curriculum), experimentation (take-home simulation), reflection (instrument tracking metrics with natural language feedback) and experience. The authors recognize that simulation training doesn't replace time spent in the OR. However, it does make you better prepared when you get there, freeing cognitive capacity to focus on the subtle nuances of live operating. The instrument tracking metrics described have been validated, and further validation studies are underway. Future development will include more training modules and extension to work with other simulator systems such as the Fundamentals of Laparoscopic Surgery (FLS) training hardware.

Innovations Abstracts

(ET004) NEW INANIMATE MODEL FOR TRAINING LOWER LEFT LOBECTOMY.

Maximiliano Maricic, Maria Marcela Bailez, Garrahan Children's Hospital

We present a complete inanimate model for the confection of lower left thoracoscopic lobectomy. This model has been manufactured with synthetic materials such as plastic 3D printing for chest, rubber and silicone tubes and balloons to simulate heart, vessels and bronchi. The lung is made with a synthetic polyester sponge, colored and cut to resemble the pulmonary fissure.

Vessels and bronchus are placed anatomically exactly as seen in the thoracoscopic view. The pulmonary fixations are made with self-adhesive film and silicone. The thoracic wall consists of plastic ribs, made with 3D printing, the parietal pleura made of adhesive film, muscles with foam rubber, and skin with silicone/latex.

Dissection of the fissure, if left intentionally incomplete, can be divided with a bipolar device. The vessels, made of latex and silicone, should be ligated with suture, and we stimulate this practice as part of the training. Bronchi must be sutured with 5-0 separate stitches.

This model is mainly for anatomical training and suturing skills. But also the interaction with the instructor allows to avoid the primary failures in the placement of trocars and surgical strategy approach. The anatomical structures are placed to be operated and replaced easily after finishing the procedure.

With this method of creation, we can simulate lobectomies of other pulmonary lobes also.

The cost of the model is less than U\$100, is fully transportable and easily reproducible.

This model also allows the use of biological tissue, with the consequent possibility of energy use, as in the actual procedure.

Validation is necessary to add improvements and evaluate the model as a specific training method.

(ET005) NO SCAR SURGERY: APPLICATION OF AUXILIARY LAPAROSCOPIC NEEDLE DEVICE IN TREATING PEDIATRIC INGUINAL HERNIA

Cui Qingbo, Li Zhaozhu, Lu Wenjun, Xu Bo, Ma Mingdi, Department of Pediatric Surgery, the Second Hospital Affiliated to Harbin Medical University

Objective: To investigate the efficacy of self-developed laparoscopic auxiliary needle device for treating inguinal hernia in children. (National Patent Number: ZL 201320479515.5)

Methods: Review from January 2013 to January 2017, 958 cases of children with indirect inguinal hernia (male 865 cases, female 93 cases), mean age 1.1 ± 0.9 years (Age range 1 months to 9 years old). By using self-made laparoscopic auxiliary needle device to replace the traditional laparoscopic handling tongs to perform laparoscopic high ligation of hernial sac, the procedure is as follows: ?The 5mm endoscope was placed under incision of umbilicus; ?The auxiliary needle device of diameter 1mm was put into the middle of lower abdomen; ?Using the auxiliary needle device to investigate whether had contralateral latent hernia; ?At the surface projection of the internal ring, the epidural needle has been inserted with two No.4 silk thread with ring percutaneous piercing to the peritoneum, first along the internal ring opening side extraperitoneal stealth, by using the auxiliary needle device pulling the peritoneum, more easily cross over the inferior epigastric vessels, vas deferens, external iliac vessels and spermatic cord, after crossed the spermatic cord we puncture peritoneum into the peritoneal cavity, using the tip groove of auxiliary needle device and the silk thread is made into a snare to be placed in the abdominal cavity; ?Pull the needle out from the original puncture point, sneak into the inner lateral peritoneum, pierce out the needle from the same abdominal puncture, and pierce into the preset number 4 thread, using the auxiliary needle pick another thread; ?Pull the preset number 4 thread, pull another 4 silk out the abdomen slowly, squeeze the gas in scrotum, tighten the silk thread to complete the high ligation of hernial sac; ?Meanwhile, by using the auxiliary needle device pulling vas deferens and spermatic vessels, to avoid distortion.

Results: All patients were treated with laparoscopic auxiliary needle device to complete the high ligation of the extraperitoneal hernia sac. The pneumoperitoneum pressure was 5.8 ± 0.3 mmHg on average (range from 5 to 7 mmHg), pneumoperitoneum time of unilateral hernia was 5.1 ± 1.2 minutes (range from 3 to 8 min.); Intraoperative exploration of 453 latent hernia cases (47.3%), of which the naked eye is difficult to distinguish with auxiliary hernia needle device determine the exploration of 239 cases (24.9%); 2 cases of hernia recurrence after operation (0.2%); The postoperative follow-up was 3-48 month after the operation., with no visible abdominal scar, no subcutaneous foreign body sensation.

Innovations Abstracts

Conclusion: Application of laparoscopic auxiliary needle device completing the laparoscopic extraperitoneal high ligation of hernial sac, it can not only detect the latent hernia accurately but also can avoid the distortion of the vas deferens, and take advantage of lower pneumoperitoneum pressure lower and shorter pneumoperitoneum time to complete the surgery. Moreover, the abdominal wall is beautiful after surgery, and it can achieve the effect of abdominal scar free.

(ET006) ESOPHAGEAL LENGTHENING AND ANASTOMOTIC DEVICE

Donald D Potter, MD, Stephanie Polites, MD, Mayo Clinic

Objectives: Approximately 10% of neonates with esophageal atresia are not candidates for primary repair due to a long gap between the esophageal ends. These patients represent a complex group of malformations frequently requiring prolonged hospitalization and numerous procedures to repair the defect as recently reported by a large volume multidisciplinary esophageal group. The objective of this device is to create a reliable method for repair that improves surgical outcomes and reduces medical utilization. The device combines the lengthening properties of traction with a compression anastomosis that would reduce the number of procedures to repair long gap esophageal atresia to a single operation.

Description: The device consists of 3 interworking parts: a proximal esophageal tube, a balloon catheter, and a tensioning component. The proximal esophageal tube is a hollow tube that is passed through the patient's mouth to the end of the blind upper esophageal pouch. The tip of the tube contains a manufactured ring that fits into part 2 of the device, the balloon catheter.

The balloon catheter is a high strength, collapsible balloon that is passed through the esophageal tube, out the upper esophageal pouch, and into the lower esophageal end. Once within the lower pouch, the balloon is inflated to capture the distal esophagus. Tension is then applied to the inflated balloon catheter to induce growth towards the upper pouch with the aid of a tensioning component, the third part of the device.

The tensioning component consists of a pneumatic piston that is connected to the proximal esophageal tube and the balloon catheter. Bedside suction equipment is used to regulate the amount of tension that is applied to each esophageal pouch via a pneumatic piston. Once the esophageal ends meet, the balloon catheter fits into the manufactured ring of the proximal esophageal tube. The tension applied then allows a compression anastomosis between the atretic esophageal ends by tissue remodeling.

Preliminary results: This is the third iteration of this device. The second version used a spring as the tensioning mechanism. This was tested to determine whether a compression anastomosis using a balloon catheter was feasible. Rabbits were used due to similar anatomy and size as human neonates. Three rabbits successfully completed the week long experiment without complications. A 90% compression anastomosis was accomplished in each rabbit. It was believed that the spring was not a reliable method to provide constant tension to complete a compression anastomosis. Thus, a pneumatic tensioning piston was created to provide more reliable, constant compression between the balloon and ring of the upper tube.

Conclusions: The esophageal lengthening and anastomotic device is a novel instrument that combines the current concepts of traction and compression anastomosis. Our next step is to test the capability of the current device to create a compression anastomosis using the pneumatic tensioning device. Subsequent steps will be to determine the gap that is able to be repaired. Alternatively, this device could be used to perform minimally invasive bowel anastomoses without suturing or to resect recalcitrant strictures of the esophagus or colon.

(ET007) MICROSENSORS ENSURE SAFE COUPLING OF MAGNAMOSIS RINGS

Colin Brahmstedt, BS, Claire E Graves, MD, Dillon Kwiat, BS, Catherine Co, MD, Brandon Gaston, BS, Philip Fullante, MD, Anupama Arun, PhD, Michael R Harrison, MD, University of California, San Francisco

Objective: Magnetic compression anastomosis (Magnetic compression anastomosis) creates endoluminal anastomoses without the need for enterotomy. The two-part device consists of magnetic rings enclosed within a polycarbonate casing, which uses graded compression to promote tissue remodeling and anastomosis formation. To ensure safe coupling of magnets and target tissue in situations without direct external visualization (ie. endoscopic natural orifice delivery, image-guided placement), the device itself should sense that it is fully and evenly mated in the desired tissue, with enough force to create an anastomosis and without interference from undesired tissue (e.g. omentum, mesentery, intervening bowel loops).

Description of Technology: Using an energy-harvesting Near Field Communication (NFC) integrated circuit (IC), we are able to wirelessly provide power through the body to various sensors on our device. These sensors are able to sense the temperature, pressure, and 3D orientation of each magnet. A reader is placed in close proximity to the patient to wirelessly collect this data and relay

Innovations Abstracts

it to a nearby computer for a surgeon to monitor while the device is being placed. When the magnets snap together, three force sensors, spaced 60 degrees apart on each magnet, will verify the force is applied evenly. This device does not contain a battery or any other energy-storing medium.

Preliminary Results: Measuring the distance between rings by X-ray or ultrasound proved imprecise. Using Hall effect and inductance sensors on the delivery device was feasible but difficult to implement. We then developed and tested a third strategy in which micro force sensors and a wireless NFC chip are incorporated inside the polycarbonate rings themselves. The sensor data is transmitted wirelessly to an external display available to the surgeon.

Conclusions: Microsensors within the polycarbonate casing of the Magnamosis rings allow for accurate detection of pressure and force exerted on the target tissue. When the pressure between the rings matches the known ideal pressure for anastomosis formation in the target tissue, the sensor alerts the surgeon on an external readout that the Magnamosis device has been safely delivered. Thus, the surgeon can be assured of correct and accurate mating without direct visualization, allowing for a variety of minimally invasive and image-guided techniques.

(ET008) THORACOSCOPIC REPAIR OF LONG GAP ESOPHAGEAL ATRESIA BY ADJUSTABLE INTERNAL TRACTION

Charles J Smithers, MD, Thomas E Hamilton, MD, Benjamin Zendejas-Mummert, MD, Ali Kamran, MD, Susannah Clark, PA, Peter Ngo, MD, Michael Manfredi, MD, Russell W Jennings, MD, Boston Children's Hospital

Objective: To describe a novel approach of thoracoscopic repair of long gap esophageal atresia using adjustable internal traction sutures for esophageal growth in order to allow for primary repair.

Description: An 8-month old infant with long gap type A esophageal atresia (6cm gap) underwent thoracoscopic approach for pouch dissection and placement of internal traction sutures from the tip of each esophageal pouch going around a rib. 3-0 Ethibond™ sutures with bovine pericardial pledgets and Roeder's knots were used to allow for simple internal traction adjustment by tightening of the sutures as esophageal growth occurred. Repeat thoracoscopy for suture tightening was performed once weekly and overlap of the esophageal pouches was achieved for easy thoracoscopic anastomosis of minimal tension at 3 weeks. Seprafilm™ was cut into fine pieces with added saline to create a slurry, and this was injected topically around the esophageal pouches to minimize adhesions and scarring between procedures. No paralysis, sedation, or intubation was required between procedures.

Results: With three months follow up, there has been no anastomotic leak, and only a mild esophageal stricture treated by balloon dilation. The time course for esophageal growth with this case of intermittent internal traction adjustment was quite similar to that we have seen for the standard Foker procedure using external traction sutures for esophageal gaps of 6cm. The operative time for the suture adjustment procedures averaged 90 minutes.

Conclusion: This novel approach for thoracoscopic repair of long gap esophageal atresia can be used for cases where the length of gap precludes primary anastomosis in one operation and esophageal growth is required. Morbidity is markedly decreased compared to the open Foker procedure with decreased ICU stay, mechanical ventilation, sedation, and paralysis. Use of Roeder's knots and Seprafilm™ slurry allow for minimal operative time for the thoracoscopic procedures of suture tightening during the esophageal growth phase.

(ET009) THE FLEXDEX: A MECHANICAL ARTICULATING LAPAROSCOPIC INSTRUMENT

Cory N Criss, Kevin N Johnson, MD, Matthew W Ralls, MD, Marcus D Jarboe, MD, James D Geiger, MD, Michigan Medicine

Objective: A number of advances in camera optics, electro-cauterization, stapling, and suturing devices have substantially impacted the field of laparoscopic surgery. However, standard laparoscopic tools have failed to undergo drastic design changes over the years. Despite advancements in the field of robotics, providing a cost effective means to provide the surgeon with mobility and articulation during laparoscopy remains to be seen. With this in mind, FlexDex Inc. (Brighton, MI) sought out to develop a laparoscopic instrument that optimized range of motion strictly through mechanical technology. The advent of this instrument has the potential to provide a more cost effective method to improve instrument degrees of freedom and functionality while operating.

Technology and Design: With a focus solely on mechanics, this instrument has three major components to its design. The first, known as the Three Axis Cuff Gimbal, fixates to the wrist of the operator and provides a central fixation point. The second is known as the Virtual Center™, a handle that is grasped by the hand and fingers where movements are mirrored in the articulating tip. This enhances mobility and provides a more intuitive control during procedures. Furthermore, this houses the control for the opening and closing of the needle driver. Finally, there is the Infinity Handle™, which is grasped with the fingertips, and provides 360° rota-

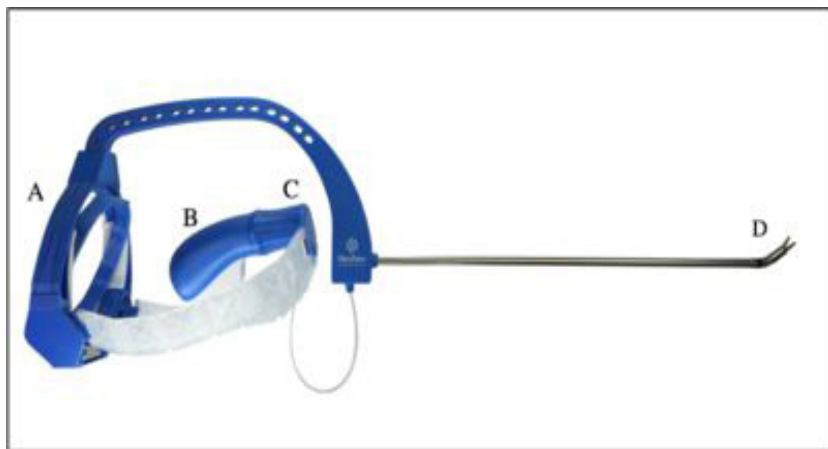
Innovations Abstracts

tion of the needle driver tip. These three major components combine to provide the use with a strictly mechanical control of the needle driver. During the procedure, the FlexDex Needle Driver (FlexDex Inc. Brighton, MI) allowed the ability to naturally articulate for ease during suturing and knot tying during the critical portions of the operation.

Clinical Application: Our institution has utilized the instrument on multiple patients thus far with various procedures including laparoscopic cecostomy, bowel resection, diaphragmatic hernia repair, and Nissen fundoplication. These procedures necessitated suturing at the esophageal hiatus, diaphragm, anterior abdominal wall, and an intracorporeal anastomosis. By providing articulation and intuitive control, suturing and knot tying in limited spaces is much more feasible, a characteristic ideal for minimally invasive surgery.

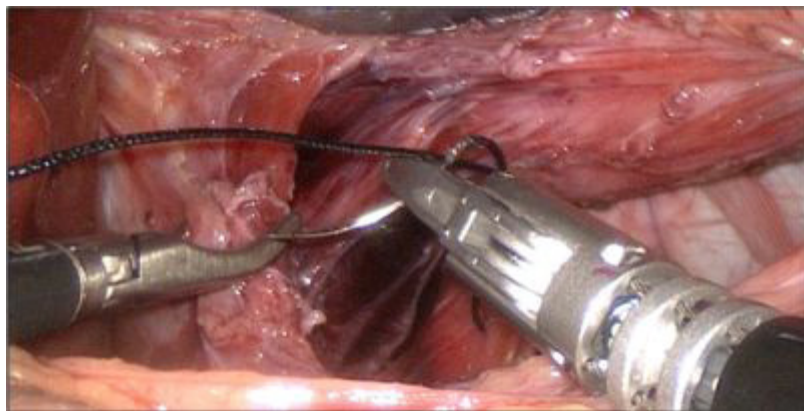
Market and Future Plans: This instrument focuses on a minimally invasive market that exceeds 500 million dollars in the US and over 2 billion dollars worldwide. Utilizing the functionality and cost effectiveness, the optimal market bridges both that of robotics and standard laparoscopy. As it is currently available in a needle driver, the next step is to incorporate various disposable tips to allow a wide range of utilization.

Image-1: FlexDex Articulating Instrument



A: Three Axis Cuff Gimbal-isolates wrist from arm for attachment, B: Virtual Center-hand and wrist control, C: Infinity Handle-360° instrument rotation device, D: Articulating needle driver

Image-2: FlexDex performance during surgery



(QS001) TO STUDY THE RESULTS OF LAPAROSCOPIC PANCREATICOJEJUNOSTOMY USING CYSTOSCOPE AND ENDOSCOPIC BASKET FOR CLEARANCE OF STONE IN BOTH HEAD AND THE TAIL REGION IN PAEDIATRIC POPULATION

Manash R Sahoo, MS, SCB Medical College, Associate Professor, Department of Surgery, Odisha, India

Aim: To study the results of laparoscopicpancreaticojejunostomy using cystoscope and endoscopic basket for clearance of stone in both head and the tail region in paediatric population.

Materials and Methods: 16 patients with chronic pancreatitis underwent laparoscopic LPJ in our unit. Patient ages ranging between 10 and 18 years. The most common presenting symptoms were abdominal pain and weight loss. In all patients diagnosis was confirmed by MRCP. Mean pancreatic duct diameter was 14.8 mm. we used a four-port technique. The pancreatic duct was identified by clearing the peripancreatic fat, palpating with a blunt instrument and by aspirating pancreatic juice using a thin lumbar puncture needle. Clearance of the pancreatic duct in the head region was confirmed by direct vision using cystoscope introduced through the left lateral port and tail through right lateral port. After clearance of all stones the left over stones were removed using endoscopic basket through the cystoscope. We routinely perform side to side pancreaticojejunostomy using 1-0 polypropylene suture reinforced with 1-0 Mersilk. All these 16 patients who underwent LAP LPJ had AP dimension of pancreatic head not more than 3 cm without any pancreatic head parenchymal calcification and with minimal stone load in head, hence head coring was not contemplated.

Results: Mean operating time was 262.5 minutes. Mean post-operative stay was 5.8 days. There were no conversions, intra operative and major postoperative complications. Mean duration of follow up was 16.5 months. Our first 8 patients who were having more than 12 months follow up had pain relief and significant weight gain.

Conclusion: Laparoscopic longitudinal pancreaticojejunostomy is safe, effective and feasible technique for chronic pancreatitis in selected patients in the presence of adequately dilated pancreatic duct containing stones and has favourable outcome in short term follow up.

Key Words: Chronic pancreatitis, Pancreatic stones, Pancreaticojejunostomy, Coring, Cystoscope, Endoscopic basket.

<https://www.youtube.com/watch?v=b2c24T8ZyF4>

(QS002) LAPAROSCOPIC EXCISION OF AND OBSTRUCTING SOAVE CUFF IN HIRSCHSPRUNG'S DISEASE

Kena Vyas, BA, Kaveer Chatoorgoon, MD, Saint Louis University

Background: The Soave Pull-through for Hirschsprung's disease leaves a muscular cuff of aganglionosis surrounding the pull-through. In some patients, this cuff can extrinsically compress the pull-through, leading to chronic enterocolitis and sometimes failure to thrive. Management typically includes botox injections, myomectomy and complete redo pull-through.

Procedure: In this video, we demonstrate a laparoscopic excision of the Soave cuff as an alternative to a complete redo pull-through. The excision is tailored to eliminate the obstruction and minimize injury to surrounding structures.

Results: Three patients have successfully undergone the excision without any operative complications and without the need for a colostomy. They have had resolution of their chronic enterocolitis.

Conclusion: In patients with an obstructing Soave cuff, a laparoscopic excision should be considered as a surgical option. We have found that the procedure can be effective, with little morbidity.

https://www.youtube.com/watch?v=baAjb_00e2U

(QS003) NOVEL APPLICATION OF PORCINE EXTRACELLULAR MATRIX IN RECURRENT STRICTURE AFTER REPAIR OF TRACHEO-ESOPHAGEAL FISTULA

Sarah B Cairo, MD, MPH, Benjamin Tabak, MD, Kathryn Bass, MD, Women and Children's Hospital of Buffalo

INTRODUCTION: Anastomotic stricture is a common complication associated with the repair of esophageal atresia (EA) affecting 30–40% of patients even in the setting of recent innovations in operative technique and improvements in perioperative care. Many factors are thought to contribute to stricture formation including, but not limited to, gap length, gastroesophageal reflux, high birth weight and operative technique. Despite increased understanding of the mechanism of stricture formation and risk factors, the options for management have been limited. Advances in the management of acute and chronic wounds have led to the development of biologic dressings, such as extracellular matrix, with growth factors and proteins essential to wound healing. Endoscopic circumferential delivery of extracellular matrix has been utilized in the management of high-grade dysplasia. By promoting differentiation and proliferation of normal tissue, it has the potential to aid in the healing and remodeling that contributes to esophageal stricture.

OBJECTIVE: This video will describe a novel technique for the management of recurrent stricture in the setting of esophageal atresia using porcine extracellular matrix.

CASE PRESENTATION: The patient was born at 30 weeks gestation with prenatal diagnosis of esophageal atresia and polyhydramnios. Postnatal studies confirmed type B EA with long gap esophageal atresia and she underwent gastrostomy tube placement and two esophageal lengthening procedures. Her esophageal anastomosis was ultimately created using esophageal atresia magnet catheter device, magnamosis, with post-operative course complicated by esophageal stricture. She underwent several endoscopic esophageal dilations and stent placements with some, albeit short lived, success. Based on prior success using extracellular matrix in the management of other esophageal disorders, a sheet of Matristem acellular porcine urinary bladder extracellular matrix was delivered with a stent to the site of recurrent stricture. The sheet was cut into strips and sutured to one end of the stent, extending down its length. Follow up esophagram and plain film demonstrated excellent stent placement without recurrent stricture.

CONCLUSION: Decellularized xenograft extracellular matrix derived from porcine urinary bladder may offer an innovative and effective therapy for recurrent esophageal strictures. Through mobilization of site specific progenitor cells and tissue deposition, this material may fully incorporate into wounds disrupting the inflammatory cascade and fibrosis associated with recurrent esophageal atresia.

https://www.youtube.com/watch?v=50_RusWZI-g

(QS004) NO HEMORRHAGE AND ULTRA-FINE DISSECTION OF LAPAROSCOPIC ANORECTOPLASTY FOR RECTO-BULBAR URETHRAL FISTULA USING 4K IMAGE AND 3.5MM BIPOLAR SCISSORS.

Satoshi Ierii, MD, PhD, FACS¹, Makoto Hayashida, MD, PhD², Kouji Yamada, MD¹, Takafumi Kawano, MD¹, Kazuhiko Nakame, MD¹, Motoi Mukai¹, Tatsuru Kaji¹, ¹Department of Pediatric Surgery, Kagoshima University, ²Department of Pediatric Surgery, Miyazaki Prefectural Hospital

Background and aim: Laparoscopic anorectoplasty for recto-bulbar urethral fistula is technically challenging procedure because of small pelvic space and difficulty of detail anatomical recognition. But in recent days, image solution is highly developed such as "4K" system and 3 dimension system, and these image modalities were introduced in clinical application. On the other hand, many kinds of needlescopic devices from 2 to 3.5mm diameter are available for pediatric endosurgery. In this video, we presented the almost no bleeding procedure of laparoscopic assisted anorectoplasty for recto-bulbar urethral fistula using 4K image and 3.5mm bipolar scissors.

Case and operative procedures: 6 months old boy was diagnosed as recto-bulbar urethral fistula by contrast enema. Body weight was 6.5 kg and no associated anomalies was recognized. Transverse colostomy was made on left upper abdomen at neonatal period. Under general anesthesia, patient was placed in a lithotomy position. A 5-mm 30° laparoscope was inserted through the umbilical incision using the open 5-mm Hasson trocar method. Pneumoperitoneum was established at 8 mmHg CO₂ inflation. Under inspection with a laparoscope, one 5-mm port (right upper abdomen) and two 3-mm ports (right and left lower abdomen) were inserted. In order to obtain the field of view, bladder was sustained by stay suture from outside of abdomen. Peritoneal reflection was opened and rectum was dissected carefully on using 3.5mm bipolar scissors (RoBi, Karl Storz, Tutlingen, Germany) in small pelvic cavity. Tiny vessels were all coagulated by this bipolar and bleeding was not recognized. A recto-bulbar urethral fistula was ligated

by 4–0 vicryl trans-fixing suture and resected. Center of muscle complex including pubo-rectal sling was confirmed by electrical stimulation from both inside and outside. Rectum was pulled through the center of muscle complex and anoplasty was performed.

Conclusion: High resolution 4K image gave us clear anatomical recognition for surgeons compared with conventional high definition image. Based on this image findings and recognition, ultra-fine dissection and the lowest invasive surgery are possible.

https://www.youtube.com/watch?v=3WLeLUZ_VvA

(QS005) NEW COMBINED ENDOSCOPIC AND TRANSANAL APPROACH IN RECTAL ATRESIA.

María Elena Carazo Palacios, Ignacio Miró Rubio, Carlos Gutiérrez Sanromán, José Enrique Barrios, Rosa Fonseca, Juan José Vila Carbó, Hospital La Fe, Valencia, Spain

AIM: Rectal atresia is a rare condition, with a reported incidence of 2% of all anorectal anomalies. Different techniques in its management have been described, usually the posterior sagittal anorectoplasty is chosen.

The aim of this communication is to present a new approach in the management of a newborn with rectal atresia.

MATERIAL AND METHODS: A newborn with abdominal distention and failure to pass meconium was submitted. The external appearance of the genitals and the anus was normal. Rectal examination showed a blind ending 3 cm from anus. The diagnosis of rectal atresia was established.

A colostomy was performed the second day of life and a cologram ruled out a fistula between rectum and urethra.

Ten months later, the patient was operated on with a combination of endoscopic and transanal approach. A 9 mm endoscope was introduced through the sigmoidostomy.

The septum between the endings of the rectum was perforated with diathermy and dissection by videoscopic control. A termino-terminal anastomosis was performed with a 21 mm curve end to end anastomosis (C.E.E.A) by endoscopic control.

Closure of the colostomy was performed in the same surgical act.

RESULTS: There were not complications in the immediate postoperative and the patient was discharged the fifth postoperative day. He started with anal dilatation two weeks after the surgery during 6 weeks. Currently, he has a normal faecal continence.

CONCLUSIONS: The endoscopic and transanal approach is a feasible alternative to other techniques such as posterior sagittal anorectoplasty. This management preserves the anatomy of all elements that contribute to faecal continence.

<https://www.youtube.com/watch?v=P2PzMuYgaKc>

(QS006) SINGLE-STAGE REDUCED PORT LAPAROSCOPIC-ASSISTED TRANSANAL PULL-THROUGH WITHOUT LEAVING BEHIND A MUSCULAR CUFF FOR HIRSCHSPRUNG DISEASE

Kazuki Yokota, MD, Hiroo Uchida, MD, PhD, Yujiro Tanaka, MD, PhD, Takahisa Tainaka, MD, PhD, Wataru Sumida, MD, PhD, Chiyoe Shirota, MD, PhD, Naruhiko Murase, MD, PhD, Kazuo Oshima, MD, Ryo Shiotsuki, MD, Kosuke Chiba, MD, Department of Pediatric Surgery, Nagoya University Graduate School of Medicine

INTRODUCTION: For Hirschsprung disease, three pull-through procedures described by Swenson, Duhamel, and Soave have gained popularity worldwide. Nowadays, the Soave procedure is most commonly used with/without laparoscopic assistance. The Swenson procedure is least often performed because it is possibly associated with a high incidence of injury to pelvic structures. Recently, several studies have reported that the laparoscopic Swenson procedure does not increase the risk of injury to intrapelvic structures and produces favorable outcomes that are as good, if not better, compared with outcomes produced by the other procedures. We believe that it is important to conduct surgery without leaving behind a muscular cuff, which can lead to obstructive symptoms. A muscular cuff is often left behind to reduce risk of injury to pelvic structures, but laparoscopic surgery with excellent lighting and magnification provides better visualization and facilitates precise intrapelvic dissection. Single-stage reduced port

laparoscopic-assisted transanal pull-through without leaving behind a muscular cuff has been performed at our hospital since 2014. Here we present our experience of using this procedure, including the short-term outcomes.

SURGICAL PROCEDURE: The patient is placed under general anesthesia in the lithotomy position. An umbilical Benz incision is made, and a multi-channel access port device with three 5-mm trocars is inserted through the incision; a 3-mm port is inserted in the lower right abdomen. Following peritoneal cavity examination, the transition zone is identified by frozen section pathology with a full-thickness biopsy. The proximal ganglionated bowel is mobilized, and distal circumferential dissection is performed. The rectum below the peritoneal reflection is circumferentially dissected up to the inferior border of the levator ani muscle; this dissection is meticulously performed along the precise lines of the wall of the rectum to identify and preserve the pelvic structures. Then, a transanal circumferential full-thickness dissection procedure is performed from the anorectal line without leaving behind a muscular cuff. When a full-thickness circumferential dissection is achieved, the aganglionic bowel is freely removed and the ganglionic bowel is pulled through and anastomosed to the anal canal.

RESULT: This procedure was performed in 12 children. Nine patients received the short type and three received the long type. For a single-stage operation in the long type, the long tube was aggressively placed for preoperative bowel irrigation in the dilated colon through the aganglionic bowel. The median weight of the patients at the time of surgery was 7.2 (2.8–12.1) kg, age was 4 (1–27) months, operating time was 215 (143–306) min, and follow-up duration was 19 (4–34) months. There were no intraoperative complications, postoperative ileus, urinary retention, or anastomotic leakage. Postoperative enterocolitis was noted in one patient, severe perianal excoriation in two, and frequent defecation, which continued for 1 year, in one.

CONCLUSION: This reduced port surgery procedure particularly facilitates the removal of the entire original aganglionic bowel without leaving behind a muscular cuff or pouch. Our procedure was found to be safe and feasible based on the short-term follow-up outcomes. However, longer follow-up durations are required to better characterize this procedure.

(QS007) A SINGLE SURGEON LAPAROSCOPIC DUODENODUODENOSTOMY CASE SERIES FOR CONGENITAL DUODENAL OBSTRUCTION IN AN ACADEMIC SETTING

Arturo Estrada, MD, Anne Kulungowski, MD, Stig Somme, Children's Hospital Colorado – University of Colorado

Introduction: Laparoscopic duodenoduodenostomy can be performed to repair congenital duodenal obstruction from atresia or duodenal web.

There are only a few published case series in the literature. We are reporting on a single surgeons' experience with the operation and briefly discuss the technical aspects of the operation.

Material and Methods: A retrospective chart review was performed using the electronic medical record identifying all patients who underwent laparoscopic duodenoduodenostomy at two institutions by a singular surgeon. The operation was performed creating a "diamond" shaped duodenoduodenostomy between the 1st portion of the duodenum and the 3rd portion. In the case of rotational anomaly the distal duodenum or proximal jejunum was used. The anastomosis was created using 5-0 or 4-0 Vicryl on a TF or RB needle. The posterior wall of the anastomosis was created using a running stitch. The anterior wall was closed with interrupted suture. Most operations were completed with a single 5 mm umbilical port for the camera, in addition to two "stab" incisions used as working ports. All knots were tied intracorporeal. As needed, a retracting stitch was placed into the first portion of the duodenum to facilitate exposure.

Results: Fourteen patients were identified as having undergone laparoscopic duodenoduodenostomy from 2010 until 2016. The weight at the time of the operation ranged from 1.5 kg to 8.7 kg (median 2.9 kg). The age ranged from 1 day to 15 months (median 3 days). Operative time ranged from 2 h 10 min to 3 h 45 min. The majority of patients underwent additional procedures during the same anesthesia. The most common procedures were broviac placement, Ladd's procedure, but also a TEF repair was performed. One case was converted to open due to poor visualization. One patient developed a stricture that required open anastomotic revision at 4 weeks of age. In one patient an enterotomy in the first portion of the duodenum was created from the retraction stitch – this was repaired by primary laparoscopic closure. There were no mortalities and no intraoperative blood loss requiring transfusion.

In conclusion: Laparoscopic duodenoduodenostomy is an operation that can be performed with excellent outcomes following simple steps that are easily taught in a teaching setting.

(QS008) EFFECT OF LAPAROSCOPIC GASTROSTOMY ON APPEARANCE OF GASTROESOPHAGEAL REFLUX – RESULTS OF EXPERIMENTAL STUDY

Yury Kozlov, MD¹, Polina Baradieva¹, Konstantin Kovalkov², Vladimir Novozhilov, MD¹, Oksana Hryachkova³, Evgenija Polukonova², Lyudmila Malikova², Alexander Seliverstov², Marat Ilyasov², Nikita Shabaldin⁴, David Chubko⁵, ¹Pediatric Hospital Irkutsk, ²Kemerovo Clinical Pediatric Hospital, ³Kemerovo Research Institute for Complex Issues of Cardiovascular Diseases, ⁴Kemerovo State Medical Academy, ⁵Krasnoyarsk Regional Pediatric Hospital

Background: Gastrostomy is the most common procedure in pediatric surgery. Open and laparoscopic methods of this operation at children are easily feasible and followed by the small number of complications. However, after installation of gastrostomy tube there is risk of appearance of gastroesophageal reflux (GER). The views of an origin of this complication remain contradictory. The aim of scientific research was to evaluate the effect of laparoscopic gastrostomy on appearance of reflux at laboratory animals.

Material and methods: The simple cohort from 30 Californian rabbits whose weight was from 2300 to 2700 g was used as object of experiment. All experimental animals were distributed on equal groups on 10 rabbits in everyone depending on where on anterior wall of stomach was settled down the opening orifice for installation of gastrostomy tube: Group 1 – orifice was in stomach fundus; Group 2 – in stomach body; Group 3 – in stomach antrum.

In final part of experiment was analysed data of X-ray contrast studies of stomach in laboratory animals before and after operation and made conclusions on impact of laparoscopic gastrostomy on appearance of gastroesophageal reflux

Results: The postoperative course was uneventful in the all animals. After the analysis of contrast roentgenograms of stomach were established the following facts:

- all animals of group 2 and 3 had no reflux of contrast from a stomach to esophagus;
- at 8 of 10 animals of group 1 was noted backflow of contrast substance from stomach to esophagus showing gastroesophageal reflux.

X-ray contrast research of stomach demonstrated that cases of appearance of gastroesophageal reflux after performing of laparoscopic gastrostomy were limited by animals at whom the gastrostomy tube was placed in stomach fundus, probably causing deformation of esophago-gastric connection.

Conclusion: Results of our research demonstrate that the gastrostomy with insertion of tube in stomach body or antrum can be executed with absence of GER, than installation of gastrostomy tube in stomach fundus. Thanks to scientific work has been shown that correct placement of tube in the stomach provides stable and reliable function of laparoscopic gastrostomy which doesn't stimulate appearance of gastroesophageal reflux.

(QS010) INAPPROPRIATE USE OF PROPHYLACTIC ANTIBIOTICS FOR PYLOROMYOTOMY AMONG CHILDREN'S HOSPITALS

Kibileri Williams¹, Timothy Lautz², Richard J Hendrickson³, Tolulope Oyetunji², ¹Northwestern University, ²Ann & Robert H Lurie Children's Hospital of Chicago, ³Children's Mercy Hospital, University of Missouri Kansas City

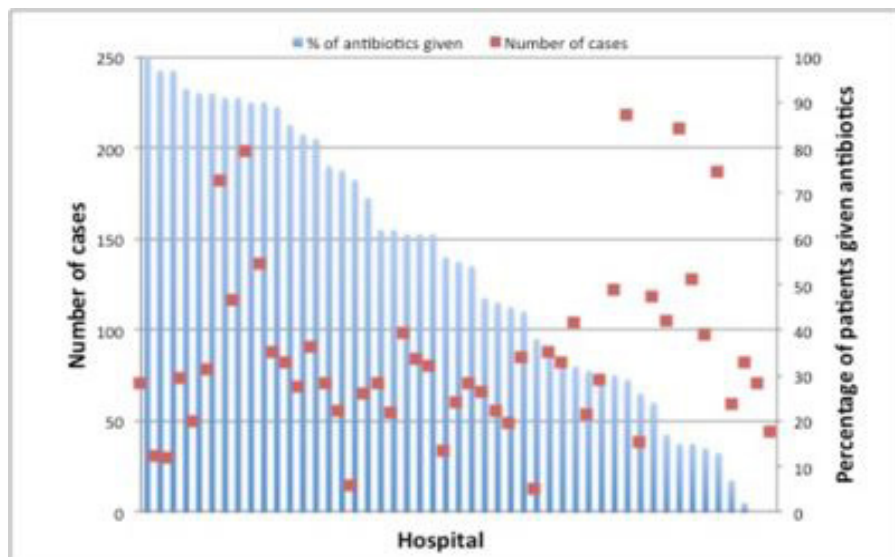
Introduction: The incidence of surgical site infection after pyloromyotomy remains low at 1–2%. The laparoscopic approach has become increasingly popular in the US and the procedure is considered "clean" by the conventional wound classification system. Inappropriate antibiotic use is the primary driver of antimicrobial resistance and adverse antibiotic-related events with national strategies focusing on better stewardship. We aim to investigate antibiotic administration for this procedure among leading children's hospitals in the US.

Methods: We queried the Pediatric Health Information System (PHIS) database for all patients less than 1 year of age with a principal diagnosis of pyloric stenosis who underwent pyloromyotomy from 2013–2014. The PHIS hospitals are 49 of the largest and most advanced children's hospitals in the US. We extracted demographic data as well as length of stay and antibiotic administration. We excluded those with total length of stay greater than 10 days and those who were not discharged to home. Data were analyzed descriptively using Stata.

Results: A total of 4206 patients were identified from 49 hospitals. The majority were male (84%) and Caucasian (70%). The median age at admission was 32 days (IQR 24–44 days) and median length of stay was 2 days (IQR 1–2 days). Antibiotics were given on the

day of the procedure in 2153 (51%) patients with significant variation among hospitals. Only 2 of 49 hospitals gave no antibiotic prophylaxis with 92% of hospitals administering antibiotics to more than 10% of patients. No infectious complications were identified whether antibiotics were given or not.

Conclusions: We have shown that among tertiary level pediatric institutions, prophylactic antibiotics are being inappropriately administered for a clean procedure in more than 10% of cases at more than 92% of hospitals. This represents a need for standardization of care and better antibiotic stewardship in pediatric surgery.



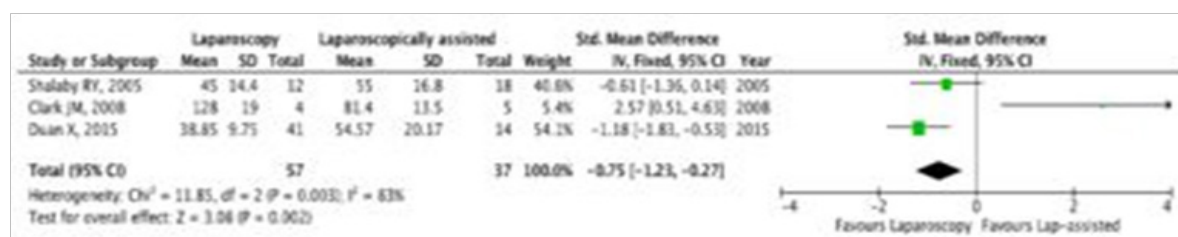
(QS011) LAPAROSCOPIC VERSUS LAPAROSCOPIC-ASSISTED EXCISION OF MECKEL'S DIVERTICULUM IN CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS

Vincenzo D Catania¹, Giuseppe Lauriti², [Elke Zani-Ruttenstock](#)¹, Lina Antounians¹, Pierluigi Lelli Chiesa², Agostino Pierro¹, Augusto Zani¹, ¹The Hospital for Sick Children, ²Spirito Santo Hospital, Pescara

AIM OF THE STUDY: Meckel's diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract. Laparoscopy is considered safe and effective in the management of MD in children. However, there is an ongoing debate whether the intracorporeal laparoscopic excision of MD is superior to the laparoscopic-assisted excision. The aim of our study was to determine whether the type of laparoscopic approach for the treatment of MD had an impact on patient outcome.

METHODS: Using a defined search strategy (PubMed, Medline, OVID, Embase, Cochrane databases), two investigators independently identified all comparative studies reporting data on MD excision either through laparoscopy or laparoscopic-assisted procedure in patients <18 years old. Case reports and opinion articles were excluded. The meta-analysis was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and analyzed using RevMan 5.3. Data are expressed as mean±SD. The present study was registered on PROSPERO – international prospective register of systematic reviews.

MAIN RESULTS: Systematic review – Of 1359 titles or abstracts screened, 28 full-text articles were analyzed. Five comparative studies were included, none of which was a randomized controlled trial. All selected papers were retrospective and reported the outcome of 106 patients with MD. The surgical approach was laparoscopy in 68 (63%) and laparoscopic-assisted in 40 (27%). Meta-analysis – Laparoscopy was associated with shorter length of procedure (46.4±58.8min) in comparison to laparoscopic-assisted excision (58.4±15.4min, p=0.002, Standardized Mean Difference -0.75, 95% confidence interval (CI) -1.23 to -0.27, I²=83%; Figure). The length of the hospital stay was reported in only one paper and it was longer in the laparoscopic group (4.3±1.5 days) than in the laparoscopic-assisted one (3.7±0.75 days; p=0.49). Although there was no significant difference in the prevalence of post-operative complications between the two groups (laparoscopy: 1.5%, laparoscopic-assisted: 6%; p=0.08, odds ratio (OR) 0.20, 95% CI 0.03 to 1.22, I²=57%), post-operative small bowel obstruction was more frequent in the laparoscopic-assisted group (12%) than in the laparoscopy group (0%; p<0.05, OR 0.03, 95% CI 0.00 to 0.85, I²=not applicable).



CONCLUSION: This study shows that the evidence in support to the type of laparoscopic approach (intracorporeal or laparoscopic-assisted) remains poor. Laparoscopic-assisted excision of MD is associated with an increased risk of post-operative small bowel obstruction, probably because of bowel manipulation. Prospective studies with long-term follow-up are needed to confirm these outcome data and determine which is the best laparoscopic approach in children.

(QS012) MAGNETIC COMPRESSION ANASTOMOSIS (MAGNAMOSIS) FOR FUNCTIONAL UNDIVERSION OF ILEOSTOMY IN PEDI- ATRIC PATIENTS.

Luzia Toselli, MD¹, Claire Graves, MD², Marcelo Martinez-Ferro, MD¹, Guillermo Cervio, MD³, Dillon A Kwiat², Jill Imamura-Ching², Michael R Harrison, MD², ¹Fundacion Hospitalaria, Private Children's Hospital, Buenos Aires, Argentina., ²University of California, San Francisco, ³Hospital de Pediatria S.A.M.I.C. Prof. Dr. Juan P. Garrahan

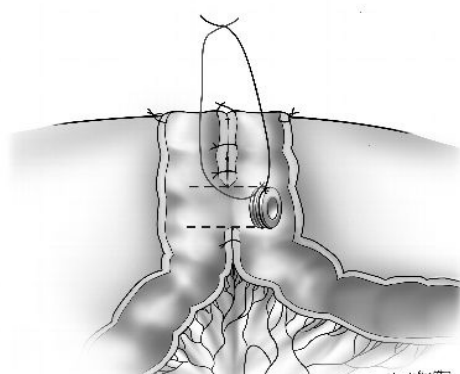
Introduction: Magnamosis forms a compression anastomosis using a pair of selfaligning magnetic Harrison rings. The device has been approved by the Food and Drug Administration for first-in-human testing and has been applied in adults for intestinal anastomosis during urologic reconstructions. We now report the first two cases of Magnamosis to functionally undivert the fecal stream from a previously created loop ileostomy in pediatric patients.

Materials and Methods: Case 1: A four year old male underwent a diverting loop ileostomy for bowel obstruction from metastatic hepatoblastoma. Although the obstruction gradually resolved with chemotherapy, high stomal output and malnutrition persisted, prompting undiversion. Case 2: A sixteen year old female with ileocolonic polyposis underwent ileoproctectomy with J Pouch and diverting loop ileostomy. She was expected to have perineal skin problems after refunctionalization.

Parental and institutional approval was obtained after detailed description of the procedure. The Magnamosis Undiversion technique involves introducing a Harrison ring through each stomal limb 5 cm deep from the skin under general anesthesia with Xray guidance. Magnets are each tied with silk sutures that exit the stoma and are then tied to each other externally. (Figure). The device is removed when patency is detected.

Results: In both cases, the introduction procedure took less than twenty minutes and there were no complications. Enteral feeding was initiated 24 and six hours postoperatively, and passage of stool through the anus occurred by the fourth and fifth days, respectively. Magnets were removed 14 and 15 days postop, with no evidence of leak or any other complication.

Conclusion: We conclude that the Magnamosis Undiversion procedure is a safe, minimally invasive way to gradually refunctionalize the excluded distal bowel after previous diverting ostomy that could in the future be accomplished without general anesthesia.



(QS014) TRANSABDOMINAL VERSUS SUBCUTICULAR SUTURES TO SECURE A LAPAROSCOPIC GASTROSTOMY

Ashwini S Poola, MD, Katrina L Weaver, MD, Richard Sola, MD, Shiva Reddy, Angela Mundakkal, Fedra Fallahian, Harmeet Bawa, Rebecca M Rentea, Shawn D St.peter, MD, Children's Mercy Hospital – University Of Missouri Kansas City

PURPOSE: Multiple fixation styles are used during laparoscopic gastrostomy. We utilize two common techniques. The transabdominal method (TA) consists of 2 monofilament sutures securing the stomach that are tied overtop the gastrostomy button and removed 4–5 days later. The subcutaneous technique (SC) buries 2 fixation sutures under the skin that remain in place until absorption. Smaller series have reported safety and efficacy with SC sutures. The aim of this study is to compare all complications between these two techniques.

METHODS: A single center retrospective review of patients who underwent laparoscopic gastrostomy tube placement between 2010 and 2016 was conducted. TA and SC were compared in outcomes prior to their first gastrostomy tube change. Complications included cellulitis, abscess formation requiring drainage, wound breakdown or erosion, internal and external leak, and dislodgement rates. In addition, persistent gastrocutaneous fistula requiring surgical closure was compared.

RESULTS: 740 children underwent a laparoscopic GT placement during with a median age of 8 months at gastrostomy (IQR: 3–30 months). More than half of the patients had a 12 French 0.8 cm gastrostomy tube placed.

554 (75%) patients had a TA stitch and the remaining 186 (25%) had a SC stitch. Demographic data was comparable in both groups. Prolene or PDS was used in the TA cohort with the majority having a PDS suture (77%). In the SC group, Vicryl (56%) was used slightly more frequently than Monocryl.

Operative times were significantly longer in the SC group (22 v. 28 minutes, $p < 0.002$). Granulation, erosion, external and internal leakage, and early dislodgement rates were equivalent between both cohorts. There were higher rates of cellulitis (19% v. 7.3%, $p < 0.001$) and abscess (7.6% v. 0.8%) noted in the SC versus TA patients. Time to external leakage was significantly earlier in the SC group (26 v. 34 days, $p < 0.03$); however, all other wound complications occurred at equivalent times following initial operation. Persistent gastrocutaneous fistulas requiring surgical closure occurred at equal rates with no difference in times to closure from GT discontinuation in both groups.

CONCLUSIONS: While both stitches are feasible options for securing gastrostomy tubes, there are increased rates of infectious wound complications and operative times in the subcutaneous stitch group while providing no measurable benefit.

(QS015) LAPAROSCOPIC EXCISION OF A CONGENITAL SPLENIC CYST IN AN ADOLESCENT FEMALE

Sarah B Cairo, MD, MPH, Benjamin Tabak, MD, David H Rothstein, MD, MS, Women and Children's Hospital of Buffalo

INTRODUCTION: Nonparasitic primary splenic cysts are a rare clinical entity. With recognition of the spleen's important immunological function, spleen-preserving surgery has become the treatment modality of choice. Technical limitations and diagnostic uncertainty may preclude minimally invasive approaches to partial splenectomy.

OBJECTIVE: To describe a technique for minimally invasive, spleen-preserving, excision of a congenital splenic cyst.

CASE PRESENTATION: The patient is a 15 year-old female with a history of hypothyroidism initially seen in the Emergency Department for progressive abdominal fullness, early satiety, and occasional nausea with oral intake. CT scan was performed revealing a large, 15 x 14 x 22 cm intrasplenic cystic lesion with distortion of surrounding peritoneal and mesenteric structures. Ultrasound guided drainage of the cyst was performed preoperatively with removal of over 2 liters of chocolate-colored serous fluid. Following drainage she was taken to the operating room for laparoscopic excision of the large splenic cyst with a thin rim of healthy splenic parenchyma. The remaining spleen was evaluated and appeared to be of normal appearance and volume. An argon beam coagulator was used to obtain adequate hemostasis and obliterate the residual cyst lining. Pathology was consistent with fragmented, benign, nonparasitic cyst. Postoperative ultrasound was performed at one month demonstrating sufficient healthy splenic tissue and a small residual fluid collection.

CONCLUSION: Laparoscopic partial splenectomy for excision of a nonparasitic primary, congenital splenic cyst is a safe and effective alternative to open procedures and total splenectomy. Preoperative planning and interventions are paramount to facilitate a successful operation.

https://www.youtube.com/watch?v=C58kU2Ys_y4

(QS016) LAPAROSCOPY FOR ABDOMINAL SURGICAL CONDITIONS IN PREMATURE BABIES: ARE WE DOING GOOD?

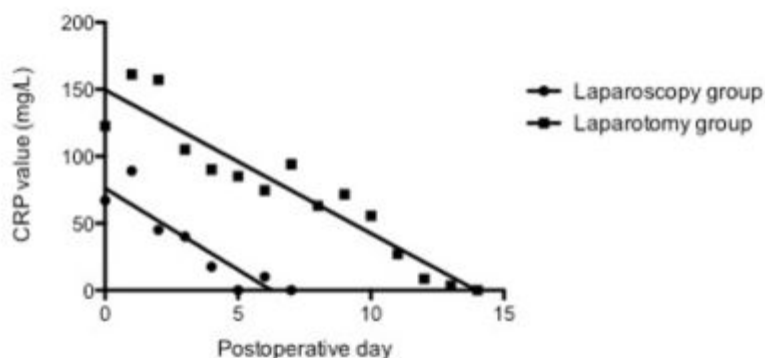
P Clermidi, MD, F Bastard, MD, S Soudée, MD, C Farnoux, MD, V Biran, MD, PhD, M Bellon, MD, A Bonnard, MD, PhD, Robert Debre Children University Hospital

Background: Necrotizing enterocolitis (NEC) and Isolated Intestinal Perforation (IIP) are the most common surgical conditions in premature babies. The role of the laparoscopy has been reported essentially as a tool for an earlier diagnosis. The aim of the study was to report our experience with laparoscopy in NEC and IIP and investigate the post-operative kinetic CRP compared to a population managed by laparotomy

Patients and method: From February 2015 to June 2016 we enrolled all premature babies presented with a sepsis and clinical signs of surgical abdominal complications introducing the laparoscopy (group 1). C Reactive Protein was serially monitored after the surgery at Day Post-Operative (DPO) 1, 2 and every other day depending of the clinical evolution. We compared those data to our immediately anterior series of premature babies operated on for IIP or NEC based on our previous indications (pneumoperitoneum, failure to respond to the medical treatment) and matched on the gestational age and birth weight (group 2). The postoperative evolution of the median CRP was modeled via a linear regression model. The model was used to compare the postoperative decrease of CRP and forecast the estimated duration to reach basal CRP level after surgery in the two groups.

Results: There were 15 patients in each group. The 2 populations were comparable. The proportion of NEC and IIP was also comparable. According to our new protocol introducing the laparoscopy, laparoscopy patient's group were operated earlier and at a younger age. As a result, they were smaller with a median weight at surgery of 1160 g [610–2020]. The CRP max in this group was also lower than the other group with a median of 96 [0–313]. According to the linear regression models, the course of postoperative CRP level showed a statistically different departure point between the two groups (76.13 and 149.5 for the laparoscopic and the laparotomy groups respectively, $P < 0.0001$) and a parallel decrease in the two groups (pooled slope = -10.90 , $P = 0.60$). The models forecast the return to basal CRP level earlier for the laparoscopy group than the laparotomy group (DPO 6 vs DPO 14 respectively).

Conclusion: Introducing laparoscopy in NEC and IIP management for premature babies allowed a faster return to a basal CRP level compared to a group of patients managed according to the classical surgical indications. The shorter duration of the acute inflammation phase may have an impact on the cerebral development and the risk of cognitive impairment in these premature babies.



(QS017) LAPAROSCOPIC EXAMINATION FOR NECROTIZING ENTEROCOLITIS

Weiwei Jiang, MD, Nanjing Children's Hospital Affiliated to Nanjing Medical University

Background: The incidence of necrotizing enterocolitis (NEC) and mortality rate associated with this disease are not decreasing in recent years. There is lack of specific indications for surgical intervention of NEC. The authors wanted to know the extent of intestinal disease by laparoscopic exploration to deciding the operative treatment of choice. Methods: Laparoscopic examination was performed in these patients who had not seen a marked improvement in the conservative treatment for a week between October 2012 and March 2016 were reviewed.

Results: A number of 67 cases were examined by laparoscopy. Median gestational age at birth was 33.5 weeks (range, 31 to 37) and median weight was 2.1 kg (range, 1.1 to 3.2). Laparoscopy was safe and tolerated well in these cases. Laparotomy was performed in 18

cases, a laparoscopically guided ileostomy was performed in 21 cases and a laparoscopically guided intestinal anastomosis was performed in 7 cases. Continue conservative treatment was performed in 21 cases, among these cases 18 cases did not require further surgery, and the remaining 3 cases underwent delayed laparotomy. Two infants who were all with intestinal gangrene and severe infection were died.

Conclusions: Laparoscopic examination can provide information regarding intestinal viability which can guide further surgical time and the surgical ways.

(QS018) EFFICACY OF METICULOUS INVESTIGATION MANEUVER FOR DISCOVERING CONTRALATERAL PATENT PROCESSUS VAGINALIS ON PREVENTING METACHRONOUS CONTRALATERAL INGUINAL HERNIA IN CHILDREN

Tae Ah Kim, MD, Soo Min Ahn, MD, Hallym University Hospital

Purpose: Even in this latest era of laparoscopic inspection of contralateral patent process vaginalis (CPP) during inguinal hernia repair in children, the incidence of metachronous contralateral hernia (MCH) still did not reach zero. We sought to evaluate the efficacy of a meticulous investigation maneuver to obviate a subsequent surgery for MCH in children.

Methods: One hundred and fifty children were prospectively subjected to meticulous investigation maneuver for discovering CPP during laparoscopic intracorporeal inguinal hernia repair between Sep 2014 and Aug 2016. The patency of contralateral internal inguinal rings were closely investigated and unveiled by lifting the peritoneal fold covering deep ring using 3-mm grasper and Maryland forceps followed by direct introducing a 2.7-mm 30° telescope to confirm the any possibility of hidden continuity through the canal of Nuck. Contralateral de novo symptoms or subsequent surgeries for MCH were queried by telephone survey. The incidences of CPP and MCH were compared to the data from a systemic review of the previous reports.

Results: A systemic review of previous reports revealed laparoscopically confirmed the incidence of CPP up to 55.7% followed by up to 2.5% incidence of MCH among the patients with negative CPP while applying only conventional laparoscopic inspection to contralateral patency of internal ring. In our series, only 19% (n=26, Lt:Rt = 14:12) of the patients who were preoperatively diagnosed with unilateral inguinal hernia (n=137, Lt:Rt, 61:76) were laparoscopically confirmed to have CPP. Nevertheless, none of 111 children with negative CPP presented any evidence of MCH or underwent subsequent contralateral herniorrhaphy during the 18 months of median follow up period (ranged from 6 to 36 months). All parents have responded to telephone survey.

Conclusion: Accurate detection of CPP by meticulous investigation maneuver may be attributable to obviate subsequent surgery for MCH even in pediatric population with lower incidence of CPP.

(QS019) LAPAROSCOPIC NISSEN FUNDOPLICATION FOR GASTRO-ESOPHAGEAL REFLUX DISEASE WITH CONCOMITANT PERCUTANEOUS ENDOSCOPIC GASTROSTOMY TUBE INSERTION...FAILED!

P Clermidi, MD, A Mariani, MD, L Montalva, MD, CO Muller, MD, J Viala, MD, PhD, A Mosca, J Hilly, MD, E Gayat, A Bonnard, MD, PhD, Robert Debre Children University Hospital

Background/Purpose: A study was conducted to identify predictive risks of failure of Laparoscopic Nissen fundoplication (LNF), in order to define a new therapeutic strategy for Gastro-esophageal reflux disease (GERD) in children. We focused on the gastrostomy tube placement before or simultaneously to the LNF either it was a predictive factor or not of LNF failure. We also compared the rate of failure between the different insertion gastrostomy's techniques.

Patients and Methods: A retrospective study reviewed all patients that underwent LNF from January 2005 to January 2014. Data collected included patient demographics, complications (procedure-specific and non-specific) and indication of the insertion of gastrostomy feeding tube (GT) before or during the procedure (after the wrap confection). We used 3 different insertion techniques to place the gastrostomy feeding tube (GT): a Pull (PL), a push (PS) or an open (OP) technique. An endoscopic control was necessary for the PL and PS technique. Data were compared using Chi-square or Fisher test analysis.

Results: 133 children underwent LNF, 103 children were therefore included in the analysis. 22 (21%) had a previous gastrostomy, 52 (50%) underwent a GT placement during LNF (5 excluded for lack of data). Among the 47, 34 (72%) had the PL technique, 7 (14%) the PS and 6 (12%) the CH.

The failure rate if a gastrostomy was already present was 18.2%. On the other hand, the concomitant GT placement was associated with a significantly higher risk of failure (28.2%, p=0.025). The insertion technique (PS, PL or CH) was not failure related (p>0.05).

Conclusion: A simultaneously GT placement with LNF is associated with an over rate of failure in our series. This can be explained by the stretching of the wrap due to the introduction of the endoscope and the insufflation of air to expand the stomach immediately after the wrap has been performed.

We failed to demonstrate that the open approach is safer probably due to the small number of patients concerned by this technic but it could be the alternative if a GT placement is required.

(QS020) LAPAROSCOPIC RESECTION OF PANCREATIC TUMORS IN CHILDREN: RESULTS OF A MULTICENTRIC SURVEY

Ciro Esposito, Prof¹, Pascal De Lagausie², Maria Escolino¹, Amulya Saxena, Prof³, Francesco Turrà¹, Mariapina Cerulo¹, Alessandra Fari-
na¹, George W. Holcomb 3rd, Prof⁴, Alessandro Settini, Prof¹, Francois Becmeur, Prof⁵, David Van Der Zee, Prof⁶, ¹University of Naples
Federico II, ²Hôpital d'Enfants de La Timone, Marseille, France, ³Chelsea Children Hospital, London, UK, ⁴Children's Mercy Hospital,
Kansas City, Missouri, USA, ⁵Hôpitaux Universitaires de Strasbourg, Strasbourg, France, ⁶Wilhelmina Children's Hospital, University
Medical Centre, Utrecht, The Netherlands

Background: Very few reports in the literature have described the role of laparoscopic approach for treatment of pancreatic tumors in children. Our study aimed to report the results of a multicentric survey about laparoscopic treatment of pancreatic tumors in children.

Methods: The data of patients operated using MIS for a pancreatic tumor in 5 International centers of Pediatric Surgery in the last 5 years were retrospectively reviewed. We recorded data relating to the clinical presentation, diagnostic evaluation, surgical technique and outcome.

Results: Fifteen patients (average age 2.2 years) were identified. The most common symptoms at presentation were related to the hypoglycemic hyperinsulinism, followed by abdominal pain and vomiting. Tumor types were insulinoma (n=4), Congenital Hyperinsulinism (CHI) diffuse type (n=3), CHI focal type (n=3), solid pseudopapillary tumor (n=2), cystic malformation (n=3). The diagnostic assessment was completed using ultrasound associated with CT scan in all centers; 18FDOPA PET in combination with CT was adopted in 2 centers. The MIS procedures performed were: tumor enucleation (n=4); distal pancreatectomy (n=8); subtotal pancreatectomy (n=2) and pancreatico-jejunostomy (n=1). Average operative time was 110 minutes. No conversion to open surgery was reported. As for post-operative complications, we recorded a persistent hypoglycemia in 1 case, requiring redo-surgery (IIIb Clavien-Dindo) and a thrombosis of splenic vein, not requiring any treatment (I Clavien-Dindo).

Conclusions: Laparoscopic resection can be considered a safe and effective treatment with minimal morbidity and excellent outcomes for most pediatric pancreatic tumors. Suspension of the stomach with a transparietal stitch and use of new haemostatic devices as Starion TLS3 or Ligasure are key factors for the success of the procedure. A long-term follow-up is mandatory in these patients to evaluate post-operative complications and long-term outcome. In our mind, considering the rarity of the pathology, these patients should be referred only in experienced centers with high-volume MIS activity.

(QS021) SINGLE-PORT APPENDICECTOMIES: HOW OFTEN IS CONVERSION TO AN OPEN PROCEDURE NECESSARY – WHY AND HOW WE DID IT

Rebecca A Pohle, MD, Tobias Klein, MD, Thomas M Boemers, PhD, Children's Hospital of Cologne

We performed 483 Appendicectomies for acute Appendicitis during the last 3 years (1/2014 – 11/2016). Of these 483 Appendicectomies, 382 (79,1%) were performed as Single-Port Appendicectomies with a transumbilical access with a laparoscope with working channel through a 10 mm port. After laparoscopic mobilisation, the appendix was retrieved through the umbilical port and resected extracorporally.

In the remaining 101 cases, a laparoscopic mobilization with the transumbilical working port laparoscope was not possible due to either difficult anatomic conditions (severe adhesions, fixed retrocoecal position, n=43), complicated appendicitis (severe inflammatory reaction with peritonitis, n=56) or complications during laparoscopy (n=2).

In 32 of the 101 cases in which a single-port laparoscopic mobilization of the appendix could not be performed, we slightly extended the umbilical incision infraumbilically and performed an open appendicectomy via this median mini-laparotomy. This incision was then closed using a skin displacement plasty, therefore an excellent cosmetic result could be achieved despite the open procedure.

The remaining 69 appendicectomies were performed in a conventional open technique (53 pararectal incisions, 16 McBurney incisions).

The overall conversion rate to an open procedure was 20,9%. Of the 20,9% of appendicectomies in which a single-port approach was not possible, 32% could be managed by a small extension of the umbilical port incision with excellent cosmetic results comparable to the single-port procedures.

The mean operative time was 85 minutes for non-perforated appendicectomies and 93 minutes for perforated appendicectomies. The operations were carried out by 14 different pediatric surgeons in our department.

This retrospective study showed that single-port appendicectomy could be performed in the majority of cases of acute appendicitis (79,1%). 6,6% of appendicectomies could be performed through a small extension of the umbilical port incision with skin displacement plasty, leaving no more scar than the single-port cases. A second incision was only necessary in 14,3% of the cases.

(QS022) LAPAROSCOPIC RESECTION OF A CONGENITAL PANCREATIC CYST

Caitlin A Fitzgerald, MD, Sarah J Hill, MD, Katherine J Baxter, MD, MS, Matthew T Santore, MD, Emory University

Background: Congenital pancreatic cysts are rare lesions that are difficult to diagnose. While most lesions are small, they can grow large in size and can lead to the obstruction of other abdominal organs. For the majority of cases, a complete excision is the best treatment option. However, if the cyst is located near the head of the pancreas, a complete excision is not possible. Herein we present a case report of a patient with a recurrent congenital pancreatic cyst that required multiple surgical excisions.

Case Report: The patient initially presented to our facility at 1 day of life, after being diagnosed with hydrocephalus and an abdominal mass during a routine prenatal ultrasound. Upon initial workup, the child was found to have numerous congenital malformations including multiple intracranial cysts, a multicystic retroperitoneal mass, and hypoplastic digits. She initially underwent ultrasound guided drainage of the abdominal cyst. Fluid from this procedure was found to be consistent with pancreatic fluid. The patient was then taken to the operating room with general surgery where she underwent a laparoscopic excision of the congenital pancreatic cyst including a distal pancreatectomy with gastrostomy tube placement. Pathology from this surgery confirmed a pancreatic cyst that was epithelial in origin. The patient was doing well until 11 months of age, when she presented with a recurrent pancreatic cyst. She then underwent a second laparoscopic resection with marsupialization of multiple smaller cysts. Since this procedure, the patient has been doing well with no evidence of recurrence as confirmed by ultrasound.

Discussion: Congenital pancreatic cysts are thought to be caused by a developmental anomaly within the pancreatic ductal system. If the embryonic ducts fail to regress during development, they can cause an obstruction of the permanent ducts and subsequent cyst formation. Though most congenital cysts are found incidentally, patients can present with obstructive symptoms including abdominal distention, vomiting, jaundice, or pancreatitis. While a complete cystectomy is the preferred treatment for a congenital pancreatic cyst, this is not always an option for all patients. If the cyst is located closer to the head of the pancreas, a cystoduodenostomy or Roux-en-Y cystjejunostomy is preferable. While congenital pancreatic cysts are extremely rare, they should be considered in the differential diagnosis of all pancreatic cysts, especially if the patient has no history of pancreatitis.

https://www.youtube.com/watch?v=bzl3cKetW_U

(QS023) FACTORS AFFECTING NON-OPERATIVE MANAGEMENT OF UNCOMPLICATED APPENDICITIS IN CHILDREN. SHOULD LAPAROSCOPIC APPENDECTOMY BE IMMEDIATE, INTERVAL, OR EMERGENCY?

Go Miyano, MD, Takanori Ochi, MD, Shogo Seo, MD, Hiroki Nakamura, MD, Manabu Okawada, MD, Takashi Doi, MD, Hiroyuki Koga, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD, Juntendo University School of Medicine

PURPOSE: We conducted a prospective nonrandomized comparison of children with non-complicated appendicitis treated either by laparoscopic appendectomy (LA) as an immediate primary procedure (primary laparoscopic appendectomy; PLA) or by non-operative management (NOM) followed by interval LA if NOM was successful (ILA) or emergency LA if NOM was unsuccessful (ELA)

METHODS: All children aged less than 16 years who presented with clinical signs and symptoms of acute uncomplicated appendicitis were eligible for enrollment; exclusion criteria included presence of an abscess on imaging studies, clinical suspicion of perforated appendicitis, or significant co-morbidities.

From October 2014 to September 2015, all patients with non-complicated appendicitis had PLA using a standard three port technique. Postoperatively, piperacillin-tazobactam (TAZ: 112.5mg/kg) was administered intravenously three times per day until the white blood cell (WBC) count was less than 10,000/ μ L, and patients were afebrile. From October 2015 to September 2016, all patients with non-complicated appendicitis were commenced immediately on NOM (TAZ: 112.5mg/kg) intravenously and admitted to the surgical ward for observation. Repeat doses of TAZ were administered every 8 hours after admission. Intravenous analgesia was

QuickShots

administered once on presentation and oral intake was unrestricted. We used a standard protocol for making management decisions and unless all criteria were met, patients were categorized as having failed NOM and underwent ELA within 6 hours (Figure 1). Postoperative management was the same as for PLA. If NOM was successful ILA was planned for some 12 weeks after discharge. Recurrences while awaiting ILA had immediate surgery. Postoperative outcome was assessed at least 3 months after LA.

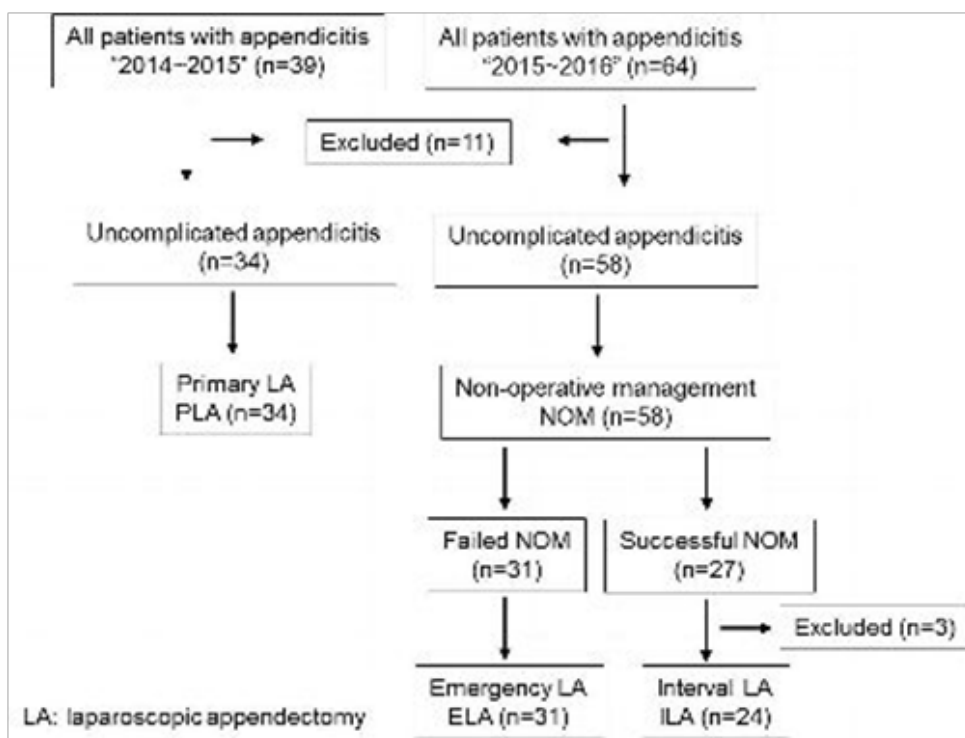
Factors thought to facilitate or be detrimental to NOM were also evaluated.

RESULTS: There were 103 eligible subjects. Of these, 11 were excluded for suspected complicated appendicitis leaving the PLA group (n=34) and the NOM group (n=58) comprised of ILA (n=27) and ELA (n=31). There was one recurrence after successful NOM 2 months after discharge, and the parents of two cases refused to consent to ILA after successful NOM (Figure 2). Demographic data is not different between three groups (PLA, ILA, ELA). There were significantly more postoperative residual abscesses in ELA (n=4: 12.9%) compared with PLA (n=0), and more perforations in ELA (n=7: 22.5%) compared with PLA (n=3: 8.8%), but this difference was not significant. Operative time and postoperative hospitalization were significantly longer in ELA (95.5min/7.5days) and shorter in ILA (40.9min/2.8days) compared with PLA (68.7min/4.1days) probably because ELA was more problematic and associated with more complications.

Differences with respect to maximum fever, presence of rebound tenderness, WBC/CRP results, presence of an appendicolith, or duration of pain were not statistically significant for evaluating NOM but duration of pre-admission fever was significantly longer in the failed NOM group than in the successful NOM group (2.5 days versus 1.1 days; $p<.05$).

CONCLUSION: Duration of pre-admission fever would appear to be predictive of failed NOM. Further evaluation is required to confirm which patients will benefit most from NOM and what the role of PLA is today.

	12h	24h	36h	48h	60h	72h
Pain score (10 at presentation)	> 10	≥ 10	≥ 10	≥ 5	≥ 5	≥ 5
Body temperature (°C)			> 38.0	> 38.0	> 38.0	> 38.0
WBC (100% at presentation)		≥ 100%		≥ 75%		≥ 50%*
				* or >10000/uL		



(QS024) GASTROJEJUNOSTOMY FEEDING DEPENDENCE FOLLOWING PEDIATRIC FUNDOPLICATION

Ashwini S Poola, MD, Katrina L Weaver, MD, Rebecca M Rentea, MD, Shawn D St.peter, MD, Children's Mercy Hospital – University Of Missouri Kansas City

PURPOSE: Management of complicated reflux in infants and children is controversial. Jejunal feedings are used when reflux complications occur with gastric feeds. However, post-pyloric feeding requires continuous feeds and are fraught with tube malfunction. We sought to determine how successful fundoplication was to allow for return of physiologic gastric feeds in patients felt to require jejunal feeds pre-operatively.

METHODS: A retrospective review of patients requiring jejunal feeds prior to fundoplication between 2010 and 2015 was conducted.

RESULTS: 114 children underwent fundoplication during the study period with a median age at surgery of 5 months (IQR: 3–12 months). Overall, median gestational age was 37 weeks (IQR: 31–39) with 50% of patients born prior to 37 weeks. Mean duration of nasojejunal feeds prior to fundoplication was 1.3 months. After fundoplication, gastric feeds were attempted in all, but 18% subsequently developed gastric feeding intolerance and were treated with GJT placement at a mean of 8 months post-operative. Of this cohort, 48% eventually tolerated intra-gastric bolus feeds, requiring jejunal feeds for a mean duration of 4.2 months. However, 11 patients remained on GJT feeds; of these, the GJT was replaced on average four additional times (range:1–12). Mean gestational age was significantly younger in the majority of patients who never required GJT placement (34 v. 37 weeks, $p=0.007$). Otherwise, there was no difference in age at fundoplication or the presence of neurologic impairment between those who went onto GJT placement and those who did not. Additionally, there were no differences seen in those who were able to tolerate gastric feeds after a short time with a GJT.

CONCLUSION: In the majority of patients requiring continuous jejunal feeds to manage complications of reflux, fundoplication allow for transition to gastric bolus feeding.

(QS025) ABDOMINAL EXPLORATION IN NEONATES USING TRANS-UMBILICAL EXPOSURE COMPARED TO TRANSVERSE LAPA-ROTOMIES

Hanna Alemayehu, MD, Richard Sola, MD, Shawn St. Peter, MD, Children's Mercy Hospital

PURPOSE: The standard approach for neonatal abdominal exploration has been a transverse incision. We have transitioned to use a

vertical trans-umbilical incision (TU). This technique involves dissection and ligation of umbilical vessels, which allows for access to all quadrants of the abdomen and complete bowel evisceration with minimal violation to the anterior abdominal wall. We compared patient characteristics and outcomes for neonates undergoing both techniques for abdominal exploration.

METHODS: A single center retrospective review of neonates who underwent abdominal exploration between January 2010 and September 2015 was conducted after obtaining Institution Review Board approval. Data included patient demographics, indication for operative intervention, operative details, complications including incisional hernias, and long-term outcomes.

RESULTS: There were 88 neonates under 4 months of age that underwent abdominal exploration, with a median age of 5.5 days (IQR: 3–20 days), and a mean gestational age of 32.8 weeks (24–40 weeks). Exploration was emergent in 38 patients (43%), and 49 (56%) required ostomy formation. Procedures included 11 (13%) diagnostic laparoscopies converted to 10 TU and 1 open exploration. Surgical interventions included bowel resections, duodeno-duodenostomies, lysis of adhesions, meconium pseudocyst resections, Ladd's procedures, and reduction of volvulus.

A transverse incision was used in 30 patients, and a trans-umbilical incision in 58 patients. Demographic data was comparable in both groups, as was operative duration and number of patients requiring ostomy formation. Both groups had similar post-operative complication rates; 27 (47%) in the TU group and 11 (36%) in the transverse open group, $p = 0.51$. Of these, 17 (29%) in the TU group and 8 (27%) in the transverse open group required reoperation, $p = 0.99$. These complications included bowel obstructions, anastomotic strictures, hematomas, wound dehiscence, wound infections, short gut syndrome, ostomy prolapse and death.

Median length of follow up in the TU group was 5.1 months (IQR 2.4 – 20 mo) and 6.2 months (IQR 2.6 – 19 mo) in the TV group, $p = 0.48$. The TU group had 4 incisional/umbilical hernias (7%), and the TV group had none, $p = 0.29$. Two of these incisional/umbilical hernias closed spontaneously prior to 3 years of age, one was closed at the time of stoma take-down and the other did not return for follow up after the initial post-operative clinic visit.

CONCLUSIONS: Trans-umbilical incisions for abdominal explorations in neonates have similar outcomes as the standard transverse incision, while preserving the integrity of the anterior abdominal wall.

(QS026) EXPERIMENTAL STUDIES AND CLINICAL APPLICATION OF SINGLE-SITE LAPAROSCOPIC ONE-LAYER FULL-THICKNESS DUODENODUODENOSTOMY IN CHILDREN WITH CONGENITAL DUODENAL OBSTRUCTION

Xuelai Liu, PhD, Suolin Li, MD, The Second Hospital of Hebei Medical University

Purpose: Laparoscopic repair of congenital duodenal obstruction (CDO) has become popularized over the past decade, however MIS repair of CDO requires suturing skills that are difficult to acquire. We sought to develop a diamond-shaped anastomosis in a rabbit for laparoscopic duodenoduodenostomy. After gaining extensive experience with intracorporeal suturing in animal procedures we evaluated the feasibility of single-site laparoscopic one-layer full-thickness duodenoduodenostomy in CDO.

Methods: The animal model was created in the rabbit whose stomach and duodenum has a very similar outward appearance of CDO. Ten rabbits were divided into running suture group and interrupted suture group to engage laparoscopic single-layer full-thickness diamond-shaped gastroduodenostomy. The anastomotic time, anastomotic external circumference and anastomotic bursting pressure were respectively calculated to evaluate the anastomotic efficacy. The same anastomosis was conducted in 16 patients with CDO. The first cannula for a 5-mm laparoscope was inserted by Hasson technique at the 5 o'clock position on the umbilical ring. Two 3-mm working cannulas were inserted (at 2 and 10 o'clock) on the umbilical fold. After mobilization of dilated upper and collapsed lower duodenum, transverse enterotomy of the upper duodenum and longitudinal enterotomy of the distal duodenum were performed, a 5-0 PDS suture was introduced through the abdominal wall near the fundus of the gallbladder, via the proximal duodenum and the distal duodenum, and back out the abdominal wall to bring the two ends of the duodenum together. This suspension stitch facilitated completion of the single-site laparoscopic one-layer full-thickness anastomosis with good visualization and minimal manipulation of the tissues.

Result: In animal experiment, the laparoscopic anastomotic time was 58.8 ± 5.07 min in the interrupted suture group and 37.0 ± 7.05 min in the running suture group, the statistic difference presented significant ($t = 2.984$, $p = 0.017$), but instead of anastomotic external circumference and anastomotic bursting pressure. The laparotomy after surgery revealed the ideal anastomotic patency and no leakage was found in two groups. Our clinical data showed that surgery was successful conducted in all neonates with CDO. Median age at the time of operation and median body weight were 3 days (1–12 days) and 2.58 kg (1.60–3.48) respectively. Among them, 6 cases with membranous duodenal stenosis underwent a partial excision of the duodenal web and a duodenoplasty. The single-layer full-thickness diamond-shaped duodenoduodenostomy was done in 5 patients with duodenal atresia and 4 patients with annu-

lar pancreases under laparoscopic visualization. Median operation time was 87min (60–150) and median postoperative day to start oral feeding was 5 days (3–9 days) and median postoperative day of reaching full feeding was 8 days (6–13 days). Median postoperative hospital stay was 13 days (10–16 days). There was no anastomotic leakage or stenosis. Median follow up was 6.5 months (3–21 months) and no late complication was found.

Conclusion: Laparoscopic duodenoduodenostomy is a technically challenging procedure which involves delicate intracorporeal suturing. Our animal experiments and clinical applications demonstrate that laparoscopic duodenoduodenostomy for neonates with CDO can be safely and successfully performed with excellent outcome. We found that suspension stitches facilitate the single-site laparoscopic anastomosis by allowing excellent visualization.

(QS027) CONVERSION FROM ADOLESCENT LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING TO SLEEVE GASTRECTOMY

Jeffrey L Zitsman, Abraham Krikhely, MD, Aaron Roth, MD, Marc Bessler, MD, New York Presbyterian

Introduction: Laparoscopic adjustable gastric banding (LAGB) has been performed in adolescents worldwide. For reasons including weight loss failure, esophageal symptoms, and intractable gastric prolapse, patients have been converted to other procedures. Sleeve gastrectomy (SG) is currently the most common procedure performed to treat severe obesity in children and adolescents. We report our experience with 17 patients who underwent LAGB as adolescents whom we converted to SG.

Methods: Following LAGB patients were followed into early adulthood. Patients who did not tolerate band tightening, who had intractable gastric prolapse, or who failed to lose weight were considered candidates for conversion. Each underwent multidisciplinary evaluation prior to surgery.

Results: 18 patients underwent evaluation for conversion to SG. One was excluded for insurance reasons. The median time from LAGB to SG was 4.5 years (range 2.3–7.4). All patients experienced weight loss failure; only 7 had achieved >40% excess weight loss (%EWL) for more than 1 year. 6 also had band intolerance and 1 developed a bowel obstruction from the tubing. 10 cases were performed in two stages and 7 in one stage. Additional procedures were performed in 4 patients. There were no operative complications. Median weight loss and %EWL available in 15 patients at 1 year were 17.4kg and 26.2%. There was no statistical difference between patients who had band intolerance and those who did not. Weight loss following LAGB < weight loss following conversion to SG (11.4 kg vs 17.2 kg) but was not statistically significant.

Conclusion: SG is a safe and reasonable surgical option for patients who fail to lose weight after LAGB. Early results show better weight reduction with SG when LAGB has failed.

Interval weight loss (mean) following LAGB, conversion to SG, and primary SG

	6 mo (N)	12 mo (N)
LAGB	11.4kg (16)	15.2kg (13)
SG (conversion)	17.2kg (15)	31.0kg (7)
SG (primary)	28.6kg* (106)	38.6kg* (45)

$p < .0001$ compared to LAGB

(QS028) NEONATAL OPERATING ROOM TABLE

Michael U Mallicote, MD, Cathy E Shin, MD, Children's Hospital Los Angeles

Objective: The primary goal of the Neonatal Operating Room Table is to make the operating room environment more optimal and safer for a newborn in need of surgical intervention. The dangers of transferring a fragile newborn starts from their room in the Neonatal Intensive Care Unit (NICU). These babies often have naso/orogastric tubes to decompress their stomachs, endotracheal tubes connected to ventilators to breathe, IVs for fluids and drug administration, foley catheters for bladder decompression and urine output monitoring, any of which may become dislodged during transfer to the operating room (OR) when they are the most critical. In the OR they are transferred onto a standard adult OR table, jeopardizing these critical lines/devices yet again. Even during their operations, the table is too wide, making access to the newborn patient difficult. The unused table space creates an obstacle for laparoscopic surgery as the ends of the instruments may require manipulation below the level of the newborn patient, and acts like a barrier where it would not in a child or adult. By creating an OR table designed to take all this into consideration that fits onto our pre-existing adult operating room tables, we would vastly improve the safety and surgical environment for our newborn

patients.

Description: The table would be 36" x 8.5", with integrated side rails so that standard OR table accessories would still be useable, and designed to attach to pre-existing adult operating room tables. The head of the table would have a depression to accommodate the larger head of the newborn so that the shoulders would not need to be elevated to keep endotracheal tubes in line with the table for the anesthesiologist. The table would have a scalloped design, for closer access to the newborn, with grooves on the top and underside so that IV and monitor lines can be easily organized and more safely managed, and a slit in the bottom half for a foley catheter line to pass through the table. Neonatal straps 1"-1.5" in width would be used to secure the newborn baby to the table. A collapsible med tube tree for corrugated breath tubes will be internally contained at the head of the bed for easy expansion and storage. Rather than foam padding, we would utilize a gel padding that incorporates temperature regulation and sensors for body temperature, ekg, pulse oximetry, and transcutaneous oxygen monitoring, that takes advantage of the newborn laying on the pad as surface area for monitors on a newborn is very limited.

Conclusion/Future Directions: The table and gel pad will need to be fabricated, and can be done so independently as they provide different but equally important benefits to the newborn needing surgical intervention. Table construction will be straight forward. The gel pad will provide unique challenges for integrating monitoring for different modalities and temperature control. Ultimately, the construction of the neonatal operating room table will be a crucial accessory to any pediatric hospital and greatly improve the surgical environment for our tiny newborn patients.

(QS029) INITIAL LEARNING CURVE IN ROBOTIC FUNDOPLICATION VERSUS LAPAROSCOPIC APPROACH. A SINGLE CENTER STUDY COMPARING PERFORMANCE AND COMPLICATIONS BY CLAVIEN DINDO.

Carlos Leganés, Carlos Giné, Ana Laín, Laura García, Javier Güizzo, Eduardo Pérez, Manuel López, Hospital Universitari Vall d'Hebron

Introduction: Robotic surgery for gastroesophageal reflux (GER) is a well-established procedure but its use is controversial regarding the costs and the results when comparing to the laparoscopic approach. The beginning of the learning curve may even drive to a more complex and time-consuming procedures. We evaluate this technique in the initial learning curve in a single center comparing to the laparoscopic approach in terms of time of surgery and intra-operative and post-operative complications classified by Clavien Dindo.

Methods: This is a single center retrospective study comparing the outcomes of the laparoscopic and robotic (Da Vinci® S system) approaches for GER between 2010 and 2016. Study variables were indications, age and weight at surgery, performed procedure, surgical time, intra and postoperative complications according to Clavien Dindo classification and time to reach complete oral feeding. A selection criterion for the study was weight > 10 kg and REDO procedures were excluded. Non-parametric test used was Mann Whitney test and parametric tests were Pearson's chi-squared, Fisher's exact test for count data and Welch two-sample t-test.

Results: From a cohort of 82 patients, 40 met the criteria for the analysis: 13 in the robotic group (G1) and 27 in the laparoscopic (G2). Groups were considered comparable with no differences in demographic parameters but for the weight (26.9 vs. 18.8 Kg, $p=0.003$). There were no intraoperative complications but there was 1 conversion in G2. Five patients needed a REDO operation in G2 and none in G1. Operating time, complete enteral feeding and hospital stay were not different. We registered 18 postoperative complications, 16 in G2 and 2 in G1. The distribution according Clavien Dindo classification was: G1) 2 grade II complications; G2) 3 grade I, 5 grade II, 7 grade IIIb and 1 grade IVa. The overall complication rate was statistically significant favoring the robotic surgery ($p=0.004$) but for each level of the classification there were not such differences. Medium follow up was 2.7 and 2.9 years and there was no mortality.

Conclusion: Robotic surgery for GER in the early learning curve does not present higher rate of postoperative complications comparing to conventional laparoscopic approach.

(QS030) LAPAROSCOPIC VERSUS OPEN PROCEDURE FOR CONGENITAL DUODENAL ATRESIA AND STENOSIS (CDAS) REPAIR IN CHILDREN

Tri T Tran, MD, Children Hospital No2

Background: In the last decade, laparoscopic repair (diamond-shaped anastomosis and web resection) for CDAS has been studied (although with small sample sizes) and performed at many centers in developed countries. In Vietnam, the procedure was not well evaluated and not applied popularly.

Purpose: To evaluate and compare the outcome results of laparoscopic procedure with open procedure in CDAS treatment.

Patients and Methods: Two groups of patients with CDAS were enrolled in this prospective, comparative study. Group I: 63 patients treated laparoscopically (Group Ia–totally laparoscopic: 53 cases, Group Ib–converted to open: 10 cases); Group II: 53 patients treated openly. Multiple logistic regression analysis was used.

Results: The median operation time needed in laparoscopic repair was longer than open repair: 145 ms versus 75ms. $P<0.001$

The median time for mechanical ventilation in two groups (Ia, II) were 18 hours and 22.1 hours. No significant difference, $P=0.276$

The median postoperative day to begin oral feeding and to full feeding in group Ia were 4.4 ± 2.9 days and 6 ± 4.6 days (respectively), shorter than that of group II: 8.3 ± 3.8 days and 12.9 ± 7.2 days, $P<0.005$.

Stay time postoperative and total stay time in group Ia were 14 days and 18 days. Those of group II were 17 days and 22 days, $P<0.005$

Logistic regression analysis showed that the postoperative day to total feeding was statistically shorter in group Ia comparing with group II. However, the median postoperative day to begin oral feeding, postoperative stay time and total stay time were shorter due to other factors, not the type of abdominal entry.

In group Ia, overall complication rate, surgical related and non-surgical related complications rate were 39.6%, 31.9% and 15.8%. These rates of group Ib were 30%, 22.2%, and 12.5%; Those of group II were 54.7%, 52% and 11.1%, respectively. No significant difference. Mortality rate in group Ia, Ib and II were 5.8%, 10% and 5.8%, $P=0.706$.

Conclusion: Laparoscopic repair reduced the time to total feeding in children with CDAS but not the postoperative time to begin oral feeding, postoperative stay time and total stay time. Although laparoscopic procedure took more time, it was safe, effective and applicable

(QS031) A SIMPLE TECHNIQUE FOR THE MANAGEMENT OF REFRACTORY GASTROSTOMY SITE COMPLICATIONS

Rebecca M Rentea, MD, Ashwini S Poola, MD, Charles L Snyder, MD, Childrens Mercy Hospital

Longstanding gastrostomy sites are prone to leakage and excoriation secondary to protrusion of gastric mucosa into the tract, dilation of the site over time, and development of refractory granulation tissue. Medical treatments (temporary tube removal to allow the site to close, over-inflation of the balloon, etc.) are often unsuccessful. Surgical revision with creation of a new gastric and skin exit site can be difficult. There are several surgical options, including: percutaneous endoscopic gastrostomy (PEG) tube placement and closure of the old site, laparoscopic closure of the old site and lap GT placement, and open placement of a new button/tube and closure of the old site.

A 15-year-old male who had a longstanding GT site with chronic leakage and skin excoriation failed conservative management and ultimately required revision and relocation of the GT to a new site. A simple and novel technique was used in which a clamp placed through the old GT site was palpated through the abdominal wall, and via an incision over the tip, used to pass a silk tie from this new site, exiting from the old site. A One-step™ device was pulled from the old site out through the new site, and then a straightforward closure of the old gastrostomy performed. A contrast study through the newly positioned button GT study confirmed good positioning and no leak from the previously closed GT site. This technique is simple and avoids endoscopy, laparoscopy and the need for a new incision and more extensive procedure.

https://www.youtube.com/watch?v=Q1E_489jixY

(QS032) EFFECTIVE ENDOSCOPIC MAGNET RETRIEVAL IN CHILDREN

Joanne Baerg, MD, Arul Thirumoorthi, MD, Rajaie Hazboun, MD, Loma Linda University Children's Hospital

Background: Children are attracted to magnets and magnetic toys, but magnet ingestion may cause significant morbidity. Ingestion of multiple magnets that pass into the intestine, may present with an acute abdomen from intestinal perforation and fistula formation. When multiple magnets are identified in the stomach, expedient endoscopic removal is recommended.

Case 1: A 5-year old boy ingested eleven, 3 mm diameter, rare earth magnets ("buckyballs"). He presented to the emergency department. Radiographs confirmed the magnets were in the stomach. The pediatric gastroenterologist attempted removal, but after 90 minutes, only one of eleven was successfully removed. Pediatric surgery was contacted to remove the remaining ten "buckyballs".

Procedure: Under general anesthesia, the endoscope was passed into the stomach and the magnets were visualized. A pacemaker-

er magnet was applied to the anterior abdominal wall. The chain of ten magnets was stabilized anteriorly and easily visualized. The endoscopic net retrieval bag was utilized to remove all ten “buckyballs” in one attempt. The operative time was 9 minutes. A post-procedure radiograph confirmed all magnets were removed.

Case 2. A 3-year old boy ingested two neodymium magnets. These powerful magnets attract with up to 6 pounds of pressure. A radiograph confirmed the magnets were in the stomach.

Procedure: Under general anesthesia, the endoscope was passed. The pacemaker magnet was applied to the anterior abdominal wall. The magnets were stabilized anteriorly, easily visualized and removed with an endoscopic stone extractor. The operative time was 8 minutes.

Both children were discharged home from the recovery room without complications.

Conclusion: A pacemaker magnet is widely available in the operating room. When a child presents with ingested magnets in the stomach, the pacemaker magnet stabilizes the ingested magnets against the anterior stomach wall. It allows efficient, expedient removal of multiple ingested magnets. Retrieval instruments such as a mesh endoscopic retrieval bag and the endoscopic stone extractor allow the pediatric surgeon versatility when removing ingested magnets.

https://www.youtube.com/watch?v=L_ArqShvF9k

(QS033) THE EXPERIENCE OF THORACOSCOPIC TREATMENT FOR CHILDREN WITH CONGENITAL ESOPHAGEAL STENOSIS

Li Xu, Ming Anxiao, Dong Ning, Chen Zhen, The capital institute of pediatrics

Objective: To study the classification, clinical manifestation, diagnostic features of children with congenital esophageal stenosis ,and further evaluate the therapeutic efficacy of thoracoscopic esophagectomy on this disease.

Method: Between March 2008 and December 2016, 23 patients with congenital esophageal stenosis were treated in our hospital. 16 out of 23 cases were diagnosed as congenital tracheobronchial cartilage remnants of esophagus, 2 cases complicated with laryngeal cartilage softening, 1 case with high imperforate anus, 2 cases of postoperative esophageal atresia. Children with congenital esophageal stenosis in 7 cases, 1 case was male, female 6 cases, aged 11 m ~ 2 y10 m, diagnosis by preoperative upper gastrointestinal radiography, chest computed tomography (CT) and gastroscopy, 2 of whom underwent esophageal endoscopy. In operation, the urine pipe segment esophageal balloon expansion to identify lesions position, length, and esophageal stenosis segment resection of esophagus end to end anastomosis, no transfer open chest surgery.

Result: History of this group with recurrent vomiting, increase after add side dish or solid food, the average 6 months after birth began to appear relatively typical clinical symptoms, vomiting time there were no significant differences. Tracheal cartilage of endometriosis esophageal barium meal examination is typical “pendulum” respectively, proximal esophageal dilatation, fine line between esophagus cardiac changes obviously. There’s a foreign body in intraoperative probe tube wall. Gastroscopy shown visible change ring uplift. Intraoperative probe feed a foreign body wall bulge, narrow section located in the cardiac scope of 1.0 to 4.0 cm, 0.5 2.0 cm long, 0.2 0.4 cm in diameter, the proximal esophageal expansion 2.0 ~ 4.0 cm in diameter. Esophageal barium meal examination muscular stenosis segment is located in the middle esophagus, more proximal esophageal expansion, formed a fixed narrow esophagus, distal fine is not obvious. Gastroscopy and shown by the middle esophagus, intraoperative probe feed tube wall slightly stiff, narrow section located in from cardia under scope of 3.0 to 6.0 cm, 1.0 1.5 cm long, 0.3 to 0.5 cm in diameter, the proximal esophageal expansion 2.0 ~ 3.0 cm in diameter. All the children are under thoracoscope esophagus resection of stenosis and esophageal end to end anastomosis. Postoperative 5–7 days), of which 3 cases had a small amount of contrast agent spillover, keep improving, 2 cases occurred postoperative anastomotic fistula, open thoracic surgery better again. 15 cases of postoperative esophageal strictures, after esophageal balloon expansion, no operation again.

Conclusion: Children with congenital esophageal stenosis with esophageal tracheal cartilage endometriosis, congenital esophageal muscular stenosis, expansion invalid require surgical treatment. Thoracoscope esophagus resection of stenosis and esophageal end to end anastomosis is a reliable treatment of children congenital esophageal stenosis, safe method, small trauma, clear operation field, less bleeding, quicker recovery, and to reduce the chances of postoperative pneumonia.

(QS034) FEASIBILITY AND SHORT-TERM RESULTS OF ROBOTIC AND LAPAROSCOPIC TOTAL OESOPHAGO-GASTRIC DISSOCIATION.

Girolamo Mattioli, Professor, Michela Cing Yu Wong, MD, Arrigo Barabino, MD, Giannina Gaslini Children's Hospital

Background: total oesophago-gastric dissociation (TOGD) as described by Bianchi in 1997 is a valid option both as "rescue" and as primary intervention for gastro-oesophageal reflux (GOR) in neurologically impaired patients. Mini invasive surgery gives multiple advantages compared to open approach even if with higher fatigue of the surgeon. The introduction of robotic approach has overcome the disadvantages linked to the laparoscopy.

Aim: to evaluate and compare the feasibility and short-term results of laparoscopic and robotic TOGD.

Materials and Methods: between February and October 2016 a prospective study comparing 5 laparoscopic and 5 robotic TOGD was conducted. Consecutive neurologically impaired children scheduled for TOGD were included. Clinical presentation and pre-operative X-ray contrast were considered. Operative time, hospital stay, postoperative complications, re-do surgery, nutrition rehabilitation, X-ray contrast study after 5 days and after one month from the intervention were recorded.

Results: three patients of the laparoscopic group and two of the robotic one had already undergone other anti-reflux procedures before. The median operative time was statistically longer in the robotic group. No intraoperative complications, no conversions to open surgery, no vagal lesions were recorded. One dehiscence in the robotic group was recorded (in a patient with oesophageal atresia history and previous multiple interventions). No statistical differences in terms of complications were detected.

Conclusion: TOGD is feasible both with laparoscopic and robotic-assisted surgery with similar results. Robotic approach is easier and more comfortable for the surgeon, especially considering the altered dystonic posture of this patients. At the same time high laparoscopic skills allow to reach the same results as robotic approach with shorter operative time.

(QS035) INTRAOPERATIVE BIOPSY OF LAPAROSCOPIC PARTIAL PANCREATECTOMY FOR INFANTS WITH PERSISTENT HYPERINSULINEMIC HYPOGLYCEMIA

Kuiran Dong, PhD, Baihui Liu, Yi Zhang, Wei Yao, Children's Hospital of Fudan University

Background: Laparoscopic partial pancreatectomy for persistent hyperinsulinemic hypoglycemia in infancy (PHHI) has been proven safe and effective. However, the pathologic subtypes of PHHI, the location of the lesion, and the extent of resection remain a difficult problem for surgeons. In some report shows that at least 5 biopsies should be used to resolve these problems. We summarize our experience of 25 cases of laparoscopic surgery of PHHI with intraoperative frozen biopsy of pancreatic tail and resection margin.

Method: From April 2011 to October 2016, 25 cases of PHHI were included in our study. The positive diagnosis was made by the pediatric endocrinologist. The clinical data, pathological features and surgical procedure were retrospectively analyzed. The pancreatic tail biopsy was used as first biopsy to estimate the type of the lesion during the operation.

Result: All these 25 cases' positive diagnosis was made by the pediatric endocrinologist, age from 17 days to 12 months, 17 males and 8 females, fasting blood glucose is 0.57–5.5 mmol / L, fasting insulin levels of is 3.1–50.1 uIU / ml. There were 5 cases of focal lesions type in the preoperative examination of FDOPA PET-CT. Three of them were confirmed by the pancreatic tail frozen biopsy which shows a normal tissue and the focal lesions were found during the operation. After the resection of lesion, which 2 cases of laparoscopic pancreatic tail resection and 1 lesion enucleation of the pancreatic head, the symptom of PHHI was relieved. Two cases of them were converted to be the diffuse lesion type because the frozen biopsy of pancreatic tail showed some islets hyperplasia, and at the resection margin scattered in some big islet cells. One underwent laparoscopic pancreatic subtotal resection and got symptom relief. But the other one received 50% of pancreas resection, and 2 weeks after hypoglycemia recurrence. 18 patients without preoperative PET-CT examination, and MRI and B-ultrasonography showed no obvious abnormalities, of which 16 cases of intraoperative pancreatic tail frozen section prompted pancreatic islet hyperplasia. The other 2 frozen biopsies showed no obvious abnormal but some big islet cells in the pancreas. Two cases were diagnosed as diffuse lesion type by the FDOPA PET-CT were also confirmed during the operation biopsy. All these 20 cases underwent laparoscopic pancreatic subtotal resection. Postoperative follow-up of 1–6 months, fasting blood glucose of these children was 2.2–12 mmol / L. The paraffin pathological diagnoses of 5 cases of focal type, and in the remaining 20 cases, 1 case of atypical type, the other were found the number of islets increased or pancreatic islet volume increased. All 25 cases, Insulin, Syn, CgA and Glut1 were positive, and the Ki-67 index ranged from 2% to 10%.

Conclusion: Multiple biopsy of pancreas is difficult and unnecessary for the laparoscopic pancreatic partial resection for PHHI. The pancreatic tail biopsy under the laparoscope combined with preoperative FDOPA PET-CT result is adequate in most of the cases.

(QS036) APPROACH TO AN INCIDENTALLY-DISCOVERED ESOPHAGEAL DUPLICATION CYST DURING ROBOTIC-ASSISTED NIS-

SEN FUNDOPPLICATION

Victoria K Pepper, MD, Dominic Papandria, MD, Astrid R Soares-Medina, MD, Karen A Diefenbach, MD, Marc Michalsky, MD, Nationwide Children's Hospital

Introduction: Esophageal duplication cysts are rare and can be difficult to diagnose. We present the case of a 7-year-old male with confirmed gastroesophageal reflux who was found to have an incidental esophageal duplication cyst which was appreciated during a robotic-assisted Nissen fundoplication

Methods/Results: A 7-year-old male presented with severe esophageal reflux diagnosed by upper endoscopy and pH testing. Esophogram was negative for pathology. The patient was scheduled for robotic-assisted Nissen Fundoplication. After mobilization of the greater curvature of the stomach, a hiatal hernia was identified. At the anterior margin of the hiatus, there was a deformity of the esophagus and on further inspection, a large cystic mass identified. Dissection of the muscular wall of the esophagus revealed an esophageal duplication cyst. The cyst was carefully mobilized from the esophagus. The hiatal defect was closed primarily and reinforced with a Surgisis patch. The patient was discharged on post-operative day 3 on a soft diet.

Conclusion: Esophageal duplication cysts are rare and difficult to diagnose, but can be managed with a minimally invasive approach. A robotic approach offers advantages when dealing with pathology such as this at the hiatus.

<https://www.youtube.com/watch?v=DCqi-3E5els>

(QS037) COMPARATIVE OUTCOMES IN LAPAROSCOPIC PYLOROMYOTOMY TECHNIQUES

Maja Raicevic, MD¹, Amulya K Saxena, MD, PhD, Dschon, FRCS, Glasg², ¹Clinic for Pediatric Surgery and Orthopedic, Clinical Center Nis, Serbia, ²Chelsea Children's Hospital Chelsea and Westminster Hospital NHS Foundation Trust Imperial College London

Aim: Infantile hypertrophic pyloric stenosis (IHPS) is a common condition with a shift towards management in the last decade favoring the use of the laparoscopic approach. This analysis performed a comparison with regards to the technical variations and outcomes in laparoscopic pyloromyotomy.

Material and methods: Literature was searched on Pubmed® for „laparoscopy“ and „pyloromyotomy“. Primary end points were age of the patients, laparoscopic technique, instrument access, special instruments and size of the instruments, intraoperative complications and morbidity. The data were analyzed statistically using SPSS version 23.0 and the Mann-Whitney test, significance was defined as p value < 0.05.

Results: The search revealed 195 articles published between 1995–2016 of which 31 met the inclusion criteria. Total numbers of patients were 1961 with mean age at surgery 35.4 days (range 3–102 days) and average weight 3.73kg (range 1.8–6.3kg). All operations were performed under general anesthesia except 12 that were performed under spinal anesthesia. Initial access using Veress needle was achieved in n=181 (9.2%). With regards to instrument access (in addition to the optic port) the preference was: (a) 2-stab incisions n=1144 (58.3%); (b) 2-ports n=520 (26.5%); (c) 1-port and 1-stab incision n=216 (11%) and (d) Single-incision laparoscopy n=80 (4%). Most preferred technique according to names was Alain n= 687 (35%), Bufo n=124 (6.3%), Tan n=111 (5.67%), Cross-technique n=92 (4.7%), Ramstedt n=77 (3.9%), Schier n= 28 (1.4%) with n=917 (46.8%) technique not named. Various sizes of scopes and instruments were used (Table 1). Nine different types of knives and 5 types of spreader were used.

Scope size	Patient No	Instrument size	Patient No
5mm	132	4mm	37
4mm	250	3,5mm	30
3mm	211	3mm	1488
2,7mm	236	2–3mm	28
2,4mm	28	2mm	262
1,7–1,9mm	21	3–5mm	27

Mean operative time was 28.9 minutes for all techniques (range 7–70min). Mucosal perforation occurred in n=24 (1.2%), incomplete pyloromyotomy in n=22 (1.1%) and reoperations in n=24 (1.2%). There were n=34 (1.7%) conversions; 32 to open and 2 from single-incision to conventional laparoscopy. Reasons for conversions were mucosal perforation n=14. Most serious complication

was carbon dioxide embolism that occurred through the umbilical vein caused by a Veress needle in a 34GW premature infant. Most common morbidity was postoperative emesis $n=48$. There were no deaths reported. When comparing the 2 decade periods (1995–2006 and 2007–2016), there were $n=527$ vs $n=1434$ infants were reported and comparatively had $n=14$ (2.65%) vs $n=20$ (1.39%) conversions ($p=NS$), 29.13min vs 28.9min operating time ($p=NS$), intraoperative complications $n=13$ (2.46%) vs $n=25$ (1.74%) and $n=4$ (0.75%) vs $n=19$ ($n=1.32\%$) reoperations ($p=NS$).

Conclusion: Despite the diversity of techniques, instrument sizes and types and the learning curve; laparoscopic pyloromyotomy is associated with low complications and conversions rates estimated to be $<2\%$.

(QS038) EFFECTIVENESS OF CONTINUOUS SUTURE IN ESOPHAGOESESOPHAGOSTOMY FOR THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA WITH TRACHEOESOPHAGEAL FISTULA.

Yusuke Yamane, Kurumi Mori, Toshio Shiraishi, Takuya Yoshida, Yasuaki Taura, Taiichiro Kosaka, Mitsuhisa Takatsuki, Susumu Eguchi, Takeshi Nagayasu, Masayuki Obatake, Department of pediatric surgery, Nagasaki university hospital

Purpose: Many reports showed the usefulness of thoracoscopic repair (TR) of esophageal atresia (EA) with tracheoesophageal fistula (TEF) in neonates. The first TR in our institution was conducted in 2013. The anastomosis was performed using a 5-0 PDS “continuous” suture (CS). No cases of esophageal strictures were seen. The aim of our investigation was to define perioperative outcome and effectiveness of continuous suture in neonates undergoing TR versus open repair (OR) for EA with TEF.

Methods: Between 2003 and 2016, 17 cases underwent OR or TR. OR group was performed via thoracotomy and extrapleural dissection. TR group was manipulated by 4 or 5 ports. In both group, TEF was occluded with suture ligature, the anastomosis was performed using PDS and trans-anastomotic tube was inserted. We reviewed the operative time, stricture, leakage and other post-operative outcomes in their medical records retrospectively.

Results: Ten cases underwent OR and 7 cases underwent TR. The characteristics were not significantly different. In TR group, one case with major cardiac anomaly was converted to OR because of intraoperative instability. The average operative times were 181 minutes (129–262 minutes) in TR group and 198 minutes in OR group. The operative times were not significantly different, but OR added insertion of central venous line. One case in TR group suffered from anastomotic leakage, which healed following conservative management. No cases in TR group and 5 cases in OR group were required balloon dilation because of stricture with significant difference ($p<0.037$).

Conclusions: In our study, continuous suture might be not related to postoperative stricture. CS might be safe and feasible procedure.

<https://www.youtube.com/watch?v=qFXgb0DuBSM>

(QS039) EVALUATING POSTOPERATIVE FEEDING REGIMENS AFTER LAPAROSCOPIC GASTROSTOMY PLACEMENT

Eric H Rosenfeld, MD, Yangyang Yu, MD, Timothy C Lee, MD, Bindi J Naik-Mathuria, MD, Mark V Mazziotti, MD, Monica E Lopez, MD, Sohail R Shah, MD, MSHA, Texas Childrens Hospital and Baylor College of Medicine

Purpose: Currently there is no standard postoperative feeding regimen after laparoscopic gastrostomy placement, and practice variation exists among individual providers and institutions. The objective of this study is to evaluate postoperative feeding regimens after laparoscopic gastrostomy placement and their effect on outcomes.

Methods: A random sample of children 2-months through 18-years-old that underwent laparoscopic gastrostomy placement at a freestanding academic children’s hospital between 1/1/2014 and 9/30/2016 were reviewed. Data collected included demographics, postoperative feeding regimen, and clinical outcomes. Statistical analysis was performed using Chi-square, Fisher’s exact and Wilcoxon Rank-Sum test.

Results: We reviewed the medical records of 142 children that underwent laparoscopic gastrostomy placement by 15 pediatric surgeons. The median age (IQR) was 9.5 (4.6–14.4) years, and 54% ($n=77$) were male. The median BMI (IQR) was 15.9 (13.8–17.8). Fourteen percent ($n=20$) had prior abdominal surgery, and 20% ($n=29$) underwent a concurrent procedure at time of the laparoscopic gastrostomy placement. The median operative time (IQR) for laparoscopic gastrostomy alone was 46 (33–59) minutes. A primary MIC-KEY button was placed in 96% ($n=134$) of patients, and 6% ($n=9$) of patients had a postoperative gastrostomy tube study. Complications within 90 days included: granulation tissue (33%), skin and soft-tissue infection (8%), leakage (13%), and dislodgement (7%). Two patients returned to the operating room, one for a dislodged tube, and another for a volvulus within 10 days of gastrosto-

my tube placement.

To analyze the postoperative feeding regimen, we performed a subset analysis of outpatients that underwent elective laparoscopic gastrostomy placement and same-day hospital admission. Patient characteristics and operative details for the same-day admission cohort are provided in Table 1. The majority of patients in this cohort had feeds initiated between postoperative day 0 and postoperative day 3. Initial feeds varied between Pedialyte, half-strength, three-quarter strength, and full strength formula / breast milk. Administration of feeds was split between continuous and bolus (Table 2).

A comparative analysis of the same-day admission cohort yielded a significant difference in hospital length of stay for early vs. late initiation of feeds without any difference in postoperative complications (Table 3).

Conclusion: There is substantial variation in the postoperative feeding regimen after laparoscopic gastrostomy. Initiation of early postoperative feeds may result in decreased length of stay without increasing complications, and prospective evaluation is necessary.

Table 1: Patient Characteristics and Operative Details

	All Patients (n=142)	Same Day Admit (n=93)
Age, median (IQR)	9.5 (4.6-14.4)	8.9 (5.3-12.9)
Male, % (n)	54% (77)	55% (51)
BMI, median (IQR)	15.9 (13.8-17.8)	14.8 (13.5-17.6)
Previous Abdominal Surgery, %(n)	18% (14)	14% (13)
Operative Time, min median (IQR)	46 (35-59)	42 (34-56)
Type of Gastrostomy Placed %(n)		
Mic-key Gastrostomy	96% (134)	96% (89)
Minnie-One Gastrostomy	3% (4)	3% (3)
Pezzer	1% (1)	1% (1)
Post-operative g-tube study, %(n)	6% (9)	6% (6)
Complications (w/ 90 days) %(n)		
Dislodged tubes	7% (14)	11% (10)
Leakage	8% (12)	3% (3)
Granulation Tissue	33% (47)	37% (34)
Soft-tissue Infection	8% (12)	9% (8)
Return to OR	1% (2)	2% (2)

Table 2: Chart of Initial Feeds for Elective Same Day Admissions

Day of Initiation of Feeds	
POD 0	8 (9%)
POD 1	68 (74%)
POD 2	9 (10%)
POD 3 and onwards	6 (7%)
Type of Feeds Initiated	
<u>Pedialyte</u>	70 (76%)
Formula	21 (23%)
Method of Initial Feeds	
Continuous	35 (58%)
Bolus	25 (42%)

Table 2: Chart of Initial Feeds for Elective Same Day Admissions

Day of Initiation of Feeds	
POD 0	8 (9%)
POD 1	68 (74%)
POD 2	9 (10%)
POD 3 and onwards	6 (7%)
Type of Feeds Initiated	
<u>Pedialyte</u>	70 (76%)
Formula	21 (23%)
Method of Initial Feeds	
Continuous	35 (58%)
Bolus	25 (42%)

Table 3: Comparative Analysis of Early vs Late Initiation of Feeds for SDA

	POD 0 (n= 12)	POD ≥ 1 (n=130)	p-value	POD 0/1 (n= 110)	POD ≥ 2 (n=32)	p-value
Leaking	1	8	0.57	7	2	0.66
Granulation Tissue	4	30	0.45	28	6	0.90
Soft-Tissue Infection	0	8	0.47	8	0	0.19
Return to Operating Room	0	2	0.84	1	1	0.34
Nausea or Vomiting during advancement of feeds	3	16	0.76	16	3	0.76
Hospital LOS (median, IQR)	1.5 (1-2)	3 (2-4)	<0.001	2 (2-3)	4 (4-5)	<0.001

(QS040) LAPAROSCOPIC CARDIOMYOTOMY IN CHILDREN WITH ACHALASIA

Zorikto Mitupov, MD, Assistant Professor¹, Alexander Razumovsky, MD, Professor¹, Abdumanap Alkhasov, MD¹, David Chubko², Nikita Stepanenko, MD¹, Andrey Petrov¹, ¹Filatov Children Hospital, ²Regional Clinical Center

Background: Nowadays there are surgical treatment, balloon dilatation and injection of Botulinum toxin are used for treatment of achalasia in children. The optimal management of oesophageal achalasia remains unclear in the paediatric population due to the rarity of the disease. This study reviews the single hospital experience of the laparoscopic Heller's cardiomyotomy (HC) procedure and attempts to define the most appropriate treatment.

Methods: Between 1991 to 2016, 39 patients with achalasia were treated in Filatov Children Hospital. Since 2011, all patients (27 cases) underwent the laparoscopic HC with Dor fundoplication. Mean age was 9.9 (4–15) years. During the laparoscopic procedure, we used five ports. We mobilize the anterior wall of the distal esophagus and gastric fundus. Cardiomyotomy was formed near 3 cm above and 1.5–2 cm below gastroesophageal junction. The mucosa was exposed for ¼ of esophageal circumference. The Dor fundoplication was performed in all cases.

Results: The mean operative time was 75 minutes. Mean hospital stay was 6 days. Intraoperative complication – esophageal mucosa injury occurred during the myotomy in 2 cases (7.4%) which were cured during the laparoscopic procedure. There were no conversions to open procedure. Six (22.2%) required re-intervention: pneumatic dilatations (n=2), balloon dilatation (n=2) and redo-surgery (n=2).

Conclusion: Laparoscopic HC for achalasia is effective in 77.8% of children. We consider the laparoscopic HC with Dor fundoplication the procedure of choice in the treatment of achalasia in children.

(QS041) DEVELOPMENT AND IN VIVO TESTING OF LAPAROSCOPIC TOOLS FOR ENDOLUMINAL DELIVERY OF MAGNETIC ANASTOMOTIC RINGS

Claire E Graves, MD, Catherine Co, MD, Philip Fullante, MD, Dillon Kwiat, Derek Smith, Brandon Gaston, Michaela W Merrill, Richard Fechter, Michael R Harrison, MD, University of California, San Francisco

Introduction: Magnetic compression anastomosis (Magnamosis) is an alternative to sutures and staples for the creation of luminal anastomoses. The Magnamosis device consists of two magnetic rings, each encased in a specially-engineered polycarbonate casing (Fig. 1), which creates a uniform pressure gradient to promote anastomosis formation and tissue remodeling. The rings can be deployed using open, laparoscopic, endoscopic, radiographic, or hybrid techniques. To deliver the device to precise locations throughout the small and large intestine, we sought to design and develop laparoscopic instruments that can easily manipulate the magnetic rings within the intestinal lumen.

Methods: All procedures were approved by the Institutional Animal Care and Use Committee at our institution. An adult female Yorkshire pig was anesthetized and prepped, and 4-port laparoscopic access was obtained following insufflation with a Veress needle. A single Magnamosis ring was delivered into the small intestine, and a variety of traditional laparoscopic graspers were used to attempt to “milk” the magnetic ring distally through the small intestine. We next used custom-manufactured, 5mm wavy atraumatic laparoscopic graspers with non-ferromagnetic 316 stainless steel tips (Fig. 2, Mobile Instrument, Bellefontaine, OH) to move the intraluminal magnet. Finally, a prototype laparoscopic magnetic “wand” was made by replacing the tip of a 5mm laparoscopic tacking device with a small magnet, encased in a smooth metal chamber (Fig.3). The small intestine was grasped proximal to the intraluminal magnet, and the magnetic wand placed against the wall of the intestine. The magnetic attraction between the ring and wand was then used to roll the ring distally through the lumen (Fig. 4). Instruments were tested in a total of five pigs.

Results: The ferromagnetic metal tips of the traditional laparoscopic instruments significantly hindered the ability to milk the magnet distally within the small bowel, as the magnetic attraction between the magnet and instrument tip resisted the pushing motion. The non-ferromagnetic 316 stainless steel tip resolved this problem and improved the ability of the surgeon to manipulate the magnetic ring within the intestinal lumen. However, we found the most efficient way to move the magnet was by rolling it within the lumen of the intestine using the magnetic “wand.” We could consistently move the magnetic ring 8–10 inches in a single motion, allowing for fast and efficient magnet placement. Both axially and diametrically magnetized device tips were tested. The size and strength of the magnetic tip were optimized in further prototype iterations to allow engagement between the magnets without damaging the bowel wall.

Conclusions: Traditional laparoscopic instruments with ferromagnetic tips can hinder endoluminal manipulation of magnetic compression rings. We have successfully developed two novel laparoscopic instruments that are uniquely suited to precise and efficient

placement of the Magnamosis device.

Figure 1: Magnamosis rings



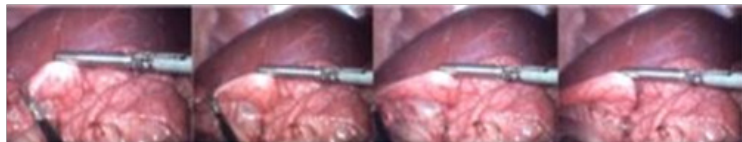
Figure 2: Custom-manufactured, wavy atraumatic laparoscopic graspers with non-ferromagnetic 316 stainless steel tips



Figure 3: Prototype laparoscopic magnetic “wand”



Figure 4: The bowel is held proximally, while the attraction to the magnetic wand is used to roll the magnet distally through the lumen.



(QS042) DUODENAL STRICTURE AFTER PANCREATITIS TREATED WITH LAPAROSCOPIC DUODENODUODENOSTOMY

Bethany J Slater, MD, Steven S Rothenberg, MD, Rocky Mountain Hospital for Children

This is a video of a 14 year old previously healthy female who was treated for perforated appendicitis and developed post-operative pancreatitis. She was evaluated by GI due to persistent nausea, poor PO intake, and weight loss. A CT scan demonstrated narrowing of the second portion of the duodenum with inflammation. An endoscopy was performed with severe stenosis of the duodenal bulb causing complete obstruction. A repeat endoscopy several weeks later showed similar findings. Thus, the patient was taken to the operating room for laparoscopic stapled duodenoduodenostomy. A 5mm Step trocar was placed at the umbilicus and two other 5 mm trocars placed in the left and right midquadrants. A transabdominal suture was placed through the gallbladder to obtain exposure. Adhesions were taken down between the colon and the second portion of the duodenum and the duodenum was Kocherized. At the second portion of the duodenum, there was significant thickening and a somewhat annular pancreas abutting the proximal duodenum. An endoscope was inserted to confirm the area of obstruction. An enterotomy was made in the proximal duodenum and in the third portion of the duodenum and a side-to-side duodenoduodenostomy was performed with an endo-GIA stapler. The enterotomy was closed with a running 3-0 vicryl suture. The patient was discharged on POD #4.

<https://www.youtube.com/watch?v=hqwvrPRp6lg>

(QS043) LAPAROSCOPIC APPROACH TO INTA-ABDOMINAL LYMPHANGIOMAS

Yuri Sokolov, PhD¹, Anatole Kotlovsky, PhD², Dmitri Donskoy, PhD¹, Dmitri Pykhiteev, MD³, Elizaveta Bibikova, MD¹, Anatole Kotlovsky, PhD², Yuri Sokolov, PhD¹, ¹St Vladimir Children's Hospital, ²St Luka's Clinical-Research Center for Children, Moscow, Russia, ³Central Children's Hospital named after Z.A. Bashlaeva

Background: Intra-abdominal lymphatic cysts (ILC) are rare malformations predominantly localised in the mesentery, omentum, retroperitoneum, they may also affect any organ. Laparoscopic surgery for management of ILC has been well established. The aim of our study was to demonstrate efficacy of laparoscopic techniques as a therapeutic mode for ILC of various localisation and size.

Patients and Methods: A retrospective review of 41 patients, aged between 3 months and 15 years, with ALC who underwent laparoscopic/ laparoscopically assisted (L/LA) surgery from 2010 to 2016.

Results: The site of the ILC location was as follows: mesenteric n=18 (43.9%), omental n=5 (12.2%), retroperitoneal n=7 (17%), diaphragmatic n=2 (4.9%), splenic n=5 (12.2%), pancreatic n=2 (4.9%), adrenal n=2 (4.2%). The lesion size ranged from 3.5 to 35 cm in the largest dimension.

In total, there were 39 L/LA procedures effectively carried out: intracorporeal – excision of the extra-parenchymal ILC <15.0cm n=25 (64.1%); deroofting of splenic ILC < 10.0cm combined with high frequency ablation of the remaining cystic wall n=2 (5.1%); splenic resection including underlying ILC >10.0cm n=2 (5.1%); enucleation of pancreatic ILC n=1(2.6%); adrenalectomy with underlying ILC n=2 (5.1%); extracorporeal excision of the large size mesenteric cyst >15.0 cm and concomitant intestinal resection n=7 (18%).

Conversion to laparotomy was required in two cases (4.9%): one – owing to giant size of mesenteric ILC and another – in the course of splenic resection due to bleeding.

The postoperative course was uncomplicated in all patients.

At follow up from 3 months to 5 years recurrences were noted in two cases (5.1%).

Conclusion: In our experience, the L/LAP techniques used for management of ILC are very efficacious as applied differentially, according to the lesion location and size.

(QS044) LAPAROSCOPIC REPAIR OF PERFORATED PEPTIC ULCER IN CHILDREN

O Gil, MD, J Valero, MD, A Holguín, MD, P Jaimes, MD, I Molina, MD, Fundación Hospital de la Misericordia

Perforated peptic ulcer is a relatively uncommon entity in the pediatric population. Symptoms and presentation may be atypical. There are several techniques described for the closure of this perforations in adults and children.

We report two cases of perforated peptic ulcer, both female 10-year-olds with an atypical presentation, the first one presented with symptoms that suggested appendicitis; the second one presented with subacute onset of abdominal pain with signs of pneumoperitoneum on tomography. Both were taken to diagnostic laparoscopy, finding perforated ulcers on the anterior duodenal bulb. Laparoscopic closure of the perforation was done with a plug of omentum in the perforation. Both had satisfactory postoperative recovery with short length stay (3 days). Gastrin levels were normal and further endoscopy showed complete healing of the ulcer without deformities or stenosis of the duodenum.

Previous cases of duodenal closure are reported in the pediatric literature with suture and overposition of an omental patch. Closure with an omental patch plugged on the perforation is one of the options for the surgical treatment of this entity with good results.

(QS045) A COOPERATIVE STUDY COLOMBIA-MEXICO ON THE MEASUREMENT OF THE GAP IN ESOPHAGEAL ATRESIA – A GUIDE TO ESTABLISH THE TREATMENT

Carlos García Hernández, MD¹, Cristóbal Abello-Munarriz, MD², Lourdes Carvajal-Figueroa, MD¹, Ricardo Cure-Dau, MD², ¹Hospital Infantil Privado, ²Organización Clínica General del Norte Colombia

Introduction: The most common indication to substitute the esophagus is atresia. The results are not optimal. There are techniques to reduce the gap, which are used as a desperate solution to the surprising finding of long gaps. Knowing the gap before the surgery facilitates the planning of an esophageal preservation surgery. Our objective is demonstrate the utility of preoperative measuring of the gap as an attempt to improve the therapeutic conduct using a standardized technique.

Material and methods: Cooperative and retrospective study conducted in: Organización Clínica General del Norte, Colombia and Hospital Infantil Privado, Mexico. Patients treated from 2010 to 2016. Measuring technique type I.– Gastrostomy is performed, introducing a 3mm trocar in the stomach and CO2 insufflation, introducing in the orifice of the distal esophageal a lens of 3 mm. DeBakey dilatator is introduced through the proximal. X Ray is performed and the distance is measured. Technique type III.– With

rigid bronchoscopy, 3 mm lens is introduced and placed in the fistulae. Then, a DeBakey dilatator is introduced through the proximal end, x-ray is performed and the distance is measured. Were classified: A.- Short, under 1 centimeter; B.- Intermediate, 1 to 3; C.- Long, more than 3. Surgical technique was suggested: Group A.- Primary plasty; Group B.- Elongation with internal traction or Collis Nissen, and Group C.- Elongation with internal traction, Collis Nissen or esophageal substitution.

Results: 27 patients, 12 type I, 14 type III and 1 type IV. type I; Group A; two cases, treated with primary anastomosis. Group B; 3 patients, 2 were treated with elongation and anastomosis, and another anastomosis with Collis esophagoplasty. Group C; 6 cases, 2 underwent esophageal substitution, other with esophageal plasty with Collis esophagoplasty, and 3; esophageal elongation and anastomosis. Patients type III, group A; 8 treated with primary anastomoses. Group B; 3, 2 with plasty and one to elongation. Group C; 3; two underwent elongation and 1 esophageal substitution. Proximal fistulae at a bronchial level present in 3, in 11 at the tracheal level. In the type IV the distance was; this patient was not subject to follow up.

Discussion: The improvement in surgical techniques and in the development of Intensive Care Units (ICUs) devoted to newborns has improved the conditions of patients with esophageal atresia. Patients with esophageal atresia are the largest group that require esophageal substitution, where a plasty can be problematic, due to either technical defects or long gap atresia. Practitioners usually know the location of the superior end of the bottom sac, but the extension of the inferior end or the location of the distal fistulae are unknown. We present a technique that can be easily reproduced to appraise the distance between the ends and assess the presence of proximal fistulae to optimally plan a surgical treatment that allows the preservation of the esophagus in a greater number of patients, and avoid esophagostomies or high risk procedures. Knowing the distance that separates both esophageal ends is as important as assessing congenital malformations in these patients.

(QS046) LAPAROSCOPIC RESECTION OF AN ENTERIC DUPLICATION CYST IN A CHILD

Hanna Alemayehu, MD, Richard J Hendrickson, MD, Children's Mercy Hospital

Introduction: Enteric duplication cysts are rare and have a varied presentation given their varied locations in the gastrointestinal tract. This can result in diagnostic challenges and requirement of tailored surgical approaches. Laparoscopy is playing an increasing role in diagnostic and therapeutic interventions for enteric duplication cysts in children.

Methods: We present the case of a 12 year old male who presented with epigastric abdominal pain; his work up revealed a mass in the epigastrium and he underwent diagnostic laparoscopy and resection of the mass.

Results: The mass was found to be an enteric duplication cyst with a calcified component thought to be secondary to volulus of part of the cyst.

Conclusions: The child had an excellent outcome and was discharged on post-operative day 2. Laparoscopy was an excellent tool for diagnosis and therapeutic intervention in this case.

<https://www.youtube.com/watch?v=tBL5ZOTv230>

(QS047) SUCCESSFUL TREATMENT OF LAPAROSCOPIC LATERAL SEGMENTECTOMY FOR INTRA-HEPATIC PORT-SYSTEMIC SHUNT TRANSECTION IN AN INFANTILE CASE

Kouji Yamada, MD, Takafumi Kawano, MD, Tomoe Moriguchi, MD, Koushiro Sugita, MD, Ryuta Masuya, MD, Seirou Machigashira, MD, Shun Onishi, MD, Waka Yamada, MD, Kazuhiko Nakame, MD, Motoi Mukai, MD, PhD, Tatsuru Kaji, MD, PhD, Satoshi Ieiri, MD, PhD, FACS, Department of Pediatric Surgery, Kagoshima University

Introduction: Porto-systemic shunt is a condition in which the portal vein blood directly flows into the inferior vena cava, including the hepatic vein. However, the optimal timing of surgical intervention is controversial, as spontaneous closure of the shunt vessel occurs by age 2. Prompt treatment is recommended after a definitive diagnosis due to the risk of pulmonary hypertension and hepatopulmonary syndrome. We herein report a successful minimally invasive approach for transection of an intra-hepatic port systemic shunt by laparoscopic hepatectomy in an infantile case.

Case: A one-year-old girl was prenatally found to have abnormal vascular formation via ultrasonography, which was most likely a port systemic shunt in the liver. After a cesarean section delivery at full term, a 4.8-mm abnormal vessel was detected in the left lobe of the liver. Using enhanced computed tomography, this abnormal vessel was diagnosed as a port systemic shunt between segment 3 of the portal vein and the left hepatic vein. The serum transaminase and galactose levels were within the normal range, but the NH3 levels were elevated slightly above the normal range. The patient was observed conservatively in the hope of sponta-

neous closure of the shunt vessel, but the shunt vessel gradually enlarged into an aneurysm shape. The serum NH₃ and total bile acid levels were in the abnormal range despite a normal liver function (transaminase). In addition, the patient was found to have progressive metabolic acidosis based on the lactate data, so surgical intervention was applied to close the shunt vessel.

Operative findings and procedure: The patient was placed in a broad base position, and a 10-mm 30° laparoscope was inserted through the umbilical incision using the open 12-mm Hasson trocar method. Pneumoperitoneum was established at 8 mmHg CO₂ inflation. Under inspection with a laparoscope, the shunt vessel was easily recognized at the surface of lateral segment 3. Initially, transection or stapling for only the shunt vessel was intended. However, given the intraoperative findings, uncontrollable hemorrhage was expected during shunt vessel dissection. We therefore performed lateral segmentectomy for safe and secure transection of the shunt vessel. Two additional 5-mm ports (left lateral abdomen and left lower abdomen) were inserted. Based on the findings of repeated laparoscopic ultrasonography, liver dissection was performed. The surface area was dissected using an ultrasonically activated device (Harmonic Ace plus; Ethicon, Cincinnati, OH, USA). The deep portion was dissected by CUSA, and hemostasis was by bipolar. Finally, the shunt vessel was stapled using a linear stapler (Powered Echelon; Ethicon), and lateral segmentectomy was completely performed. The dissected surface was coagulated using an Argon beam coagulator, and the lateral segment was extracted through the Pfannenstiel incision.

Results and Conclusion: There were no intra- and postoperative complications. The postoperative course was uneventful, and the patient showed a good clinical course. The serum transaminase and lactate levels were immediately normalized. Cranial magnetic resonance imaging showed no manganic deposition. The intra-hepatic shunt vessel was difficult to approach in the present case, and laparoscopic hepatectomy is one method for resolving a shunt vessel.

<https://www.youtube.com/watch?v=XcwRw9qzSeU>

(QS048) PREVENTION OF COMPLICATIONS IN CHOLEDOCHOCYST TREATMENT BY LAPROSCOPIC OPERATION

Zhaozhu Li, MD, Qingbo Cui, Bo Xu, Zenan Zhang, 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 excision of choledochal cyst with Roux-en-y hepaticoducho-jejunostomy is being offered as an alternative to open operation for choledochal cyst in children. The complications may be occurred in postoperative periods. Here we review our 75 patients and focus on the reason of post-operative complications. Aim to prevent the post-operation complications by laparoscopic excision of choledochal cyst in the future.

Methods: We reviewed 75 patients who had undergone laparoscopic excision of choledochal cyst. The data was analysed for operative time, type of choledochal cyst, intraoperative problems, postoperative complications and postoperative follow up.

Results: From January 2009 to July 2016, 75 patients have undergone laparoscopic surgery for choledochal cyst. Mean age was 5.2 years old (3 month – 13 y), all patients had type I (60 spheroida dilatation and 15 spindle dilatation of common bile duct). The cyst diameter was 1.5 to 15 cm. Mean operative time was 210 minutes (180 – 410 minutes). Mean intraoperative blood loss was 25 ml (10 – 100 ml). All patients underwent Roux-en-y hepaticoducho-jejunostomy. No patients were converted to open surgery. Bile leak was seen in 5 patients, four were treated conservatively and one patient required abdominal puncture drainage. Adhesive intestinal obstruction was seen in 16-month girl, she was treated by redo-laparoscopic operation in post-operation fifth day. Residual stone was found at distal common bile duct in perioperative period, the stone disappeared without treatment in second follow-up months. Mean hospitalisation was 6.5 days (5 – 9 days). Follow-up from 3 months to 5 years, two patients had cholangitis which reverted to normal after antibiotic therapy. Two boys ill with stenosis of biliary-intestinal anastomosis were operated by redo laparoscopic hepatico-jejunostomy in one month and three month respectively after the first operation.

Conclusions: Laparoscopic excision of choledochal cyst is a safe alternative to open surgery. Postoperative recovery of the children is quickly even more operating time than open surgery. It is an acceptable treatment for child with choledochal cyst. Bile leak can be prevented by hepatico-jejunostomy anastomosis carefully and finding aberrant bile-duct. When biliary-intestinal anastomosis will be done, we suggest trim the hepatic duct by scissors not electric hook. It will be good for preventing stenosis of biliary-intestinal anastomosis.

Key words: Choledochocyst; Laparoscopic operation; Complications

Acknowledgments: The research support by Supported by NSFC No.81272049 and 81572117.

(QS049) THE USE OF NEUROENDOSCOPIC LAVAGE IN NEONATES

Viktor Petracke, PhD, Andrey Prityko, PhD, Boris Semernitzky, PhD, Ruslan Asadov, PhD, Denis Kovalev, PhD, St Luka's Clinical-Research Center of Medical Care for Children, Moscow

Background: Neuroendoscopy as MIS approach to various intracranial conditions has been evolving. The purpose of this study was to ascertain efficacy of neuroendoscopic lavage (NEL) in our neonatal practice.

Patients and methods: From 2010 to 2016, NEL was carried out in 58 preterm infants with intraventricular haemorrhage (IVH) and purulent ventriculitis (PV) that were complicated with hydrocephalus (HC).

The selection criteria for use of NEL were indicators of ineffectiveness of the initial conservative therapy.

The patient data was retrospectively reviewed.

Results: The patient age ranged from 12 to 45 days.

In total, 60 NEL procedures were performed (in two cases – repeated): for IVH – 31 and PV – 27.

All procedures were effectively completed removing the intraventricular blood remnants or eliminating purulent collections. Restoration of inter-ventricular communications was also carried out in 32 of these cases complicated with multiple occlusions of the ventricular system (VS). The operative time ranged from 30 to 180.

There was no perioperative mortality.

Postoperative recovery was uneventful in 56 (96,5%) patients showing marked improvements in CSF clearing and resolution of intracranial hypertension within 7–12 days. The same results were achieved in two other patients with PV after the second procedure.

Subsequently VP-shunt insertion was required in 36 (62%) patients: 13 (41,9%) IVH and 23 (85,1%) PV.

Conclusions: In our experience, NEL is a safe and very efficacious technique in resolving IVH, eliminating PV and relieving intracranial hypertension in premature infants. In addition, further development toward neuroendoscopic provision of reliable communications between of the VS compartments is required.

(QS050) PUBLIC PERCEPTION OF TELEMEDICINE AND SURGICAL TELEMENTORING IN THE PEDIATRIC POPULATION

Sophia Abdulhai, MD, Dominic Craner, Edwin Chou, Ian C Glenn, MD, Todd A Ponsky, MD, Akron Children's Hospital

PURPOSE: Telemedicine and surgical telementoring strive to provide equal access to specialized healthcare, regardless of patient location. It also aims to provide providers in more remote locations real-time, second opinions from more experienced physicians who are otherwise not readily available. The goal of this study is to gauge the public perception of this technology in the pediatric population.

METHODS: Patient families in our pediatric surgery and gastroenterology clinics were asked to complete a seven-question survey after being shown a one-minute video describing telemedicine and surgical telementoring.

RESULTS: A total of 129 people were surveyed, of whom 98% were within a 1-hour drive of a pediatric hospital. Among respondents, 89% were amenable to telemedicine for routine physician visit, 70% said "yes" for a post-operative visit, and 67% agreed to telemedicine and telementoring as a way to be evaluated by a specialist. Regarding surgical telementoring, 49% would consider it for their child, 58% would consider it for themselves, and 10% said "yes" for themselves, but "no" for their child. Additionally, 24% and 19% were unsure about surgical telementoring for their child and themselves, respectively. History of surgery or surgical complications did not correlate with their responses, nor did private versus public insurance. Although a higher proportion of those with an annual income of greater than \$100K said "no" to surgical telementoring for their child and themselves, this was not statistically significant by Fisher's exact test ($p = 0.23$ and 0.25 , respectively). Desire to see a physician in person was cited by 63% as a reason against telemedicine, while 35% reported concern about a physician's competence as a reason against surgical telementoring.

CONCLUSION: Overall, surgical telementoring was only supported by about half of the respondents. We predict that with increased

education about surgical telementoring, this technology will ultimately have public increased support in the pediatric population.

(QS051) LAPAROSCOPIC PROCEDURE IN CELIAC ARTERY COMPRESSION SYNDROME IN CHILDREN

Zorikto Mitupov, MD, Assistant Professor¹, Alexander Razumovsky, MD, Professor¹, Abdumanap Alkhasov, MD¹, Said-Hassan Bataev, MD², Nikita Stepanenko, MD¹, Anatoly Pavlov, MD³, Roman Ignatiev, MD⁴, ¹Filatov Children Hospital, ²Pirogov Russian National Research Medical University, ³Republic Children Hospital, ⁴European Medical Center

BACKGROUND: The celiac artery (CA) compression syndrome (CACS) is a rarely diagnosed disorder, which is characterized by chronic abdominal pain and vegetative symptoms. The role of surgical treatment in CA decompression has been discussed controversially by numerous authors.

PATIENTS AND METHODS: Three patients (median age, 15 years) diagnosed with CACS underwent laparoscopic decompression. The patients presented with chronic abdominal pain, vegetative symptoms and a reduced quality of life. Doppler sonography showed an increased blood flow velocity of the CA with maximum of 190–300 cm/s (mean 205 cm/s). CT angiography and angiography demonstrated a characteristic hook-shaped appearance of the CA with severe localized compression.

RESULTS: All patients underwent laparoscopic decompression of the CA. Four or five ports we used during laparoscopic approach. The procedure consisted of division of the median arcuate ligament and complete mobilization of the CA from its origin on the aorta to its trifurcation. Average operating time was 65 minutes, and the average length of stay was 4 days. We did not observe any complications. Postoperatively all patients were immediately free of abdominal pain. Doppler sonography showed a marked reduction in CA blood flow velocity. An increase of vessel diameters to normal dimensions was documented by postoperative CT angiography.

CONCLUSIONS: Laparoscopic treatment of celiac artery compression syndrome offers a novel, safe, reliable and, compared to open surgery, less invasive approach. The surgical treatment is indicated in patients with characteristic symptoms and typical findings at Doppler sonography and CT after exclusion of other abdominal pathologies.

(QS052) LAPAROSCOPIC LOW PROFILE BALLOON BUTTON APPENDICOSTOMY FOR ANTEGRADE ENEMAS

David Grabski, MD, Yinin Hu, MD, Sara Rasmussen, MD, PhD, Eugene McGahren, MD, Jeffery Gander, MD, University of Virginia

Introduction: The Malone appendicostomy is a continent catheterizable channel used for antegrade enemas. However, it requires daily catheter insertions, which can be painful for the child. Additionally, there is no indwelling tube, which can lead to stenosis of the channel. This has been reported to be as high as 41%.

We have used an indwelling low profile balloon button tube inserted through the appendix into the cecum for antegrade enemas. We hypothesize that leaving the button in place reduces stenosis while successfully managing constipation or fecal incontinence.

Methods: At our institution, a laparoscopic balloon button appendicostomy is performed with 2 or 3 laparoscopic ports and the appendix is used as a conduit when present. A low profile balloon button tube (AMT, Brecksville, OH), is placed at the time of the operation. All children that underwent the procedure at our institution from January 2011 through August 2016 were identified. Demographic and clinical data were collected. The primary outcome was success in managing constipation or fecal continence as measured by the Malone continence scale (full, partial or failure). Complications were analyzed. Data collection and analysis was performed using Microsoft Excel 2016 and StataIC 14.

Results: Thirty-five children underwent the procedure over the study period. One patient moved after the operation and we were unable to obtain clinical data. Males made up 67.6% of the group. The average age was 8.4 years old (range 4–16). Twenty-eight patients (82.4%) underwent the operation for idiopathic constipation; 3 patients (8.8%) for anorectal malformation (2 for incontinence, 1 for constipation) and 1 patient (2.9%) for hypermotility after a hirschsprung disease operation. Additionally, 2 other patients had an appendicostomy placed for constipation– 1 patient with a myelomeningocele and the other after a sacrococcygeal teratoma excision. One patient required conversion to an open procedure due to intraabdominal adhesions.

A full response was obtained in 23 patients (67.6%), 9 patients (26.5%) had a partial response and 2 patients failed (5.9%). Both of the failures were from reluctance of the parents to use the tube. One patient developed an internal hernia near the appendicostomy requiring a laparotomy. Minor complications included 8 patients with excessive granulation tissue. One patient developed a stricture noted at button change and 1 patient had mucosal prolapse. Six patients (17.6%) underwent reversal of their appendicostomy tube, 4 patients due to return of normal bowel function, and two because of perceived discomfort of the child with flushes.

Conclusion: A laparoscopic appendicostomy with a balloon button tube placed through the conduit is an effective means of addressing chronic constipation or fecal incontinence. Ninety-four percent of patients in our series achieved a full or partial response. The stenosis rate in our series (2.8%) is lower than the rates reported for Malone procedures. The low profile nature of the balloon button is not bothersome to patients and leaving it in place helps prevent stenosis.

(QS053) LAPAROSCOPIC ABDOMINAL LIGATION OF THORACIC DUCT

Rebecca M Rentea, MD, Ashwini S Poola, MD, Walter S Andrews, MD, Childrens Mercy Hospital

Persistent chylothorax is a complex problem. We present a 6 month old male who, following the repair of a recurrent tracheo-esophageal fistula, developed a persistent right chylothorax. The chylothorax was refractory to medical management. We demonstrate ligation of the thoracic duct via a laparoscopic abdominal approach which we combined with a Toupet wrap for gastroesophageal reflux.

https://www.youtube.com/watch?v=_wsAUA8gimc

(QS054) IN PURSUIT OF THE MOST COST EFFECTIVE LAPAROSCOPIC APPENDECTOMY: THE EFFECT OF DISPOSABLES ON OPERATIVE TIME AND SURGEON-CONTROLLABLE OPERATIVE COST

Emily E Abbott, DO¹, Jonathan Chan², Nathan M Novotny, MD, FACS³, ¹Beaumont Health, Royal Oak, MI, USA, ²Oakland University William Beaumont School of Medicine, Rochester, MI, USA, ³Beaumont Health, Royal Oak, MI, USA and Jordan University of Science and Technology, Irbid, Jordan

Background: There is a movement toward cost savings in healthcare worldwide. Surgeons can affect two main cost variables in an operation (variable cost): disposables and time. Some surgeons believe disposables shorten operative time enough to outweigh the associated cost. At our institution we have utilized multiple laparoscopic techniques for appendicitis including single incision, traditional three-incision, and nearly all options in between. Our hypothesis was that increasing disposable costs does not decrease operative time, complications, or overall variable cost.

Methods: We retrospectively reviewed patients under 18 years old undergoing laparoscopic appendectomies for non-perforated appendicitis from January 2013 to November 2016 at an American tertiary children's hospital. Data obtained included demographic information in addition to intraoperative details including disposables used, (endostaplers, endoloops, ligasure, harmonic, clips, hook cautery, disposable or reusable trocars, and endobag or endocatch) their associated costs, resident participation, operative time and final pathology. Due to the numerous methods used, the 8 most common approaches were analyzed and compared. We also looked at any perioperative complications within 30 days. Patients were excluded based on perforation confirmed by operative or pathology report (Kansas City definition) or if they had concurrent procedures performed at the time of the appendectomy.

Results: We reviewed 918 patients with 227 excluded for a total of 691. The mean age was 12 (3–17). Median operative time was 37 minutes. Median length of stay was 1.44 days. Disposable cost, OR time, and complications were compared between cases with a resident (492) and those without (199). Residents did not increase the use of disposables but did increase operative time (39 vs. 34 minutes) and therefore the total variable cost ($p < 0.0001$). There were too few complications to make meaningful statements about associated complications. Single site was significantly faster and had lower variable cost when compared to all other methods with the exception of the disposable trochars and the stapler ($p < 0.0001$). Using disposable trochars and the stapler was the second fastest and second lowest variable cost and retained a significant difference when compared to most other methods. Endoloop methods did not show overall variable cost savings versus the vast majority of methods.

Conclusion: The single site method had the lowest overall variable cost due to its lack of disposable use and expediency. Surprisingly, the addition of two higher priced expenditures (disposable trochars and an endostapler in the standard 3 port appendectomy) sped the operative time enough to outweigh the disposable cost when compared with most other methods. Endoloops are a fraction of the cost of staplers but the OR time to apply them outweighed their cost savings. In spite of the additional five minutes of operative time and associated cost, we still support the use of residents during cases as an investment in the future generation. Given the variable cost savings, we recommend a single site appendectomy or a standard 3 port laparoscopy appendectomy with disposable trochars and the stapler.

(QS055) LAPAROSCOPIC APPROACH FOR A SACROCOCCYGEAL TERATOMA IN A NEWBORN WITH PRENATAL DIAGNOSIS. CASE REPORT.

Tomas Ferraris, MD, Gaston Elmo, Daniel Liberto, MD, Francisco De Badiola, MD, Juan Moldes, MD, Pablo Lobos, MD, Hospital Italia-

no de Buenos Aires

INTRODUCTION: Sacrococcygeal teratoma (SCT) is a tumor of the newborn. Its prognosis is defined by a prompt surgical treatment and a complete excision. We report a case of a newborn with a laparoscopic approach with median sacral artery section associating perineal approach performed at the Hospital Italiano de Buenos Aires.

CASE REPORT: In this study we report the case of a patient with prenatal diagnosis of Sacrococcygeal Teratoma. It was first observed in an US of a 32-week fetus with 75% intrapelvic and 25% extrapelvic. With a 36-week fetus an MRI was performed observing a voluminous intrapelvic mass with sacro-coccygeal extension. It mixed solid and cystic components. Intrapelvic portion measured 8 x 3.5 x 3 cm, while the extrapelvic measured 3.8 x 3.5 x 3 cm. It was classified as a Type 3 American Academy of Pediatrics Surgery Section (AAPSS).

He was born by a programmed C-Section, weighing 2980 kg, APGAR 9/10 with 38-week of gestational age. On physical examination he did not have another congenital anomalies. Lab tests showed AFP 80,000.

An US showed the intrapelvic mass with mixed echogenicity. It also showed a presacral component which remained below the coccyx as an extrapelvic component.

The patient was taken to the OR when he was 3 days old. We performed a laparoscopic approach. The tumor was protruding from the retroperitoneum. Bladder and rectum were hanged with extracorporeal suture, and the peritoneum was opened. We released intrapelvic mass without damaging its walls. Both iliac vessels were identified and left apart. We could also identify median sacral artery, which was ligated and cut. Once the intrapelvic component was released, the patient was rotated and a posterior Chevron section was done to perform conventional surgery for the extrapelvic mass. The tumor was taken completely without any damage, and no hemorrhage. After surgery he recovered well, with oral tolerance within the next three days, and normal catharsis. No complications occurred, and the patient was sent home when he was 9 days old. With a follow-up of 14 months, the patient is fully recovered, without recurrence and normal AFP.

CONCLUSIONS: Sacrococcygeal teratoma is a well-known tumor of the newborn. When this tumors have an important intra-pelvic component, laparoscopic approach can be feasible to control median sacral artery and dissecting the tumor without a big anterior incision, possibly improving a prompt recovery with less pain and less blood lost.

<https://www.youtube.com/watch?v=vjdOYhKorjc>

(QS056) LAPAROSCOPIC RESECTION OF EXTRA-ADRENAL PARASPINAL PHEOCHROMOCYTOMA

Rebecca M Rentea, MD, [Ashwini S Poola, MD](#), Walter S Andrews, MD, Childrens Mercy Hospital

Extra-adrenal pheochromocytomas are rare tumors that are more common in children (30%) than in adults (10%). A 15-year-old boy presented with significant hypertension and was found to have a ____ cm mass inferior to the left kidney and appeared to surround the left renal artery. After preoperative alpha blockade, we successfully removed the mass laparoscopically from the left paraspinal region of his abdomen. The tumor was found to be dumbbelled around the left renal artery, which was preserved. A 5mm JustRight™ surgical stapler was utilized during the course of the operation.

<https://www.youtube.com/watch?v=JslY0-pd2cs>

(QS057) MODIFICATIONS TO EXPOSE PORTA HEPATIS AND MAKE THE LAPAROSCOPIC PORTOENTEROSTOMY EASIER IN THE TREATMENT OF BILIARY ATRESIA

[Bing Li¹](#), Lin S Xia¹, Bing W Chen¹, Nian f Zgang¹, Bo Y Wang², ¹Huai'an Women and Children's Hospital, ²Department of General surgery, Huai'an First People's Hospital, Nanjing Medical University, 6 Beijing Road West, Huai'an, Jiangsu 223300, P. R. China

Purpose: Laparoscopic Kasai portoenterostomy (LKPE) is generally regarded to have a poorer outcome than open Kasai portoenterostomy for the surgical treatment of uncorrectable biliary atresia (UCBA). We herein evaluated our initial experience of some modifications to expose porta hepatis and make the Laparoscopic portoenterostomy easier in the treatment of type III biliary atresia.

Methods: Between July 2012–October 2016, 25 infants with type III BA were treated with our modified LKPE technique. Our series included 18 boys and 7 girls with a mean age of 59.1 days (range from 30–85 days). We introduced some key modifications to increase exposure of the porta hepatis and make the removing of the fibrotic tissue and portoenterostomy easier to the LKPE. A percutaneous suture introduced just below the xiphoid process was used to snare the round ligament and retract the liver; other percutaneous stay sutures were then introduced and fundus and neck of gallbladder were sutured to elevate the liver to expose the porta hepatis. In fifteen of the cases that liver was enlarged evidently, part of hepatic lobus quadratus was removed laparoscopically for exposure of the porta hepatic. The fibrous cord was carefully mobilized from the portal vein. The portal vein and hepatic artery were mobilized, then put two rubber bands round the portal vein and hepatic artery. The porta hepatis was exposed by stretching the two rubber bands, then the laparoscopic portoenterostomy was accomplished easily.

Results: There were no operative deaths; blood loss during operation was minimal, without necessity for blood transfusion. Operative time varied from 210 to 270 min (mean 232.35±18.97 min). Median follow-up was 20 months. All the cases survived the surgery without any intraoperative complications. 18 patients' bilirubin total dropped to normal. 5 others' bilirubin levels have dropped significantly after the surgery and are still being observed. 2 cases died of repeated cholangitis and liver failure.

Conclusion: Our LKPE can be performed safely and successfully with encouraging outcome in infants with type III BA. With the original concepts of Kasai portoenterostomy and perfect laparoscopic skills and some key modifications to expose porta hepatis, LKPE could be considered the first line treatment for type III biliary atresia.

(QS058) A NOVEL TECHNIQUE FOR SAFE LAPAROSCOPIC SUBTOTAL SPLENECTOMY IN CHILDREN WITH HEREDITARY SPHEROCYTOSIS

Jeffrey Lukish, MD, Daniel Levin, MD, Mark Kovler, MD, Johns Hopkins University, Baltimore, Maryland, USA

Purpose: Partial splenectomy has emerged as a surgical option for children with hereditary spherocytosis. The goal of reducing hypersplenism and anemia while preserving immunologic function to avoid overwhelming post splenectomy infection (OPSI) is logical. The technical aspects of the procedure can be challenging, specifically the intracorporeal partial splenic resection can result in splenosis and potential hemorrhage. This pilot study evaluates the feasibility and safety of a novel laparoscopic with evisceration resection strategy. (LEVR)

Methods: Data were collected retrospectively from 6 children who underwent LEVR from January 2013 to July 2016. Following division of the short gastric vessels, the splenic hilum was inspected to determine if a suitable lower pole vein and artery branch existed to preserve a 4 cubic cm wedge of spleen. Complete laparoscopic dissection and division of splenic attachments and vessels taking care to preserve the lower pole vein and artery were performed. The spleen was eviscerated preserving this vascular pedicle via a mini laparotomy at the site of the left upper quadrant port site. Subtotal splenectomy was performed extracorporeally with minimal hemorrhage. The argon beam coagulator and topical hemostatic agents were utilized for hemostasis. Data retrieval included age, gender, weight, operative time, complications, post-operative transfusion requirements and follow-up examination.

Results: Five children underwent partial splenectomy based on a lower pole artery and vein branch. One child required laparoscopic total splenectomy due to splenomegaly and inability to safely dissect the hilar vessels. Mean operative time was 105 minutes. There were no complications in the group and LOS was 2 days. All children have had a sustained increase in hemoglobin and decrease in reticulocyte count and bilirubin levels post operatively. None of the children have required transfusion and have been free from recurrent anemia and abdominal pain.

Conclusions: Our pilot indicates that partial splenectomy for hereditary spherocytosis utilizing the LEVR strategy is feasible and safe and may lead to a decrease in operative time and LOS. It is clear that partial splenectomy leads to sustained and clinical improvement in hematologic profiles and symptoms in most children. Long term follow up is necessary, however, our data support LEVR partial splenectomy as an alternative for children who may otherwise require total splenectomy. Splenic preservation may provide an immunologic advantage with subsequent reduction in the risk of OPSI.

https://www.youtube.com/watch?v=qVtqzPN_Y74

(QS059) A VALIDATION STUDY FOR A NOVEL LAPAROSCOPIC INGUINAL AND DIAPHRAGMATIC DEFECT (LIDD) MODEL.

Damir Ljuhar, MBBSHons, BBioMedHons, MPHTM, DipAna, Sam Alexander, Sarah Martin, Ramesh M Nataraja, MBBS, BSChons, GCCSHD, FRCSEdPaeds, Monash Children's Hospital

Aim: To assess construct and content validity on a novel laparoscopic bench trainer model for use in advanced paediatric surgical simulation.

Background: Paediatric laparoscopic procedures are now becoming routine. There is a need for simulated laparoscopic models to acquire part-procedural competency prior to paediatric patient contact. 2 conditions; congenital diaphragmatic hernia and inguinal hernias were combined to create the Laparoscopic Inguinal & Diaphragmatic Defect (LIDD) model.

Method: 109 participants completed the tasks: Volunteer medical students; Trainees & Experts surgeons. Basic demographic data was collected. Subjects were shown a pre-recorded video of both exercises. The assessment exercise involved closing both the simulated inguinal or diaphragmatic hernial orifice. A scoring system with a maximum score of 21 for the inguinal hernia model and 15 for the diaphragmatic hernia was used. A Likert-style scale (0–5) assessed the future training modality potential of the models and task completion realism (5 = strongly agree).

Statistical analysis was performed using an unpaired t-test with a p-value of <0.05 being significant. Results were expressed as a mean (± standard deviation).

Results:

Summary of Main Results in Table 1 and 2:

Table 1: Summary of Scores on the tasks:

	CDH			IH		
	n	Mean(SD)	Median	n	Mean(SD)	Median
Medical Students	18	5.3(4.4)	4	18	6.3(3.5)	5.5
Trainees	83	9.3(4.4)	10	83	11.2(7.2)	12
Experts	6	14.8(0.4)	15	6	20.3 (1.0)	21

Table 2: Statistical Analysis

	CDH		IH	
	Trainees	Experts	Trainees	Experts
Medical Students	0.0006	0.0001	0.0058	0.0001
Trainees	–	0.0031	–	0.0026

Both aspects of the LIDD model revealed a statistical significance between the scores obtained by the three groups of subjects. Experts scored significantly higher than medical students and trainees in both LIDD models. Similarly, trainees performed significantly better than medical students in both models (Table 2).

Content validity for the competent laparoscopic surgeons revealed that there was a high score for the training modality potential of both aspects of LIDD (4.8 & 4.8). There was also a high level of fidelity for the task completion (4.0 & 4.0).

Conclusion: We have demonstrated both the construct and content validity of the LIDD model for both laparoscopic IH and CDH repair. It was able to successfully differentiate between the expert, trainees and inexperienced laparoscopic surgeons. The two models also scored highly on the content and therefore these are potentially high fidelity models for use with laparoscopic surgical simulation.

(QS060) ROLE OF SINGLE-SITE UMBILICAL LAPAROSCOPY IN THE TREATMENT FOR INGUINAL INCARCERATED HERNIA IN CHILDREN

Li Gui Bin, The 5th central Hospital of Tianjin

Objective: To evaluate clinical effect of single-site umbilical laparoscopy in the treatment for inguinal incarcerated hernia in children.

Methods: Retrospective reviews were conducted for the clinical data of the 105 children of inguinal incarcerated hernia during January 2010 to August 2014. According to different operative approach, single-site laparoscopic surgery group (SLS, n=56) and open surgery group (OS, n=49) were assigned and compared. The follow-up period was 6–36 months.

Results: operation underwent successfully in both groups. The average operative duration had significant difference, which was (33.73 ± 4.41) min for OS versus (25.13 ± 4.82) min for 48 cases in SLS ($p < 0.01$); the operative duration of other 8 cases in SLS was (32.25 ± 2.18) min, because of discovery of occult inguinal hernia and treating bilateral hernia. The average operative blood loss was (3.18 ± 2.90) ml for OS versus (1.73 ± 0.88) ml for SLS ($p < 0.01$); the hospitalization duration (4.22 ± 1.16) d for OS versus (3.50 ± 0.97) d for SLS ($p < 0.01$). The postoperative complications were 24.5% for OS and 8.9% for SLS.

Conclusion: Single-site umbilical laparoscopy is safe and efficacious for inguinal incarcerated hernia in children. It offers many advantages such as mini-invasiveness, quick recovery, fewer complications and discovery of occult inguinal hernia, compared with open surgery.

(QS061) ENGINEERING MEETS MEDICINE: AN INTER-UNIVERSITY STUDENT PROJECT TO DEVELOP AFFORDABLE ENDOSURGICAL EQUIPMENT FOR DEVELOPING COUNTRIES

Oliver J Muensterer, MD, PhD¹, Claudius D Ries, MD¹, Susann Schweiger, MD, PhD¹, Marja Ahola, MSc², Samuel Schabel, PhD², ¹University Medicine Mainz, Germany, ²Technical University Darmstadt

Background: Minimal invasive surgery (MIS) is associated with lower wound infection rates compared with the corresponding open intervention. Since morbidity from postoperative wound infection is especially high in the developing world, increasing the access to endosurgical treatment in these regions could potentially save lives. Unfortunately, the high cost of endosurgical equipment currently hampers the worldwide availability of MIS, especially in low-resource regions, although the technical components of these instruments (digital camera chips, video screens, computers) have dramatically fallen in price.

Purpose: To harness the creativity and talent of small combined groups of medical and engineering students to design low-cost, simple endosurgical equipment for basic procedures such as appendectomy, cholecystectomy, or inguinal hernia repair.

Methods: In a coordinated, curricular project week, 330 engineering students from the Technical University of Darmstadt, 14 students from social sciences at TU Darmstadt, and 21 medical students from the University Medicine Mainz were teamed up in small groups. On the first day, they were given lectures on dynamic team interaction, minimal invasive interventions, commercially available MIS equipment, and product development. Each medical and social student advised 2 groups of 8–10 engineers. In the following 4 days, the teams were asked to come up with concepts for low-cost endosurgical equipment. The groups were able to consult experts for any specific questions that would arise in the process. At the end of the week, the groups were asked to present their ideas. The presentations were judged by an independent jury and prizes were awarded for the top 3 concepts.

Results: A total of 38 groups of students were created. Overall, the groups spent over 40 hours together on the project (figure 1). All student groups consulted an “expert” (one of 2 pediatric surgeons) at least once for 15–30 minutes during the project week. The most common items that were developed were a) gasless laparoscopic systems, b) mobile integrated endosurgery modules, and c) multi-purpose laparoscopic instruments. Many ideas integrated widely available equipment such as laptops, tablet computers, cell phones, or virtual-reality goggles into the novel devices to decrease cost. The prize winners were encouraged to patent their inventions, and given support for start-up creation with possible future commercialization.

Conclusions: Brainstorming in small groups of engineering and medical students brought about a wide spectrum of innovative ideas to create endosurgical equipment for developing countries. In the process, the students also learned about team communication, biomedical engineering, surgical techniques, as well as product design and evolution. The naïve approach of the students in this inter-university and inter-faculty project week appeared to foster a culture of thinking “out of the box”, leading to a number of novel and exciting potential ideas for future, low-cost MIS.

Figure 1: Engineering, social studies, and medical students develop solutions together to bring endosurgical capabilities to the developing world.



(QS062) ADVANCED INTUSSUSCEPTION SIMULATOR FOR THE INTRODUCTION OF NOVEL TECHNOLOGY IN A RESOURCE LIMITED COUNTRY.

Ramesh M Nataraja, MBBS, BSc, GCCS, FRCSEd¹, Stephanie Khoo, MBBS¹, Nathalie Webb, MB, BS, Hons, FRACS, Urol¹, Yin Mar OO², Damir Ljuhar, MBBS, BBioMed, MPHTM, DipA¹, Nyo Nyo Win, MBBS, MMedSc, DrMedSc³, Aye Aye, MBBS, MMedSc, FRCSEd, DrMedSc, DipMedEd², Chris Kimber, MBBS, FRACS, FRCS, FAICD¹, ¹Monash Children's Hospital, ²Yangon Children's Hospital, ³Yankin Children's Hospital

Aim: To use simulation-based training to introduce the technique of air enema reduction into a novel resource limited environment.

Background: The recent Lancet Commission on Global Surgery has highlighted the significant global burden of disease amenable to surgical intervention. In response to this we are working with local colleagues to improve paediatric surgical care in low and middle-income countries. Air enema reduction of paediatric intussusception is now routine practice in many countries, and has been proven to be clinically superior to other established methods. However, the requirement for specialised equipment many prevent utilisation of this approach in resource-limited environments. The absence of this equipment was identified during an initial surgical support and development visit to a resource limited country with a high incidence of intussusception presentation. Established practice was barium enema for diagnosis and possible treatment, proceeding to laparotomy for the majority, where reduction was not achieved. We hypothesised that the use of advanced simulation would be able to introduce this novel technique into routine practice in a controlled and safe manner.

Methods: An advanced intussusception simulator was created and validated. Air enema reduction machines were sourced and donated, and an educational programme was constructed, consisting of core knowledge review with introductory lectures followed by simulation activity. There were 25 local participants, including senior and junior medical staff in the disciplines of Paediatric Surgery and Radiology. The session was designed with 2 components: a non-technical skills consent scenario and the air enema reduction scenario. For the second component the participants were divided into teams of 3 with assigned roles; a 'parent' who stabilised the infant, a 'medical assistant' holding the buttocks and preventing air leak, and a 'primary clinician' who explained the procedure, obtained consent, controlling the image intensifier and the air enema reduction machine. Participants commenced observing the group prior and then rotated through each role during the scenario. Qualitative analysis was conducted with a Likert scale for self-assessment of confidence in procedural skills and background knowledge.

Results: All 25 local participants successfully complete the simulation in each of the roles and also as observers for another group. 68% of them were female and 36% more than 9 years' postgraduate qualification. The 2 introduction lectures scored highly with mean scores of 8.3 and 8.8 on a Likert scale of 10. Statistical analysis of the pre- and post-course questionnaire revealed that there was a significant difference in the confidence of performing (1.9 vs. 3.6, $P < 0.0001$) or assisting (2.8 vs. 3.7, $P = 0.005$) in an air enema reduction. There was no significant difference when the confidence for performing or assisting in a Barium enema was assessed (2.1 vs. 2.4, $p = 0.43$ & 2.8 vs. 3.0, $p = 0.60$). Confidence also increased for knowledge of intussusception pathology, radiological reduction and the evidence base for current practice but not for operative indications ($P = 0.001$, < 0.001 , 0.0005 and 0.1).

Conclusion: Advanced educational techniques of hybrid simulation, integrating technical and non-technical elements, can be successfully applied in a resource-limited setting to facilitate the safe introduction of novel equipment and techniques.

(QS063) TRANSANAL ENDOSCOPIC MICRO SURGERY (TEMS): THE WAY TO GO WITH SESSILE ENDORECTAL TUMORS.

Fernando P Rabinovich, MD, Horacio Bignon, Carolina Millan, Soledad Valverde, Luzia Toselli, Gaston Bellia Munzon, Marcelo Martinez Ferro, Fundacion Hospitalaria Private's Children Hospital

Introduction: Although endoscopic resection is the method of choice for the resection of most of the polyps of the lower digestive tract, occasionally, large or wide based tumors may occur in which this way is not possible. We report our first TEMS performed in a pediatric patient.

Material and Methods: Case: A 14 years old male patient consulted for several episodes of enterorrhagia. Endoscopy revealed a 3cm sessile endorectal tumor located at 8 cm from the anal margin. The tumor was unresectable by this method so biopsies were taken. Histology confirmed a mucosecreting tubular adenoma with slight grade epithelial dysplasias. A TEMS was decided.

Surgical Technique: The patient was placed supine with the monitor on the head and the surgeon between the legs. A SILS™ Port (Covidien, USA) and conventional 5mm laparoscopy instruments were used. The SILS port was placed in the anus. The rectum was insufflated with CO2 at 8 mmHg, achieving good visualization. A lesion was identified at hour 12, the base was infiltrated with saline solution in order to facilitate dissection. By using blunt, sharp maneuvers and electrocautery with hook the tumor was completely resected. Two interrupted stitches were used to close the wound.

Results: The patient evolved without complications, and feeding was started next day and was discharged on the 2nd post-op day. Tumor histology revealed inflammatory pseudopolyps, with free margins. The final diagnosis was solitary rectal ulcer syndrome.

Conclusion: TEMS resulted into a simple and safe procedure for the treatment of a sessile endorectal tumor in a pediatric patient. Technical details are described and shared in this video.

<https://www.youtube.com/watch?v=ZGEr0pl5mGo>

(QS064) POSTOPERATIVE RESOURCE UTILIZATION AFTER MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUM

Yangyang R Yu, MD¹, Richard Sola Jr, MD², Tyler C Friske¹, Abdur R Jamal¹, Eric H Rosenfeld, MD¹, Mark V Mazziotti, MD¹, Shawn D St. Peter, MD², Sohail R Shah, MD, MSHA¹, ¹Texas Children's Hospital / Baylor College of Medicine, ²Children's Mercy Hospital

Introduction: The objective of this study is to review postoperative resource utilization and effects on outcomes after minimally invasive repair of pectus excavatum (MIRPE).

Methods: A retrospective review was performed of patients that underwent MIRPE from 1/2012 – 7/2016 at two academic children's hospitals to compare their methods of postoperative management. Data collected included demographics, severity of pectus defect [Haller Index (HI)], utilization of chest radiographs (CXR), outpatient follow-up, and clinical outcomes. Statistical analysis was performed using Chi-square and Fisher's exact test.

Results: A total of 361 patients (172 at Hospital 1 and 189 at Hospital 2) underwent MIRPE. Mean age was 15.7 ± 2.0 years and 84% were males. The mean HI was 4.5 ± 1.5 . Mean postoperative hospital length of stay was 4.5 ± 1.1 days and mean time to bar removal was 32.5 ± 6.0 months (Table 1).

There was significant variation in postoperative imaging between the hospitals, including frequency of immediate postoperative CXR, total number of CXRs during hospitalization, and number of postoperative outpatient CXRs prior to bar removal (Table 2).

However, there was no significant difference in outcomes between the hospitals, including postoperative pneumothorax, postoperative chest tube placement, number of slipped bars, number of infected bars, or any other complications (Table 3).

Conclusion: These data suggest that increased postoperative imaging does not affect clinical outcomes and routine imaging may not be necessary.

Table 1. Patient Characteristics

Patient Characteristics	Total (N=361)	Hospital 1 (N=172)	Hospital 2 (N=189)	p value
Males	83.9%	88.4%	79.9%	p=0.03
Age (years)	15.7 ± 2.0	15.4 ± 1.8	16.0 ± 2.2	p=0.01
Haller Index	4.5 ± 1.5	4.4 ± 1.4	4.5 ± 1.6	p=0.51
Postoperative Hospital Length of Stay (days)	4.5 ± 1.1	4.3 ± 0.9	4.7 ± 1.2	p=0.01
Length of Treatment with Nuss bar (months)	32.6 ± 6.0	34.5 ± 4.1	30.4 ± 7.1	p=0.01

Table 2. Postoperative Resource Utilization

Postoperative Resource Utilization	Total (N=361)	Hospital 1 (N=172)	Hospital 2 (N=189)	p value
Immediate Postop CXR	341 (94.5%)	153 (89.0%)	188 (99.5%)	p<0.01
≥ 2 CXRs During Hospitalization	205 (56.8%)	26 (15.1%)	179 (94.7%)	p<0.01
≥ 3 CXRs During Hospitalization	58 (16.1%)	4 (2.3%)	54 (28.6%)	p<0.01
Outpatient CXR	141 (39.2%)	56 (32.7%)	85 (45.0%)	p=0.02
≥ 3 Outpatient CXRs	39 (10.8%)	5 (2.9%)	34 (18.0%)	p<0.01
≥ 4 Postop Follow-up Visits Prior to Bar Removal	104 (28.9%)	48 (28.1%)	56 (29.6%)	p=0.82

Table 3. Clinical Outcomes

Clinical Outcomes	Total (N=361)	Hospital 1 (N=172)	Hospital 2 (N=189)	p value
Postop Pneumothorax	250 (73.3%)	108 (70.6%)	142 (75.5%)	p=0.33
Postop Chest Tube	2 (0.6%)	0 (0.0%)*	2 (1.1%)	p=0.50
Slipped Bar	7 (1.9%)	3 (1.8%)	4 (2.1%)	p=1.00
Infected Bar	2 (0.6%)	1 (0.6%)	1 (0.5%)	p=1.00
Any Complication	33 (9.2%)	14 (8.2%)	19 (10.1%)	p=0.59

* Two patients underwent needle decompression.

(QS065) VALIDATION OF A PERFUSED SIMULATION-BASED TRAINING MODEL TO ACQUIRE COMPETENCIES IN ARTERIAL ANASTOMOSIS.

P. Achurra¹, A. Torres¹, R. Tejos¹, R. Avila¹, R. Rebolledo¹, M. Sanhueza², N. Jarufe¹, J. Varas¹, ¹Pontificia Universidad Católica de Chile, ²Hospital Dr. Sótero del Río

Introduction: Post-anastomosis arterial thrombosis is an important cause of morbidity and mortality and is mainly due to technical factors, specially during the learning curve. Measurement of arterial flow correlates with anastomotic permeability and and graft viability in transplantation. Simulated training has been shown to shorten learning curves of surgical procedures.

Objectives: An ex-vivo and artificially perfused tissue-based model was designed for the training of medium caliber arterial anastomosis.

Materials and Method: Experimental study that compared technical abilities of 3 groups of surgeons/residents with different levels of experience in arterial anastomosis through a simulated model. All participants performed a terminal-terminus anastomosis in a perfused model (300–400 ml/min) of ex-vivo animal artery of 3–4 mm in diameter. The technical evaluation was performed with global scales (EG, maximum 25 points) and specific scales (EE, maximum 20 points) through blinded video review and recording of operative time. In functional variables, the percentage of flow loss was evaluated after the anastomosis. The final result was evaluated with a validated error scale. Statistical analysis was performed with nonparametric tests. Results: We found significant differences in time (mean 5.6 min vs 16.9 min vs 23.2 min, $p = 0.01$), EE (mean 19 vs 10 vs 5 points, $p < 0.001$), EG (mean 24 vs 15 vs 8 points, $p < 0.001$) and arterial flow difference (mean 96%, 47% and 13% of the initial flow $p = 0.004$). Novice residents made significantly more errors.

Conclusions: The simulated model of perfused arterial anastomosis discriminates significantly between 3 levels of experience. The technical difference was correctly evaluated by EG, EE, operative time, final result and arterial flow measurement. The proposed model allows training through repeated practice without risk to patients.

(QS066) SINGLE SITE LAPAROSCOPIC NISSEN FUNDOPLICATION FOR HIATAL HERNIA IN CHILDREN: TWO-CENTER-STUDY IN CHINA.

Jiangbin Liu, PhD, Zhibao Lv, PhD, Shanghai Children's Hospital

Purpose: To review the experience of single site laparoscopic Nissen fundoplication (LNF) for hiatal hernia, and to assess the safety and feasibility of single site LNF and compare its outcomes with traditional multiport LNF in children.

Methods: from January 2010 to May 2016, 39 cases of hiatal hernia were performed by LNF in Shanghai Children's Hospital and Children's Hospital of Fudan University in Shanghai, China. All the patients were divided into 3 groups chronologically. Group A, 9 cases with 5-port procedure; group B, 14 cases with 3-port method; group C, 16 cases with single-site technique. The following factors such as average operative time, conversion rate, volume of bleeding, hospital stay, and postoperative complications were analyzed.

Results: The average operative time in group A (4.7 ± 1.2 hours) was longer than those of group B (2.8 ± 0.7 hours) and C (3.1 ± 0.5 hours) respectively. And conversion rate of group A (22.2%) was higher than those of group B (7.1%) and group C (0%). The other factors were nearly same in all the 3 groups. 33 patients followed up 3.7 ± 1.5 years (range 0.5–4.5 years). Two patients underwent an opening redo-Nissen fundoplication for recurrence and 3 children performed post-operative esophageal balloon dilatation for dysphagia.

Conclusions: Single site LNF is both safe and feasible for hiatal hernia in children for experienced surgeon. Long-term outcomes are comparable with traditional multiport LNF.

(QS067) LAPAROSCOPIC DIAGNOSIS OF THE ELUSIVE PEDIATRIC FEMORAL HERNIA

Veronica F Sullins, MD, John J Aiken, MD, John C Densmore, MD, Medical College of Wisconsin

Pediatric femoral hernias comprise 1% of all groin hernias and are most commonly repaired as a sequelae of recurrence following inguinal hernia repair. We present a case of a 6 year old boy with compelling history of right inguinal hernia without physical findings. Laparoscopy was employed to elucidate the status of bilateral inguinal regions. No hernias were detected until the skin lateral to the symphysis pubis was tented on the symptomatic side. This demonstrated a femoral hernia clearly, aided in meshless repair through a minimal incision, and allowed for assessment of the repair. This provocative maneuver prevented missing a femoral hernia.

<https://www.youtube.com/watch?v=XFANGmPgg4o>

(QS068) SINGLE INCISION LAPAROSCOPIC BILATERAL NEPHRECTOMY

Margaret M McGuire, MD, Cristen N Litz, Paul D Danielson, MD, Nicole M Chandler, MD, Johns Hopkins All Children's Hospital

Introduction: Single incision laparoscopy may be utilized for complex procedures. We present a case of single incision laparoscopic bilateral nephrectomy for uncontrolled hypertension.

Methods: The patient is a 15 year old young man with uncontrolled hypertension and end stage renal disease maintained on hemodialysis. His medication regimen included clonidine, labetalol, amlodipine and lisinopril. Despite this regimen he had repeated

admissions for hypertensive urgency. The surgical service was consulted for bilateral nephrectomy. A curvilinear incision was made to the left of the umbilicus and a 1.5 cm fascial opening was created for placement of the single incision laparoscopic port. Pneumoperitoneum to 15 mmHg was established. The right colon was mobilized. The ureter was identified and tacked to the abdominal wall to aid in retraction. The attachments surrounding the kidney were divided with an energy device. The hilum of the kidney was dissected and the renal vessels were divided with endovascular stapler. The ureter was dissected down to the pelvic brim and was ligated with an endoloop. The right kidney was placed in a laparoscopic bag and morselated. The left side was then addressed in a similar fashion. There was minimal blood loss and there were no hypertensive events during the operation.

Results: The patient was discharged home on POD 5. At 6 months following bilateral nephrectomy, he requires no antihypertensive medications and his blood pressure is well controlled. He continues on hemodialysis three times a week. His incision is virtually invisible.

Conclusion: Single incision laparoscopy can be utilized for medically complex patients with excellent intra and postoperative results.

<https://www.youtube.com/watch?v=X5o0CBcWCSE>

(QS069) TOPICAL ANTIBIOTIC POWDER REDUCES THE RATE OF SURGICAL SITE INFECTIONS FOLLOWING SINGLE-INCISION LAPAROSCOPIC APPENDECTOMY FOR ACUTE APPENDICITIS IN CHILDREN

Cristen N Litz, MD, Sandra Farach, MD, Gerry Tuite, MD, Paul D Danielson, [Nicole M Chandler](#), Johns Hopkins All Children's Hospital

Background: Single-incision laparoscopic appendectomy (SILA) has been reported to have a wound infection rate of 4.3% which is higher than the rate of 2% reported after multiport laparoscopic appendectomy. Topical antibiotic powder has been shown to reduce the incidence of sternal wound infections, as well as wound infections after spinal surgeries. A quality improvement initiative was implemented to determine if the use of topical antibiotic powder reduces the incidence of surgical site infections in pediatric patients who undergo SILA.

Methods: IRB acknowledgment was obtained to perform this quality improvement study (No. 00083473). Patients aged 0–21 years who underwent SILA for acute appendicitis from April 2015–November 2016 were included. Exclusion criteria included complicated appendicitis, concurrent procedures, or conversions to a multiport or open technique. Cefoxitin powder was chosen based on its reported efficacy in reducing wound infections after open appendectomy as well as its cost effectiveness (\$2.61 for 1 gram vial). One gram of Cefoxitin powder was placed directly into the umbilical wound after fascial closure and prior to skin closure. All patients received standard preoperative intravenous antibiotic prophylaxis and no postoperative antibiotics were prescribed. Outcome measures were compared to a historical cohort of patients with acute appendicitis who underwent SILA from April 2014–March 2015 (IRB No.00098589) prior to the implementation of antibiotic powder. Continuous variables were compared using Student t test and categorical variables were compared using Fisher's exact test. Statistical significance was set at $p < 0.05$.

Results: There were 108 patients in the historical group (HIST) and 136 patients in the powder group (POWD). Ten patients did not receive powder due to allergies. The groups were similar in age (HIST– 11.5 ± 3.6 vs POWD– 12.2 ± 3.7 years, $p = 0.15$), body mass index percentile (HIST– 57.6 ± 30.7 vs POWD– 58.8 ± 27.8 , $p = 0.84$), and had a similar proportion of females (HIST– 47% vs POWD– 45%, $p = 0.8$). The groups had a similar presenting white blood cell count (HIST– 13.7 ± 4.6 vs POWD– $13.7 \pm 4.7 \times 10^3/\mu\text{L}$, $p = 1.0$). The operative time was significantly longer in the powder group (HIST– 26.5 ± 7.5 vs POWD– 29.7 ± 8.9 min, $p < 0.05$). The length of stay (HIST– 0.2 ± 0.4 vs POWD– 0.1 ± 0.4 days, $p = 0.06$), 30-day return to emergency department (HIST– 7% vs POWD– 8%, $p = 1.0$), and 30-day hospital readmissions (HIST– 5% vs POWD– 2%, $p = 0.8$) were similar between groups. There was a significant decrease in superficial wound infections following use of topical antibiotic powder (HIST–4.6% vs POWD–0%, $p < 0.05$).

Conclusions: Surgical site infections result in increased costs to patients and the health care system overall. We have demonstrated that in pediatric patients undergoing single-incision laparoscopic appendectomy for acute appendicitis, the use of cefoxitin powder after fascial closure is a simple, low cost intervention to significantly reduce the incidence of superficial surgical site infections.

(QS070) SINGLE INCISION LAPAROSCOPIC APPENDECTOMY VERSUS CONVENTIONAL LAPAROSCOPIC APPENDECTOMY IN CHILDREN: A RETROSPECTIVE STUDY

[Ryan Bly](#)¹, Michael Leinwand, MD², ¹Western Michigan School of Medicine, ²Bronson Children's Hospital

Purpose: Single incision laparoscopic appendectomy is often perceived to be associated with increased operative time and cost.

Conclusions: A vast majority of practicing surgeons who received SILS training during their fellowship continue to utilize the technique. Most feel that it was an important part of their training and believe that it has a significant role in the future. As such, SILS should be considered as an integral part of pediatric surgery fellowship curriculum.

Table 1: Perceptions on SILS among survey respondents

Perceptions on SILS	(1) Strongly Disagree	(2) Disagree	(3) Neither Agree nor Disagree	(4) Agree	(5) Strongly Agree	Total	Mean LS aggregate
SILS is helpful in pediatric surgical training	0.0%	0.0%	15.4%	23.1%	61.5%	100.0%	4.46
SILS interferes with the education of residents and fellows	46.2%	30.8%	23.1%	0.0%	0.0%	100.0%	1.77
There is a future role for SILS in pediatric surgery	0.0%	0.0%	0.0%	38.5%	61.5%	100.0%	4.62
SILS procedures will replace conventional laparoscopy	7.7%	30.8%	30.8%	23.1%	7.7%	100.0%	2.92
SILS procedures improve cosmetic outcomes	0.0%	0.0%	23.1%	7.7%	69.2%	100.0%	4.46
Availability of SILS procedures will become an important marketing tool for a pediatric surgery practice.	0.0%	0.0%	15.4%	46.2%	38.5%	100.0%	4.23
SILS is helpful for the following:							
Appendectomy	0.0%	7.7%	7.7%	23.1%	61.5%	100.0%	4.38
Cholecystectomy	0.0%	7.7%	7.7%	30.8%	53.8%	100.0%	4.31
Splenectomy	0.0%	23.1%	7.7%	15.4%	53.8%	100.0%	4.00
Pyloromyotomy	0.0%	38.5%	61.5%	0.0%	0.0%	100.0%	2.62
Gynecologic Procedures	0.0%	23.1%	0.0%	30.8%	46.2%	100.0%	4.00
Bowel Resection	0.0%	7.7%	23.1%	15.4%	53.8%	100.0%	4.15
Diagnostic Laparoscopy	0.0%	7.7%	7.7%	23.1%	61.5%	100.0%	4.38
Inguinal Hernia Repair	15.4%	15.4%	46.2%	7.7%	15.4%	100.0%	2.92

(QS072) PERORAL ENDOSCOPIC MYOTOMY (POEM) WITH ENDOFLIP AND DOUBLE-ENDOSCOPE: NOVEL TECHNIQUE FOR ACHALASIA IN PAEDIATRIC POPULATION

Fanny Yeung, Dr, Patrick Ho Yu Chung, Dr, Kenneth Kak Yuen Wong, Dr, Paul Kwong Hang Tam, Professor, Queen Mary Hospital, Hong Kong

Background: Achalasia is a rare oesophageal motility disorder in paediatric population with an incidence of 0.11 cases per 100,000 children. Endoscopic pneumatic balloon dilatation and laparoscopic Heller myotomy with partial fundoplication have been shown to be safe and effective as definitive management of paediatric achalasia. Since the introduction of peroral endoscopic myotomy (POEM) in 2010, increasing studies have found satisfactory short- and long-term outcomes in adults. However, data in paediatric population is scarce. We herein describe the first case of paediatric achalasia managed with POEM incorporated with novel EndoFLIP system and double-scope technique in Hong Kong.

Patient presentation and operative technique: A 11-year-old boy who enjoyed good past health, presented with four-month history of progressive dysphagia, repeated vomiting and weight loss. Oesophagogastroduodenoscopy, barium swallow and oesophageal high-resolution manometry revealed typical findings of type II achalasia. Eckardt symptoms score was 9 (2 for weight loss; 3 for both dysphagia and regurgitation; 1 for retrosternal pain).

POEM was performed with a 9.9-millimeter-diameter forward-viewing gastroscope (Olympus GIF-HQ190). OGJ was identified at 36 centimeters from incisor. EndoFLIP® (Endolumenal Functional Lumen Imaging Probe) was used intra-operatively before and after POEM. Before POEM, the OGJ distensibility index was 1.8 mm²/mmHg, basal LES pressure was 32.7 mmHg and the OGJ diameter was 8.3 millimeters. Submucosal injection of saline mixing with indigocarmine and adrenaline using hybrid knife was performed on anterior wall of the mid-oesophagus at 28 centimeters level. Mucosa was opened longitudinally using Endocut®. A submucosal tunnel was created from the mucosal entry site down and just beyond the OGJ, of which the position was confirmed by identifying the palisading vessels within the submucosal layer at the OGJ and bluish discoloration of the gastric cardia mucosa on retroflexed

endoscopic view in stomach. Anterior circular myotomy was performed from 30 centimeters level towards the OGJ and just beyond. Double-scope technique was used to confirm the adequacy of myotomy by inserting a 5-millimeter-diameter endoscope (Olympus GIF-XP260N) via nostril into stomach and visualizing the transillumination of first endoscope at the end of submucosal tunnel. After POEM, repeat EndoFLIP® measurements revealed decreased LES pressure to 16.9 mmHg, increased OGJ diameter to 11.1 millimeters and increased distensibility index from 1.8 to 6.0 mm²/mmHg. Mucosal opening was closed with haemostatic clips. Endoscopic examination at the end of the procedure showed widely patent OGJ.

Gastrografen esophagogram on post-operative day one showed smooth passage of contrast without leakage. Eckardt symptoms score improved from 9 to 0 and patient was fit for discharge on post-operative day three.

Discussion: Experience of POEM for treatment of achalasia in paediatric population is limited with varying techniques in different centers. In our patient, we introduced the intra-operative use of EndoFLIP® system using impedance planimetry during volumetric distension, which allows real time assessment of the distensibility of OGJ and immediate evaluation of the treatment effects after POEM. Incorporation of double-scope POEM was also first described in our paediatric patient for ensuring complete gastric myotomy. From our experiences, POEM for achalasia in paediatric population appears to have encouraging results similar to adult patients.

(QS073) FIFTEEN YEARS' EXPERIENCE WITH LAPAROSCOPIC INGUINAL HERNIA REPAIR IN INFANTS AND CHILDREN

Rafik Shalaby¹, Adham Al-Saied², Mohamad Abdel-Razek, MD¹, Maged Ismaiel¹, Mohamad Mahfouz, MD¹, Mohamad Maged¹, ¹Al-Azhar University, Cairo, Egypt, ²Mansoura University, Mansoura, Egypt

Background: Laparoscopic inguinal hernia repair [LIHR] is rapidly gaining popularity with more and more studies validating its feasibility, safety, and efficacy. The aim of this work is to present our experience with laparoscopic inguinal hernia repair in infants and children along the last 15 years and to discuss tailoring of deferent laparoscopic techniques to suit a given case of inguinal hernia.

Patients and Methods: A total of 1284 patients with 1689 inguinal hernial defect were corrected laparoscopically along the period of the study with different laparoscopic procedures. Three trocar laparoscopic closure of the IIR, percutaneous laparoscopic closure of the IIR, disconnection of the hernia sac, single incision laparoscopic hernia repair [SILHR], and one trocar needlescopic assisted hernia repair. Inclusions criteria: Bilateral cases, Recurrent hernias, Unilateral hernia in obese child, Unilateral hernia with associated infantile umbilical hernia [IUH], Unilateral hernia with questionable contralateral side. The main outcome measurements included: operative time, hospital stay, hernia recurrence, development of hydrocele, testicular atrophy or iatrogenic ascent of the testis and cosmetic results.

Results: A total of 1284 patients with 1689 inguinal hernias were corrected laparoscopically along the period of the study. All cases were completed laparoscopically without intraoperative complications. Mean operating time, in TPP technique, was 15 ± 2.3 M. for unilateral and 20 ± 1.7 minutes for bilateral cases, while the mean operating time, in percutaneous technique, was 8.7±1.18 minutes for unilateral and 12.35 ± 2 M for bilateral cases. The contralateral patent processus vaginalis was present in 176 (11.8 % of cases). In early stages of the study, recurrence rate was 1.2%. In the last 450 cases, no recurrence was reported. Hydroceles occurred in 0.58% and no testicular atrophy or iatrogenic ascent of the testis.

Conclusion: LIHR can be a routine procedure with results comparable to those of open procedures. Both recurrence and operative time are nearly equal or even less than that for the open procedure after gaining a learning curve and modifications of the techniques. Different techniques were described, However, tailoring of the technique to suit a given case of hernia is needed.

(QS074) HYDROSURGERY FOR THORACOSCOPIC DEBRIDEMENT OF PLEURAL CAVITY IN CHILDREN WITH FIBRINOTHORAX.

Saidkhassan Bataev, Prof¹, Vladimir Rozinov, Prof¹, Nodar Zurbaev, Prof¹, Roman Ignatiev, Prof¹, Murat Afaunov, Dr¹, Alexandr Fedorov, Dr¹, Ruslan Molotov, Dr¹, Zoricto Mitupov, Prof¹, Svetlana Karpovich, Dr², Svetlana Smirnova, Dr², ¹Russian state medical university, ²Speransky childrens Hospital

Introduction: Thoracoscopy became a favored modality in pediatric pleural empyema treatment. However, the factors affecting on outcome of thoracoscopic management remain unclear. In this case, we demonstrate capabilities of hydrosurgery system for thoracoscopic debridement of pleural cavity.

Materials and methods: 14 patients from 1.6 to 15 years of age (mean, 3.2 ± 3.8) with pleural empyema were operated at the Speransky Children's Hospital in Moscow for the last 2 year.

Hydrosurgery system is a surgical instrument based on the impact of high-speed jet of water on necrotic and inflamed tissues, combining the advantages of acute cleansing tissue and processing them by pulsating water jet. The design of the evacuation tube and its close proximity to the liquid jet creates a local vacuum, which effectively removes fibrin and liquid contents by Bernulli effect. Informed consent was obtained from parents, and the procedure received approval from the local ethics committee.

Results: The period of recovery and rehabilitation was uneventful in 13 cases. 1 patient with empyema of the right pleural cavity and severe organic lesion of the central nervous system was treated in our hospital by thoracoscopic adhesiolysis. However, post-operative period was complicated by recurrence of pleural empyema and cortication of right lung. Rethoracoscopy was performed six days later after initial operation – thoracoscopic debridement of pleural cavity, decortications of the right lung by hydrosurgery system with good results after surgery.

Ultrasound and X-rays examination 4 months after surgery confirmed the absence of inflammation in the lung parenchyma and full lung reexpansion in all patients.

Conclusions: Application Hydrosurgical system during thoracoscopy, provide effective debridement of pleural cavity, decortications of the lung without damaging the lung parenchyma and create conditions for early rehabilitation of the compromised lung.

(QS075) BARBED SUTURES IN THORACOSCOPIC EVENTRATION REPAIR

Pradeep Johns¹, Nathan M Novotny, MD, FACS², ¹Michigan State University College of Osteopathic Medicine, Michigan, USA, ²Beaumont Health, Michigan, USA and Jordan University of Science and Technology, Irbid, Jordan

Since the first description of thoracoscopic eventration repair around 20 years ago there have been many variations on technique. Nearly all have been centered around the difficulty of plication by suturing from one side to the other and then tying 'from east to west'. Herein we describe a novel technique of using barbed suture to ease the plication. This allows for traditional intracorporeal sewing but (potentially) without the need for knot tying. Additionally, this decreases the time and complexity of the operation during which the patient is being ventilated on essentially one preemie lung.

We used barbed suture on a former 31 week preemie with a right sided diaphragmatic eventration who weighed 2.2 kg at the time of operation. Two permanent barbed sutures were used to plicate the diaphragm and then traditional permanent woven sutures were used to ensure the durability of the repair as this was the first application of barbed sutures in a neonate to our knowledge. His chest xrays revealed a satisfactory result immediately postoperatively and at two month follow up.

The application of barbed sutures is a safe, simple, and expedient way to plicate the diaphragm completely intracorporeally. As longer term results of barbed sutures confirm their durability, this may obviate the need for the secondary sutures speeding the operation even more.

<https://www.youtube.com/watch?v=BJIsE885O7Y>

(QS076) RECURRENCE OF CONGENITAL DIAPHRAGMATIC HERNIA AFTER MINIMALLY INVASIVE REPAIR: ANALYSIS OF RISK FACTORS

Ali Kamran, MD, David Zurakowski, MS, PhD, Charles J Smithers, MD, Boston Children's Hospital

Purpose: Identify factors that increase the risk of recurrence following minimally-invasive (MIS) repair of congenital diaphragmatic hernia (CDH) that could have implications for technical modification.

Methods: CDH patients who underwent MIS repair April 2003 to September 2016 were reviewed retrospectively.

Results: Sixty-nine patients underwent thoracoscopic (64) or laparoscopic (5) repair of a diaphragmatic hernia that presented either neonatally (50) or beyond the neonatal period (>1 month) (19). Only clinically stable patients likely to have type A or B defects were considered for MIS approach. Median follow-up was 51 months; there were no deaths. Fifty patients with type A CDH had primary closure, and 19 patients, type B defect was repaired with a small patch. Re-herniation developed in 13 patients (overall 19% recurrence rate). Hernia recurred in only 1/25 patients with a sac-type defect; a case for which the sac was resected by the laparoscopic approach in a teenager. For thoracoscopic cases in which a sac was encountered, the sac was kept intact and inverted into the abdomen below the diaphragm repair to act as a natural buttress to prevent re-herniation. The presence of hernia sac reduced the risk of recurrence significantly (4% vs. 27%, $P = 0.02$). Recurrence complicated 6/19 (32%) cases with patch repair versus 7/50 (14%) cases after primary closure; this difference was not significant, ($P = 0.16$). The age of presentation and operation had a significant

association with risk of recurrence following thoracoscopic approach [24% (neonatal) vs. 0% (>1 month), $P = 0.04$]. Sixteen patients (11 neonatal) more recent in the series underwent a technically modified thoracoscopic approach utilizing bovine pericardium as an underlay buttress with no recurrences ($P = 0.03$) and a median follow-up of 21 months.

Conclusion: Hernia sac and age of presentation are two factors that predict lower risk of recurrence following MIS repair of CDH. Based on the protective risk factor of a hernia sac when inverted as an underlay buttress, addition of mesh type underlay buttress appears to confer the same benefit.

(QS077) THORACOSCOPIC REPAIR OF A TRAUMATIC DIAPHRAGMATIC HERNIA

Anne-Lise D D'angelo, MD, MS, Ed, Hau D Le, MD, University of Wisconsin Hospitals and Clinics

Introduction: Traumatic diaphragmatic hernias are rare in the pediatric population¹. Traditionally, these injuries were repaired via open abdominal or thoracic approaches. However, case series have documented successful thoracoscopic repairs in children². We present the case of a 13 year old male who developed radiographic evidence of a left diaphragmatic hernia eight days after his initial presentation as a level I trauma. The CT scan revealed a left diaphragmatic injury lateral to the hiatus with the majority of the stomach herniated into the chest. Given the acute onset of the diaphragmatic hernia, we elected to proceed with thoracoscopic repair of the injury.

Surgical technique: The patient was taken to the operating room and placed in the right lateral decubitus position. The existing chest tube was removed and used as initial entry site. After inspection of the thoracic cavity, due to the large herniated stomach and non-optimal location of the chest tube site, three different ports were used. The stomach was decompressed and reduced into the abdomen using two Endokittners. The diaphragmatic defect measured 5 x 3cm and was in close proximity to the left phrenic nerve and pericardium. The defect was repaired with interrupted figure of eight pledgeted 2-0 Ethibond sutures. There was minimal tension at the completion of the procedure.

Conclusion: This video demonstrates safe repair of a left traumatic diaphragmatic hernia located just lateral to the hiatus and in close proximity to the left phrenic nerve and pericardium. Excellent visualization from above the diaphragm with the thoracoscope helped us avoid injuring the left phrenic nerve and pericardium. Follow up imaging demonstrated a functional diaphragm without recurrence. Despite the rarity of these traumatic diaphragm hernias in children, surgeons experienced in thoracoscopic surgery may successfully employ a minimally invasive approach to fixing these injuries safely.

References:

1. Ramos, C.T., Koplewit, B.Z., Babyn, P.S., Manson, D., & Ein, S.H. (2000). What have we learned about traumatic diaphragmatic hernias in children. *Journal of Pediatric Surgery*, 35(4), 601-604.
2. Parelkar, S.V., Oak, S.N., Patel, J.L., et al. (2012). Traumatic diaphragmatic hernia: Management of video assisted thoracoscopic repair. *J Indian Assoc Pediatr Surg*, 17(4), 180-183.

<https://www.youtube.com/watch?v=roEUYjRDRZ0>

(QS078) THORACOSCOPIC SYMPATHECTOMY IN CHILDREN – EXPERIENCE AND LONG TERM RESULTS IN 46 CASES

Elisangela Mattos E Silva, Bruna Cecilia N De Carvalho, Carolina Talini, Leticia A Antunes, Paula Trintinalha, Jessica P Guerra, Giovanna C De Almeida, João Carlos Garbers, Sylvio Gilberto A Avilla, Cesar C Sabbaga, Claudio Schulz, Fernando B Amado, HOSPITAL PEQUENO PRÍNCIPE

Introduction: Hyperhidrosis is a pathologic condition of excessive sweating in amounts greater than physiological needs for body thermoregulation. Sympathetic thoracoscopic intervention appears to be superior to clinical management in definitively healing patients with palmar and axillar hiperhidrosis specially in children. Nevertheless there are some controversial results in literature regarding the level of sympathetic interruption chain, long term results and patients satisfaction.

Objective: The aim of this study is to analyze our experience with thoracoscopic sympathectomy in children. Comparing level of sympathectomy, results, complications and patient's satisfaction with the procedure results.

Methods: A retrospective and prospective study with 46 patients assigned to sympathectomy from 2012 to 2016. The medical re-

cords were reviewed and patients were contacted by telephone after the surgery and invited to answer some questions about their surgery's results and complaints. A questionnaire with continuous variables was used and a subjective patient-rated

Results: There were 46 patients, 78,3% female and 21,2% male, with mean age of 13,5 years old, varying from 6 to 17 years old. The most frequently involved location were hands (89,1%), underarms (34,8%) and foot (67,4%); 97,9% were bilateral. Some patients had hiperhydrosis in more than one site. Family history was reported by 45,6% of patients, 58,7% had attempted a prior treatment option with no success, and the most frequent option was body lotion prescribed by dermatologist. The mean follow up was 25 months after surgery procedure (2 – 48 months).

All 46 patients were submitted to thoracoscopic sympathectomy. Pleural adhesions were present in 6,5% of patients and 21,7% of patients needed pleural drainage due to pleural lesion or surgeon's choice. The chosen technique was electrocautery and transection in 93,48% and simple sympathicotomy clipping in 6,5%. Regarding the procedure rib level, 78,3% were only R4, 15,21% R3 and R4, 4,3% R3 only, 2,2% R4 and R5. There were 10,86% of intraoperative interurrences including hemodynamic instability and lung injury. The most common postoperative complication was pain, that was ranked in three levels: 23,9% mild pain, 8,6% average pain, 6,5% significant pain and 58,7% had no postoperative complications.

Compensatory hiperhydrosis was reported by 45,6% patients, 30,4% related in dorsal region, 17,6% in feet and abdomen and 42,8% reported mild sweating. Surgical failures in extremities was present in 19,5%, mainly palmar sweating (77,7%) than axilar.

After the surgery procedure the patients were questioned about the success and satisfaction with the procedure, 86,9% declared themselves satisfied with the results of the procedure, and 89,1% answered they would do the procedure again if necessary, and 92,3% would recommend to a friend, with high improvement in their quality of life.

Conclusion: Endoscopic thoracic sympathectomy with interruption of the sympathetic chain is the treatment of choice for patients with primary hyperhidrosis, with few complication rates and great satisfaction rates.

Thoracic sympathectomy is a therapeutic method capable of changing the quality of life of patients with hyperhidrosis.

(QS079) LUNG STEREOLOGY AND MORPHOMETRIC ANALYSIS, PRELIMINARY RESULTS OF FETOSCOPIC ABDOMINAL DECOMPRESSION FOR CONGENITAL DIAPHRAGMATIC HERNIA

Felipe Fromm¹, Thomas F Krebs, MD², Christian Mühlfeld, PhD, MD³, Katharina Wenke, MD¹, Michael Boettcher, PhD, MD¹, Georg Eschenburg, Dr¹, Bastian Tiemann, DVM⁴, Beate Roth¹, Birgit Appl¹, Kurt Hecher, PhD, MD⁵, Konrad Reinshagen, PhD, MD¹, Robert Bergholz, PhD, MD¹, ¹Department of Pediatric Surgery, UKE: University Hospital Eppendorf, Martinistrasse 52, 20243 Hamburg, Germany, ²Kinder- und Jugendchirurgie, Ostschweizer Kinderspital Claudiusstrasse 6 9006 St.Gallen, ³Institute for Functional and Applied Anatomy, Hannover Medical School, Carl-Neuberg-Strasse 1, 30625 Hannover, ⁴Department of Experimental Animal Research, UKE: University Hospital Eppendorf, UKE Main Campus, Martinistrasse 52, 20243 Hamburg, ⁵Department of Obstetrics and Fetal Medicine, UKE: University Hospital Eppendorf, UKE Main Campus, Martinistrasse 52, 20243 Hamburg

BACKGROUND: Severe lung hypoplasia in children affected with congenital diaphragmatic hernia (CDH) is attributed to lung compression by intrathoracically prolapsed abdominal organs. Fetal abdominal decompression (AD) appears to be effective in reducing the pressure by directing the growing intestine away from the lungs into the amniotic cavity. Aim of this study was to morphometrically evaluate affected lungs in an ovine model of CDH after fetoscopic abdominal decompression.

METHODS: CDH was surgically created on mid-gestation in 13 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 gestation and the lung structure quantitatively evaluated by stereology.

RESULTS: Surgical establishment of the CDH was successful in all fetuses with a mortality of 20%. Eight fetuses with CDH were treated with fetoscopic abdominal decompression. Five fetuses with CDH and three healthy fetuses were taken as controls. Fetoscopic abdominal decompression was successful in 87,5% of available fetuses with a mortality of 50%.

Morphometric analysis indicated that fetuses with CDH had a lower alveolar volume and thicker alveolar septa compared to healthy controls. Those treated with AD exhibited higher alveolar volume and thinner septa compared to untreated CDH.

CONCLUSIONS: Fetoscopic abdominal decompression is technically feasible but remains a high risk procedure. In comparison to untreated CDH fetuses, AD helped to preserve a higher alveolar volume and thinner Septa. These findings support the hypothesis of

an alternative palliative fetal surgery for severe cases of CDH apart from tracheal occlusion.

(QS080) THORACOSCOPIC ULTRASOUND FOR IDENTIFICATION OF PULMONARY NODULE IN A PEDIATRIC PATIENT

Sarah B Cairo, MD, MPH, Benjamin Tabak, MD, David H Rothstein, MD, MS, Women and Children's Hospital of Buffalo

Introduction: With the application of minimally invasive, video assisted thoracoscopy for management of pulmonary nodules, there has been an increased need for adjunctive modalities for lesion identification. Compared to open techniques for pulmonary nodule resection, VATs is limited by altered spatial relationships of nodule on CT due to collapsed lung and lack of tactile feedback. Previously employed adjuncts, such as CT guided methylene blue labelling, hook-wire localization, and bronchoscopy, are all associated with increased morbidity and discomfort in the pediatric population.

Objectives: To describe the application of endoscopic ultrasonography as an adjunct for localization of pulmonary nodules during thoracoscopic resection in the pediatric patient.

Case Description: We present the case of a fifteen-year-old female diagnosed with Acute Myelogenous Leukemia. She was immediately treated with induction chemotherapy followed by several cycles of chemotherapy with course complicated by VRE bacteremia and cardiomyopathy. She was treated with 6 weeks of intravenous antibiotics for bacteremia and subsequent clostridium difficile infection. Further cardiac work-up demonstrated intracardiac lesion and CT scan was obtained to evaluate for pulmonary embolism. She was found to have multiple pulmonary nodules of progressive size on repeat imaging despite treatment for suspected pneumonia and infectious etiology. She underwent CT guided biopsy with inconclusive results. She was taken to the operating room for VATs wedge resection during which thoracoscopic ultrasound was employed to assist in identification of a 0.4 cm lesion and confirmation of excision margins.

Conclusion: Sonographic guidance is a useful tool in identification of both peripheral and central lesions during video assisted thoracoscopic resection of pulmonary nodules. Endoscopic sonography provides a safe alternative to CT guided methylene blue labelling or hook-wire localization done pre-operatively, especially in pediatric patients with the added benefit of reduced radiation exposure.

(QS081) THORACOSCOPIC LOBECTOMY. EXPERIENCE IN OUR CENTER.

Aixa Reusmann, Carlos I Giuseppucci, Mariano M Bogleione, Marcelo E Barrenechea, Hospital Garrahan

Introduction: Thoracoscopic lobectomy (TL) has increasingly been used to treat congenital lung malformations (CLM). In many institutions around the world it has become the preferred technique. However in many countries some challenges remain. The lack of availability of specific materials sometimes gets in the way.

The objective of this presentation is to review our experience with TL and to share our learning curve and the technical details we used to overcome these difficulties.

Method: A retrospective chart review was performed for all the patients that underwent a TL between the years 2008 and 2016.

The variables analyzed were age, sex, indication for surgery, surgical findings, affected lobe, rate and causes of conversion, operative times and technical details.

Results: Over the study period, 58 patients underwent a TL to treat CLM. Thirty were females and 28 males with an age at operation between 7 days and 5.6 years. Fifty percent (n=29) had prenatal diagnosis. Indications for surgery were: radiologic image in an asymptomatic patient (n=31), infection (n=17), respiratory distress (n=9) and left to left shunt symptoms in 1 patient with a large sequestration vessel.

Surgical findings were: cystic lesions (n=37), 3 of which proved to be pleuropulmonary blastoma in the pathology, intralobar sequestration (n=13), extralobar sequestration (n=6) and congenital lobar emphysema (CLE) (n=2).

There were 35 lower, 10 upper, 2 middle lobe lobectomies and 3 bilobectomies. The remain 8 patients underwent atypical resections.

Twelve patients (20%) required conversion to an open procedure, the causes were: lost of selective ventilation and/or intolerance to CO2 insufflation (n=4), incomplete fissure (n=3), intra procedure bleeding (n=2), technical difficulty related to an anatomic anomaly (n=2) and an extremely overdistended superior lobe in 1 patient with CLE.

A sealing device as the only mean to treat all the vessels was used in 1 patient, in the others we used a combination of extracorporeal ligatures and the sealing device.

Lobar bronchus was treated using a stapling device in 8 patients (all of them older than 2 years), in the others we used non absorbable ligatures with or without stitches.

Mean operative time was 209 minutes (range: 25–460 minutes). In the subset of 8 patients that underwent atypical resections (6 extralobar sequestrations and 2 circumscribed lesions), the mean operative time was 103 minutes (range: 25–225).

In order to analyze the learning curve we divided the 50 patients that underwent typical lobectomies in 2 consecutive groups of 25 patients each. Reduction of the operative time resulted statistically significant ($p=0,0321$) between both groups (247 vs 205 minutes). On the other hand conversion rate was similar between groups (7 vs 5 patients).

Conclusion: Thoracoscopic lobectomy using surgical ligatures and/or stitches to treat major vessels and bronchus is a viable alternative. Even though operative times seem to be longer than in other published series, we think that it is a valid option to overcome the challenges that some particular scenarios present.

(QS082) THORACOSCOPIC REMOVAL OF INCLUDED THORACO-AMNIOTIC SHUNT IN NEWBORNS.

Sara Costanzo, Claudio Vella, Claudia Filisetti, Francesca Destro, Marcello Carlucci, Federica Marinoni, Giovanna Riccipetoni, Department of Pediatric Surgery– Buzzi Children's Hospital – Milan – Italy

Background: Placement of a thoraco-amniotic shunt (TAS) is a well-described procedure to treat fetal hydrothorax. A TAS is a 3-mm double pigtail stent, which is inserted under ultrasound guidance and easily extracted after birth similarly to a common chest drain. We describe 2 cases in which a TAS was entirely retained in the chest and had to be removed postnatally through thoracoscopic approach.

Patients and Methods: Case 1, male. Following diagnosis of non-immune fetal hydrops, a bilateral TAS was placed during the third trimester. The right TAS had to be repositioned after its displacement into the pleural cavity 9 days after the first procedure. Born at the 37th gestational week (GW) through vaginal delivery, the child presented respiratory distress with bilateral lung hypoplasia and needed high frequency ventilation and inhaled nitric oxide for 16 days. The left TAS could be extracted at birth, while the right one showed to be completely embodied in the lung parenchyma (Fig. 1). After extubation, lung function progressively improved on both sides and a thoracoscopy could be planned and performed at 53 days of life. One 3-mm port was placed in the IV right intercostal space and 2 3-mm ports were placed in the V space. The lung tissue was freed from thick and diffuse adhesions until the shunt was identified and extracted. No bleeding nor other complications occurred. A 8-ch chest tube was left in place. Operative time was 70'.

Case 2, female. During the third trimester, bilateral hydrothorax was diagnosed and thoracentesis and bilateral TAS positioning was performed. As the right TAS did not function properly, a second one was placed. A caesarean section was performed at the 33rd GW. The child did not develop any respiratory distress. One shunt was removed on both sides at birth, while the first non-functioning right TAS resulted to be included in the lung parenchyma at a CT scan performed at 4 days (Fig. 2). A thoracoscopy was performed at 9 days; a 5-mm camera port was inserted in the IV intercostal space and an operative 3-mm port was placed in the VII intercostal space, through which the shunt was removed and a 10-ch chest drain was placed. No bleeding nor other complications occurred. Operative time was 50'.

Results: Patient 1: The chest tube was removed 48 hours after the procedure. No postoperative complications occurred. The child was discharged on post-operative day (POD) 9 in good conditions. On follow-up a severe pectus carinatum has been diagnosed and is being treated with a corset with good result.

Patient 2: The chest tube was removed on POD 5. A pleural effusion was detected on chest X-ray on POD 7 and gradually resolved. The child was discharged on POD 26 after resolution of thriving problems related to prematurity.

Conclusions: Thoracoscopic removal of retained TAS is a safe approach that can be performed in early postnatal period, even after neonatal distress requiring mechanical ventilation and in the premature child.

(QS083) THORACOSCOPIC ESOPHAGEAL ATRESIA REPAIR FIRST PAKISTANIAN STUDY EARLY LEARNING CURVE

Prof. Ali Raza Brohi, MBBS, FCPS, FEBPS, FACS, DipMAS, peoples university of medical & health sciences Nawabshah sind Pakistan

Key words: Thoracoscopic, Atresia, Esophagus

Introduction: Esophageal atresia is rare congenital anomaly, which is traditionally repaired by open thoracotomy. The first thoracoscopic esophageal atresia with tracheo-esophageal fistula repair was performed in March of 2000. This report evaluates the results and evolution of the technique over the last decade. Thoracoscopic esophageal atresia repair has proven to be an effective and safe technique.

Nowadays with the advent of minimal invasive neonatal thoracoscopy, high definition imaging, smaller size instruments & improvement in paediatric anesthesia it is possible to correct this problem thoracoscopically as there were lot of problems like musculoskeletal and others related to open thoracotomy.

Material & methods: This is a retrospective study done between May 2015 to Dec 2016 at Peoples University of medical & health sciences Nawabshah Pakistan in which 15 patients included having type C esophageal atresia. Neonates having major cardiac problems & having other GIT association were excluded.

The objective of study is to develop final technique for successful thoracoscopic esophageal repair after going through few steps of initial learning curve.

Results: Out of 15 patients first three patients were underwent video assisted technique through single incision of 2 cm to visualize the exact videoscopic anatomy & to do few steps if possible. In next 5 cases three-port technique done with ligation of azygos vein & fistula identification and it's clipping then conversion to open for completion of rest of steps. In last 7 cases steps were completed with both ends mobilization & intracorporeal single layer interrupted stitching of esophagus. The average operative time was between 120–180 min. Postoperative period was good in most of cases and 3 patients required ventilator support. Complications encountered in 4 patients like esophageal leak in two managed conservatively, stenosis & reflux in one patient each.

Conclusion: Thoracoscopic esophageal repair is challenging & advance technique in paediatric minimal invasive surgery, which requires skills & learning undersupervision of experienced surgeon.

Learning curve for this procedure can be achieved step-by-step starting from observation to expert person, practice on models, video assisted method & then final pure thoracoscopic technique keeping in mind patients safety & life.

(QS084) THORACOSCOPIC DIAPHRAGM PLICATION WITH PLEDGETS IN AN 8 KG INFANT AFTER CARDIAC SURGERY

Jeffrey W Gander, MD, University of Virginia Children's Hospital

Introduction: Diaphragm eventration from a phrenic nerve injury after congenital heart surgery is a well-recognized complication. Treatment of the eventration is diaphragm plication if there has been no recovery of the diaphragm function. This has been performed thoracoscopically in children, typically with a single row of non-absorbable suture without pledgets. Some pediatric surgeons have expressed reluctance to performing plications thoracoscopically, for concern that the single row of sutures without pledgets is not as durable and can pull suture through the muscle. I present a technique of a thoracoscopic diaphragm plication using horizontal mattress suture with pledgets.

Case History: A 9 month old boy with hypoplastic heart syndrome underwent a Glenn procedure. Post-operatively, he had difficulty weaning oxygen and was tachypneic. A CXR showed an elevated right hemidiaphragm. An ultrasound and fluoroscopy showed paradoxical motion of the right diaphragm, confirming an eventration. This did not improve after 21 days and a thoracoscopic diaphragm plication was undertaken.

Surgical Technique: The patient was placed in the lateral decubitus position with the right side up. Three ports were used. A 4 mm port was placed in the mid axillary line at the 6th intercostal space and a 4 mm 30 degree thoracoscope was used. A 3 mm port is placed in the anterior axillary line and a 5 mm port is placed at the posterior axillary line at the 7th intercostal space.

After confirming the diaphragm eventration, 2-0 polyester suture is inserted through the 5 mm port and a horizontal mattress suture is performed. The second row of the double ended suture is placed in the same position a few mm lateral to the first row. The pledget that comes preloaded on the suture is pulled into the chest. The needle from the second row is pulled out and placed onto a second pledget. Then the first row needle is pulled out and placed on the same pledget and the pledget is inserted into the chest. A knot pusher is used to tie the two rows together. This allows pledgets on both sides of the rows of sutures. This process is repeated going laterally for 3–4 rows of sutures bringing the diaphragm to an appropriate tension.

The post operative CXR showed the right diaphragm in a good position. The child was extubated on post-operative day number

one and weaned to room air by post operative day number 3.

Conclusion: A horizontal mattress pledgeted plication of the diaphragm can be performed thoracoscopically. I believe this technique distributes the tension better on the diaphragm muscle. While pledgets have not routinely been used in other descriptions of thoroscopic repairs, it does not add much time, is easy to insert and adds durability to the repair to prevent pulling through of sutures.

<https://www.youtube.com/watch?v=5lvQtB042aY>

(QS085) VATS RIGHT PARASPINAL NEUROBLASTOMA RESECTION

Ryan K Schmocker, MD, MS, Hau D Le, MD, University of Wisconsin

Introduction: Surgical resection of thoracic neuroblastomas have been traditionally performed via thoracotomy, especially those with image-defined risk factors (IDRFs). There is an increasing experience with thoroscopic resection of thoracic neurogenic tumors. We present a case of an 8-month-old female who presented with Horner syndrome and progressive paraplegia. She was diagnosed with stage IV Intermediate Risk paraspinal cervicothoracic neuroblastoma. After emergent spinal cord decompression followed by 10 cycles of chemotherapy per ANBL0531, surgical resection was recommended due to inadequate response. The tumor's location in apical thoracic was most amenable to thoroscopic approach. However, the presence of IDRFs suggested low threshold for opening.

Surgical Technique: A thoracoscopy was started with the patient in a semi-prone left lateral decubitus position. A three-port with a stab incision approached was performed. The tumor was dissected from the subclavian, superior vena cava, and azygous veins and then chest wall using both electrocautery and an ultrasonic energy device. The patient tolerated the procedure well and was discharged home on postoperative day five without complications. She was active and thriving at one-month follow up.

Conclusions: We have demonstrated that a thoroscopic approach may be a safe and effective surgical treatment for thoracic neurogenic tumor in a challenging position for thoracotomy, despite presence of IDRFs. Thoracoscopy could also be used to assess and help with dissection in difficult location prior to converting to thoracotomy.

https://www.youtube.com/watch?v=C_g70Ygmlul

(QS086) LONG TERM FEEDING OUTCOMES IN THORACOSCOPIC REPAIR OF TRACHEOESOPHAGEAL FISTULA AND ESOPHAGEAL ATRESIA

Katherine J Baxter, MD, MS, Amina M Bhatia, MD, MS, Mark L Wulkan, MD, Children's Healthcare of Atlanta, Emory University

Introduction: In the surgical treatment of tracheoesophageal fistula with esophageal atresia (TEF/EA), minimally invasive thoroscopic technique has been increasingly applied over the last several years. The evaluation of thoroscopic outcomes with respect to standard open repair via thoracotomy is ongoing. In addition, there is little information on the long term feeding outcomes in these patients. The purpose of this study was to collect and evaluate both short and long term outcomes for thoroscopic TEF/EA patients at our institution.

Methods: We identified patients who underwent TEF/EA repair at two children's hospitals within a single institution during years 2008–2012. IRB approval was obtained. Chart review was conducted to collect demographic, operative, and outcome data. Thoroscopic and open repair outcomes were compared using chi square and t-test as appropriate.

Results: We identified 92 total patients of which 29 (31.5%) underwent thoroscopic TEF/EA repair. Delayed repair of EA secondary to long gap was performed in 22 (23.9%) patients. Type C TEF/EA accounted for 83 (90.2%) of the cases. Gestational age (37.8 vs. 36.6 weeks, $p=0.002$) and birth weight (2932 vs. 2312g, $p<0.001$) were greater in the thoroscopic group. The frequency of associated congenital anomalies was similar between thoroscopic and open groups (44.4 vs. 48.3%, $p=0.732$). Total operative time was longer in the thoroscopic repair group (164.36 vs. 141.87 minutes, $p=0.032$). Short term postoperative outcomes including rates of anastomotic leak, stricture, time to extubation, time to first oral feeding, and length of stay were similar between groups (Table). The majority of children in both thoroscopic and open groups required tube feeding at discharge (66.7 vs. 67.9%, $p=0.911$). There was a nonsignificant trend toward fewer children in the thoroscopic group requiring tube feeds at both one year (14.8 vs. 27.9%, $p=0.189$) and three years (0 vs. 11.5%, $p=0.095$).

Conclusions: In our institutional experience, thoroscopic TEF/EA repairs in selected children had similar outcomes when compared to open repair. Operative time was increased in the thoroscopic group in keeping with the literature, but may decrease

over time with increased experience. Although the majority of children required tube feeding at discharge, long term feeding outcomes were overall favorable and comparable between the two groups.

Short term outcomes in thoracoscopic versus open TEF/EA repair

	Thoracoscopic (n=29)	Open (n=63)	P-value
Anastomotic leak n(%)	3 (10.3)	8 (12.7)	0.522
Anastomotic stricture n(%)	11 (37.9)	28 (44.4)	0.557
Time to extubation (mean days)	13.64	23.14	0.217
Time to oral feeds (mean days)	4.83	5.24	0.649
Length of stay (mean days)	31.83	37.02	0.325

(QS087) THE «FLAT DIAPHRAGM ON CXR»: DOES TENSION ON POSTOPERATIVE CHEST X-RAY PREDICT CDH RECURRENCE?

Avraham Schlager, MD¹, Heather L Short, MD², Kelly Arps, MD², Curtis Travers, MPH², Matthew S Clifton, MD², ¹Akron Children's Hospital, ²Emory University School of Medicine

PURPOSE: Tension-free repair of congenital diaphragmatic hernia (CDH) is regarded as a key tenet in preventing recurrence. The appearance of the diaphragmatic curvature and the rib insertion level of the diaphragm on postoperative chest x-ray (CXR) may predict recurrence. A “flat-appearing” diaphragm may be a surrogate for a tense repair and therefore portend a higher rate of recurrence. Our purpose was to examine the relationship between the flatness of the diaphragm on postoperative CXR and recurrence.

METHODS: We performed a retrospective review of left-sided, Bochdalek CDH surgical repairs between January 2004 and July 2015 at a single, quaternary pediatric hospital. A radiologist reviewed postoperative day 1 CXRs and performed measurements including the lateral rib insertion level of the diaphragm, the tangential length (straight-line distance between the medial and lateral insertions of the diaphragm), and the peak length (straight-line distance from the highest point of the curve of the diaphragm to the tangential length line at a right angle). A “tension ratio” was calculated as the tangential length/peak length, in which a larger value indicated a “flatter” repair. The primary outcome of interest was recurrence within 2 years of repair.

RESULTS: Of the 127 patients who underwent left-sided CDH repair during the study period, 54% (n=69) had a primary repair while 46% (n=58) required a patch repair. The median time of follow-up was 1.9 years (Interquartile range [IQR] 0.7–4.1). The overall recurrence rate was 21.3% (n=27), and the mortality rate was 7.1% (n=9). There was no difference in median lateral rib insertion level in patients with and without recurrence (9 vs. 9, p=0.51) or those who had a primary or patch repair (9 vs. 9, p=0.40). The overall median tension ratio was 6.29 (IQR 5.30–8.09) and was not significantly different among patients who had a recurrence (6.00, IQR 5.34–8.24) and those who did not (6.46, IQR 5.24–8.07) (p=0.853). Within the primary repair group (6.34 vs. 6.93, p=0.84) and the patch repair group (5.59 vs. 6.18, p=0.46), the median tension ratio was not different among patients who had a recurrence and those who did not.

CONCLUSIONS: Increased tension as measured by diaphragmatic curvature on postoperative CXR is not associated with recurrence. The flatness of the diaphragm or level of rib insertion on postoperative CXR after CDH repair may not be predictive of recurrence as previously thought.

(QS088) SEVERE TRACHEOMALACIES TREATED BY MINIMALLY INVASIVE APPROACH

Eduardo Perez Etchepare, Ana Lain, Carles Gine, Laura Garcia, Carlos Leganes, Javier Güizzo, Manuel Lopez, University Hospital of Vall d'Hebron Barcelona–Spain

INTRODUCTION: Severe tracheomalacia is a condition that may result in acute life-threatening events (ALTE). Usually, aortosternotomy from a left anterolateral thoracotomy is the treatment of choice in these patients. The development of minimally invasive thoracoscopic approach could decrease the morbidity of open techniques. This study evaluates our initial experience in thoracoscopic aortopexy.

METHODS: A retrospective study of two patients who underwent thoracoscopic aortopexy was conducted. Both patients presented distal tracheomalacia in relation to type III esophageal atresia with gastroesophageal reflux. Surgical indication for aortopexy was severe tracheomalacia with failed extubation in one case and ALTE in the other.

Technique: Patients were placed in supine position with selective right bronchial intubation. A left thoracoscopic approach with three ports (5 mm– 30o for the telescope, and two 3 mm instrumental trocars) was performed. The CO2 pressure was 5 mmHg. Initially, we proceeded to a left lobectomy of the thymus to expose the anterior wall of the ascending aortic arch and three trans-sternal non-reabsorbable stitches were fixed to the intima of the aorta. All the procedure was monitored under simultaneous flexible tracheo-bronchoscopy.

RESULTS: Between January 2015 and October 2016, 2 thoracoscopic aortopexies were performed. Age was 2 and 4 months, and weight 4,7 and 4,2 kg respectively. Operative time was 70 minutes in the first case and 65 minutes in the second. There were no intraoperative complications and no reconversions to open procedure. Follow-up was 2 and 20 months. Both patients could be successfully extubated and no ALTE have been reported to date.

CONCLUSION: Thoracoscopic aortopexy is a technically demanding but feasible procedure in patients with severe tracheomalacia and ALTE. Simultaneous bronchoscopy is useful to ensure an adequate opening of the tracheal lumen.

<https://www.youtube.com/watch?v=vP97nKyaU0M>

(QS089) TRANSVESICOSCOPIC URETERAL REIMPLANTATION IN CHILDREN UNDER 2-YEAR-OLD: A SINGLE-CENTER INITIAL EXPERIENCE.

Makoto Suzuki, MD, PhD¹, Ryota Koyama, MD¹, Yasuyuki Uchida, MD¹, Kenjiro Ogushi, MD¹, Sayaka Otake, MD¹, Hiroyuki Kuwano, MD, PhD, FACS², ¹Division of Pediatric Surgery, Integrative Center of General Surgery, Gunma University Hospital, Gunma, JAPAN, ²Department of General Surgical Science Gunma University Graduate School of Medicine, Gunma, JAPAN

PURPOSE: Cohen's cross-trigonal ureteral reimplantation is the most widely used technique and is familiar to most pediatric/urologic surgeons. With the recent evolution of endoscopic treatment and laparoscopic correction, transvesicoscopic cross-trigonal ureteral reimplantation under CO2 pneumovesicum was introduced to minimize surgical trauma and serve as an alternative to open Cohen's surgery. In some reports, the rate of complication/surgical failure after this surgical procedure was higher in children 2-year-old or younger with small bladder capacity. And an explanation for this observation was the technical complexity of the procedure in the limited space of a small child. They emphasized patient selection, advising this technique may be especially challenging in the narrow pelvises of children under 2-year-old. So in this paper, to review our initial experience with this technique under 2-year-old and to evaluate the safety and efficacy of this technique.

PATIENTS AND METHODS: 7 ureteric units in 6 patients under 2-year-old underwent a transvesicoscopic 'Cohen' ureteral reimplantation and the results were retrospectively analyzed. There were two boys and four girls. All patients had vesicoureteric reflux (VUR). One patient underwent bilateral and five unilateral transvesicoscopic reimplantation. Cohen's classic technique was reproduced using a laparoscopic technique with two 3-mm working ports and a 5-mm camera port.

RESULTS: The procedure was successfully completed in 5 patients with a mean age of 11 months and converted to open intravesical reimplantation in one (9-month-old) patient. The postoperative vesicoureteral reflux resolution rate was 100 %. Mean operative time was 222 min in unilateral cases without perioperative complications, except for one patient who converted to open procedure. Mean hospital stay was 4.5 days (3–6 days).

CONCLUSION: Transvesicoscopic cross-trigonal ureteral reimplantation is currently performed at only at a few centers in Japan because of the technical difficulties. Especially when ureteral tapering is required, this technique is challenging in bladders with small pelvic capacity. However, our initial results have indicated safely performed in children under 2-year-old.

(QS090) LAPAROSCOPIC REPAIR AND OVARIAN SALVAGE OF AN INCARCERATED HERNIA CONTAINING A TORSIONED OVARY

Meghna V Misra, MD, MS¹, Anthony Tsai, MD², Shefali Thaker, MPH¹, Douglas J Moote, MD¹, ¹Connecticut Children's Medical Center, ²Penn State Hershey Children's Hospital

BACKGROUND: Inguinal hernia repair is a common operation in pediatric surgery. As many as 1–5% of all children undergo inguinal hernia repair. Of these, 25 to 33% occur in girls, and 4–20% of female hernias are sliding hernias that contain ovary. Of all sliding hernias, approximately 5% are irreducible, and of these irreducible hernias, 25–40% become torsion. The traditional treatment for incarcerated hernias with torsion is inguinal hernia repair and oophorectomy. Furthermore, most ovaries and fallopian tubes are described as being too swollen to reduce laparoscopically, and therefore some sort of open repair is needed to close the hernia. This is the first case report of complete laparoscopic reduction and repair of an incarcerated inguinal hernia involving a torsion. Furthermore, this is the first report of ovarian salvage of a torsion that was contained in an incarcerated hernia of a young

infant.

METHODS: The patient is a 3 month-old, 5 kg girl who was a former 34 week preemie. She had presented to the Emergency Department after 10 hours of fussiness associated with a left groin bulge. The patient's physical exam was notable for irreducible swelling of the left groin with overlying erythema. Ultrasound revealed an enlarged left ovary herniated through the canal of Nuck. There was absence of spectral Doppler flow in the left ovary. The volume of the left ovary was more than twice of that compared to the right side. The patient was then taken to the OR emergently for hernia reduction and repair.

RESULTS: A 5 mm 30 degree scope identified hemorrhagic fluid in the pelvis. The hernia contained the left fallopian tube and ovary. A combination of laparoscopic manipulation with a 3 mm grasper and external pressure was successful at reducing the hernia. The left ovary and fallopian tube were large, ischemic, and purple. The ovary was detorsed counter clockwise and left in place. The laparoscopic approach of choice to repair the hernia was the transcutaneous laparoscopic repair. The patient did well postoperatively, and was discharged home the next day. The patient returned to the hospital at 3 months postop with a repeat ultrasound. On exam, the patient's hernia repair was intact. The ultrasound showed a viable, albeit slightly smaller left ovary with normal flow and follicles. At 1 year follow-up, the hernia repair still remained intact.

CONCLUSION: Laparoscopic repair of an incarcerated inguinal hernia containing a torsed ovary in a young infant is possible. Furthermore, detorsion with ovarian salvage may result in viable and functional ovarian tissue postop, and this approach is an appealing option to be considered for treatment of future similar cases.

<https://www.youtube.com/watch?v=AHuYfVtj-M>

(QS091) POSTOPERATIVE PAIN MANAGEMENT WITH SUBPLEURAL INTERCOSTAL CATHETERS IN PATIENTS UNDERGOING MINIMAL-INVASIVE PECTUS EXCAVATUM REPAIR

A. Alsweed, MD, J. Goedeke, MD, S. Rohleder, MD, OM Muensterer, PhD, MD, Department of Pediatric Surgery, University Medical Center Mainz, Germany

Background: Minimal-invasive pectus excavatum repair (MIRPE) can be severely painful. In the past, we employed a combination of epidural catheter along with systemic analgesia. Recently, we devised a novel technique of thoracoscopic subpleural, intercostal catheter placement for continuous local anesthetic infusion as an alternative.

Purpose: This pilot study evaluates the effectivity of subpleural, intercostal catheters with continuous local anesthetic infusion as an alternative to epidural anesthesia after minimal-invasive pectus excavatum repair.

Methods: A prospective study was performed in patients undergoing pectus excavatum repair from June until November 2016. Instead of traditional epidural anesthesia, and before the actual pectus excavatum correction, we placed bilateral 23 cm long subpleural catheters with microperforations over at least 3 intercostal spaces thoracoscopically next to the bar placement site. Hydrodissection was used to place the catheters in the correct plane. Both catheters were initially infused with a loading dose of 8 ml 2mg/ml Ropivacain solution, followed by a continuous infusion rate of 3–8ml/h for 48–72hrs until the catheters were removed. All patients also received standing metamizol and diclofenac medication. Salvage analgesia with piritramid (opioid) PCA was available to the patients if needed. Outcome parameters were maximal daily pain scores (0–10), length of stay, and demand for salvage analgesia.

Results: In the study period, a total of 8 patients were included (2 females). There were no intra- or postoperative complications concerning the pain catheters. 2 patients (25%) received opioid salvage medication (one 3 doses, one 2 doses). Median maximal pain scores were 4 in the first 24hrs, 2.5 in the following 24hrs. Average postoperative length of stay was 5.8 days.

Conclusion: Our method of thoracoscopically-placed subpleural, intercostal pain catheter therapy is associated with low postoperative pain scores, and a low rate of salvage opioid analgesia, with no complications in our first 8 patients. Subpleural, intercostal pain therapy is a promising alternative to epidural pain management. Based on these findings, we are currently planning a prospective, randomized trial.

(QS092) ROBOT-ASSISTED LAPAROSCOPIC VARICOCELE REPAIR FOR ADOLESCENT SCROTAL VARICOCELE: AN ANALYSIS OF TECHNIQUE AND SURGICAL OUTCOMES

Daniel B Herz, MD, Children's Hospital at Erlanger

Introduction: Laparoscopic ligation of the spermatic veins for the treatment of adolescent scrotal varicocele is widely performed. However, despite the wide spread application in many procedures in pediatric urology, robot-assisted laparoscopic varicocele repair (RALVX) has not been reported in the literature.

Methods: We provide a retrospective analysis of the patient characteristics, surgical technique, and surgical and outcomes of a series of 16 children who had robot-assisted laparoscopic varicocele repair (RALVX) of scrotal varicocele by a single surgeon. We hypothesized that the surgical outcomes are the same as the historically reported open subinguinal and laparoscopic repairs.

Results: A total of 16 children had RALVX over a 5-year period. The mean age was 16.5 years. There were 15 left sided repairs and 1 bilateral repair. One RALVX was performed after a failed percutaneous embolization procedure. All surgeries were technically successful without open conversion. Eight of the 16 procedures were artery sparing. All procedures were lymphatic sparing. Overall success was 94% with 1 patient having a percutaneous embolization for recurrent scrotal varicocele due to an extragonadal vein. There were no Clavien class complications; however, one patient within the 12-month follow-up period had bilateral scrotal orchidopexy for intermittent torsion of the contralateral right spermatic cord that was unrelated to the left sided RALVX. Median total operative time was 88 min (range = 69–112 minutes), and mean robotic console time was 39 min (range = 31–52 minutes). Median pre-operative %left testicular volume differential was 25.1% and median post-operative %left testicular volume differential was 11% with 75% of patients exhibiting catch-up growth with a mean volume increase of 15% in the 12-month follow-up period. No patient developed post-operative hydrocele, nor was there any recorded testicular atrophy.

Conclusion: RALVX is feasible, safe, and effective with essentially equal surgical success to open and pure laparoscopic repair. However, compared to traditional open and laparoscopic repairs, RALVX has an improved outcome since there was no development of post-operative hydrocele, and no recorded testicle atrophy.

(QS093) THORACOSCOPIC TREATMENT OF OESOPHAGEAL DUPLICATION

C Vella, MD, M Carlucci, MD, F Destro, MD, L Maestri, MD, A Pansini, MD, G Riccipetioni, MD, V Buzzi Children's Hospital, Milan

Oesophageal duplication cysts are rare congenital cystic masses. Diagnosis could be accidental. Thoracoscopy has an expanding role in treatment of oesophageal mediastinal duplications but no large series were published.

Case report: 6 years old girl with accidental diagnosis of mediastinal cystic mass during an echocardiography for rheumatic disease. MRI and oesophageal ultrasound endoscopy confirmed the diagnosis. Right thoracoscopy was performed using 4 ports; right lung was excluded. The mass was mobilized from pleura, pericardium and lower pulmonary lobe. Both branches of vagus nerve were preserved and cyst removed within oesophageal sero-muscular layer. No mucosal lesions occurred. Oesophageal sero-muscular layer was approximated and chest drained. Operating time was 170 min. No intraoperative complication occurred. A contrast study on postoperative day 7 did not show leaks and patient did not present symptoms feeding. Length of hospital stay was 8 days.

Thoracoscopy represent a safe and feasible technique for treatment of mediastinal oesophageal cyst, permitting better cosmetic results and shorter hospital stay compared with open techniques.

<https://www.youtube.com/watch?v=cdzI3HIVwRE>

(QS094) MINIMAL INVASIVE SURGERY TYPE III ESOPHAGEAL ATRESIA WITH TRACHEOESOPHAGIC FISTULA REPAIR DONE BY TRAINEES IN A REFERRAL CHILDREN'S HOSPITAL. TENDENCE THROUGH THE YEARS.

Julietta Strambach, Marcela Bailez, Aixa Reusmann, Martin Rubio, Mariano Boglione, Hospital Garrahan

Thoracoscopic esophageal atresia with fistula (MIS TYPE III EA –TEF) repair reflects the level of surgeons skills in a pediatric surgical department. This technique was introduced in our institution in April 2001. The surgery was performed by the chief residents (trainee) assisted by 5 different attendings.

The aim of this study is analyze the tendency MIS type III EA–TEF in our department. Between 2001–2010 we concluded there was no statistical differences regarding operative time, first oral feeding, ventilation time, and surgical complications, when comparing to the open approach. Another review between 2010–2015 shown similar conclusions. To express the relation MIS / OPEN we established the MIS/OP index. The two groups were similar taking into account the weight and associated malformations.

Between 2001–2010 has been 47 patients. The MIS / OP index was 60 % (28/ 19). The operative time was 125 minutes. Ventilation

time 4,2 days. First oral feeding 4,5 days. Five patients presented dehiscence, none required a second procedure. Prevalence of stenosis was 53%. Two patients developed refistula and required a new procedure to treat it. The MIS / OP index between 2010–2015 was 53 % (19/ 17) on a total of 36. The operative time was 183 minutes. One was converted for technical reasons. The average time on ventilation was 5,5 days. First oral feeding was 11,4 days. Four patients presented dehiscence, one required open surgery. Prevalence of stenosis was seen on 52%. There were no re fistula One required a new thoracoscopic to remove a foreign body.

The tendency of MIS EA–TEF remains stable through the years and can be safely performed by experienced endoscopic trainees. MIS training for advance skills using biological models began in 2014. Although there is no preliminary data of the latest procedures, we expect that the training program will increase surgeons confidence and results. In the future we need to develop an strategy to increase the index including more attendings as students of the neonatal MIS hands on courses.

(QS095) THORACOSCOPIC APPROACH TO PAEDIATRIC MEDIASTINAL MASS

Yuri Sokolov, PhD¹, Dmitriy Haspeckov, PhD¹, Oleg Topilin, PhD², Timur Sharoev, PhD³, Anatole Kotlovsky, PhD³, ¹St Vladimir Children's Hospital, ²Central Children's Hospital named after Z.A. Bashlaeva, Moscow, ³St Luka's Clinical–Research Center for Children, Moscow

Background: The feasibility and efficacy of thoracoscopic surgery for management of mediastinal mass in children have been proven. The number of publications on this topic is however limited. We present our experience in management of mediastinal mass using thoracoscopic techniques.

Patients and Methods: From 2008 to 2016, 69 patients, aged between 2 months and 16 years underwent thoracoscopic surgery (TS) for mediastinal lesions. The patient data was retrospectively reviewed in particular considering lesion characterization, details of surgical procedures and postoperative course.

Results: A spectrum of the final diagnoses included the following: lesions of the anterior and middle mediastinum n=32 (46.4%) – lymphoma n=6 (8.7%), thymoma n=2 (2.9 %), lipoma n=2 (2.9%), mature teratoma n=4 (5.8%), broncogenic cyst n=11 (15.95%), pericardial cyst n=3 (4.35%), lymphangioma n=3 (4.35%), azygos vein aneurism n=1 (1.45%) and in the posterior mediastinum n=37 (53.6%) – ganglioneuroma n=16 (23.2%), neuroblastoma n=8 (11.6%), duplication cyst n=13 (18.8%).

In total, 69 TS procedures were carried out: excision of the lesion (EL) n=58 (84.05%) and the lesion biopsy n=11 (15.95%). 64 (92.75%) of these were successfully completed.

In 7 cases (10.14%) thoracoscopic dissection of large size solid lesions > 10cm was associated with technical difficulties, which in three of these led to inadvertent injuries to the vital structures. In two cases the resultant complications were managed thoracoscopically.

The conversion to thoracotomy was required in 5 (7.25%) of all EL cases.

Overall there was no perioperative mortality. Postoperative recovery in all TS cases was prompt and uneventful.

Conclusion: In our experience the efficacy of TS for management of the mediastinal lesions in a broad spectrum is confirmed. Yet, it is also demonstrated that the thoracoscopic dissection of large size lesions may present challenges.

(QS096) TRENDS IN SURGICAL MANAGEMENT OF CONGENITAL LUNG MALFORMATIONS IN THE UNITED STATES

Justin Lee, MD¹, Jason Dewitt², Erin Garvey, MD¹, Daniel Ostlie, MD¹, ¹Phoenix Children's Hospital, ²University of Arizona College of Medicine

Introduction: We sought to analyze trends surgical management of congenital lung malformations (CLM) including rate of surgical intervention, thoracoscopic approach, and timing of intervention.

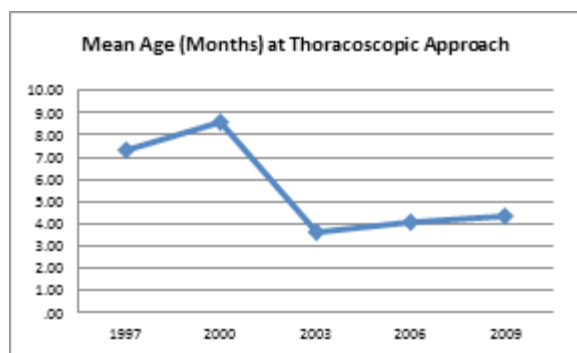
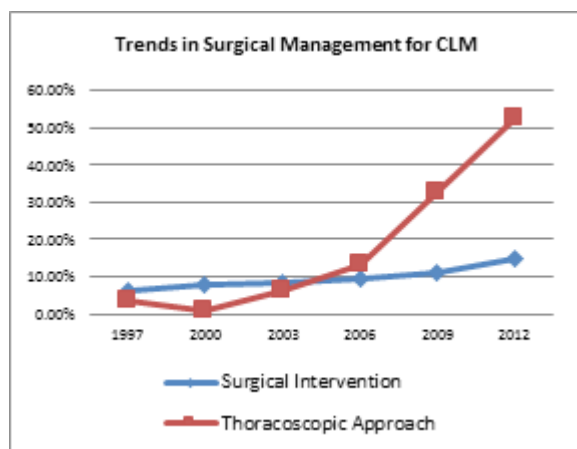
Methods: Kids' Inpatient Database (1997–2012) was used to select CLM cases, age younger than 1 year. Rate of surgical intervention, thoracoscopic approach, and age at intervention were analyzed for trends over the study period. Multivariable logistic regression model including patient demographics and hospital variables was used to predict thoracoscopic approach versus open approach.

Results: A total of 18,989 CLM cases were identified. Overall surgical intervention rate was 10.0% (1,905). The rate of surgical in–

QuickShots

intervention increased during the study period from 6.4% to 15.0% ($p < 0.001$). Overall, open approach was used in 75.2% (1,432) and thoracoscopic approach in 24.8% (473). The use of thoracoscopic approach increased during the study period from 3.5% to 52.3% ($p < 0.001$). Mean age at the time of thoracoscopic approach was 4.38 months, decreasing from 7.29 months to 4.12 months during the study period ($p < 0.001$). Age older than 3 months (OR 2.330, $p < 0.001$) and teaching hospitals (OR 1.591, $p = 0.43$) were more likely to utilize thoracoscopic approach.

Conclusion: Both the rate of surgical intervention and thoracoscopic approach for CLM have increased in the United States. Thoracoscopic approach is becoming more popular in younger patients. Further studies are needed to analyze access to thoracoscopic approach in various hospital settings.



(QS097) THORACOSCOPIC POSTERIOR TRACHEOBRONCHOPEXY TO TREAT SEVERE TRACHEOMALACIA

Eileen M Duggan, MD, MPH, Ali Kamran, MD, Thomas E Hamilton, MD, Russell W Jennings, MD, Charles J Smithers, MD, Boston Children's Hospital

Introduction: There is currently no consensus on diagnostic and treatment approaches for tracheobronchomalacia. We have had increasing success with direct posterior tracheopexy to address dynamic intrusion of the membranous trachea by open thoracotomy approach. We now report the first known use of the thoracoscopic approach for this procedure.

Case Description: A morbidly obese 12-year-old boy presented with chronic respiratory issues since 2 years of age, including recurrent pulmonary infections, frequent noisy cough, exercise intolerance, and need for continuous positive airway pressure at night. His symptoms kept him from attending school and were associated with easy fatigability. He did not have a history of cardiovascular or esophageal abnormalities. Dynamic airway evaluation with computed tomography and diagnostic bronchoscopy revealed severe long segment posterior intrusion of the membranous trachea that also involved both right and left mainstem bronchi (Fig. 1). Bow-shaped cartilages contributed to his tracheobronchomalacia that produced complete occlusion of the airway with vigorous expiration and coughing.

In the operating room, lung isolation was achieved with a right bronchial blocker and he was positioned in semi-prone left lateral decubitus. Four thoracoscopic ports were inserted in standard location for tracheal and esophageal surgery. The camera trocar was

placed at the level of the scapular tip. The three additional trocars were then introduced, one in the axilla, one at 7th intercostal space in the posterior axillary line, and one trocar more posterior and inferior. The azygos vein was divided between two ligatures, removing a small segment to be used as autologous pledget material for the posterior tracheopexy. The esophagus was dissected from the trachea and suspended by encircled vessiloops through separate stab incisions along the posterior thorax (Fig. 2). The anterior spinal ligament was cleared off and the thoracic duct was pushed towards the left chest. Posterior tracheobronchopexy was performed by placing pledgeted horizontal mattress sutures through the longitudinal midline portion of the posterior tracheal membrane and securing them to the anterior longitudinal spinal ligament. (Fig. 3). Flexible bronchoscopic visualization was used continuously throughout this process to confirm that sutures were not placed intraluminally and that the lumen was optimally opened without distortion. This series of approximately 10 sutures spanned the intrathoracic trachea from the thoracic inlet to the carina, also including both right and left mainstem bronchi. (Fig. 4). The pleura was closed between the trachea and esophagus to rotate the esophagus into the right chest to help improve long-term durability for scarring of the posterior tracheopexy (Fig. 5). The patient was extubated at the conclusion of the operation and observed in the ICU overnight. He was discharged home after 7 days with markedly improved pulmonary status, and continues to do well now being 2 months post-operative.

Discussion: In our esophageal and airway treatment program, we have a growing experience with posterior tracheopexy as a successful strategy for severe tracheobronchomalacia, with over 100 reported cases. This is our report of the first case utilizing minimally invasive techniques, which we believe will have an expanding role going forward in treatment for these patients.

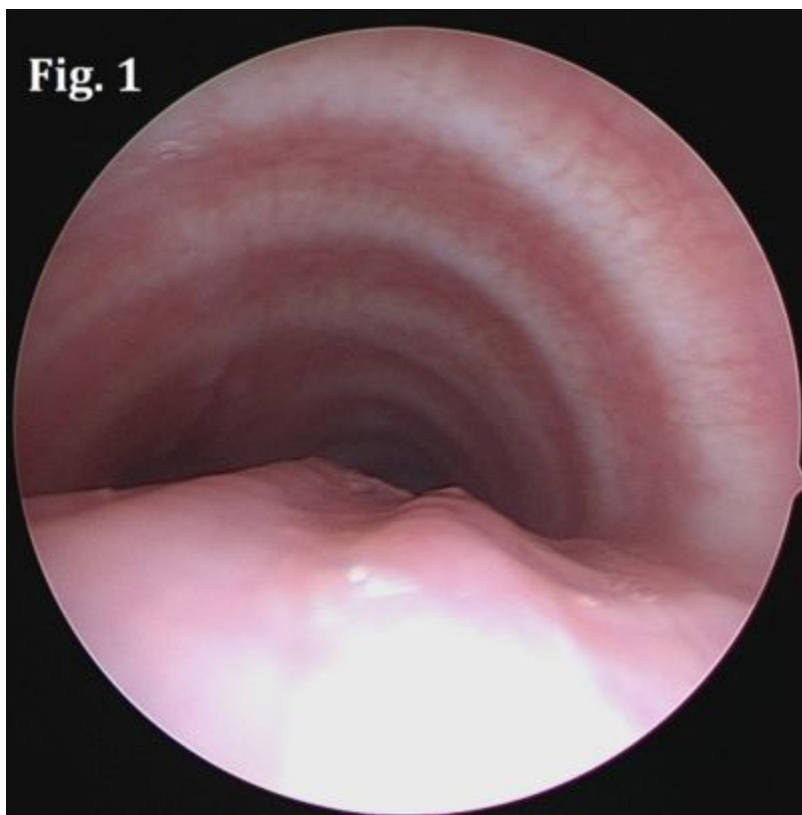


Fig. 2



Fig. 3

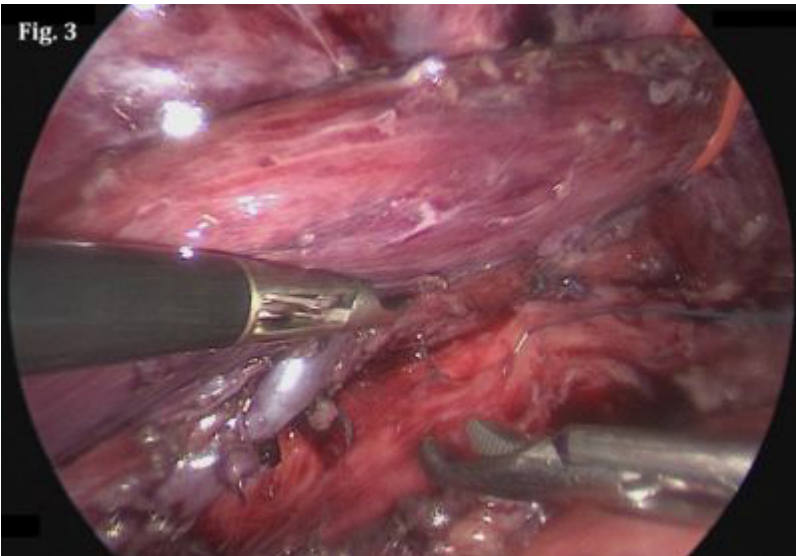
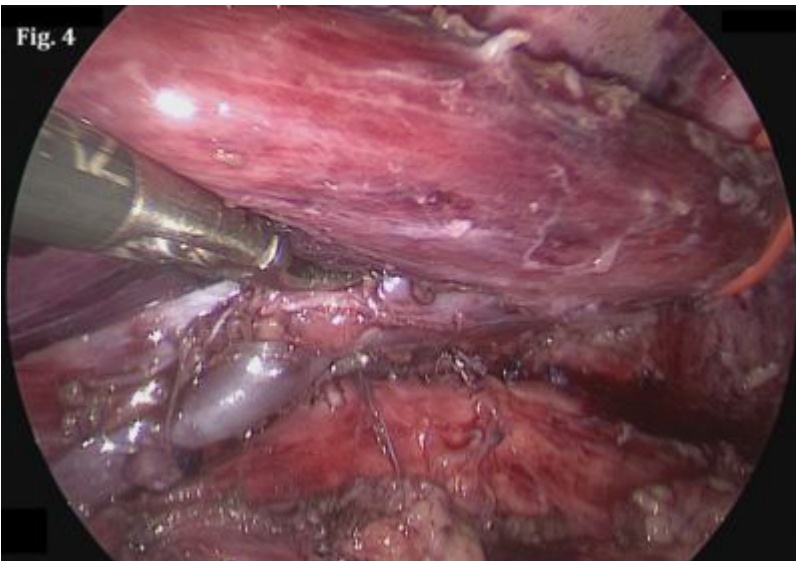
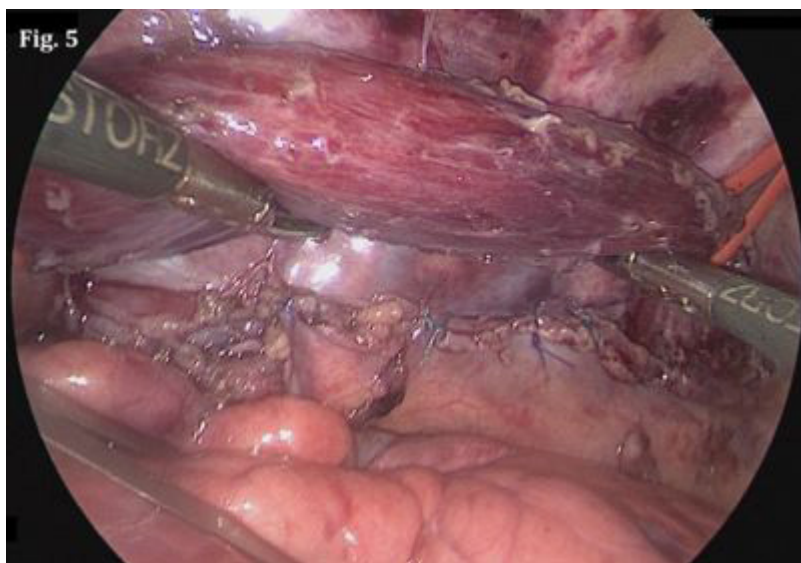


Fig. 4





(QS098) REVISIONS OF DIAPHRAGM PACERS IN CONGENITAL CENTRAL HYPOVENTILATION SYNDROME: A SINGLE-INSTITUTION EXPERIENCE

Yom Alemante, MS¹, Mubina Isani, MD², Sheila S Kun, RN³, Thomas G Keens, MD³, J Gordon McComb, MD⁴, Iris A Perez, MD³, Cathy E Shin, MD⁵, ¹University of Southern California Keck School of Medicine, ²Los Angeles County + University of Southern California Medical Center, Department of Surgery, ³Children's Hospital Los Angeles, Department of Pulmonology, ⁴Children's Hospital Los Angeles, Department of Neurosurgery, ⁵Children's Hospital Los Angeles, Department of Pediatric Surgery

Background: Congenital central hypoventilation syndrome (CCHS) is a rare disease that results in failure of ventilatory and autonomic control. Today, there are at least 1200 diagnosed cases of children and adults with PHOX2B mutation-confirmed CCHS. All patients need ventilatory support, either via tracheostomy, non-invasive ventilation, or phrenic nerve stimulated diaphragm pacing. Since 1997, diaphragmatic pacing (DP) has been used with increasing frequency to treat CCHS patients, with approximately 18% undergoing DP. We have previously reported post-operative complications related to DP. However, the long-term outcome of DP has not yet been studied.

Methods: This study is a retrospective single-center chart review of all patients with CCHS treated with implanted diaphragmatic pacemakers at Children's Hospital Los Angeles from 1997 to 2016. Long-term outcome including demographic data, comorbidities, site and timing of device failure, biotelemetry, and any complications were studied using descriptive and linear regression analysis. IRB approval was obtained.

Results: In total, 28 patients underwent thoracoscopic operations to place bilateral diaphragmatic pacers during the years 1997–2016. Patient groups were comparable with regards to rates of serious comorbidities (Table 2). Seven of the 28 (25%) required replacement or revision surgeries. The 7 patients were first operated on at a mean age of 6.1 (12.0 years at revision), while the remaining 21 were operated on at mean age 9.4. Revision surgery took place a mean of 5.9 years after device implantation (Table 1). Of the 21 patients without revisions, their devices have been active for an average of 6.9 years (range 0.5–19.4).

The right side was involved in 86% of failures. However, both electrodes and receivers have failed equally often. Single receiver failure occurred earlier than electrode failures, and failure of both elements occurred after even longer periods of time (Table 1).

Revision surgeries (Table 1)			
Time to failure (yrs)	Failure point	Side	Age (yrs) at revision
2.4	Receiver	L	5.0
3.3	Receiver	R	6.0
4.4	Electrode	R & L	2.7
5.1	Electrode	R	5.7

Revision surgeries (Table 1)

Time to failure (yrs)	Failure point	Side	Age (yrs) at revision
5.5	Receiver & Electrode	R	4.1
8.6	Receiver & Electrode	R	4.6
11.7	Receiver & Electrode	R	14.8

Comorbidities (Table 2)

Group	Hirschsprung's or Bradycardia	Other	None	Total
Revision	3 (42%)	2 (28%)	2 (28%)	7
No revision	9 (42%)	6 (28%)	6 (28%)	21

Conclusion: The failure rate of DP is significant, as one quarter of the DP patients received surgical revision. Excepting a few cases of trauma to the device, the etiology of the equipment malfunction is unknown. We speculate that age and the site of the electrode placement might be influencing variables to consider in the future.

(QS099) VALIDATION OF A PROTOCOL OF FIBRINOLYSIS AS FIRST LINE TREATMENT FOR PEDIATRIC PLEURAL EMPYEMA IN 79 CONSECUTIVE PATIENTS

A Laín, M Aguilera, L Garcia, C Giné, MP Martín, G Guillén, C Rodrigo, M López, PhD, Hospital Universitari Vall d'Hebron. Barcelona

INTRODUCTION: Management of pleural empyema in children is still a matter of debate. Our service (Marhuenda et al.) published in 2014 the results of a prospective, randomized multicentric trial (2008–2010) comparing video-assisted thoracoscopic surgery (VATS) versus chest drain and fibrinolysis with urokinase (UK) concluding that there were no differences between the two treatments. The use of chemical debridement as first-line therapy in these patients was then established in our service. The aim of our study was to evaluate the effectiveness and efficiency of this protocol after the study period.

METHODS: Single center retrospective review of patients treated with the protocol of thoracic drainage + 6 doses of UK as first line treatment of all empyema, independently of the type, associated pathologies or days of evolution, from 2011 to 2016.

Study variables were demographics, clinical and microbiological data, complications, requirement of second surgical procedures (VATS or decortication by thoracotomy), length of hospital stay and outcome.

RESULTS: A total of 79 patients were enrolled in this period. Median age was 3 years and median weight 16,5 kg. Out of 18 patients who presented complications (6 necrotizing pneumonias, 6 bronchopulmonar fistulas, 9 residual fluid collections) 7 patients (8,8%) needed a second surgical procedure (VATS). Causes were bronchopleural fistula en 4 cases and multisepted fluid collections in 3. None of the patients of our series required decortication by thoracotomy or a third intervention. Mean length of postoperative hospitalization was 9 days (IQR 7–12) with median 5 days of chest tube. The Follow-up was done by clinical and radiological examination. Three months after discharge all patients were asymptomatic and 88% of them showed normal chest radiography.

We did not observe complications related to the use of urokinase.

CONCLUSION: Fibrinolytic therapy as indicated in this protocol is recommended as the first line treatment attending its very low complications rate and its minimally invasion compared to VATS. Thoracoscopic treatment should be reserved for patients with poor response or complications as not self-limited bronchopleural fistula.

(QS100) THORACOSCOPIC ESOPHAGOMYOTOMY FOR ACHALASIA IN THE PEDIATRIC POPULATION

Eileen M Duggan, MD, MPH, Charles J Smithers, MD, Samuel Nurko, MD, MPH, Steven J Fishman, MD, Boston Children's Hospital

Introduction: Esophageal achalasia is an uncommon diagnosis in the pediatric population. Current recommendations are for either pneumatic dilation or surgical esophagomyotomy for those at a low surgical risk. While many surgeons prefer laparoscopic esophagomyotomy with a concurrent fundoplication, we have almost exclusively performed thoracoscopic esophagomyotomies at our institution without fundoplication. We believe that this approach is less likely to cause significant gastroesophageal reflux disease as we do not disrupt the phreno-esophageal ligament while also achieving a longer myotomy.

Methods: A retrospective cohort study was conducted of patients undergoing thoracoscopic esophagomyotomy for achalasia at a

single institution. For the operation, these patients were positioned in the right lateral decubitus position with placement of a left bronchial blocker for lung isolation. A four trocar setup was used in the majority of cases. After retracting the lung, the pulmonary ligament was taken down and the pleura was divided over the distal esophagus. The myotomy was created using a combination of blunt spreading and sharp dissection with scissors. The diaphragmatic esophageal hiatus was retracted caudally with a vein retractor to gain adequate exposure for the distal myotomy onto the gastric cardia. Endoscopic guidance was used concurrently to confirm adequate location and length of the myotomy as well as to prevent mucosal violation. All myotomies were leak tested with irrigation installation and insufflation of the esophagus. At the conclusion a chest tube was placed or a red rubber catheter was used to evacuate pneumothorax during lung re-expansion and then removed with immediate closure of the port site.

Results: Thirty-one patients were identified to have had thoracoscopic esophagomyotomies for achalasia between 1995 and 2016. Nineteen of these patients were male (61%) and 12 were female (39%). Median duration of symptoms prior to presentation was 7 months. The most common symptom complaints were dysphagia to solids (85%) and regurgitation of undigested food (79%). Fourteen patients (45%) had pneumatic dilations prior to surgery (median 3, range 1–7); eight patients (26%) had dilations after surgery (median 2, range 1–6). Of the patients requiring post-operative dilation, 75% had pre-operative dilations performed. Only one patient underwent a repeat myotomy, which was performed laparoscopically with robotic assistance. Nine patients (29%) had chest tubes left in at the conclusion of the case. Three patients required chest tube or needle decompression of a pneumothorax after leaving the operating room. Two patients had a mucosal injury recognized during the case and repaired thoracoscopically – swallow studies conducted post-operatively showed no leak. The median length of stay post-operatively was two days. Median operative time was 142 minutes. No patients required a fundoplication for reflux post-operatively.

Conclusion: Thoracoscopic esophagomyotomy for achalasia has advantages of excellent exposure for a long myotomy without violation of the phreno-esophageal ligament, thereby obviating the need for fundoplication. This technique is straightforward to teach and learn for the surgeon; and patients recover quickly with minimal morbidity and excellent symptomatic relief. It should be strongly considered as a preferred first-line treatment for this disease.

(QS101) THORACOSCOPIC TREATMENT OF ANTERIOR MEDIASTINAL MASS

M Carlucci, MD, C Vella, MD, F Destro, MD, G Riccipetitoni, MD, V Buzzi Children's Hospital, Milan

Thymomas and thymic carcinomas belong to a group of thymic epithelial tumours arising from the anterior mediastinum and, are extremely rare in children in which no therapeutic guidelines have been established.

Case report: 11 years old girl presenting with respiratory symptoms. MRI showed a mass located in the anterior mediastinum, sized 46x32x40 mm. Oncological markers were negative and a mediastinal teratoma was suspected basing on preoperative data. Left lung was excluded and left thoracoscopy was performed using three 5mm and one 11mm trocars. Mediastinal pleura over the mass was divided and mass isolated preserving the phrenic nerve. Mediastinal superior artery was divided and the mass detached from the healthy thymic tissue. Enlarging the 11mm port incision the mass was removed. Fibrin sponge and chest drains were placed. Histological diagnosis was of low-grade thymoma (Masaoka grade I). According to most recent literature no adjuvant chemotherapy was administrated and no complete thymectomy performed. Clinical and radiological follow-up at 3 months were negative for recurrence. Thoracoscopy represent a safe and feasible procedure for the treatment of anterior mediastinal masses.

<https://www.youtube.com/watch?v=qQOeJzMuUsM>

(QS102) THORACOSCOPIC APPROACH OF ISOLATED CONGENITAL TRACHEO-ESOPHAGEAL FISTULA

Giorgio Farris, MD, Anna Morandi, MD, Francesco Macchini, MD, Andrea Zanini, Valerio Gentilino, Ernesto Leva, U.O.C. Chirurgia Pediatrica Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico Milano

Introduction: Analyze the experience of a single center in thoracoscopic correction of congenital isolated tracheo-esophageal fistula (TOF)

Materials and Methods: We analyzed surgical data of cases of fistula treated at our center from January 2014 to December 2016.

Results: Since 2014, 5 newborns with an isolated H-Type fistula were referred to our Center. All of them underwent a combined radiological and endoscopic evaluation of the fistula. Subsequently a 5 mm flexible video-endoscope was positioned in the esophagus, confirming the communication with the airway tract through the identification of the wire. The endoscope was placed at the esophageal exit-site of the fistula and a plane antero-posterior radiography of the chest was obtained. The precise localization of the fistulas was recorded. In consideration of the preoperative evaluations (all fistulas below T2) and according to the above

mentioned protocols, a thoracoscopic approach was chosen for all patients. All patients were placed in a modified prone position with the right side elevated by 30°–45°. This allowed for gravity to retract the lung anteriorly, thus giving excellent exposure to the posterior mediastinum, without the need for a lung retractor. Lung collapse was achieved by CO₂ insufflation at a low flow and low pressure (0.5 L/min, pressure of 4–6 mmHg). Three trocars either two 3 mm and one 5 mm or three 3 mm, were used to access the thoracic cavity. The fistulas were successfully identified, the guide-wire retracted, The fistulas were finally sectioned between the two clips or stitches and the integrity of trachea and esophagus was tested both visually and pneumatically through the injection of high pressure air inside the two organs. A chest drain was left in all cases. The mean age at operation was 5.5 days (range: 2.9 / 8.1), the average weight of the operation was 3,8 kg (range 2.5 / 5.1), the average procedure time was 180 min. In 4 cases, TOF was closed with metal clips. In 2 cases it was observed the disappearance of at least one of the two clips. In one case it was observed recanalization of TOF.

There were no complications in the case with transfixated stitch on tracheal side.

Conclusions: Thoracoscopy resulted feasible and effective in all cases nonetheless safer if transfixated sutures are used instead of endoclips, once the site of the fistula is c

(QS103) ROBOTIC MINIMALLY INVASIVE SPINE SURGERY: A PROOF-OF-CONCEPT STUDY WITH APPLICABILITY TO SCOLIOSIS CORRECTION

Abdalla E Zarroug, MD¹, Julien Abinahed², David L Sigalet, MD¹, Abdulla Al-Ansari³, Nikhil Navkar², Jason J Howard, MD¹, ¹Sidra Medical and Research Center, ²Qatar Robotic Surgery Centre, Qatar Science & Technology Park, ³Hamad Medical Corporation

Design. This is a proof-of-concept study investigating the use of the minimally invasive techniques and the da Vinci surgical robot to perform minimally invasive, multilevel access to the posterolateral spinal elements using an ovine model. Appropriate ethical approvals from the governing institution was granted.

Objective. Is it feasible to access to the postero-lateral spine over multiple vertebral levels (as is required for scoliosis correction) through use of robotic-assisted minimally invasive techniques?

Background. Standard surgical techniques for multilevel posterior spine procedures involve a long open incision necessitating extensive soft tissue disruption leading to pain, increased length of stay, and disfiguring scars. There is a need for a minimally invasive technique that provides excellent access to the posterolateral spine while minimizing soft tissue injury. Although minimally invasive techniques have been developed for abdominal, thoracic and joint surgery, no study has ever investigated the use of minimally invasive and robotic assistance for posterior spine surgery over multiple vertebral levels. Only one previous study has investigated the use of robot assistance and this was performed with an open technique. By combining the expertise of a pediatric orthopedic spine surgeon, a pediatric surgeon with minimally invasive and robotic expertise, and technology experts in multiple institutions we endeavored to develop the first model of robotic/minimally invasive spine surgery.

Methods. An adult Australian Merino sheep specimen underwent minimally invasive surgical exposures of the posterior spinal elements over multiple vertebral levels. Two separate paramedian incisions were made on either end of the spine. A submuscular plane was created and a self-retaining wound protector was placed in the wound and a glove on the opposite end. Trocars were placed into the fingers of the glove and tied to keep a CO₂ tight seal. Multiple 'laparoscopic' 5mm instruments and techniques were attempted and finally the da Vinci S Surgical system was used for robot assistance during the experimental trials to aid in the development of submuscular, subperiosteal tunnels for posterolateral spinal access. The extent of submuscular access and associated technical challenges were recorded.

Results. Trial 1: For the thoracic spine, a submuscular tunnel measuring 5 cm was developed (12.5 cm total length) representing 5 vertebrae. For the lumbar spine, a submuscular tunnel measuring 3 cm was developed (7 cm total length). The two tunnels 'met' in the middle of the spine for full spinal exposure in-between both incisions, making a total of 17 cm spinal exposure. Trial 2 created an identical tunnel of 12 cm and Trail 3 created a 40.5 cm tunnel. One attempt was abandoned due to technical inability to maneuver the arms of the da vinci system.

Conclusion. The use of robot-assistance for minimally invasive access to the posterior spine appears to be feasible. However, instruments optimized for this area need to be developed. Further experimental studies aimed at improving the working space for surgical dissection via submuscular tunnel support are also required.

(QS104) LAPAROSCOPIC INGUINAL HERNIORRHAPHY IN CHILDREN: REPRODUCING THE OPEN APPROACH

Anwar Abdul-Hadi, MD¹, Ahmed Nasr, MD¹, Kyle Cowan, MD¹, Hedyeh Ziai, BHSc², Marcos Bettolli, MD¹, ¹Children's Hospital of Eastern Ontario, ²University of Ottawa

Background: Open herniotomy has been regarded as the gold standard treatment of repairing inguinal hernias in children for years. In the advent of laparoscopy, several techniques were developed. The aim of this study is to evaluate the outcomes of a laparoscopic herniorrhaphy (LH), a technique that follows the principles of the well established open technique.

Methods: We carried out a retrospective chart review of all patients with primary inguinal hernia that underwent LH in a single institution between April, 2013 and June, 2016. Data extracted includes: patient demographics, pre and post-operative diagnosis, presence of contralateral patent process vaginalis (CPPV), operative times, length of follow-up and post-operative complications.

Results: A total of 243 patients underwent 329 laparoscopic inguinal hernia repairs; 55 left, 102 right, 6 bilateral and 80 patients (32.8%) were found to have a CPPV that was repaired. Nine had a previous contralateral open herniorrhaphy and 5 had an ipsilateral recurrence after open repair. Two out of 243 patients (0.82%) recurred; one at 17 months and the second patient at 24 months. One patient presented with a metachronous contralateral inguinal hernia at 3 months. There were no testicular ascents, testicular atrophy, vas deferens injury or other intraoperative complications reported.

Conclusion: LH ensures a high ligation and excision (or transection) of the hernia sac. This technique is a safe and effective in children of all ages with indirect inguinal hernias with recurrence rates comparable to those for the open repair.

(QS105) LAPAROSCOPIC IPSILATERAL URETEROURETEROSTOMY FOR CHILDREN'S RENAL DUPLEX ANOMALIES WITH FUNCTIONAL ECTOPIC URETER

Liangsheng Lu, Yunli Bi, Division of Pediatric Urology, Children's Hospital of Fudan University

PURPOSE: We present the technique and early outcomes of the laparoscopic ipsilateral ureteroureterostomy for ureteral duplication anomalies in children with functional ectopic ureter.

METHODS: Nine consecutive cases of laparoscopic ipsilateral end-to-side ureteroureterostomy in children with ureteral duplication anomalies were reviewed between August 2012 and August 2016. The indication for consideration of this procedure is complete renal duplex with obstructed upper pole ureter, without reflux and with a functioning upper pole kidney. The medical records were collected including demographic parameters, clinical and operative details, follow-up and results. Ultrasound, voiding cystourethrogram, magnetic resonance urography, and isotope nephrogram were assessed before surgery in each case. The patient was placed in a supine position and a laparoscopic transperitoneal ureteroureterostomy was undertaken with 3-mm instruments and a 5-mm optical trocar. The pathologic ureter was divided and cut off as low as possible. The recipient ureter was opened longitudinally at the pelvic brim. End-to-side ureteroureterostomy anastomosis was performed with interrupted 5/0 Vicryl sutures with or without assistance of transabdominal holding sutures. A double J stent was placed in the recipient ureter after the anastomosis by a cystoscope and was removed after 8 weeks.

RESULTS: A total of nine patients, aged 3.4 years (range 6 months–9 years) were identified, including five girls and four boys. Eight children had unilateral complete duplication with ectopic upper ureter. One child had bilateral duplex systems (each with ipsilateral ectopic upper ureter). No vesicoureteric reflux case was found in this group. Symptoms included urinary incontinence or antenatal diagnosis of hydronephrosis. Mean operative time was 143 ± 25 min. There were no intra- and no postoperative complications. Post-operative stay was 5.7 ± 1.2 days. At a mean follow-up of 15 months (3–48), all children are asymptomatic and continent, all preserved their renal functions, with a significant reduction or complete disappeared in hydroureteronephrosis on ultrasound.

CONCLUSION: Our preliminary experience shows that the early result of laparoscopic ipsilateral ureteroureterostomy for ureteral duplication anomalies in children with functional ectopic ureter is feasible and safe. It could be performed with perfect cosmetic results and good success. Long-term follow-up of the renal functions and hydroureteronephrosis is mandatory.

KEYWORDS: ureteral duplication; functional ectopic ureter; ureteroureterostomy; laparoscopy

(QS106) LAPAROSCOPIC EXCISION OF PERSISTENT MULLERIAN DUCT REMNANT (PMDR) IN CHILDREN WITH 46XY- DSD AND SEVERE HYPOSPADIAS.

Muhammad Anwar, MRCS, FCPS, National Institute of Child Health and JSMU Karachi

Aim of study: Persistent Mullerian duct remnant is a rare anomaly. It may be associated with 46 XY DSD and severe variety of hypospadias. Their removal is technically challenging for the surgeons. It is also not agreed upon as to which variety needs surgical removal. The surgery has the potential to inflict damage to important structures like vas deferens and urethra, and autonomic control of urination. This study describes our experience of removing PMDR through laparoscopic approach with emphasis upon tricks and trades of avoiding damage to important anatomical structures.

Methods: Data was collected prospectively from April 2014 to November 2016. A total of 50 patients between 1 to 14 year of age were diagnosed to have PMDR. Clinical presentation was with proximal hypospadias (penoscrotal, perineal types). All had retrograde urethrogram to identify presence of Mullerian duct remnants. After grading the size of the remnants (Grade 0 to 4), surgical approach was planned. Laparoscopic excision of PMDR was performed in grades 2 to 4 varieties.

Results: A total of 20 (grade 2 to 4) PMDR were excised laparoscopically.

Conclusion: By tailoring the approach according to the anatomical variations of the PMDR, complete excision was possible without conversion to open surgery. Laparoscopy was found safe and effective in all the patients with good cosmetic results and minimal postoperative pain and short hospital stay.

(QS107) ANTE-GRADE LAPAROSCOPIC TESTICULAR VESSELS DISSECTION IN PROXIMAL INGUINAL UNDESCENDED TESTIS: A NOVEL APPROACH

Sherif M Shehata, MCh, CST, MD, PhD, Section of Pediatric Surgery, Faculty of Medicine, Tanta University, Tanta, Egypt

Purpose: To present a novel approach to deal with proximal inguinal undescended testis (UDT) to improve the mobilization laparoscopically in order to improve the outcomes.

Patients & Methods: Fifteen boys with unilateral proximal inguinal UDT were treated along the last 6 years. All cases were subjected to laparoscopic ante-grade dissection in a medial and lateral manner of inguinal canal including dissection of testicular vessels with proximal mobilization of gubernaculum after dissection if needed. The testis is brought to abdomen then passed to the scrotum through the canal under laparoscopic guidance. Associated hernia repaired accordingly laparoscopically. Operative findings and post-operative results and complications were assessed. The patients were followed for a period that ranged between 3 and 24 months. Post-operative duplex is done when indicated at 3 months.

Results: We have 15 boys with unilateral UDT; 8 right and 7 left. Operative age ranged between 8 months and 36 months. Six cases of associated hernia were repaired; 4 by purse string suture and 2 with herniotomy. Operative time ranged between 45 and 90 min. without conversion. Mild scrotal edema was reported in 4 cases and port site infection in one case where all were treated conservatively. No case of testicular atrophy in the 3 cases subjected to post-operative ultrasound.

Conclusion: Laparoscopic ante-grade dissection of testicular vessels is feasible and safe new approach in unilateral proximal inguinal UDT. It provides enough length of testicular vessels that provides better outcome along follow up. Larger studies and long-term follow up are needed to support this initial experience.

(QS108) DIAGNOSIS AND LONG-TERM OUTCOME OF RENAL CYSTS AFTER LAPAROSCOPIC PARTIAL NEPHRECTOMY IN CHILDREN

Ciro Esposito¹, Bernardita Troncoso Solar², Maria Escolino¹, Roberta Iacona², Mariapina Cerulo¹, Francesco Turrà¹, Alessandra Farina¹, Alessandro Settini¹, Imran Mushtaq², ¹Federico II University of Naples, Naples, Italy, ²Great Ormond Street Hospital, London, UK

Aim: We aimed to document the imaging follow-up of laparoscopic partial nephrectomy (LPN) in children and to investigate the natural history of cystic lesions post-LPN.

Materials and Methods: We reviewed the US imaging reports performed during follow-up in 125 children (77 girls, 48 boys – average age 3.2 years) underwent LPN in 2 centers of pediatric surgery in the period 2005–2015.

Results: Transperitoneal approach was adopted in 83 cases while retroperitoneoscopy in 42 cases. The average follow-up was 4.2 years. At US, an avascular cyst related to the operative site was found after 61/125 procedures (48.8%). As for their appearance, 53/61 cysts were simple and anechoic and 8/61 appeared septated. The average diameter of the cysts was 3.3 x 2.8 cm. As for their course, 13/61 cysts (21.3%) disappeared after mean 4 years, 26/61 (42.6%) did not significantly change in dimension, 17/61 (27.8%) decreased in size and only 5/61 cysts (8.3%) enlarged. The cysts were asymptomatic in 51 cases (83.6%) while they were associated with urinary infections and abdominal pain in the remaining 10 patients. None of them required a re-intervention.

Conclusions: The US finding of a simple cyst at the operative site after LPN is a common event during follow-up, with an incidence of about 50% in our series. In regard to aetiology, probably a seroma takes the place of the removed hemi-kidney. There is no correlation between cysts formation and type of surgical technique adopted. As there is no correlation between cysts and clinical outcomes, renal cysts after LPN can be managed conservatively, with only periodical US controls.

(QS109) LAPAROSCOPIC REPAIR OF VAGINAL ATRESIA.

Alex Cuenca, Belinda Hsi Dickie, Boston Children's Hospital

The role and use of minimally invasive techniques in pelvic surgery and in particular complex vaginal anomalies continues to gain acceptance. We present the use of laparoscopy in the repair of a distal vaginal atresia in a 13 year old female. On initial evaluation and review of her imaging, she was found to have an 8 cm distance between her perineum and the most distal/caudal aspect of her hemivaginas. Following laparoscopic mobilization of her hemivaginas, a primary vaginal pull through was performed. The patient subsequently did well and presented for an exam under anesthesia one month later. There was no anastomotic stenosis and the patient was able to be dilated to a 20 Hegar. This report adds to the growing evidence that laparoscopic mobilization and repair of complex vaginal anomalies, like distal vaginal atresia, can be achieved safely and with excellent outcomes.

<https://www.youtube.com/watch?v=wfmKs9dBEe4>

(QS110) LAPAROSCOPIC ASSISTED EXTRAVESICAL URETERAL REIMPLANTATION AND EXTRACORPOREAL URETERAL TAPERING REPAIR FOR PRIMARY OBSTRUCTIVE MEGAURETER IN CHILDREN

Eduardo Perez-Etchepare, Romy Gander, Gloria Royo, Marino Ascencio, Manuel López, University Hospital of Vall d'Hebron. Barcelona

BACKGROUND: Open surgery is a preferred treatment for primary obstructive megaureter (POM) in cases where the conservative treatment fails, with reported success rates of 90–96%.

OBJECTIVE: To describe our initial experience in the treatment of POM by laparoscopic assisted extracorporeal ureteral tapering repair and ureteral extravescical reimplantation following Lich Gregoir technique as alternative to open surgery.

DESIGN, SETTING, AND PARTICIPANTS: A total of 15 patients (9 female and 6 male) with unilateral POM underwent laparoscopic assisted extracorporeal ureteral tapering repair and ureteral extravescical reimplantation following Lich Gregoir technique between 2011 and 2015. Three ports were used in all cases, 5 mm 30° for the telescope and two 3-mm trocars. Post-operative follow-up included of a renal and bladder ultrasound scan, voiding cystourethrogram (VCUG) and mercaptoacetyl triglycine (MAG-3) renogram were done at 6 months.

OUTCOME MEASUREMENTS AND STATISTICAL ANALYSIS: Statistical analyses were performed using the SPSS software package (version 15.0; SPSS, Chicago, IL), and $p < 0.05$ was considered statistically significant. Paired tests, Wilcoxon test, were performed to compare pre and post measures.

RESULTS: The mean age was 18 months (8–60 months). Laparoscopic ureteral extravescical reimplantation (LUER) and extracorporeal ureteral tapering repair (EUTR) for POM was completed successfully in all patients (10 left and 5 right) without conversion.

A postoperative MAG 3 renogram showed non obstructive pattern in all patients. Statistical analysis revealed significant differences before and after surgery in the average time of elimination on the MAG 3 renogram ($T_{1/2}$ 59,10 min vs. 13,57, $p < 0,0001$). After medium term follow-up, the overall POM resolution was 93,3 % due to one postoperative case of VUR grade I. A total of 15 patients were asymptomatic without recurrence of POM.

CONCLUSION: LUER and EUTR following Lich Gregoir technique for POM is a effective minimal invasive approach, safe and good option when the first line of treatment fails, with success rate similar to open procedure. Nevertheless larger randomized prospective trials and long-term follow-up are required to validate this technique.

(QS111) RETROPERITONEOSCOPIC PYELOPLASTY FOR PELVIURETERIC JUNCTION OBSTRUCTION: TECHNIQUE AND RESULTS WITH FIRST 20 CASES.

Vineet Binu, MD, Ravi Kanojia, MD, MRCS, PGIMER, CHANDIGARH

Aim: Retroperitoneoscopic Pyeloplasty (RPP) for Pelviureteric junction obstruction (PUJO) is a technically challenging procedure in children. Small space and small form factor of the pediatric patient makes it difficult for a beginner to adopt the procedure. This

study aims at describing our technique of RPP with early results. Emphasis is laid on adequate space creation and triangularization for better suturing.

Patients and Methods: Patients with proven PUJO were selected. The diagnosis was made by ultrasound and EC scan. All patients above 6 months of age were included. Patients requiring re-do procedures, massively dilated kidneys, kidneys with intra renal pelvis and patients less than 6 months of age were excluded. The space expansion was done as a 2 step procedure first by a finger glove and then by a glove hand balloon. The ports were placed with superior port placed within the last intercostal space. All anastomosis were stented with double j stents. All patients were followed up by a 3 month post op EC scan to demonstrate drainage.

Results: Total 20 patients were operated (6 females). Mean age was 3.5 years (range 6mth to 12 years). Obstructed drainage with > 50% retention of tracer at 3 hrs was present in all patients. Three patients had PUJO due to crossing lower pole vessel. All one except patient showed drainage on 3 months post surgery EC scan. One patient aged 1.5 years continued to show obstructed drainage underwent re-do open pyeloplasty 4 months after the laparoscopic procedure. There was one conversion to open due to malrotated kidney.

Conclusions: The modified 2 step space expansion technique employing the second glove hand balloon creates a wider space safely as shown in the video. The extra space helps in placing the superior working port between the 11th and 12th rib without any pulmonary implication this helps in better ergonomics and triangularization. Bigger volume space helps in better PUJ reconstruction and improve outcome. (The final presentation video will be only 5 minutes)

https://www.youtube.com/watch?v=Gb_5B5lvFX0

(QS112) LAPAROSCOPIC TRANSPERITONEAL DISMEMBERED PYELOPLASTY BY UTILIZING V-LOC BARBED SUTURE: OUR FIRST RESULTS

Omer Yilmaz¹, Halil Ibrahim Tanriverdi¹, Hasan Cayirli¹, Pelin Ertan², Can Taneli¹, Aydin Sencan¹, Abdulkadir Genc¹, ¹Celal Bayar University Medical School, Department of Pediatric Surgery, Manisa, Turkey, ²Celal Bayar University Medical School, Department of Pediatric Nephrology, Manisa, Turkey

Introduction: Laparoscopic pyeloplasty is a trending technique in children. The reason of non-widespread usage of this technique is the difficulty of intracorporeal suturation. In this study, we present our first six cases which laparoscopic pyeloplasty was performed with barbed suture in childhood.

Material and methods: Laparoscopic transperitoneal dismembered pyeloplasty was performed in cases with ureteropelvic junction obstruction. Ureter and renal pelvis was reached transmesocolically in five cases and was reached with dissection of the right colonic flexura in one case. Standart Anderson-Hynes pyeloplasty was carried out via barbed suture (4/0 V-Loc™ 90, Covidien) without pelvic reduction. The needle was passed through the loop localized distal tip of suture and anastomosis was performed continuously. Proximal tip of the suture was cut and was left free after suturation. Mesocolon was also sutured continuously with barbed suture without knots.

V-Loc™ is a suture material which has a spiral barbed (with two angles) structure and it was developed for soft tissue closure firstly. It holds 90% of its tensile strength at seventh day and 75% at fourteen day. V-Loc™ has a PDS-like structure and it is composed of glycolide, dioxanone and trimethylene carbonate. It is widely used in urologic and gynecologic laparoscopic procedures.

Results: Laparoscopic knotless pyeloplasty was performed with barbed suture in five male and one female cases, aged between 1 to 15 years for ureteropelvic junction obstruction. Right pyeloplasty was performed to one patient and left pyeloplasty was performed to other five patients. Operation times were 90–100 minutes in five cases which were operated transmesocolically and 110 minutes in one case which was operated with dissection of the colon. There wasn't any complication per or postoperative period except one case. In this case, double-j catheter couldn't pass through the ureterovesical junction at the operation. Ureterovesical junction stenosis was determined as an associated anomaly and ureteroneocystostomy was also performed at the first day after pyeloplasty. The follow-up periods of the cases are between 3 months to 2 years. Follow-up was done with ultrasonography and if necessary with MAG3 scintigraphy. Hydronephrosis regressed completely in one case and decreased significantly in the others after pyeloplasty.

Conclusion: V-Loc™ can be used without knot due to its barbed architecture. There is a study reporting 13 adult patients which pyeloplasty was performed with V-Loc™ successfully. In our study, pyeloplasty was performed successfully with barbed suture at childhood firstly in the literature and it was shown that barbed suture provides a reliable and time effective anastomosis in pediatric laparoscopic pyeloplasty by removing the need to apply knots.

(QS113) ROBOTIC NON-DISEMBERED PYELOPLASTY FOR RARE VARIANT OF EXTRINSIC UPJ OBSTRUCTION

Brendan Caprio¹, Paul H Noh, MD², ¹University of Cincinnati, ²Cincinnati Children's Hospital Medical Center

Objective: To demonstrate a robotic non-dismembered pyeloplasty for management of a rare variant extrinsic ureteropelvic junction (UPJ) obstruction.

Methods: The patient is a 13-year-old female who presented with right flank pain and vomiting and was found to have a UPJ obstruction, demonstrated by ultrasound and an abnormal renogram. The daVinci Xi robotic surgical system was utilized, with a total of 4 trocars for the procedure. Intraoperative retrograde ureteropyelogram demonstrated a dilated kinked proximal ureter and renal pelvis. The proximal ureter and accessory lower pole vessels were dissected from the renal pelvis. The lower pole vessels were pexed onto the renal pelvis, cranial to the ureteropelvic junction.

Results: The robotic surgery console time was 164 minutes. Repeat intraoperative retrograde ureteropyelogram at the end of the procedure demonstrated an open ureteropelvic junction and straightened proximal ureter. There was no blood loss or intraoperative complication. No complications occurred in the postoperative period. The patient has remained asymptomatic during an 8 month follow-up period.

Conclusion: A non-dismembered technique for pyeloplasty can be performed for rare variants of extrinsic UPJ obstruction.

<https://www.youtube.com/watch?v=VAIwdnu5AEk>

(QS114) AN EFFICIENT HOME-MADE SIMULATION MODEL OF LAPAROSCOPIC PYLOROMYOTOMY

Quentin Ballouhey¹, Liviu Micle¹, Céline Grosos¹, Yohann Robert², Aurélien Binet³, Alexis Arnaud⁴, Olivier Abbo⁵, Hubert Lardy, Professor³, Bernard Longis¹, Jean Bréaud, Professor⁶, Laurent Fourcade, Professor¹, ¹CHU Limoges, ²CHU Grenoble, ³CHU Tours, ⁴CHU Rennes, ⁵CHU Toulouse, ⁶CHU Nice

Objective of the technology or device: A key concern regarding laparoscopic pyloromyotomy (LP) lies with the process of learning this skill. Surgical procedures and especially laparoscopic procedures require a minimal number of procedures before the technique is safely performed and a plateau is reached by the whole surgical team. Respective learning processes for open and LP appear to be different, with a higher and earlier increased risk of specific complications like perforation or incomplete pyloromyotomy for LP. A preliminary and published study in our centre confirmed this clinical experience, with an increased risk particularly in the first 20 procedures. Our aim was to develop an efficient and validated simulation tool to reduce these specific complications.

Description of the technology and method of its use or application: A model of hypertrophic pyloric stenosis (HPS) was created with simple materials simulating the stomach and the swollen pylorus. This model was inserted in a paediatric laparoscopic surgery (PLS) simulator. The current training focused on the three consistent steps of LP: linear cut in the serosa, splitting the muscle to begin myotomy and completion using a spreader. First, the reproducibility of model assembly was evaluated by sending a "do it yourself simulation kit" of HPS to different surgeons of other paediatric surgical centres. In the second phase, a cohort of paediatric surgeons, considered as experts, completed a 6-item questionnaire, using a four-point scale about model's realism and accuracy after they participated in the testing. The third phase consisted in recruiting trainees to test the LP simulator. Evaluation of the LP procedure was performed by two reviewers using a dedicated Objective Structured Assessment of Technical Skills (OSATS). Three groups were enrolled for the final validation of this model: experts, surgical fellows and medical students.

Preliminary results if available: Reproducibility of the model construction was considered as satisfactory. The paediatric surgeons agreed that this home-made pylorus accurately simulated essential characteristics of the HPS and was easy to replicate. A total of 57 participants were enrolled in this study, including 15 experienced surgeons, 25 surgical residents and 17 medical students. Experts agreed that the model accurately simulated essential components of the pyloromyotomy (mean 3,03, $\pm$ 0,7). Concerning OSATS scores, paediatric surgeons performed significantly better (25,2 $\pm$ 1,7; p < 0.01) with lower specific complications rate than surgical residents (21,3 $\pm$ 3,1) and medical students (18,0 $\pm$ 2,7).

Conclusions / future directions: This model appears simple, reproducible, and cheap but accurate enough for its use as a support to teach LP. These arguments could promote this model as an efficient tool for early and effective LP simulation teaching in our fellow teaching program. The ultimate goal of this approach would be to demonstrate that this model teaches skills acquisition for LP, which is transferable to the operating room with a reduction of specific complications of the procedure in the surgical fellows learning curve.

Oral Abstracts

(S001) DEVELOPMENT OF SIMULATION MODELS TO TEACH ADVANCED PROCEDURAL SKILLS IN NEONATAL MINIMALLY INVASIVE SURGERY

Dominic Papandria, MD¹, Robert Strouse, MFA², Patterson Jeremy², Karen Diefenbach, MD¹, ¹Department of Pediatric Surgery, Nationwide Children's Hospital, ²Research Information Solutions & Innovation, The Research Institute at Nationwide Children's Hospital

Objective: Duodenal atresia (DA) is a one of several congenital malformations amenable to repair using minimally invasive surgery (MIS). The use of a simulation model to facilitate training of laparoscopic DA repair would be a valuable adjunct for surgical educators, complementing "hands on" experience in the operating room. The goal of this investigation was to develop an anatomic model for laparoscopic repair of DA with material characteristics approximating living tissue.

Methods: Radiologic studies of representative patients with DA were reviewed and the dimensions of relevant anatomy were calculated. A three-dimensional model of representative anatomy in DA (including esophagus, stomach, duodenum and pancreas) was developed and refined. This was adapted into a 3D printed mold which was then used to construct silicone models of duodenal atresia with a gastric lumen, dilated proximal and decompressed distal duodenal segments. The model also utilized pigmented layers to differentiate intraluminal mucosa. These components were assembled within a laparoscopic trainer scaled to the size of a neonatal abdomen. The models were then used by both novice and experienced pediatric surgeons to evaluate this model for its potential to facilitate surgical education. Participants were observed individually or in pairs by an experienced proctor over a 40 minute session. Survey responses were tabulated and basic performance data were collected.

Results: Ten experienced MIS surgeons and 24 novice surgeons attempted simulated laparoscopic DA repair. Eight of 24 novices were able to complete the simulation within the time allotted. Failures in completion by the novice group were related to the time required to place and tie sutures, as observed by the proctor. Experienced surgeons with greater experience in intracorporeal suturing were all able to complete the anastomosis. All participants felt strongly or very strongly that the models were a good representation of the anatomy and of the technique to perform a laparoscopic repair of this anomaly. All participants felt that the tactile feedback, deformability and tensile strength of the model materials were very good or excellent.

Discussion: This anatomic training model demonstrated potential as an adjunct for training MIS techniques to address a rare congenital anomaly. It is applicable for use in individual and group instruction. This approach can be used to amplify experience of surgical trainees, allowing practice to proficiency. Expansion and refinement of such MIS models presents unique opportunities to improve patient safety, surgeon efficiency, and surgeon confidence.

Conclusion: This simulated model accurately represents duodenal atresia and is a useful training tool, as assessed by participants in this preliminary investigation. Additional studies to validate this model and assess translatability of simulation performance to OR performance are planned.

(S002) 3-D LUNG MODEL FOR SURGICAL EVALUATION AND SIMULATION OF CONGENITAL PULMONARY AIRWAY MALFORMATIONS

Tal Koppelman, MD¹, Brandon Smith², David Mathews², Ilan Maizlin, MD¹, Robert Russell, MD, MPH¹, Mike Chen, MD¹, Vincent Morrellaro, MD¹, ¹Children's of Alabama, ²University of Alabama at Birmingham

PURPOSE: Congenital Pulmonary Airway Malformation (CPAM) is a rare congenital malformation of the lower respiratory tract found in about 1:30,000 live births. Surgical excision is the treatment in the majority of these infants and is often performed between 3 and 6 months of age after adequate imaging of the lung. Thoracoscopic resection of these lesions in an infant can be technically challenging due to the small volume of chest. Additionally, the large variability of the location and size of lesion with respect to the bronchial anatomy and pulmonary vascular structures can make the resection especially difficult. Our aim was to create a 3-D model of a lung with incorporated CPAM lesion for endoscopic surgical simulation use as well as for preoperative planning.

MATERIALS AND METHODS: Stereo Lithography (STL) files of bronchi and pulmonary arteries were imported into Meshmixer® software. Using a 3-D printer Lulzbot TAZ6 by Aleph Objects, we printed a unilateral bronchial tree and a reciprocal pulmonary vascular tree model using polylactic acid filament and NinjaFlex filament respectively. Following printing, a round mass was placed on a bronchial tube mimicking a CPAM. To achieve a realistic lung tissue model, we chose Smooth-On Ecoflex® GEL, which was poured into a lung mold forming around the respiratory and vascular structures.

RESULTS: We were able to create a 3-D model of a neonate lung that mimics physical morphology and properties of human tissue. The stages of the 3-D printing and molding process are demonstrated in Figure 1. Visual and tactile features of the model were evaluated subjectively and were consistent with lung anatomy and texture.

Oral Abstracts

CONCLUSIONS: We have successfully created a life like CPAM lung model using a specific patient's preoperative imaging files. Future work will include validation of the model's anatomical details and material properties testing the model on staff and trainees, using our endoscopic surgical simulation center. Once validated we can proceed to implement the model-based, endoscopic simulation task as part of our fellow and resident curriculum. At the same time we will also incorporate the model as an individually designed preoperative planning tool.

Figure 1. The developing model: a. bronchial tree b. bronchial tree combined with pulmonary vasculature c. lung mold ready for filling d. complete lung model with bronchi tree and pulmonary vasculature



(S003) CHARACTERISTICS AND PRECISENESS OF NEEDLE DRIVING FOR RIGHT HANDED PEDIATRIC SURGEON COMPARING RIGHT DRIVING WITH LEFT DRIVING USING INFANT LAPAROSCOPIC DIAPHRAGMATIC HERNIA REPAIR MODEL

Motoi Mukai, MD, PhD, Shun Ohnishi, MD, Takamasa Ikee, MD, Kouji Yamada, MD, Takafumi Kawano, MD, Waka Yamada, MD, Ryuta Masuya, MD, Seirou Machigashira, MD, Kazuhiko Nakame, MD, Tatsuru Kaji, MD, PhD, Satoshi Ieiri, MD, PhD, FACS, Department of Pediatric Surgery, Kagoshima University

PURPOSE: Late presenting diaphragmatic hernia is treated by both thoracoscopic and laparoscopic approach. In case with no herniation of spleen into the thoracic cavity, laparoscopic approach is easier to repair the diaphragm because of no costal restriction and working space comparing with thoracic approach. We supposed the both hand needle driving trocar positions for laparoscopic approach for late presenting diaphragmatic hernia (Fig.1a). The aim of this study was to verify the characteristic and preciseness of needle driving for right handed pediatric surgeon comparing right needle driving and left needle driving using infant laparoscopic diaphragmatic repair model simulator

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. A detachable diaphragmatic defect (Bochdalek hernia, 3.0x1.5cm), stomach, liver and spleen were made of styrene, and were placed in this model (Fig.1b). The examinees were 11 pediatric surgeons. Task is three needle driving without not tying. They were all right handed and had to perform with both hands (Fig.2a and 2b). We evaluated the required time and image analysis (suturing balance and suturing pitch, Fig.2c). Additionally, we evaluated the total path length, velocity, and acceleration of needle driver using a three-dimensional position measurement instrument with an electromagnetic tracking system (TrackStar, Northern Digital Inc. Canada). 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.

RESULTS: All results were shown in Table 1: Required time (sec, Rt: 325.3 ± 168.2 vs Lt: 297.6 ± 129.2 , $p = 0.67$), suture balance (1st, Rt: 1.10 ± 0.98 vs Lt: 2.08 ± 1.70 , $p = 0.114$, 2nd, Rt: 1.09 ± 0.80 vs Lt: 1.81 ± 2.16 , $p = 0.313$, 3rd, Rt: 1.82 ± 0.97 vs Lt: 1.69 ± 1.55 , $p = 0.82$), suture pitch (Rt: 3.29 ± 0.96 vs Lt: 5.72 ± 2.04 , $p = 0.0019$), total path length (mm, Rt: 589.6 ± 211.5 vs Lt: 1467.9 ± 612.5 , $p = 0.000221$), velocity (mm/sec, Rt: 2.0 ± 0.5 vs Lt: 5.1 ± 1.5 , $p = 1.41 \times 10^{-6}$), and acceleration (mm/sec², Rt: 18.9 ± 18.7 vs Lt: 91.9 ± 66.3 , $p = 0.00206$), respectively.

Oral Abstracts

CONCLUSION: There was no significant differences in required time and suture preciseness without 1st needle driving. For right handed pediatric surgeons, left needle driving showed fast but not economical movement. This means rough and risky forceps manipulation in small working space such as neonate and infant patients. From these obtained results, non-dominant hand training is necessary in advanced pediatric endosurgery to avoid the organ injury due to the fast and excess forceps manipulation.

Figure 1

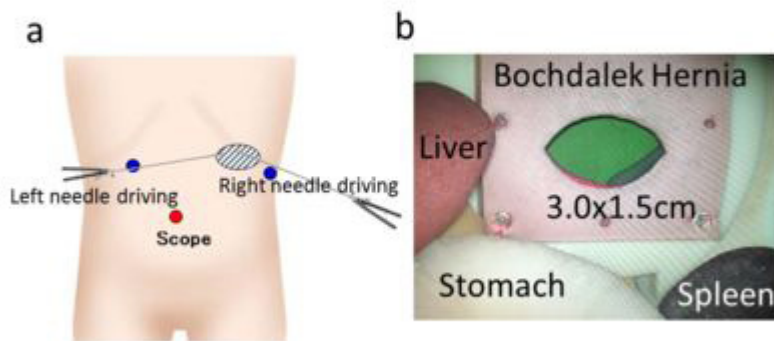


Figure 2

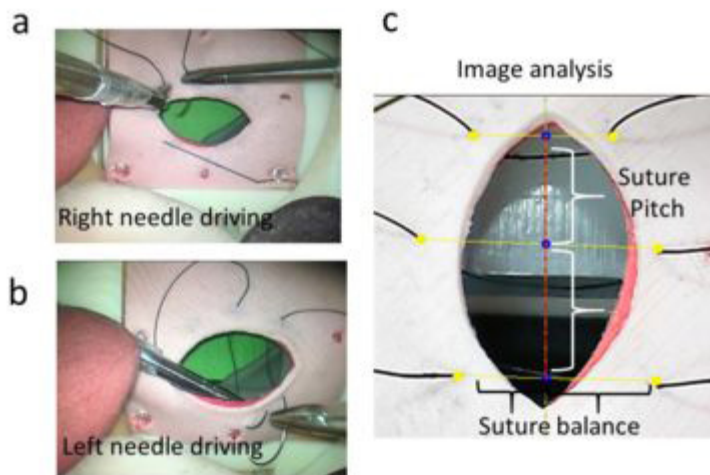


Table 1

	Rt. needle driving	Lt. needle driving	p value
Time (sec)	325.2±168.2	297.6±129.2	0.67
Total path length (mm)	589.6±211.5	1467.9±612.5	0.000221
Velocity (mm/sec)	1.97±0.46	5.09±1.46	1.41e-06
Acceleration	18.4±18.7	91.9±66.3	0.00206
Suture balance(1 st)	3.29±0.96	5.72±2.04	0.0019
Suture balance(2 nd)	1.09±0.80	1.81±2.16	0.313
Suture balance(3 rd)	1.82±0.97	1.69±1.55	0.82
Suture Pitch	1.10±0.98	2.07±1.70	0.114

(S004) MAINTENANCE OF SKILLS SIMULATION (MOSS) CURRICULUM IN ROBOT ASSISTED LAPAROSCOPIC SURGERY: CORRELATION WITH AVERAGE CASE TIME AND CLINICAL OUTCOMES

Daniel B Herz, MD, Children's Hospital at Erlanger

Background: Pre-operative simulation as part of a training curriculum for open and laparoscopic surgery improves resident performance in the operating room by objective measures. Despite the widespread use of robotics in pediatric surgery and urology there is little evidence that simulation exercises have any role in surgeon performance and maintenance of skills for post-training robotic surgeons. We present our correlation of clinical surgical outcomes before and after the implementation of a maintenance of skills simulation (MOSS) curriculum for both pediatric urologic and general surgery robotic laparoscopic surgeons.

Methods: Over a 3.5-year period we collected robotic simulation data on 12 Robotic surgeons all at different levels of post-residency training in a multispecialty RAS program. These included 5 pediatric urologists and 2 pediatric general surgeons as well as 2 pediatric urology fellows and 3 pediatric surgery fellow trainees that regularly sit at the console during clinical surgeries. Each RAS surgeon is required to have performed a quarterly 10-exercise module MOSS curriculum over 8 quarters. We recorded the quarterly results of simulation exercises performed as well as the corresponding time-matched clinical surgical outcomes of RAS cases both during Period 1 (Pre-MOSS) and Period 2 (Post-MOSS). Having all surgeons familiar with computer simulation and the robotic surgery system was prerequisite to reduce the learning curve effect. We divided surgeons into 4 groups: Experienced Robotic Attending Surgeon (ERAS); Inexperienced Robotic Attending Surgeon (IRAS); Experienced Robotic Trainee Surgeon (ERTS); and Inexperienced Robotic Trainee Surgeon (IRTS). The trainee had to complete at least 50% of the console time to receive credit for that case.

Results: All surgeons completed all simulation modules during all 5 quarters. During period 1 there was an average reduction in case-matched total and robotic console time of 9% (range 2–13%). During period 2 this reduction was 21% (range 10–25%). There were no changes in the total number of open conversions or technical robotic failures between the pre- and post MOSS periods. There was a reduction in overall major post-operative complications between the two time periods with a total of 6 complications recorded before, and 2 after the MOSS curriculum. When we divide the results by surgeon experience, the MOSS curriculum effect on total and robotic surgical console time was significant in both experience groups but greater for the less experienced surgeon. When we examined the simulation data itself, we found that the more experienced robotic attending and trainee surgeons achieved overall higher scores and needed less number of tries to reach 80% proficiency in all simulation modules. However, the overall scores increased and the number of attempts to attain proficiency decreased quarterly in both experience groups.

Conclusions: Maintenance of skills simulation curriculum is feasible with good surgeon compliance. The MOSS curriculum is associated with reduced operative times, robotic console times, and major complications in all surgeon experience levels. This association is stronger for those less experienced robotic surgeons.

(S005) MEASUREMENT OF MAS TOOL FORCES DURING AN INTRACORPOREAL SUTURING TASK

Oral Abstracts

Justin W Wee, BASc¹, Georges Azzie, MD², James Drake, MD², Justin T Gerstle, MD², ¹University of Toronto, ²The Hospital for Sick Children

Background: Preventable medical errors result in significant annual morbidity and mortality; some are caused by errors during surgical interventions. Minimal access surgeries (MAS) are potentially prone to error due to the lack of haptic feedback caused by the use of long and awkward surgical tools that are inserted through small incisions. This affects the surgeon's ability to intuitively appreciate how much force can safely be exerted on tissues, which may lead to excessive forces being applied, exposing the patient to potential complications. Surprisingly, no force sensors exist for standard MAS instruments. Current standards of MAS resident training and assessment do not directly quantify tissue manipulation forces. Conventional box simulators evaluate surgical trainees using the metrics of precision and time (Fundamentals of Laparoscopic Surgery---FLS). Recent studies, however, have shown that precision and time alone are unable to assess a surgical trainee's tissue handling skills. As a result, the investigation of the forces exerted during MAS tasks by surgeons of varying experience could help determine whether force measurements can be used as an additional metric to assess surgical skills, incorporating tissue handling in future evaluations.

The objective of this study was to measure MAS tool forces during an intracorporeal suturing task in a box simulator to assess, quantify and classify surgical expertise.

Methodology: A novel, thin MAS force-sensing "skin" was developed to measure and quantify forces exerted by standard MAS instruments (see figure below). The force-sensing skin does not alter the MAS instrument's structural integrity or the surgical workflow, and acts as a minimally disruptive add-on to any MAS instrument. Participants (n=19: 3 novices, 11 fellows, and 5 staff surgeons) performed one intracorporeal suturing task using two 5 mm straight-tip needle holders equipped with force-sensing skins. Instrument forces were recorded via a customized Bluetooth mobile application and post-processed using conventional signal processing techniques. Using participant task video footage, each participant's two puncture forces (each wall of the penrose drain) and three knot tightening forces were measured. Force metrics from the three expertise groups were compared using ANOVA and Tukey's honest significance test with statistical significance assessed at $p < 0.05$.



Results: Mean first puncture force was statistically different between expertise groups ($p < 0.02$). The differences in the other force metrics were not significant. Fellows applied lower first puncture forces than novices ($p = 0.02$); a similar relationship was observed between staff surgeons and novices (approaching clinical significance with $p = 0.06$), but not between fellows and staff ($p = 0.99$). Fellows and staff were observed to have a larger knot tightening force on the third knot relative to their first two knots.

	Mean Force +/- Standard Deviation (N)			p-value
	Novice	Fellow	Staff	
1st Puncture Force	1.903 +/- 0.1770	1.309 +/- 0.1669	1.322 +/- 0.4236	0.0196
2nd Puncture Force	1.890 +/- 0.9102	1.260 +/- 0.5970	1.306 +/- 0.5469	0.4750
1st Knot Tightening Force	4.056 +/- 1.830	2.375 +/- 0.9676	2.039 +/- 1.3030	0.0807
2nd Knot Tightening Force	3.657 +/- 1.589	2.337 +/- 1.3990	1.480 +/- 0.7928	0.1030
3rd Knot Tightening Force	3.279 +/- 2.265	2.452 +/- 0.9333	2.315 +/- 1.3280	0.5570

N=Newtons

Conclusion: Preliminary force metric data from the intracorporeal suturing task shows differences between novices and more experienced fellows and surgeons. Of the five force metrics evaluated, the first puncture force seemed to best reflect the difference in skill amongst participants. Further development of the force-sensing skin and evaluation of other MAS tasks are required to establish the role of force metrics in surgical trainee assessment and education.

(S006) LEARNING LAPAROSCOPIC SKILLS: LOOKING OR PRACTICING?

Françoise Schmitt, MD, PhD¹, Aurora Mariani, MD², Emilie Eyssartier, MD¹, Jean-Claude Granry, MD, PhD¹, Guillaume Podevin, MD, PhD¹, ¹University Hospital of Angers, ²Robert Debré Hospital, Paris

Objective: Several drawbacks make laparoscopic surgery be more and more often taught on low or high-fidelity simulators, rather

Oral Abstracts

than by surgeon's observation and assistance in the operating room. The aim of this study was to assess the respective parts of observation or direct practice in the retention and restitution of laparoscopic teaching.

Material and methods: Eighteen 5th-year medical students were included in a two-sessions laparoscopic learning course in pairs after we obtained from them informed consent. During the first session, one participant completed a "panel 1" of 4 tasks extracted from the Basic skills and Essential tasks modules of the Simbionix LAPMentor™, and then observed his colleague realizing another "panel 2" of 4 other tasks. During the second session, each participant completed panels 1 and 2. Performance evaluation was assessed with the OSATS (Objective Structured Assessment of Technical Skills) global rating scale, and with the use of LAPMentor™ metrics.

Results: Mean OSATS score during the first session was 16.7 +/- 3.2, and increased by 34% during the second session to reach 21.8 +/- 2.6 in the group of former observer students (S2O, $p < 0.0001$), and by 56% (25.1 +/- 1.9) in the group of former practising students (S2A, $p < 0.0001$). The 3.3 points difference between both groups was statistically significant ($p < 0.0001$). Dividing the OSATS items into manual skills and procedural knowledge showed that laparoscopic skills improvement came equally from these two entities. Self- and peer-evaluation results were concordant with the supervisor's evaluation, with in each case a positive correlation ($R^2 = 0.36$ and $R^2 = 0.42$ respectively, $p < 0.0001$). LAPMentor™ recorded values common to all 4 tasks were total time, total path length and average speed of instruments. Among them, total time was significantly reduced in both S2A and S2O groups as compared to S1, without difference between S2A and S2O, whereas total path length of instruments was only improved by 6% in the S2A group ($p = 0.03$), and average speed did not differ between the two sessions. Detailed analysis of LAPMentor™ metrics showed improvement in 14 out of 28 parameters (50%) in the S2A group as compared to S1, whereas only 25% of the parameters were improved in the group S2O, the difference being significant ($p = 0.048$). In both groups, the more the task was complex, the more the number of improved parameters was decreased.

Conclusions: Even if simple observation of laparoscopic skills allowed improvement in further performance, direct practice on the virtual reality LAPMentor™ trainer provided better training, as scored by the OSATS global rating scale and by the LAPMentor™ metrics. Self- as well as peer-evaluation were concordant with the supervisor's one, making them of potential interest for self-apprenticeship inside a surgical curricula. Further studies are mandatory to confirm our results on more complex laparoscopic interventions and after a longer training, but this work may advocate the integration of both personal training on simulators and surgeons observation into residents' surgical curricula.

(S007) THE SENSE OF TOUCH – HAPTIC PERCEPTION IN SURGERY: A QUALITATIVE STUDY

Giuseppe Retrosi, MD, ^{Med}¹, Simon Clarke, BSc, MBBS, FRCS², Munther Haddad, MBBCH, FRCS², Fernando Bello, PhD³, ¹Division of Pediatric Surgery, Winnipeg Children's Hospital, Winnipeg, MB, Canada, ²Division of Pediatric Surgery, Chelsea & Westminster Hospital NHS Foundation Trust, London, UK, ³Surgical Computing and Simulation Centre for Engagement and Simulation Science, Imperial College London, London, UK

Purpose: Haptic perception is the sense of feeling things via the sense of touch to recognise objects. Haptic perception in surgery has changed with the change in surgical procedural approaches. In minimally invasive surgery (MIS), haptic perception is considerably distorted and this could affect the way of teaching and performing surgery.

Aims:

1. To highlight the importance of haptic perception in surgery by investigating the educational implication of "losing the sense of touch" in teaching and performing surgery,
2. To study how the introduction of MIS is affecting surgical training, and whether a surgeon needs "talent" and/or more training in order to become an expert working in a distorted haptic perception environment.

Methods: We have run a qualitative study using Ground Theory methodology. This methodology allows to extract the theory "grounded" in the data during the analysis of the interviews, leaving untouched participants' ideas and opinions. We interviewed 6 Paediatric Surgeons. All interviews were audio recorded and transcribed, subsequently analysed and coded. During the process of identifying and integrating categories to develop theory, we continuously collected, interpreted, verified and conceptualised data from the interviews.

Results: Each interview took an average of 20 – 25 minutes. During the analysis of the interview transcripts, we coded 128 data points and outlined five emerging major themes (Table 1):

Oral Abstracts

- 1) Is haptic perception always important? – Haptic perception is not considered determinant to perform most of the operations
- 2) To be gifted or not to be gifted: this is the question – 50% of the interviews think to learn surgery in a deprived haptic perception environment we need more “talent”
- 3) Teaching surgery losing the sense of touch – Losing the haptics makes teaching surgery more difficult
- 4) Developing the “touching eye” – The visual cues help to overcome the loss of haptics perception
- 5) The importance of simulation based training – Simulation is a good adjunct to learn how to perform surgery in reduced haptics perception conditions

Table 1: Data Points Coded by Major Theme

Themes	Number of data points coded
Is Haptics perception always important?	25
To be gifted or not to be gifted: this is the question	34
Teaching surgery losing the sense of touch	42
Developing the touching eye	16
The importance of simulation based training	11
Overall	128

Conclusion: Haptic perception in surgery was considered moderately important for performing surgery by most of the interviewees. Instead, it appears to have a major role in teaching and learning surgery. Educational theory such as experiential learning, expertise, and motor-skills acquisition theories can help to train a surgeon in a distorted haptic perception environment. Practice in a simulation environment is a good adjunct to help the surgeon to develop a “touching eye” and acquire hand-eye coordination, but a certain amount of “talent” might be needed to reach expert level in MIS.

(S008) DEVELOPMENT OF SKILL EVALUATION SYSTEM FOR A CAMERA ASSISTANT USING AN INFANT-SIZED LAPAROSCOPIC BOX TRAINER

Tetsuya Ishimaru, MD, PhD¹, Kyoichi Deie, MD¹, Atsushi Nakazawa², Kanako Harada, PhD², Shinya Takazawa, MD, PhD³, Jun Fujishiro, MD, PhD¹, Naohiko Sugita, PhD², Mamoru Mitsuishi, PhD², Tadashi Iwanaka, MD, PhD⁴, ¹Dept. of Pediatric Surgery, The University of Tokyo, ²Dept. of Mechanical Engineering, The University of Tokyo, ³Dept. of Pediatric Surgery, Gunma Children's Medical Center, ⁴Saitama Children's Medical Center

Aim: Laparoscopic surgical simulations have been popular, but most of them are for operators. However, operators rely on laparoscopic images to perform surgical tasks, and skills of camera assistant influence the performance of surgery. There were no many studies regarding systems of skill evaluation and training for camera assistants. Therefore, we developed an infant-sized laparoscopic box trainer and evaluated participants' performance as camera assistants.

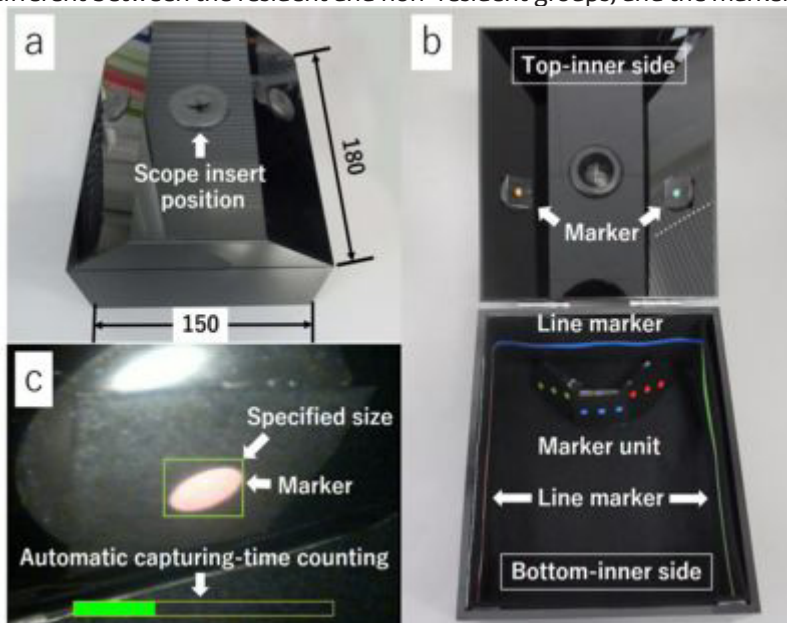
Methods: An infant-sized box trainer mimicking infantile abdominal laparoscopic surgery with several inside markers and lines was developed (Figure a, b). Camera port was placed at the center of superior aspect of the box to imitate umbilicus. On the top inner side, two markers were placed on the locations of working ports. Three sets of three side-by-side markers on trapezoid were placed in front of the posterior wall to mimic rectal wall in the pelvic floor. Lastly, transverse long lines were placed on the left, posterior, and right side walls, respectively (Figure b). Participants were recruited at an annual congress of domestic pediatric surgery, and performed the following tasks using a 5-mm 30-degree scope. Assigned tasks were to capture each marker and show it in the specified size on the monitor and hold for 5 seconds (the size and time were automatically measured as shown in Figure c), and then, to trace each line from left to right edge to keep the line horizontal in the monitor. A 5-point scale questionnaire on reality and usefulness of this system was performed. The number of failure and the task completion time were measured.

Results: 52 participants were enrolled in this study, including 5 residents with less than two years clinical experiences, and 7 skilled pediatric endoscopic surgeons, certified by the Endoscopic Surgical Skill Qualification (ESSQ) system. Reality of box size, insert position of scope, and assigned tasks were scored as 4.0, 3.9, and 3.6, respectively. Usefulness of this system for skill evaluation of camera assistant, training of novice, and training for the participant himself/herself were scored 4.1, 4.3, and 4.2, respectively. The

Oral Abstracts

completion time of the whole task was significantly longer in the resident group than in the non-resident group (508 vs 269 sec., respectively, $p = 0.04$). The completion time of capturing the markers was also significantly longer in the resident group than in the non-resident group (244 vs 124 sec., respectively, $p = 0.04$), but that of tracing the lines was not significantly different between the groups. Also, there was no significant difference in the number of failures and the task completion times between ESSQ-qualified surgeons and the others.

Conclusions: The developed system was evaluated as useful for skill evaluation and training of camera assistant. Reality of the size was good but there is a room for improvement in the scope insert position and the task settings. The results of the task completion time show that the ability as camera assistant is different between the resident and non-resident groups, and the marker capturing



task was more difficult than the line tracing task.

(S009) THE APPENDICEAL MICROBIOME IN PEDIATRIC PATIENTS WITH ACUTE APPENDICITIS

Sara Schölin, Nadine Schlichting, Carlotta Blod, Anne Suttikus, Martin Lacher, MD, PhD, Ulf Bühlig, MD, Steffi Mayer, MD, Department of Pediatric Surgery, University of Leipzig, Germany

Introduction. Intestinal microbiota is implicated in metabolic and nutritional processes and plays an important role in the pathophysiology of several diseases. In recent years special attention has been paid to investigations targeting the changes of intestinal microbiome in various gastrointestinal disorders. In this study we aimed to characterize the microbial composition in different histopathologic stages of acute infantile appendicitis by bacterial culture and 16S rDNA sequencing.

Methods. Between 1-6/2015, 29 children (3-17y, mean age 10.7 ± 3.4 y, m:f=2.6:1) undergoing laparoscopic appendectomy for acute appendicitis were prospectively included in the study. After calculating the pediatric appendicitis score (PAS) (Samuel M, *Pediatric appendicitis score, JPS 2002*), swabs were taken intracorporeally from the outer surface of the appendix prior to surgical dissection ("extraluminal") and from the lumen of the appendix after removal ("intraluminal") for bacterial cultures ($n=29$) and 16S rDNA sequencing ($n=16/29$). The degree of inflammation was subgrouped into catarrhal, phlegmonous and gangrenous appendicitis by a blinded pathologist according to Carr (*The pathology of acute appendicitis, Ann Diagn Pathol 2000*).

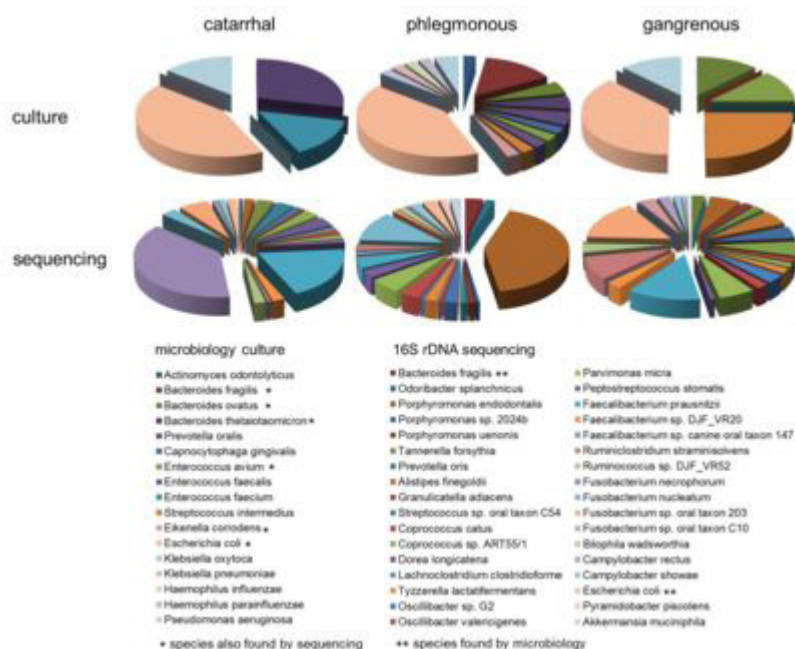
Results. Patients with catarrhal, phlegmonous, and gangrenous appendicitis differed significantly in the level of C-reactive protein (CRP) and pediatric appendicitis score (PAS) (Table).

Type of appendicitis	catarrhal	phlegmonous	gangrenous	p-value
patients: n (male:female)	4 (2:2)	21 (15:6)	4 (4:0)	
age at surgery (y)	13.0 ± 1.6	10.3 ± 3.8	10.9 ± 3.2	0.4
BMI (kg/m^2)	20.5 ± 5.2	17.5 ± 3.3	18.9 ± 1.9	0.2
leukocytes (Gpt/l)	13.9 ± 5.8	14.5 ± 4.3	18.1 ± 3.5	0.3

Oral Abstracts

CRP (mg/l)	*24.7±13.9	*17.2±21.2	74.2±17.0	0.01
neutrophils (Gpt/l)	6.7±6.2	#10.8±4.73	##16.1±3.5	0.06
PAS (0-10)	4.8±2.2	***6.6±1.3	****8.0±1.7	0.02
fecolith (on US)	1 (25%)	3 (14%)	0 (0%)	0.2
OR time (min)	75.0±7.8	80.5±29.7	92.5±17.4	0.6
mean±SD. *sign. different from gangrenous, **sign. different from catarrhal. #n=20, ##n=3.				

In 28 of 29 intraluminal swabs (97%), 17 species were identified by bacterial culture and 267 species by 16S rDNA sequencing. Six of 17 cultivated species were also detected by 16S rDNA sequencing. The abundance and diversity of the detected species differed significantly among histological groups in bacterial cultures ($p=0.001$), but not by 16S rDNA sequencing (Figure). From two extraluminal swabs (7%) of patients with phlegmonous appendicitis, *Escherichia coli*, *Bacteroides fragilis*, *Bacteroides ovatus* and *Prevotella oris* could be cultured. Due to the marginal DNA-reads, no 16S rDNA sequencing was possible.



Conclusion. Only a minority of bacterial species detected by DNA sequencing (6%) were captured by conventional culture. Even in children with gangrenous appendicitis, bacteria were not found extraluminally by culture or 16S rDNA sequencing, suggesting that the inflammatory pathogenesis of acute appendicitis starts from the inside and spreads to the outside of the appendix.

(S010) THE SPAM PROJECT (STUDYING THE PEDIATRIC AIRWAY MICROBIOME): CAN WE FIND GENETIC FOOTPRINTS OF MICROORGANISMS IN CONGENITAL PULMONARY AIRWAY MALFORMATIONS (CPAM)?

Holger Till, MD¹, Karl Kashofer, PhD², Pablo Laje, MD³, Stephan Kellnar, MD⁴, Gert Warncke, MD¹, Gregor Gorkiewicz, MD², Georg Singer, MD¹, ¹Department of Paediatric and Adolescent Surgery, Medical University of Graz, Austria, ²Institute of Pathology, Medical University of Graz, Graz, Austria, ³The Children's Hospital of Philadelphia, The University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA, ⁴Department of Paediatric Surgery, Klinikum Dritter Orden, Munich, Germany

Introduction: Latest gene sequencing tests provide a much deeper insight into the presence of microorganisms like bacteria, viruses or fungi than traditional culture techniques. However, little is known about the pediatric lung. Our international SPAM project (Studying the Pediatric Airway Microbiome) investigates specimen from thoracoscopic lobectomy for congenital pulmonary airway malformation (CPAM) and aims to identify any colonization as a potential source for inflammation.

Patients and Methods: Surgical specimen from 7 children that had undergone lobectomy for CPAM were collected, cryopreserved and blindly analyzed. Standard HE histology was performed to confirm the diagnosis. Additionally, DNA was extracted from cryo-

Oral Abstracts

preserved tissue using the Maxwell DX system (Promega). Primers for the fungal ITS and bacterial 16s conserved region were used to amplify a 300–400bp amplicon in a twostep PCR reaction totaling 50 cycles. Ion Torrent adapters were incorporated into PCR primers of the second round of PCR. Amplicons were purified and sequenced on Ion Torrent PGM using the 400bp sequencing kit with a total yield of ~100.000 reads per sample. Reads were analyzed using Qiime scripts to generate annotated OTU tables of all samples.

Results: The patients' age at thoracoscopic removal ranged between two and three months. CPAM was confirmed in all cases by standard HE histology. Analysis of the internal transcribed spacer of the ribosomal RNA gene (fungal ITS) revealed colonization with *Pneumocystis jirovecii*, mostly known from immunosuppressed patients, and *Preussia* sp. in one patient. In one other specimen we were able to find 16s sequences of *Streptococcus* sp., matching equally on *Streptococcus salivarius* and *Streptococcus thermophilus*. The remaining 5 patients showed neither fungal nor bacterial DNA in this analysis.

Conclusion: For the first time ever this SPAM project reveals genetic footprints of *Pneumocystis jirovecii*, *Preussia* sp. and *Streptococcus* sp. before the age of 5 months in 2/7 infants with CPAM. These unusual species found in CPAMs call for broader investigations. We invite more centers to participate in our SPAM project aiming for an "age-dependent microbial mapping". Such data could support pediatric surgeons when counselling parents for the optimal age to perform thoracoscopic resection of CPAMs.

(S011) EVOLUTION OF RESPIRATORY SYMPTOMATOLOGY FOLLOWING LAPAROSCOPIC NISSEN FUNDOPLICATION IN CHILDREN Carlos García-Hernández, Dr, Lourdes Carvajal-Figueroa, Dra, Sergio Landa-Juárez, Dr, Hospital Infantil Privado

Background: There is a direct relationship between gastroesophageal reflux and reactive respiratory diseases. Typical symptoms of gastroesophageal reflux tend to be absent in patients where both this ailment and reactive respiratory diseases are present. In contrast, issues such as coughing, bronchospasms or bronchitis are usually evident in these cases. A number of studies suggest a surgical approach to control these symptoms is more effective than conventional treatment.

Objective: To determine the effectiveness and convenience of performing laparoscopic Nissen fundoplication in patients with gastroesophageal reflux that exhibit respiratory symptomatology.

Methodology: This is a retrospective cohort study through a 16-year timespan of pediatric patients that manifested esophageal reflux and respiratory symptoms. Patients in the cohort were subjected to a laparoscopic Nissen fundoplication after previously being treated via medical means. Follow-up took place one year after the surgery in most patients, and five years after in a limited portion of the cohort. Statistical analysis was a purely descriptive approach.

Results: A total of 2293 patients were treated. 1215 out of 1537 that presented respiratory symptomatology were included. The age group that exhibited the highest frequency was patients between 2 and 6 years (41.63%). The respiratory symptomatology was divided in high (20.9%), and low (76.7%). 90.46% were subject to a bronchoscopy with lipid laden macrophages in 56.99%. The pH metrics practiced to 27% was abnormal in 29.39%. An impedanciometry was practiced in 38.52%, 82.26% evinced abnormalities. Respiratory symptoms, disappeared or improved within one month in 63.53%, within 6 months in 85.33% and in 12 months in 87.8%. Follow up was possible after 5 years to 65.67%. Of this group, in 91.73% of subjects the symptoms improved or disappeared. In the follow up to a year from the surgery the symptoms disappeared and improved in the 92.16% of the patients between 1 and 24 months of age, 93.44% between 2 and 6 years of age, 87.65% from 6 to 12 years and 75.89% between 12 to 18 years.

Discussion: The relationship between respiratory diseases and gastroesophageal reflux is well documented. In our study, as many as 70% of patients concurrently evidenced reflux and respiratory disorder. The injury mechanisms conducive to these conditions can be related to aspiration or vagal responses. The morbidity rate of the laparoscopic procedure is low and the benefits associated to the control of respiratory symptoms is evident, as significant improvements or total healing of these ailments ensued a year after the surgery took place in as many as 80% of cases considered. We note these improvements are not usually immediate and, in fact, tend to be more noticeable six months after the surgical procedure took place. It is also worth stressing patients aged 2–6 exhibited the most significant improvements, a fact that is most probably related to pulmonary damage being practically nonexistent in infants of this age group.

Conclusion: laparoscopic Nissen fundoplication is a safe and effective procedure for the optimal control of respiratory manifestations associated with gastroesophageal reflux in pediatric patients that do not evidence neurological damage.

(S012) SMALL BOWEL OBSTRUCTION FOLLOWING OPEN OR LAPAROSCOPIC SURGERY IN INFANTS AND CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Oral Abstracts

Giuseppe Lauriti, MD, PhD¹, Vincenzo Davide Catania, MD², Pierluigi Lelli Chiesa, MD¹, Agostino Pierro, OBE, MD, FRCSEngl, FRCSEd, FAAP², Augusto Zani, MD, PhD², ¹Pediatric Surgery Department, “Spirito Santo” Hospital, Pescara, and “G. d’Annunzio” University, Chieti-Pescara, Italy, ²Division of General and Thoracic Surgery, The Hospital for Sick Children, Toronto, ON, Canada

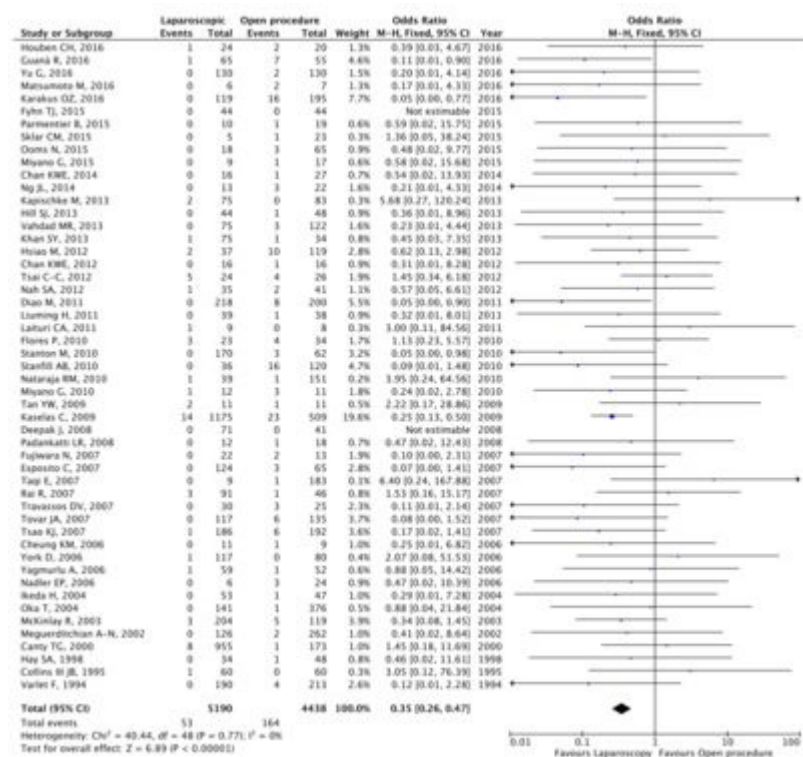
AIM OF THE STUDY: Post-operative peritoneal adhesions are fibrous bands that form as a result of abdominal and/or pelvic surgery and, sometimes, may result in post-operative small bowel obstruction (SBO). Although laparoscopy has been reported to be associated with a reduced risk of SBO in comparison to open surgery, the accumulated evidence to support this concept in children is lacking. The aim of the present study was to determine whether laparoscopy reduced the risk of SBO in children.

METHODS: Using a defined search strategy (PubMed, Medline, OVID, Embase, Cochrane databases), two investigators independently identified all comparative studies reporting the incidence of SBO following open or laparoscopic procedures in infants and children. Case reports and opinion articles were excluded. Both the systematic review and the meta-analysis were conducted according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The meta-analysis was conducted using RevMan 5.3. A sub-analysis was made to compare procedures performed on the upper abdominal quadrants versus those performed in the lower ones. The present study was registered on PROSPERO – international prospective register of systematic reviews.

MAIN RESULTS: Systematic review – Of 11,653 titles or abstracts screened, 280 full-text articles were analyzed. Fifty-one comparative studies (9,628 children) reported an overall incidence of post-operative SBO in 217 patients (2.25%). The meta-analysis showed that the incidence of SBO was significantly lower after laparoscopy (53/5190, 1.02%) than after open procedures (164/4438, 3.69%; $p < 0.00001$, odds ratio (OR) 0.35, 95% confidence interval (CI) 0.26 to 0.47, $I^2 = 0\%$; Figure). Twenty-five of the 51 studies compared laparoscopic versus open appendectomy. Our meta-analysis revealed that laparoscopic appendectomy was associated with a lower rate of SBO (42/4158, 1.01%) compared to open appendectomy (90/3072, 2.93%; $p < 0.00001$, OR 0.39, 95% CI 0.27 to 0.57, $I^2 = 0\%$). Interestingly, the advantage of laparoscopy in reducing the risk of SBO was more noticeable for procedures performed in the upper abdomen (laparoscopy: 0.24%, open surgery: 2.23%; $p < 0.05$, OR 0.27, 95% CI 0.08 to 0.86, $I^2 = 48\%$). Nonetheless, laparoscopy was also advantageous in procedures performed in the lower abdomen (laparoscopy: 1.09%, open surgery: 3.88%; $p < 0.00001$, OR 0.36, 95% CI 0.26 to 0.49, $I^2 = 0\%$).

CONCLUSIONS: Laparoscopic surgery reduces the risk of post-operative SBO in infants and children. This reduction is observed following all types of operations in both upper or lower abdomen. SBO is extremely rare after laparoscopic procedures in the upper abdomen, possibly due to absence of bowel manipulation. By reducing the risk of SBO, laparoscopic surgery can improve clinical outcome and overall cost.

Oral Abstracts



(S013) ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA WITH RIGHT-SIDED AORTIC ARCH. A SURVEY ABOUT IPEG AND ESPES MEMBERS' EXPERIENCE

Montserrat Aguilera Pujabet, MD, Jose Andres Molino Gahete, MD, Gabriela Guillén Burrieza, MD, Sergio López Fernández, MD, Marta Pilar Martín Gimenez, MD, Josep Lloret Roca, MD, Manuel López Paredes, MD, PhD, Hospital Universitari Vall d'Hebron, Barcelona, Spain

BACKGROUND: There is still a lack of consensus regarding the optimal approach and management when a newborn with esophageal atresia and tracheoesophageal fistula (EA/TEF) presents a right-sided aortic arch (RAA). In order to establish a decisional algorithm depending upon the surgical approach, we wanted to know the current practice of pediatric surgeons involved in minimally invasive techniques. We surveyed International Pediatric Endosurgery Group (IPEG) and European Society of Paediatric Endoscopic Surgeons (ESPES) members about their experience and opinion.

MATERIALS AND METHODS: An anonymous online-based survey was sent to all IPEG and ESPES members on December 2016 collecting data from personal background on surgical repair of EA/TEF with RAA.

RESULTS: 134 surgeons from 23 countries completed the questionnaire (69.8% IPEG members and 30.2% ESPES members), most of them (72.2%) covering more than 10 years of clinical experience. The majority of respondents (55.2%) performed less than 5 EA/TEF repairs annually, being those who repair 5-10 EA/TEF annually (27.6%) the second biggest group. A preoperative echocardiography was almost uniformly performed (94%) and only 26.1% extended the preoperative study if RAA was suspected. A total of 263 patients with RAA have been reported. 32.8% of the surveyed never found an EA/TEF with RAA.

The results were divided depending on first surgical approach in Thoracotomy (Group A) and Thoracoscopy (Group B).

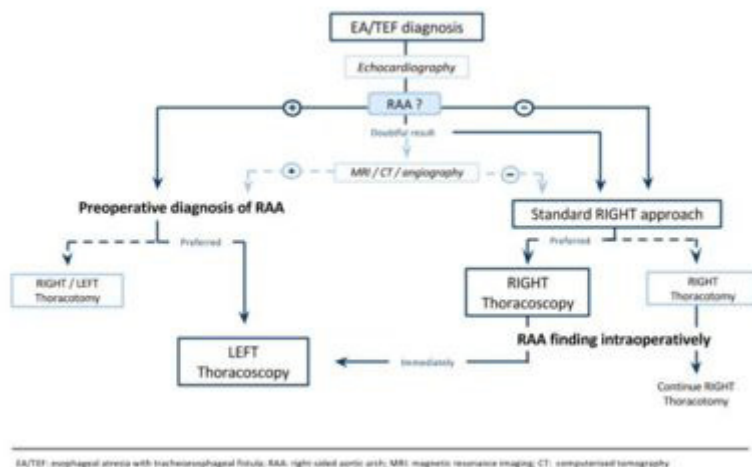
The Group A was formed by 54.5% of the IPEG/ESPES members. If RAA is preoperatively confirmed, 54.8% of the surgeons who perform routinely thoracotomy go through right side as first approach. When RAA is encountered intraoperatively, 67% attempts contralateral thoracotomy if difficulties arise.

The Group B formed by those whose first option is thoracoscopic repair of EA/TEF accounts for 45.5%. If RAA is preoperatively suspected 21.3% of them change their approach to a thoracotomy. Of those who keep going thoracoscopically (78.7%), 50% approach on left side and 50% on right side. Most of them (70.8%) preferred to attempt contralateral thoracoscopy if surgical repair is impos-

Oral Abstracts

sible to achieve safety, rather than convert.

CONCLUSIONS: Preoperative echocardiography performed by experienced hands can help in surgical planning allowing, if RAA is diagnosed, to choose the best approach. Thoracoscopy is being increasingly used and becoming more popular for the correction of EA/TEF among IPEG and ESPES members. The suspicion or presence of a RAA should not discourage preoperatively and modify the approach of preference, out of those whose first option is thoracoscopic repair. Moreover, it ease us to attempt contralateral approach if EA/TEF repair is not doable, being less aggressive than open surgery.



(S014) TEN-YEAR FOLLOW-UP OF PROSPECTIVE, RANDOMISED STUDY COMPARING LAPAROSCOPIC NISSEN FUNDOPLICATION WITH LAPAROSCOPIC THAL FUNDOPLICATION IN CHILDREN

C Skerrett¹, C Kwok, MRCS¹, R Kubiak, MD¹, C M Rees, MD, FRCS, Paed, Surg², H W Grant, MD, FRCS¹, ¹Oxford Children's Hospital, ²Great Ormond Street Hospital

Background: This is the only prospective, randomised study to follow patients for 10+ years. Interim results were published in 2011 at median 2.5 year follow-up – at that time Nissen fundoplication had a significantly lower failure rate compared with Thal fundoplication.

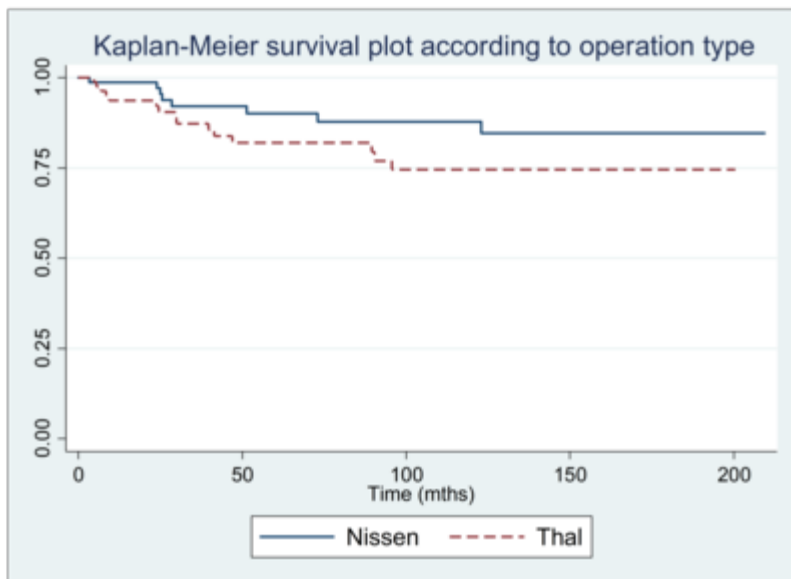
Aims: The aim of this study was to compare the long-term outcomes of complete fundoplication (Nissen) with partial fundoplication (Thal).

Methods: A randomised, controlled trial of Nissen versus Thal fundoplication in children (<16yrs) was performed. Patients were recruited between July 1998 and April 2007. Patients were assessed before surgery and at pre-specified intervals commencing three months after surgery. The primary outcome measure was “absolute” failure of the fundoplication – defined as recurrence of symptoms that merited either reoperation or insertion of transgastric jejunostomy (PEJ). Secondary outcomes were “relative” failure (defined as need for post-op antacid therapy), complications (e.g. dysphagia), and death. The study is registered with clinicaltrials.gov (NCT01027975). Data were analysed using GraphPad Prism 7 and Stata v14 using appropriate statistical methodology.

Results: 175 patients were recruited; 85 patients underwent Nissen fundoplication, 82 patients underwent Thal fundoplication. Long-term follow-up was available in 167 patients. Median length of follow-up in survivors was 132 months (IQR 73–173 months). There was no significant difference in the “absolute failure” rate: 8/85 (9.4%) patients who had a Nissen, compared with 15/82 (18%) who had a Thal – Kaplan-Meier survival analysis (Fig. 1), log-rank test $p=0.14$. There was also no difference in “relative failure”: a further 7/85 (8.2%) required antacid therapy after a Nissen, and 12/82 (14%) after Thal (Fisher's exact test $p=0.23$). When both “absolute” and “relative” failures were considered, Nissen fundoplication had a significantly lower rate of overall failure (Chi squared test, $p=0.023$). 3/85 who had Nissen (4%), and 2/82 (2%) who had Thal had dysphagia (Fisher's exact test, $p>0.99$). 59 children (35%) died from other co-morbidities; none of the deaths was related to surgery. Two neurologically normal children died from complications of cystic fibrosis. Median survival for neurologically impaired children after a fundoplication was 149 months. There were no significant differences in failure rates for patient sub-groups – neonates, neurologically impaired, previous oesophageal atresia repair or

Oral Abstracts

presence of hiatus hernia at operation.



Conclusions: Gastro-oesophageal reflux is a functional problem and outcomes change the longer patients are followed up. There was no statistically significant difference in the “absolute” failure rates between Nissen and Thal fundoplication, but Thal fundoplication had a higher failure rate if “relative” failures were included. Neurologically impaired children have a high mortality rate following fundoplication, unrelated to their surgery. Failure can occur many years after surgery.

(S015) OPEN VERSUS LAPAROSCOPIC APPROACH FOR MORGAGNI’S HERNIA IN INFANTS AND CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Elke Zani-Ruttenstock¹, Vincenzo D Catania¹, Giuseppe Lauriti², Lina Antounians¹, Pierluigi Lelli Chiesa², Agostino Pierro¹, Augusto Zani¹, ¹The Hospital for Sick Children, ²Spirito Santo Hospital, Pescara

AIM OF THE STUDY: The laparoscopic repair of Morgagni’s hernia has become popular in infants and children and it has been reported to be safe and feasible in this patient population. However, it is still unclear whether the laparoscopy is superior to open surgery in repairing Morgagni’s hernia.

METHODS: Using a defined search strategy (PubMed, Medline, OVID, Embase, Cochrane databases), three investigators independently identified all comparative studies reporting data on open or laparoscopic Morgagni’s hernia repair in patients younger than 18 years of age. Case reports and opinion articles were excluded. Meta-analysis was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and analysed using RevMan 5.3. Data are expressed as mean±SD. The present study was registered on PROSPERO – international prospective register of systematic reviews.

MAIN RESULTS: Systematic review – Of 774 titles or abstracts screened, 3 papers met our search criteria. Selected articles included 92 patients, with 53 (58%) open approaches and 39 (42%) laparoscopic procedures. Meta-analysis – The length of surgery was reported only in one paper, where it was reported to be shorter in the laparoscopic (40±15min) in comparison to open procedure (90±17min; p<0.00001). Laparoscopic repair was associated with shorter length of hospital stay (1.5±0.6days) in comparison to open procedure (4.0±1.4days; p<0.00001, Standardized Mean Difference -1.94, 95% confidence interval (CI) -2.55 to -1.33, I²=0%; Figure). There was no difference with regards to post-operative complications between the two groups (laparoscopy: 8.8%, open: 9.4%; p=0.087, odds ratio (OR) 0.89, 95% CI 0.21 to 3.70, I²=18%), as well as considering the prevalence of recurrence (laparoscopy: 2.9%, open: 5.7%; p=0.84, OR 0.82, 95% CI 0.12 to 5.52, I²=38%).

CONCLUSION: Comparative but non-randomized studies indicate that laparoscopic repair of Morgagni’s hernia can be performed in infants and children. Laparoscopy is associated with shortened length of surgical procedure and hospital stay in comparison to open surgery. Prospective randomized studies with long-term follow-up would be needed to confirm present outcome data and optimize the surgical technique in order to reduce the rate of surgical complications.

Oral Abstracts

(S016) SPONTANEOUS PNEUMOTHORAX IN CHILDREN: NATIONAL MANAGEMENT STRATEGIES, OUTCOMES AND TIMING OF SURGERY

Tolulope Oyetunji¹, Kibileri Williams², Grace Hsiung², Richard J Hendrickson³, Timothy Lautz¹, ¹Ann & Robert H Lurie Children's Hospital of Chicago, ²Northwestern University, ³Children's Mercy Hospital – University of Missouri, Kansas City

Purpose: No evidence-based pediatric-specific guidelines exist for the management of spontaneous pneumothorax, and the effectiveness of surgical intervention in the prevention of recurrence remains controversial. The aim of this multicenter review is to compare outcomes among different management strategies in children with spontaneous pneumothorax.

Methods: We retrospectively reviewed patients 10–19 years old in the Pediatric Health Information System admitted for spontaneous pneumothorax from 2010–2014. Three treatment groups were identified based on management on Hospital Day 0 to 1 – no intervention, chest tube placement and operation. For patients who underwent initial chest tube placement, the probability of requiring surgery was calculated for each day that patients remained hospitalized. Outcomes were compared between management groups using the chi-squared or ANOVA. Multivariate analysis was performed using a logistic regression model.

Results: A total of 1040 patients had an inpatient admission for spontaneous pneumothorax. The majority were male (82.1%) and White (71.1%). The mean age at first encounter was 15.7 +/- 1.7 years. Initial treatment included no intervention in 336 (32.3%), chest tube in 497 (47.8%), and VATS in 207 (19.9%). Ultimately, 417 (40.1%) patients underwent VATS during the initial admission, and 559 (53.8%) during the initial admission or a subsequent encounter. Aggregate length of stay was higher for those treated initially with chest tube alone. Among these patients, the probability of requiring surgery was 36% if they remained hospitalized on day 3, 46% on day 4, 55% on day 5 and 61% on day 6. Patients treated initially with VATS had a 13.5% reoperation rate. In a multivariable logistic regression controlling for co-morbidities and utilization of computed tomography, operation during the first encounter was associated with a decreased risk of readmission (OR 0.67, 95% CI 0.50 – 0.90). Estimated adjusted hospital costs are shown.

Conclusion: Many children with small pneumothoraces do well with no intervention. For those requiring any intervention, the majority ultimately require VATS. Early VATS decreases hospital length of stay, charges and readmissions. For those managed initially with chest tube alone, the likelihood of requiring operation increases with each day hospitalized, and early conversion to operative management should be considered.

	Initial Management (First 24 Hours)			P value
	No Intervention (n=336)	Chest Tube (n=497)	VATS (n=207)	
Surgery during admission				
Initial	53(15.8)	157 (31.6)	--	<0.001
Aggregate	105 (31.3)	247 (49.7)	--	<0.001
Length of stay, mean(sd), d				
Initial	4.1 (4.3)	7.2 (7.3)	6.2 (4.0)	<0.001
Aggregate	6.5 (8.5)	9.6 (9.1)	7.4 (5.0)	<0.001
Readmissions	82 (24.4)	140 (28.2)	42 (20.3)	0.08
Adjusted costs, \$				
Initial	10,046			
	18,021			
	17,011			
	<0.001			
Aggregate	16,523	24,178	20,374	<0.001

(S017) FIBRIN GLUE FOR RECURRENT TRACHEOESOPHAGEAL FISTULA: SHOULD BRONCHOSCOPIC TREATMENT BE CONSIDERED AS THE FIRST CHOICE?

I Miró, E Carazo, C Gutiérrez, V Ibáñez, R Fonseca, JE Barrios, M Couselo, P Ortolá, JJ Vila, Hospital Universitari i Politecnic La Fe, Valencia

Oral Abstracts

BACKGROUND: Recurrent Tracheoesophageal Fistula (RTEF) represents a frequent complication (5–10%) from surgical repair of esophageal atresia. Its treatment remains a controversial matter since open surgery implies an important rate of morbidity and mortality. Therefore, endoscopic approach using different options for fistula closure appears as a promising alternative for the management of these patients. We present the results of a repair technique using fibrin glue in a bronchoscopic approach, which was first described in 1994 by our team.

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

RESULTS: Fourteen patients were treated with fibrin glue; in the latter eleven of them (78,6%) previous diathermy was applied. The results are represented in the following table:

	Fibrin glue (n=3)	Diathermy + fibrin glue (n=11)	Overall (n=14)
Day of first treatment (after date of birth) (range and mean)	14-45 (33)	16-770 (98,5)	14-770 (84,5)
Number of endoscopic sessions (range and mean)	1-3 (2)	1-5 (2,1)	1-5 (2,1)
Number of patients with endoscopic follow-up	2 (60%)	6 (54%)	8 (57,1%)
Years of follow-up (mean)	20	10	12,1
Success (%)	66,6	72,7	71,7

CONCLUSIONS: Bronchoscopic application of fibrin glue represents an excellent option for the treatment of patients with RTEF following esophageal atresia repair. Previous application of diathermy seems to enhance the clinical outcomes compared to fibrin glue application alone. An early treatment is recommendable to improve the rate of success. Endoscopic approach should be considered as first choice treatment for RTEF.

<https://www.youtube.com/watch?v=aFRlAmmwTHA>

(S018) MEDIUM TERM PULMONARY FUNCTION TEST AFTER THORACOSCOPIC LOBECTOMY FOR CONGENITAL PULMONARY AIRWAY MALFORMATION: A COMPARATIVE STUDY WITH NORMAL CONTROL

CT Lau, Kky Wong, P Tam, Department of Surgery, The University of Hong Kong, Queen Mary Hospital

Introduction: Congenital pulmonary airway malformation (CPAM) is a major indication of lobectomy in children. Early lobectomy had been proposed for the advantage of compensatory lung growth. Despite the increasing use of thoracoscopic lobectomy its effect on post-operative lung function was still not well established in the literature. This study was therefore performed to study the result of post-operative pulmonary function test on a medium term basis.

Methods: All patients who underwent thoracoscopic lobectomy for CPAM between 2006 and 2010 were recruited into the study. Pulmonary function test was performed 5 years after the operation. Age-matched healthy individuals with similar body size were recruited for pulmonary function test as the control group. Demographic data and pulmonary function test results were extracted for statistical analysis. Test result less than 80% of predicted value was considered abnormal.

Results: 15 consecutive patients were identified in the study period, 8 males and 7 females. The pulmonary function test was performed at a mean age of 9 years. None of the patients had respiratory symptom. The forced vital capacity (FVC) (99.6 vs 97.0% predicted, $p=0.56$), forced expiratory volume in 1 second (FEV1) (86.0 vs 89.1% predicted, $p=0.52$), FVC to FEV1 ratio (96.6 vs 98.7% predicted, $p=0.60$), total lung capacity (92.5 vs 94.5% predicted, $p=0.68$) and alveolar volume adjusted diffusion capacity of carbon monoxide (106.4 vs 100.4% predicted, $p=0.35$) showed no statistical difference from the control group.

Conclusion: Patients who underwent thoracoscopic lobectomy have normal lung function 5 years after the operation. Further study is necessary to confirm the long term result.

Oral Abstracts

(S019) THORACOSCOPIC VS. OPEN CONGENITAL DIAPHRAGMATIC HERNIA REPAIR: A SINGLE TERTIARY CENTER REVIEW

Anna F Tyson, MD, MPH, Richard Sola Jr., MD, Michael Arnold, MD, Graham H Cosper, MD, Andrew M Schulman, MD, Carolinas Medical Center

Introduction: Congenital diaphragmatic hernia (CDH) can be repaired via open or minimally invasive techniques. Thoracoscopic CDH repair has the potential to improve cosmesis and avoid the complications of open surgery, but some limited studies have raised concerns regarding higher recurrence rates and potentially harmful elevations of intraoperative pCO₂. The purpose of this study was to examine the outcomes of thoracoscopic versus open CDH repair at a single institution, with regard to recurrence and perioperative parameters.

Methods: We performed a retrospective review of one pediatric surgical group's outcomes from open versus thoracoscopic Bochdalek CDH repair performed in a single, 234-bed children's hospital from January 1, 2007 to August 31, 2015. The medical records were reviewed to obtain demographics, perinatal course, operative details, perioperative morbidity and mortality, and recurrence rates. The primary outcome was hernia recurrence rate. Secondary outcomes included intraoperative pCO₂ levels, length of stay, and short- and long-term post-operative complications. All statistical analysis was performed using standard statistical methods.

Results: Fifty-seven infants underwent repair of a Bochdalek CDH at the institution during the study period. Thirty-seven patients underwent attempted thoracoscopic repair, of which 27 were completed successfully (conversion rate of 27%). Two patients developed a recurrent diaphragmatic hernia (overall recurrence rate 3.5%), both of whom had undergone open initial repair. Rates of preoperative mechanical ventilation and ECMO tended to be lower in the thoracoscopic group compared to the open group (89% vs 97% and 11% vs 25%, respectively), although these differences were not statistically significant (p= 0.3). The open repair group had a statistically higher rate of mesh repair compared to the thoracoscopic group (72% vs 19%, p< 0.001), likely reflecting larger defect size in the open cohort. Operative time and intraoperative pCO₂ and pH did not differ between the two groups. Patients in the thoracoscopic cohort had a median length of stay of 17 days compared to 46 days in the open cohort (p= 0.003). Four patients in the open cohort developed ventral hernias (13%) and six developed bowel obstructions (20%) during the follow-up surveillance. No long-term complications have been identified in the thoracoscopic cohort in follow-up. The median follow-up was 26 months.

Discussion: In our experience, thoracoscopic CDH repair was performed safely and with similar outcomes and perioperative parameters. In addition to improved cosmesis, thoracoscopic repair may avoid some of the long-term complications of laparotomy, specifically bowel obstruction and ventral hernia. Despite earlier concerns, in our series thoracoscopic CDH repair did not have a higher recurrence rate compared to open repair. We conclude that thoracoscopic CDH repair is a safe option in appropriately selected neonates.

(S020) THORACOSCOPIC ANATOMIC SEGMENTECTOMY FOR BENIGN LUNG LESIONS: IS IT SAFE, SUITABLE AND WORTHWHILE?

X Tarrado, MD, PhD, L Saura, MD, P Palazón, MD, I De Haro, MD, J Prat, MD, PhD, A Soria, MD, V Julià, MD, PhD, Hospital Sant Joan de Déu. Barcelona

Aim: To analyze our early experience in the treatment of lung lesions through thoracoscopic segmentectomy. To present a broad spectrum of such procedures.

Patients: We have reviewed the first 16 thoracoscopic anatomic segmentectomy cases, defined as lung resections where a segmental vascular dissection and intersegmental parenchyma transection was performed. So lobectomies, extralobar sequestrectomies and wedge resections were excluded. They were 8 boys and 8 girls, with a mean age of 9 months (5m-30m) among the asymptomatic patients (12 cases), and 9,7 years among those diagnosed on after repeated lung infections (3 cases) or hemoptysis (1 case). Mean weight was 8,9 kg and 38,5 kg respectively in the asymptomatic/symptomatic groups. According to the segment resected were performed: 9 intralobar sequestrectomies (S10); 1 lingulectomy (S4-5); 1 culminectomy (S1-3); 1 right basal lobectomy (S7-S10); and segmentectomies of right S5, right S3, right S2, right S6 (one case each). Segmentectomy was attempted in those cases based on the CT finding of well-defined lesions confined to one or several segments with a clear margin. Preoperative diagnoses were: 3 congenital pulmonary airway malformations (CPAM); 9 intralobar sequestrations (2 associated with CPAM); 3 congenital lobar emphysema (CLE) with bronchial atresia; and 1 bronchiectasis. Bronchial selective intubation was used in all cases. Different sealing methods for vessels and bronchi were used depending on the case. Parenchyma transection was carried out with endostapler.

Results: Mean operative time was 112 min (55-240min). There were no reconversions to open surgery or need of blood transfusion. No intraoperative complications were found. Mean chest tube duration was 2.3 days and mean hospital stay 3.3 days. With a mean follow-up time of 41months (1-88m) all patients are symptom-free and follow-up CT-scan show no residual lesions.

Oral Abstracts

Conclusion: The use of thoracoscopy in infant and children segmentectomy is a safe and effective technique with the advantages of minimal access surgery. Anatomical segmentectomy is a lung-sparing suitable option for selected cases with lung lesions confined to one or several segments. Preoperative planification based on imaging, anatomical knowledge and careful dissection are essential.

(S021) OUTCOMES OF LAPAROSCOPIC-ASSISTED TRANSANAL ENDORECTAL PULL-THROUGHS WITH SHORT MUSCLE CUFF FOR CLASSIC HIRSCHSPRUNG'S DISEASE

Bo Xiang, PhD, West China Hospital, China

Purpose: The muscle cuff of traditional Soave pull-through procedure for Hirschsprung's disease was related with complications including constipation, enterocolitis and soiling. We intended to investigate surgical outcomes of laparoscopic-assisted transanal endorectal pull-through with a short muscle cuff.

Methods: A total of 94 male patients with Hirschsprung's disease from Jan 2014 to Dec 2015 had been included in the study. The median age was 1.2 year-old (6 month to 6 year-old). 64 of them had received laparoscopic-assisted transanal endorectal pull-throughs with muscle cuffs of traditional length (8–10cm) and 30 had received procedures with shorter muscle cuffs (2.5–3.5cm). Laparoscopic mobilization of the rectum was done until the level of levator ani had been reached. Endorectal dissections started at the same level 0.5cm above the dentate line. 3 to 4 cm above the dentate line we would reach the previously dissected intra-abdominal level and enter the peritoneal cavity. Other parts of the procedures were the same. Hip bath with 2.5% warm NaCl was given 3 days after surgery and for 3 months after surgery. Anal dialation lasted 6 months.

Results: During 1-year follow-up the rate of enterocolitis was 3.3% (1 of 30) in the short-cuff group compared with 7.8% (5 of 64) in the long-cuff group ($p<0.05$). Constipation occurred in one patient in the short-cuff group and four patients in the long-cuff group ($p<0.05$). Soiling rate was lower in the short-cuff group (3/30 VS 7/64, $p<0.05$). The short-cuff group also had significantly lower endorectal infection and anastomotic stricture rates ($p<0.05$).

Conclusions: We recommended the application of short-cuff in laparoscopic-assisted transanal endorectal pull-throughs. Shorter cuff had been related with improved functional outcomes including lower rates of enterocolitis, constipation and soilings. It was also showed to have less endorectal infection and anastomotic strictures.

(S022) VASCULAR MALFORMATIONS INVOLVING ANORECTUM AND SIGMOID COLON: COMBINED ENDOSCOPIC AND LAPAROSCOPIC APPROACH FOR MANAGEMENT

Zhibao Lu, MD¹, Jiangbin Liu¹, Xianmin Xiao², ¹Shanghai Children's Hospital, ²Children's Hospital of Fudan University

Purpose: Vascular malformations are rare causes of lower intestinal bleeding. The aim of this study was to evaluate the role of combined endoscopic and laparoscopic approach for the management of vascular malformations involving anorectum and sigmoid colon (VMARS).

Methods: The charts of nineteen patients diagnosed with VMARS during January 2000 and December 2015 from two tertiary referral centers were retrospectively reviewed. The records were analyzed for gender, age at onset and diagnosis, clinical presentations, diagnostic methods, pathological findings, treatments and outcomes. Institutional Review Board was obtained.

Results: There were 14 males and 5 females, with a median age at onset and diagnosis was 20 months (range, 5 to 108 months) and 66 months (range, 12 months to 11 years), respectively. The proper diagnosis was delayed in all cases. Acute or chronic rectal bleeding was the most common presentation. Five children had skin lesions of vascular malformations. None had Klippel-Trenaunay or other overgrowth syndrome. The hemoglobin level on admission ranged from 1.9 to 13.1 g/dL (mean, 8.5 g/dL). Six children received blood transfusion to correct the anemia. Selective angiography was performed in four children and consistently established the location and nature of vascular malformations (low-flow venous malformation). Barium enema was performed in seventeen children, showing irregular rectal contours and indentation. Computed tomography (CT) scan showed circumferential thickened rectal wall, intravenous contrast enhancement, and phleboliths. Magnetic resonance imaging (MRI) also showed bright signal on T2-weighted imaging. X-ray film of the pelvic, nuclear scintigraphy, and ultrasonography had no contribution to the diagnosis.

At operation, colonoscopy and laparoscopy could be performed under one anesthetic. Colonoscopy was useful in visualizing the lesions, demonstrating diffusely carpeted mucosal involvement proximal to the anus, with a clear boundary between the lesion and the normal intestinal mucosa. Laparoscopy showed markedly thickened bowel and the diseased intestinal segments located in rectum and distal part of sigmoid colon. No small bowel lesions were identified. The sigmoid colon and rectum were mobilized.

Oral Abstracts

Conversion was required in five patients. Modified Whitehead procedure was used for the distal part of endorectal dissection. After resection of the diseased bowel, the colon was pulled down and anastomosed to the anus. All patients underwent colectomy, transanal rectal mucosectomy and endorectal pull-through. Nine children required blood transfusion (1–2 u) during operation because of preoperative anemia and intraoperative bleeding. The mean length of resected bowel was 23.2 cm (range, 14 to 30 cm). Histopathology demonstrated that submucosal veins were dilated and CD31 positive in all specimens.

One patient was lost to follow-up. Post-operative results were good in majority of other patients (16/18, 88.9%), with 1-year to 14-year follow-up. Three children experienced minor anal bleeding for several weeks after surgery. None required transfusion or iron replacement. Two children had intermittent soiling after six months of follow-up. No stricture, sepsis, or death was reported.

Conclusions: The combined use of endoscopy and laparoscopy is useful to establish the proper diagnosis of VMARS and offers a suitable therapeutic modality. Colectomy, rectal mucosectomy and endorectal pull-through should be considered in children with VMARS.

(S023) THE SHORT TERM OUTCOME OF MODIFIED LAPAROSCOPIC KASAI PORTOENTEROSTOMY FOR BILIARY ATRESIA WITH 140 CASES

Xu Zhicheng, The department of Pediatric surgery, West China Hospital of Medicine, Sichuan University

Aim: The aim of this study was to present the short-term efficacy of modified laparoscopic Kasai portoenterostomy (MLKPE) for biliary atresia (BA) in our hospital.

Materials and Methods: From May 2012 to May 2015, the charts of infants with BA underwent MLKPE were reviewed retrospectively. The details of MLKPE: (1) the full exposure of portal hepatis was maintained by suspension of quadrate lobe of liver with percutaneous suture; (2) the depth of fibrous cone resected depended on the appearance of biliary liquid, but the base of the fibrous mass should be remained intact.

Results: 140 patients with BA received WLKPE. There were 78 males and 62 females with non-syndromic BA (type I, 125; type II, 10; cystic 5). The median age at operation was 88 days (range, 57–115 days). The median operative time was 240 min (range, 150–330 min) without any severe perioperative complications. 5 cases (3.8%) were converted to open Kasai operation (OKPE). After a median follow-up of 33 months (range, 12 – 48 months), 1-year, 3-year survival with native liver were 76.4%, 64.0% respectively. The clearance of jaundice was 75.0% within 6 months postoperatively. 47.7% patients had cholangitis before one year of age, which fell to 12.5% at 3 years after WLKPE. By the end of study, 93 patients survived with native liver, 23 patients died of hepatic function failure without transplantation, 25 patients had liver transplantation. Among survivors with native liver, 96.8% were jaundice free; 88.2% had abnormal serum value of AST, ALT and GGT, and 89.2% showed hepatic fibrosis by ultrasonography.

Conclusion: The procedure of MLKPE was easy to perform. 1-year, 3-year survival with native liver after MLKPE was 76.4% and 64.0% respectively.

Keywords: Pediatric, Biliary atresia, Laparoscopy, Portoenterostomy

(S024) ASSESSING THE LONG TERM MANOMETRIC OUTCOMES IN PATIENTS WITH PREVIOUS LAPAROSCOPIC ANORECTOPLASTY (LARP) AND POSTERIOR SAGGITAL ANORECTOPLASTY (PSARP)

Patrick Ho Yu Chung, Carol Wing Yan Wong, Kenneth Kak Yuen Wong, Paul Kwong Hang Tam, The University of Hong Kong

Introduction: Laparoscopic anorectoplasty has been developed for more than 10 years. Anorectomanometry provides an objective assessment of the functional outcome in toilet-trained patients with previous operations. The objective of this study is to compare the long term manometric outcomes in patients with previous laparoscopic anorectoplasty (LARP) and posterior sagittal anorectoplasty (PSARP).

Methodology: This is a retrospective study conducted in a local paediatric surgical centre. All the studied patients were born with high-/intermediate- type malformations and have received colostomy followed by either PSARP or LARP. They were attending normal schools without neuro-spinal anomaly and have received toilet training at the time of assessment. Clinical assessment was performed according to the criteria of a seven-itemed bowel function score (BFS) (maximum score = 20). Manometric assessment was carried out with high-resolution anorectomanometry without sedation. The results of manometric assessment from six age-matched healthy children were used as reference values in this study.

Oral Abstracts

Results: A total of 30 patients were included in this study (PSARP = 14, LARP = 16). There was no significant difference in the median age at operation (PSARP vs LARP = 5 months vs 3.5 months, $p=0.96$). Patients who underwent PSARP were older at the time of assessment (median age of PSARP vs LARP = 15.5 years vs 9 years, $p=0.06$).

While the incidence of constipation (defined according to Rome III criteria) was comparable between the two groups (PSARP vs LARP = 14.3% vs 12.5%, $p=0.17$), soiling (more than once per week) occurred slightly more frequently in patients with PSARP (PSARP vs LARP = 42.9% vs 37.5%, $p=0.12$). The median value of BFS was significantly lower in the PSARP group (PSARP = 12.5, range: 8 – 18; LARP = 16, range: 10 – 20, $p=0.03$).

The median value of sphincteric resting pressure was 20 mmHg (range: 10 – 50 mmHg) in the PSARP group and 40 mmHg (range: 10 – 70 mmHg) in the LARP group ($p=0.05$). Compared with age-matched controls, 50% ($n=7$) and 75% ($n=12$) patients had normal sphincteric resting pressure (30mmHg – 60mmHg) in the PSARP group and LARP group respectively ($p=0.28$). A higher sphincteric squeeze pressure was found in patients with LARP (PSARP = 30 mmHg, range: 10 – 80 mmHg; LARP = 50 mmHg, range: 20 – 80 mmHg, $p=0.08$). Rectoanal inhibitory reflex (RAIR) was present in 42.9% ($n=6$) and 31.3% ($n=5$) patients in the PSARP and LARP groups ($p=0.14$). The median value for volume of air to elicit the first anal sensation was 30 ml (range: 20 – 60 ml) in the PSARP group and 40 ml (range: 20 – 80 ml) in the LARP group ($p=0.18$).

Conclusion: Most patients with previous LARP could achieve satisfactory bowel function in long term. The outcomes in terms of bowel function score and sphincter resting pressure in manometric assessment were favoring LARP. The result of manometric assessment would serve as a useful guidance for intervention to correct bowel dysfunction after anorectoplasty.

(S025) APPLICATION OF LAPAROSCOPY IN PERFORATED CHOLEDOCHAL CYSTS

Mei Diao, Professor, Long LI, Professor, Department of Pediatric Surgery, Capital Institute of Pediatrics

Purpose: The current study is to evaluate efficacy of single-incision laparoscopic hepaticojejunostomy (SILH) in children with perforated choledochal cysts (CDC).

Methods: One hundred and sixteen children with perforated CDCs who underwent SILHs between August 2011 and November 2016 were reviewed. A series of retraction suture were placed at serosa of gallbladder fundus, proximal common hepatic duct, and proximal to distal common bile duct to facilitate dissection and anastomosis. Severe adhesion often obscured the border between CDC and surrounding tissues, such as pancreas, duodenum, portal vein, hepatic artery. To minimize iatrogenic injuries, dissection plane was kept close to the cyst wall. The CDC was transected to identify the margins of CDC and surrounding tissues under direct vision. Blunt dissection by suction tube was adopted when inflammatory cyst wall was too fragile to place the retraction sutures. Localized mucosectomy was performed in the perforated area to minimize the injuries of portal vein and hepatic artery. In the case of duodenal injury caused by severe adhesion in distal CDC dissection, the assistant pulled up retraction suture through the distal CDC to expose the duodenum. Duodenal repair was then performed by a double-layer 5-0 PDS running suture. The distal CDC was transected after duodenal repair was accomplished. In the case of perforation sealed with surrounding tissues, bile pseudocyst should be distinguished from CDCs, and Roux loop was carried to the hepatic hilum through antecolic instead of retrocolic tunnel.

Results: Fourteen patients (12.1%) converted to open procedures due to severe adhesions and oozings. Within remaining 102 patients successfully undergoing SILHs, 38 (37.3%) patients had submucosal perforations, 24 (23.5%) patients had complete perforations sealed with surrounding tissues and confined peritonitis, and 40 (39.2%) patients had complete perforations with massive ascites and extensive peritonitis which required external biliary drainages. Mean age at SILH was 1.73 years (range: 2 days–10.25 years). Average operative time was 3.32 hours (range: 2–5 hours). Mean postoperative hospital stay was 5.88 days (range: 4–10 days). Mean duration of full diet resumption was 2.12 days (range: 2–5 days). The median follow-up period was 26 months. Postoperative liver function tests and serum amylase levels returned to normal within 1 year. Two (1.9%) patients required blood transfusions because extensive oozings from intramural micro-vessels of CDCs. Two (1.9%) patients encountered duodenal injuries because of severe adhesions. The duodenal repairs were conducted by double-layer 5-0 PDS running sutures. One (0.9%) patient with giant CDC had fluid collection because of extensive dissection of intrapancreatic segment of CDC. He was cured by 10 days drainage. None of patients had bile leak, anastomotic stenosis, cholangitis, intrahepatic reflux, pancreatic leak, pancreatic calculi formation, pancreatitis, Roux-loop obstruction, or adhesive intestinal obstruction.

Conclusion: SILH is safe and effective for selected perforated CDCs in experienced hands.

(S026) DEVELOPMENT AND IMPLEMENTATION OF A MANDATORY SIMULATION-BASED NATIONWIDE PEDIATRIC LAPAROSCOPIC TRAINING PROGRAM

Oral Abstracts

Jean Breaud, PhD¹, Isabelle Talon, MD², Philine De Vries, MD³, Laurent Fourcade, PhD⁴, Julien Rod, MD⁵, Guillaume Podevin, PhD⁶,
¹Hopitaux Pédiatriques de Nice CHU-Lenval – Université de Nice Sophia Antipolis (France), ²Hopitaux Universitaire de Strasbourg (France), ³Hopitaux Universitaires de Brest (France), ⁴Hopitaux Universitaire de Limoges (France), ⁵Hopitaux Universitaires de Caen (France), ⁶Hopitaux Universitaires d'Angers (France)

While simulation based training is acknowledged as an important component of surgical education, to our knowledge, there exist no mandatory national programs. We describe the processes involved in the development and implementation of a mandatory, national, simulation-based pediatric laparoscopic training program in France. The process took several years from inception, to implementation, and addresses cognitive skills, technical skills, communication, collaboration, leadership, advocacy, and professionalism.

Aim of the work: Review the important elements in the creation and implementation of the first national program in laparoscopic and scenario-based simulation for pediatric surgical trainees in France.

Methods: We review the timeline and crucial elements involved in the creation of the inaugural simulation-based pediatric surgical training program in France.

Results: 40 residents attend a yearly, mandatory, two day simulation-based course. Scenario-based simulation is used to cover cognitive skills, as well as issues surrounding communication, collaboration, leadership, advocacy, professionalism and team building. Traditional simulators are used for upskilling of psychomotor skills.

Conclusion: Important lessons have been learned in the creation and implementation of France's inaugural, nation-wide, mandatory simulation-based program. The introduction a national simulation-based training program for all new pediatrics surgeons in France will help ensure a measurable level of competence, and allow targeting the highest possible level of expertise among all trainees.

(S027) PEDIATRIC SURGICAL EDUCATION: THE VALUE OF BASELINE SKILLS' ASSESSMENTS FOR EDUCATIONAL COURSES

Katherine A Barsness, MD¹, Holger Till, MD², Philipp Szavay, MD³, Maria Marcela Bailez, MD⁴,
¹Lurie Children's Hospital of Chicago, ²LKH-Univ. Klinikum Graz, ³Kinderspital Luzern, ⁴J. P. Garahan Pediatric Hospital

Background: Mastery learning (ML) is an educational approach that has two central tenets, 1) educational excellence is expected and can be achieved by *all* learners, and 2) little or no variation in measured outcomes will be seen among learners in a mastery environment. While achievements are expected to be equivalent among learners, the *time to achieve* mastery is not uniform. Of the seven features of ML, the first critical step is the performance of baseline testing of existing skills. In this study, we sought to 1) assess baseline laparoscopic suturing skills, 2) determine the impact of skills assessment, and 3) determine the correlation of independently assessed skills with self-reported experience and comfort levels for pediatric MIS, among a cohort of international pediatric surgeons.

Methods: IRB-approved prospective data were collected at a 2-day hands-on course for advanced neonatal and infant minimally invasive surgery (MIS), offered to practicing pediatric surgeons. Thirty-five surgeons from 13 different countries completed a pre-course self-assessment of experience (novice, experienced, expert) and comfort level with a variety of advanced neonatal MIS procedures (range 0–2, 0=not comfortable, 2=very comfortable). Participant's intracorporeal suturing skills were then assessed by one of four course faculty members, using a modified GOALS assessment tool (range 4–32, 4 = low, 32 = high). Participants were then assigned to station work-groups according to the total skills score. Correlation coefficients (r) were calculated using bivariate regression analyses, P<0.05 significant.

Results: Thirty-one of 35 participants had complete self-report and suturing assessment data. Self-reported experience levels were "novice" (N=20) and "experienced" (N=11), with no "expert" experience levels reported. Fifteen participants were "not comfortable", 13 were "somewhat comfortable" and 3 were "very comfortable" with intracorporeal suturing in neonates. Total time to complete skills assessments on 35 participants was 70 minutes. The mean total skills score was 17.9 (range 4–32). Four participants scored the minimum 4 points, and one participant scored the maximum 32 points allowed. There was no correlation between participants' total skills score and self-rated experience levels (r=0.16; P=0.38) or self-reported comfort level with neonatal intracorporeal suturing (r=0.29, P=0.11).

Conclusion: The addition of baseline skills assessment to a 2-day hands-on neonatal minimally invasive surgery course allowed course faculty to more accurately assign course participants to workgroups comprised of other surgeons with similar skills. The assessments also assisted faculty to identify true novices, and move them out of advanced skills stations into basic suturing stations,

Oral Abstracts

to better meet the needs of the novice participants. There was no correlation between self-reported experience/skills and independently assessed skills, strengthening the argument for baseline testing for all simulation-based educational courses. Future work will focus on data to support/refute the subsequent 6 steps of mastery learning, aiming for full implementation of relevant mastery learning education for future hands-on courses offered through IPEG.

(S028) UMBILICAL INCISION COMPLICATION RATES FOLLOWING SINGLE INCISION PEDIATRIC ENDOSURGERY – LONG TERM FOLLOW-UP

Ilan I Maizlin, MD, Laura V Bownes, MS, Elizabeth A Beierle, MD, Robert T Russell, MD, MPH, Mike K Chen, MD, David A Rogers, MD, MHPE, Colin A Martin, MD, Scott A Anderson, MD, Vincent E Mortellaro, MD, Children's Hospital of Alabama, University of Alabama at Birmingham

Introduction: The advantage of single-incision pediatric endosurgery (SIPES) over traditional laparoscopy is the use of a single access site. Because the approach requires a larger skin and fascial incision at the umbilicus, recent meta-analyses of single-port access in adults raised subjective concerns regarding consequent incision site complications and cosmesis, as compared to the 4–6% incision complication and 1–3% hernia rates reported in the literature for traditional multi-port laparoscopy. No large scale evaluations of SIPES umbilical access site complications in children currently exist. The purpose of this study was to perform long-term (5-year) follow-up for patients undergoing SIPES to determine the rates and types of umbilical site complications. We hypothesized that the rates of these complications would be comparable to those of traditional multi-site laparoscopy.

Methods: Following IRB approval, a retrospective chart review was performed for all patients who underwent SIPES at least 5 years ago (2009 to 2011). Patient demographics and operative details were recorded. All patients or guardians were then prospectively contacted for information regarding incision site complications, as well subjective scar assessment in the form of binary (Yes/No) response to satisfaction with incision site appearance.

Results: During the time period studied, 527 children were treated via single incision laparoscopic approach. On follow-up, 93% of those patients were successfully contacted, resulting in a cohort of 490 patients. Median age was 10.2 years (range 3 months –16 years). The most common procedure performed was appendectomy (58.5%), followed by cholecystectomy (15.3%), pyloromyotomy (7.6%), splenectomy (5.9%) and gynecologic procedures (2.6%). During the follow-up period (5 to 7 years postoperative), fifteen patients (3.06%) experienced surgical site infections, as defined by clinical indications of blanching erythema or purulent discharge. Thirteen of the occurrences (86.7%) were diagnosed within 30 days of procedure. Two of the infections required bedside drainage, while all others resolved following a course of oral antibiotics. Despite the umbilical incision size, only 5 incisional hernias (1.02%) were diagnosed, all of which underwent uneventful surgical repairs. In addition, three patients presented with complaints of granulation tissue at the incision site – 2 patients within 30 days of surgery and 1 patient two years after procedure. Further stratification of the umbilical site complication rates by type of procedure is demonstrated in Table 1. In the subjective evaluation of the incision site, all but one patient's family (99.8%) expressed satisfaction with the appearance of the umbilical incision site.

Conclusions: To our knowledge, this study represents the first long-term follow-up study of pediatric SIPES procedures. Long-term follow-up revealed a low rate of incision-associated complications, with only 1% of cases resulting in hernias and requiring surgical intervention. Furthermore, the incision resulted in a satisfactory cosmetic outcome as perceived by the majority of the patients. As such, SIPES appears to result in incision-associated hernia and infection rates comparable to traditional multi-port laparoscopy.

Table 1: Stratification of umbilical site complication rates by type of procedure.

Procedure	Infection (%)	Hernia (%)
Appendectomy (n=287)	7 (2.44%)	2 (0.70%)
Cholecystectomy (n=76)	3 (3.94%)	1 (1.31%)
Pyloromyotomy (n=37)	1 (2.70%)	1 (2.70%)
Splenectomy (n=29)	1 (3.48%)	-
Gynecologic (n=13)	1 (7.66%)	-
Miscellaneous (n=48)	2 (4.16%)	1 (2.08%)
Total (n=490)	15 (3.06%)	5 (1.02%)

(S029) SINGLE-SITE ROBOTIC VS. MULTIPORT LAPAROSCOPIC CHOLECYSTECTOMY IN PEDIATRICS

Astrid R Soares Medina, MD, Dominic Papandria, MD, Victoria K Pepper, MD, Marc P Michalsky, MD, Karen A Diefenbach, Nationwide

Oral Abstracts

Children's Hospital

Purpose: While robotic surgery has gained wide acceptance in the adult surgical population, there continues to be a relative paucity of data examining its use in pediatric general surgery. Single site robotic-assisted cholecystectomy (SSRC) has distinguished itself as an attractive alternative to the standard multiport laparoscopic cholecystectomy (MPLC) approach and offers several potential benefits including enhanced cosmesis. The aim of this comparative study was to establish the safety and efficacy of SSRC in the pediatric population compared to MPLC.

Methods: A retrospective comparative analysis of 75 subjects undergoing either MPLC (Group 1; n=50) vs. SSRC (Group 2; n=25) performed at a pediatric tertiary care center was conducted between December 2014 and June 2016. Data collection included demographic variables (age, sex, race, BMI and comorbid disease), indication for surgery, perioperative complications, post-operative hospital length of stay (LOS) and 30-day outcomes (i.e. ER visits, hospital readmissions and documented telephone contact). Analysis was performed using chi-squared, Fisher's exact and Wilcoxon Rank-Sum tests.

Results: As seen in Table 1, median age of subjects in Group 1 (MPLC) was slightly younger compared to Group 2 (SSRC; 15 vs. 16 y respectively, $p < 0.05$) however, both groups had similar distributions for sex, race, and/or indication for cholecystectomy. The prevalence of documented comorbid disease was similar between groups. Subjects undergoing SSRC were more likely to be severely obese (BMI $\geq 99^{\text{th}}$) compared to those undergoing MPLC (40% vs. 10% respectively, $p < 0.01$). Although comparative analysis showed a significantly longer operative time during robotic cholecystectomy (106 min vs. 63 min), subjects undergoing SSRC were more likely to be discharged to home on the day of surgery compared to MPLC subjects (28% vs. 8% respectively, $p < 0.05$). Overall perioperative complication rates were similar between both groups (10% LC vs. 4% SSRC, $p = 0.6$) and included a single common bile duct injury in the MPLC group. No significant differences in 30 day post-operative outcomes (ER visits, hospital readmissions and telephone contact) were observed.

Discussion: We have shown that SSRC is equally safe when compared to MPLC in the pediatric population. Although the operative time was longer in the SSRC group, this may be a reflection of several confounding variables including surgeon experience and/or patient selection. Further prospective studies are required to support these preliminary findings, evaluate comparative cost utilization, and further explore potential benefits compared to the standard multiport laparoscopic approach.

Table 1: patient demographics, operative time, hospital LOS and 30-days outcome:

	MPLC (n=50)	SSRC (n=25)	p
Age, median (IQR)	15 (14, 16)	16 (15, 17)	0.0473
Female, n (%)	37 (74)	18 (72)	0.8535
Indication, n (%)			0.391
Symptomatic cholelithiasis	31 (62)	18 (72)	
Biliary dyskinesia	19 (38)	7 (28)	
Elevated Body Mass Index (BMI), n (%):			
Severe obesity (BMI $\geq 99^{\text{th}}$)	5 (10%)	10 (40%)	<0.01
Obesity (BMI $\geq 95^{\text{th}}$)	14 (28%)	11 (44%)	0.1659
Operative time (min) median (IQR)	63 (55, 74)	106 (86, 119)	<0.0001
Hospital LOS (h) median (IQR)	26.4 (24, 31.2)	26.4 (16.8, 28.8)	0.5356
Hospital stay, n (%):			
Same day d/c to home	4 (8)	7 (28)	0.035
30 days outcome, n (%):			0.5854
ER visits	4 (8%)	4 (16%)	
Hospital readmission	1 (2%)	1 (4%)	
Phone calls complaining of pain	9 (18%)	7 (28%)	

(S030) ONE-TROCAR LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE OF PEDIATRIC INGUINAL HERNIA USING AN INNER TWO-HOOKED CANNULA WITH HYDRODISSECTION

Suolin Li, MD, Xuelai Liu, PhD, Chuan Fei, MD, Yongting Zhang, MD, The Second Hospital of Hebei Medical University

Background: Many different laparoscopic techniques for pediatric inguinal hernia (PIH) have been developed, with a trend to-

Oral Abstracts

ward increasing use of extracorporeal knotting and decreasing use of working ports. Laparoscopic percutaneous extraperitoneal closure (LPEC) with variable devices seems to be one of the most simple and reliable methods. We describe our modifications of one-trocar laparoscopic hernia ring ligation using an inner two-hooked cannula with extraperitoneal hydrodissection and evaluate the feasibility and safety of this procedure.

Patients and Methods: 962 children with 1211 inguinal hernias were treated with one-trocar LPEC. Under laparoscopic visualization through a single umbilical trocar, an inner two-hooked cannula with a nonabsorbable suture was inserted at the corresponding point of the internal ring, which it could be readily kept in an identical subcutaneous path. The orifice of the hernia defect was lassoed extraperitoneally by the suture that was introduced into the abdomen on one side and withdrawn on the opposite side using the cannula around the internal ring with the hydrodissection technique. PIHs with an internal ring more than 1.5 cm were accepted the medial umbilicus fold flap reinforcement after LPEC.

Results: All hernia repairs were successfully performed by LPEC, 713 patients had unilateral inguinal hernia repairs and 249 patients underwent bilateral inguinal hernia repairs. Of them, additional medial umbilical flap reinforcement was necessary in 58 huge hernias and an assisted grasping instrument in 16 cases due to omental adhesion or sliding hernia. Mean operating time for unilateral and bilateral inguinal hernia repairs were 10.8 ± 2.1 min and 13.7 ± 2.3 min, respectively. There were no intra-operative complications and no wound infection, iatrogenic cryptorchidism or testicular atrophy were postoperatively found during 6 to 24 months' follow-up period in 954 children. Only one recurrence, two hydroceles and three suture granuloma formations were observed to date.

Conclusions: LPEC using an inner two-hooked cannula with preperitoneal hydrodissection as a handy technique has proved to be a safe and effective in the treatment of inguinal hernia in children. It is invisible scarring and good cosmetic results and therefore is a worthy choice for pediatric inguinal hernia.

Oral Abstracts

(S031) INTERNATIONAL SURVEY ON ROBOT-ASSISTED SURGICAL TECHNIQUES UTILIZATION IN PEDIATRIC SURGERY

Ilan I Maizlin, MD¹, David C Yu, MD², Colin A Martin, MD¹, Mike K Chen, MD¹, Robert T Russell, MD, MPH¹, ¹Children's Hospital of Alabama, University of Alabama at Birmingham, ²Louisiana State University Health Sciences Center

Introduction: Robotic technology has grown rapidly and has had a transforming effect on many adult surgical subspecialties. However, limited information is available on the effect of this technology in pediatric surgery. Consequently, the International Pediatric Endosurgery Group (IPEG) Emerging Technology Committee expressed interest in gauging worldwide utilization of the robot in pediatric settings. We aimed to assess robotic technology utilization in pediatric surgery, perceptions on pediatric robotic surgery, and the extent of robotic surgery education among pediatric surgeons throughout the world.

Methods: An anonymous, web-based survey was designed to query utilization of the robot in pediatric surgery, perception of the utility of the robot, and incorporation of the robot in training. All sections were composed of multiple-choice 5-point Likert-scales, analyzed using a Friedman test. Following approval by the IPEG Research Committee, the survey was sent to all IPEG members.

Results: One hundred and two members responded to the survey, representing 26 different countries on five continents. 84% of respondents are involved in the training of surgical residents and 66% in the training of pediatric surgery fellows. While two thirds of respondents indicated the presence of a robotic surgical system in their facility, less than a quarter utilize the robot in their practice and only 14% use it more than 10 times per year. While the percentage of facilities with a robot was highest in North-America (73% vs. 47% in rest of the world), the rate of robot utilization was actually significantly higher in Europe and much lower in Asia. The most common robot-assisted surgeries were foregut(83%), hepatobiliary(79%), urologic(71%), and colorectal(67%) procedures. Among programs not utilizing the robotic surgical system, the most common reasons provided were lack of clear supportive evidence and incompatibility of instrument size to pediatric patients. Almost two-thirds of responders (62%) reported some training in robot-assisted surgery, though the rate of training was significantly higher in Europe and less than half that rate in Asia and South-America. While 61% of members believe that there is a future role for robot-assisted surgery in children, less than a third indicated that robotic training should play an important part in pediatric surgery education and an additional 11% believe that such procedures actually interferes with surgical training. Consequently, while 43% of trainees receive robotic training, most receive the training outside of pediatric surgery institutions. Moreover, only 14% of trainees participate in live procedures and only 12% operate the console. Only 11% of responding institutions are currently engaged in research of robotic-assisted surgical techniques in the pediatric population, with most of the research being conducted in North-America. Table 1 further delineates the respondents' perceptions on robotic surgery utilization in pediatric surgery.

Conclusions: Most pediatric surgeons have access to a robotic surgical system within their facility, but few utilize the technology in their practice. Current barriers to utilization include lack of convincing supportive evidence, and lack of appropriate scaling of instruments. As such, further investigation is required into both the technology's potential benefits in the pediatric population and its role in pediatric surgery training.

Oral Abstracts

Table 1: Perceptions on robotic surgery utilization in pediatric surgery.

	(1) Strongly Disagree	(2) Disagree	(3) Neither Agree nor Disagree	(4) Agree	(5) Strongly Agree	Mean 1-5 aggregate
Factors for lack of robot utilization						
Unclear supportive evidence	0.9%	5.9%	10.8%	32.5%	49.9%	4.246
Instrument size	3.1%	6.2%	7.2%	30.9%	52.6%	4.237
Set up and docking time	9.5%	15.4%	12.9%	32.5%	29.7%	3.575
Longer procedure	10.3%	14.4%	9.6%	40.3%	25.5%	3.562
System is currently cost-prohibitive	5.3%	18.6%	20.6%	30.9%	24.7%	3.513
Instrument range	6.2%	19.8%	27.1%	28.1%	18.8%	3.335
System size in the operating room	17.2%	22.6%	33.3%	19.4%	7.5%	2.774
Lack of availability of robot	23.2%	29.4%	12.3%	22.0%	13.2%	3.726
Lack of access to training or simulation	27.9%	30.3%	17.4%	17.4%	7.0%	2.453
Perceptions on Robotic Surgery						
There is future role for robot minimally invasive surgery in children	1.0%	8.0%	30.0%	40.0%	21.0%	3.720
Availability of robot procedures will become important marketing tool for a pediatric surgery practice	10.0%	18.0%	29.0%	39.0%	4.0%	3.090
Robot-assisted procedures will replace NOTES (Natural Orifice Transluminal Endoscopic Surgery)	9.2%	9.2%	18.4%	27.1%	36.1%	3.717
Robot-assisted procedures will replace SILS (Single Incision Laparoscopic Surgery)	9.1%	10.1%	24.2%	27.3%	29.3%	3.576
Robot-assisted procedures will replace conventional laparoscopy	20.0%	44.0%	23.0%	10.0%	3.0%	2.320
Robot training needs to play important part in pediatric surgery training	12.0%	10.0%	9.0%	25.0%	44.0%	3.790
I will be likely to adopt more robotic procedures when the instrumentation is smaller	2.0%	10.1%	14.1%	32.4%	41.4%	4.011
I will be likely to adopt more robotic procedures when the cost per case is reduced	2.0%	12.1%	21.2%	43.5%	21.2%	3.698

(S032) LONG-TERM OUTCOMES OF TRANSORAL INCISIONLESS FUNDOPLICATION IN A HIGH-RISK PEDIATRIC POPULATION

Jason O Robertson, MD, MS, Marcus D Jarboe, MD, University of Michigan/C.S. Mott Children's Hospital

Purpose: Nissen fundoplication is the standard for operative management of GERD. However, in children, surgical complications, pain, recurrent GERD and/or gas-bloat are common following this procedure and may be significantly increased for re-do fundoplications and for children with neurological impairment. Transoral incisionless fundoplication (TIF) was performed as a minimally invasive alternative to potentially address some of these issues. Long-term outcomes have never been reported in children who have undergone this procedure.

Methods: 11 pediatric patients underwent TIF at our institution between 1/2008 and 9/2010. A retrospective chart review was performed to determine long-term freedom from symptoms, reoperation and antireflux medications. Average follow-up was 4.78 years.

Results: The average age at the time of surgery was 16 years old, and the mean weight was 45.4 ± 13.9 kg. 63.6% (7/11) of patients had one or more prior operations for reflux. 81.8% (9/11) had severe neurologic impairment, 72.7% (8/11) received their primary feeds through a g-tube at the time of surgery, and one patient (9.1%) had a history of congenital tracheoesophageal fistula. Preoperative presenting symptoms and recurrent/persistent symptoms at last follow-up are documented in Table 1. Overall, recurrence of reflux symptoms occurred in 54.5% (6/11) of patients. Four of the 11 required an additional operation. One patient went on to require a Nissen and three (27.3%) subsequently required a disconnect operation. The three patients that required a disconnect had all failed a previous Nissen, and the patient that subsequently required a Nissen also had recurrence of symptoms following that operation. Among the patients that had previous operations before the TIF, 71.4% (5/7) had recurrent reflux symptoms. Among patients without a prior fundoplication, long-term success was seen in 75% (3/4) of patients. At last follow-up, 81.8% (9/11) of patients were still on antireflux medications, and 18.2% (2/11) were on two antireflux medications. One patient died of causes unre-

Oral Abstracts

lated to the operation without recurrent reflux at 5 months postoperatively. There were no technical failures of the wrap identified, but when re-operation was needed the wraps were noted to be subjectively difficult to takedown.

Conclusions: This is the first report of long-term outcomes for TIF in a pediatric population. This procedure is a low-risk alternative to Nissen fundoplication. While the recurrence rate in this study was quite high, the patient population was suboptimal, and these data suggest that prior antireflux operations should be a relative contraindication to TIF. Recurrent reflux was high in this difficult population of primarily neurologically impaired pediatric patients, but the procedure nevertheless provided a durable, minimally invasive alternative for a subset of patients.

Table 1. Reflux symptoms

Gagging/Dysphagia	72.7% (8/11)	54.5% (6/11)
Feeding Intolerance	18.2% (2/11)	27.3% (3/11)
Retching/Emesis	45.5% (5/11)	27.3% (3/11)
Chest/Abdominal Pain	12.2% (2/11)	18.2% (2/11)
Aspiration	63.6% (7/11)	18.2% (2/11)
Chronic Cough	45.5% (5/11)	18.2% (2/11)

(S033) ROBOT-ASSISTED LAPAROSCOPIC DISMEMBERED URETERAL REIMPLANT WITH AND WITHOUT URETERAL TAPERING FOR THE REPAIR OF PEDIATRIC PRIMARY OBSTRUCTED MEGAURETER: ANALYSIS OF TECHNIQUE AND COMPARISON OF SURGICAL OUTCOMES WITH AN OPEN COHORT

Daniel B Herz, MD, Children's Hospital at Erlanger

Introduction: Despite popularity of robot assisted surgery in pediatric urology, robot-assisted laparoscopic dismembered ureteral reimplantation (RALDUR) for repair of pediatric primary obstructed megaureter (POM) is not widely reported.

Methods: We present a retrospective analysis of a series of children who had RALDUR with and without ureteral tapering and compare this group to a historically well matched cohort of children who had open dismembered ureteral reimplant (ODUR) with and without ureteral tapering to treat primary obstructed megaureter (POM). We hypothesized that the surgical outcomes in the RALDUR group are the same as the ODUR group. We provide a comparative analysis of patient demographics and clinical characteristics, surgical technique, surgical times, and clinical outcomes of these matched groups. We also analyze and present the learning curve and lessons learned in the RALDUR group.

Results: A total of 15 children had RALDUR over a 6-year period. The median age was 5.2 years, and 80% were male. The open cohort had 22 children who had ODUR over an 8-year period. The ODUR group median age was 4.6 years, and 72% were male. Open and robotic groups had similar gender, median age, presentation, indication for operation, pre-operative ipsilateral differential renal function, and pre-operative ureteral diameter. All robotic surgeries were technically successful without open conversion. We define surgical success as the successful treatment of ureteral obstruction in the absence of significant complication, reoperation, or development of de-novo vesicoureteral reflux. In the RALDUR group, overall success was 13/15 (86.7%) with 14/15 (93.3%) having successful treatment of primary ureteral obstruction. One child had post-operative pyonephrosis that required percutaneous nephrostomy, and ultimately needed nephrectomy for severe loss of renal function. Ten children in the RALDUR group and 16 children in the ODUR group required ureteral tapering. In the ODUR group, overall success was 19/22 (86.4%) and 20/22 (90.9%) had relief of surgical obstruction. Two children required second surgery for obstruction. VUR occurred in 1 child in each group. Complications were similar between the two groups. In those in which matching data were available, the RALDUR group had a lower hospital length of stay and less total mg/kg narcotic usage. The RALDUR group had higher overall cost due largely to longer operative times and non-reusable equipment. Although after a learning period, operative times were not significantly different between the RALDUR and ODUR groups.

Conclusion: RALDUR with and without ureteral tapering is feasible, safe, and effective with equal surgical outcomes to ODUR. Higher RALDUR costs may be limit wide spread application of this minimally invasive surgical technique

(S034) DEVELOPMENT OF A SURGICAL ROBOT SYSTEM TO SUPPORT PEDIATRIC MINIMALLY INVASIVE SURGERY IN NARROW SPACE

Oral Abstracts

Satoshi Ieiri, MD, PhD, FACS¹, Yo Kobayashi, PhD², Tomoaki Taguchi, MD, PhD, FACS³, Masakatsu Fujie, PhD², Makoto Hashizume, MD, PhD, FACS⁴, ¹Department of Pediatric Surgery, Kagoshima University, ²Faculty of Science and Engineering (Research Institute of Science and Engineering), Waseda University, ³Department of Pediatric Surgery, Kyushu University, ⁴Department of Advanced Medicine and Innovative Technology, Kyushu University

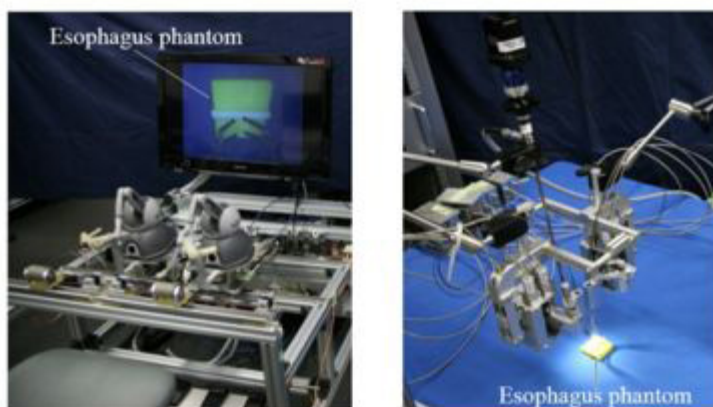
Introduction: Recent years have seen a growing demand for minimally invasive treatments. Minimal invasiveness is also important in pediatric surgery, and Minimally Invasive Surgery (MIS) has been widely used in this field. Minimally invasive surgery involves performing surgical procedures via a small incision in patient's body. The objective of this study was to develop a surgical robot specifically for operating in the restricted narrow spaces inherent to minimally invasive surgery.

Methods: We developed a master-slave robot system allowing accurate and intuitive suturing manipulation within a restricted narrow space (Fig.1). A Selective Compliance Assembly Robot Arm (SCARA) manipulator was used for the robot, as this uses a small mechanism relative to the range of motion. The manipulator consists of an arm part and an actuator part, and has 3 rotational DOF around the Z axis and 1 linear DOF along the Z axis (Fig.2). Figure 3 shows the SCARA manipulator and the DOF configuration. Each rotation joint is connected to a reduction gear located above the actuator part. The reduction gear is connected to a motor, provided separately from the robot, via a flexible shaft 3.0 mm in diameter. The rotation joints are labelled joint 1, joint 2 and joint 3 from the actuator outwards. Harmonic drives were used for the reduction gears (reduction ratio 30:1). Rotation of the each joint is driven independently of the rotation of the other joints due to the belt transmission mechanism. These characteristics mean that the orientation of each link relative to the world coordinates depends only on the rotational angle of the joint actuating the link, and is unaffected by the rotational angle of the other joints. This design therefore makes it unnecessary to coordinate the motion of two or more joints and consequently achieves highly precise and stable movement. We then tested movement accuracy of the surgical robot in suturing using a latex membrane as the suturing target (Fig.4). The experiment tested whether the surgical robot could successfully suture an esophagus phantom in narrow space. Finally, we performed suturing in a realistic in vivo surgical environment simulated using pig intestine (Fig.5).

Results: In terms of movement accuracy, average needle insertion error was 0.35 mm (standard deviation, 0.17 mm) and surgeons could adjust needle direction using the left and right tool manipulators. Suturing of the phantom was successfully performed by all 3 surgeons. Finally, surgeons were able to operate the robot to grasp and lift the pig intestine in vivo, perform displacement, grip and adjust the direction of the suture needle, and suture the intestine.

Conclusions: The master-slave robot allowed accurate and intuitive work in narrow spaces. The experiment demonstrated that the robot could operate with sufficient accuracy. The phantom experiment showed that the robot had the accuracy, controllability and intuitiveness necessary for suturing and ligation. The in vivo results suggested that suturing was possible in real organs within a target narrow space.

Figure 1



Oral Abstracts

Figure 2

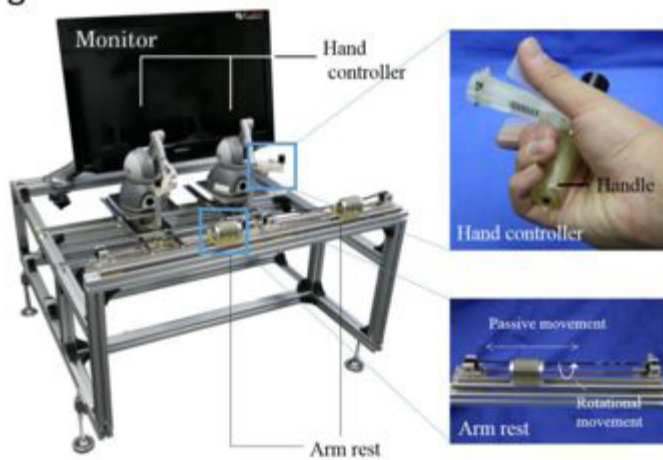
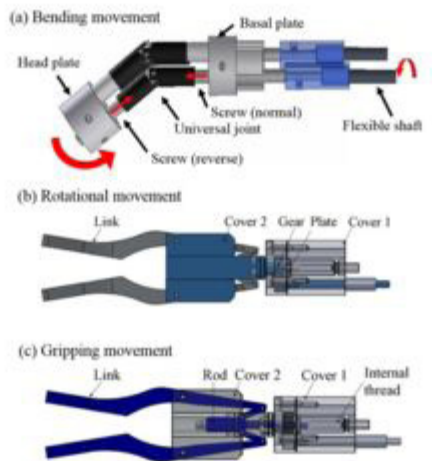


Figure 3



Oral Abstracts

Figure 4

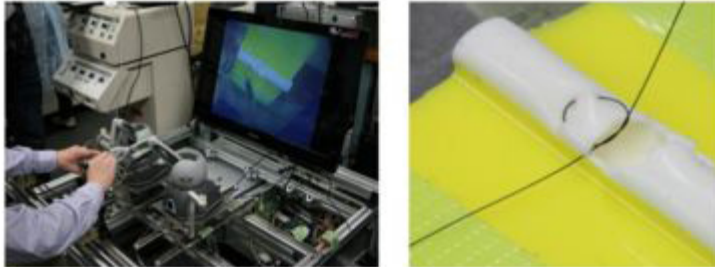
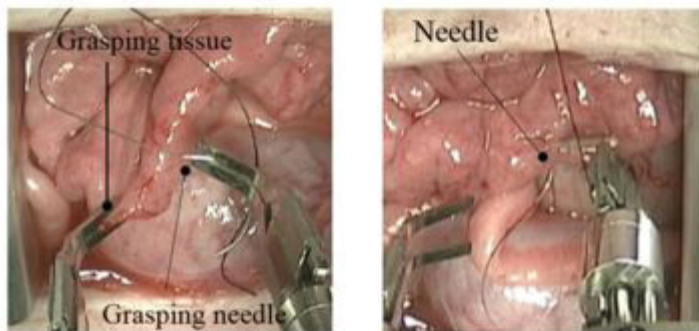


Figure 5



(S035) COMPLICATIONS AFTER APPENDECTOMY FOR APPENDICITIS: DOES BMI PERCENTILE OR LAPAROSCOPIC APPROACH MATTER?

Joseph R Esparaz, MD¹, Breanna M Elger, BS², Melissa G Medina, MD¹, Robert C Kanard, MD², Mark J Holterman, MD, PhD¹, Benjamin Kindred, BS³, Erlena Josifi, MS³, Carley E Demchuk, BA³, Jeremy S Mcgarvey, MS⁴, Richard H Pearl, MD¹, Charles J Aprahamian, MD¹,
¹Department of Surgery, University of Illinois College of Medicine at Peoria, ²Children's Hospital of Illinois at OSF Saint Francis Medical Center, ³University of Illinois College of Medicine at Peoria, ⁴Healthcare Analytics, OSF Innovation

Introduction: There is mixed literature regarding risk factors related to surgical complications in children. This study evaluated the impact of age and gender-specific body mass index (BMI) percentile on complications and hospital resource utilization in treating pediatric appendicitis. Secondarily, we compared two different single incision techniques, single incision pediatric endosurgery (SIPES) and transumbilical laparoscopic appendectomy (TULA), with conventional laparoscopy in treating pediatric appendicitis at a single institution.

Methods: A retrospective review of 440 consecutive pediatric patients who underwent an appendectomy from March 2010 to December 2015 was performed. Both complicated and noncomplicated appendicitis were included. Laparoscopic approach was at the

Oral Abstracts

discretion of the surgeons; 185 underwent single-incision laparoscopic appendectomies, 68 by SIPES and 117 by TULA. Specifically, SIPES uses a commercially available triport sleeve in which multiple laparoscopic instruments can be utilized via a single incision. TULA is a laparoscopic assisted approach where the appendix is delivered via the umbilicus and removed in an extracorporeal fashion with suture ligation followed by amputation. A standard technique was used for closure. Variables studied included age, gender, height, weight, diagnostic imaging modality, antibiotic administration, clinical characteristics, operative technique, and operative duration. Outcomes assessed included length of stay and postoperative complications, including surgical site infection, intraabdominal abscess, readmission, and unexpected intubation. BMI was calculated and BMI percentile was identified according to age and gender. Patients were categorized with BMI percentiles according to CDC definitions; obese (BMI > 95th percentile), overweight (BMI 85th–94th percentile), and underweight (BMI < 5th percentile). Univariate and multivariate logistic models, linear regressions, and chi-square analysis were used to test significance of associations.

Results: Of all appendicitis encounters, 30.5% were complicated. In a multivariate analysis adjusting for surgical technique, age, sex, and surgeon, BMI was not a significant risk factor for 30-day postoperative complications when comparing the BMI categories ($p = 0.54$). The length of surgery was a more predictive measure in determining the likelihood of postoperative complications ($p < 0.001$). Both single incision techniques had a significantly shorter operative time (means 32.5 and 37.9 minutes) than multiple incision laparoscopic appendectomies (47.1 minutes). Utilization of single incision techniques significantly decreased the length of surgery ($p < 0.001$) and indicates a decreased complication rate. SIPES had an overall complication rate of 11.8%, TULA 12.8% and the conventional 3-trocar technique 14.9%.

Conclusions: Obesity, based on BMI percentile, was not found to be an independent risk factor for appendicitis complications. There is a clear relationship with length of surgery and complication rate. At our institution, both single incision techniques had the greatest impact on shorter operative times, inferring that these techniques have a lower complication risk than conventional laparoscopy. Specifically, SIPES had a lower complication rate than TULA, suggesting that the multiport single incision sleeve secondarily acts as a wound barrier in pediatric appendicitis.

(S036) SURGICAL OUTCOME ANALYSIS OF PNEUMOVESICOSCOPIC URETERAL REIMPLANTATION AND ENDOSCOPIC DEXTANOMER / HYALURONIC ACID (DX/HA) INJECTION FOR PRIMARY VESICoureTERAL REFLUX IN CHILDREN – A 12-YEAR MULTICENTRE REVIEW

Kly Chung, Dr¹, Jdy Sihoe², Jws Hung¹, Ycl Leung², Pyh Tam³, KH Lee³, Nsy Chao², Mwy Leung¹, ¹Queen Elizabeth Hospital, ²United Christian Hospital, ³Prince of Wales Hospital

Objective: Vesicoureteral reflux (VUR) is a common condition associated with childhood urinary tract infection (UTI), which may lead to chronic renal failure and hypertension. Different anti-reflux approaches were advocated with differences in morbidity and success. The aim of this study is to review and analysis the surgical outcomes of pneumovesicoscopic ureteral reimplantation and endoscopic injection of dextranomer / hyaluronic acid (Dx/HA) in 3 tertiary referral centres.

Materials and Methods: The medical records of 215 patients (159 boys and 56 girls) for a total of 323 ureters underwent surgical interventions for primary VUR with pneumovesicoscopic ureteral reimplantation and Dx/HA injection from February 2002 to August 2014 were reviewed. Data on baseline demographics, pre-operative symptoms, radiological imagings and post-operative outcomes were reviewed. All results with p value ≤ 0.05 were regarded as statistically significant.

Results: The mean age at operation was 3.33 and 4.63 years for reimplantation and Dx/HA injection respectively ($p=0.08$). There were 234 ureters underwent Dx/HA injection (1–3 injections) and 92 ureters underwent pneumovesicoscopic ureteral reimplantation with mean pre-operative VUR grading of 3.12 and 4.18 respectively ($p=0.0001$). The overall VUR downgrading and resolution rates were both significant higher in reimplantation than Dx/HA injection (97.8% vs 78.6% $p=0.0001$ & 84.3% vs 65% $p=0.0011$). Further sub-group analyses across the different VUR gradings showed higher downgrading and resolution rates in reimplantation group than Dx/HA injection for grade 4 (100% vs 81% $p=0.0147$ & 82.4% vs 63% $p=0.0411$) and grade 5 VUR (94.6% vs 50% $p=0.0022$ & 81.6% vs 40% $p=0.0256$). No significant differences in downgrading and resolution rate were observed in grade 1 to 3 VUR. Dx/HA injection was associated with shorter operation time (41.5 min vs 147.5 min $p<0.001$), less post-op analgesic usage ($p=0.049$) and shorter hospital stay (1.06 days vs 4.44 days $p<0.0001$). There was one vesicoureteric junction stricture post reimplantation required a re-operation, otherwise no major complications were identified in both groups. The mean follow-up time was 37.85 months and 57.25 months for Dx/HA and reimplantation group respectively ($p=0.004$). There was no significant difference in the rate of subsequent UTI development during follow-up ($p=0.8$).

Conclusions: Both Dx/HA injection and pneumovesicoscopic ureteral reimplantation are safe and effective treatment for VUR. Reimplantation is associated with significantly higher VUR downgrading and resolution rates than Dx/HA injection especially in the

Oral Abstracts

higher grade VUR while Dx/HA injection has significantly shorter operation time, lower post-op analgesic usage and shorter hospital stay.

(S038) COMPARISON OF ROBOTIC AND LAPAROSCOPIC PYELOPLASTY IN INFANTS: A MULTI CENTER STUDY

Amos Neheman, MD¹, Abd Elhalim Darawsha, MD², Paul Noh, MD³, ¹Asaf – Harofeh medical center, Zerifin, Israel, ²Meir medical center, Kfar-Saba, Israel, ³Cincinnati childrens hospital medical center, Ohio, USA

Laparoscopic pyeloplasty (LP) in children is well established and considered by some the gold standard.

Robotic assisted pyeloplasty (RP) has replaced laparoscopic pyeloplasty in many centers.

While the safety and efficacy of RP and LP has been well-established in older children, a paucity of evidence is available in infants.

In this study we compare our experience between robotic to laparoscopic pyeloplasty.

Materials and Methods

- A retrospective study was performed for patients less than 1 year who underwent RP and LP at two deferent institutes between October 2009 and February 2016.
- Demographic information and perioperative data were abstracted from their medical records and compared with Fisher's exact or Mann-Whitney U test.
- Our primary outcome was an improvement in hydronephrosis on postoperative renal ultrasound at the most recent follow-up.
- Our secondary outcomes included the rate of postoperative complications.

Results: Complications occurred in 5 (24%) patients undergoing RP and 4 (30%) in the LP group (mainly UTI).

All complications were Clavien-Dindo grade I-II, except for urinary extravasation requiring a nephrostomy tube after RP.

Redo pyeloplasty was required in 1 case in each group.

	RP (n=21)	LP (n=13)	
Median age month (range)	5.8 (1.4-11.8)	6.27 (2.2-12)	Ns.
No. gender m/f	10/11	11/2	Ns.
Median weight kg (range)	7.5 (4.7-12)	8.4 (6-10)	P=0.006
Laterality R/L	8/13	5/8	Ns.
Median op. time (min)	156 (125-249)	181 (82-300)	P=0.01
ureteral stent no.	15 (71%)	13 (100%)	Ns.
No. drain	2 (10%)	13 (100%)	P<0.05

Conclusion: While RP and LP are comparable regarding outcomes and complications, RP potentially offers shorter operative time and reduces morbidity of drains.

(S040) FLEXIBLE URETERORENOSCOPY IS EFFECTIVE FOR TREATING RENAL STONES IN CHILDREN

Ahmed Suliman, Mr, Tariq Burki, Massimo Garriboli, Jonathan Glass, Mr, A Taghizadeh, Mr, Evelina London Children's Hospital

Introduction: We present the results of flexible ureterorenoscopy (FURS) in children; specifically identifying the additional benefits of endoscopic treatment.

Method: We performed a retrospective case note review of children who had undergone FURS to treat upper renal tract stones in our unit between March 2008 and November 2015. Results are quoted as median (range). Success rates were statistically compared using Chi-squared.

Results: FURS was used to treat 56 stone episodes in 36 patients (some patients had recurrent stones). Median patient age was 127

Oral Abstracts

months (range 17–188.7). Patients were followed up for 17.1 (3–71) months.

Preoperative imaging indicated stone size of 8 (3–23) mm; where there were multiple stones the size of the largest was taken. Multiple stones were present in 36 cases (64.3%). A JJ stent was present prior to FURS in 33 (59%).

After passing a guide wire the distal ureter would first be examined with a rigid ureteroscope. A flexible ureteroscopy would be passed over the guide wire and the stones fragmented using a holmium YAG laser with a 200µm fibre.

At first FURS intra-operative stone clearance was achieved in 42/56 (75%). A JJ stent was inserted post-operatively in 36 (64.3%).

Inpatient stay was 1 (0–4) nights. There were no immediate complications. Two patients were readmitted; one (1.8%) with stent symptoms one (1.8%) and with urinary infection.

Of those who were not cleared after the first FURS, 11 went on to have a second procedure for the same stone resulting in clearance in a further 8 bringing the cumulative clearance to 89%. Second procedures were often planned as “another look” to ensure clearance prior to stent removal.

After first FURS clearance seemed to be better for single stones (81.8%) compared to multiple stones (70.6%) although this was not statically significant. For stones less than 10 mm clearance was 84.4%, but for stones of 10mm more clearance was 65.2%; again this was not statistically significant.

During the same procedure unexpected disease was found in 9 (16.1%): additional rigid ureteroscopy and ureteric stone treatment was performed in four, two had treatment of stone within a previously undiagnosed calyceal diverticula, one had an unexpected foreign body removed from the renal pelvis and in two no stone was found.

No patients developed ureteric injury.

Conclusions: FURS carries minimal morbidity. By providing direct visualisation it can define stone burden in a way that is not always possible with radiology alone. It allows treatment of multiple stones at different locations within the kidney and ureter, and enables diagnosis and treatment of unexpected pathology.

(S041) ADVANTAGES OF LAPAROSCOPY IN THE SURGICAL MANAGEMENT OF COMPLEX VAGINAL ANOMALIES

Alex Cuenca, Fellow¹, Lesley Breech², Deborah Morse², Belinda Hsi Dickie¹, ¹Boston Children's Hospital, ²Cincinnati Children's Hospital

Complex vaginal anomalies, such as distal vaginal agenesis (DVA), vaginal atresia, transverse vaginal septum (TVS) or a urogenital sinus anomaly (UGS) can be potentially complicated reconstructions requiring different operative approaches. Depending on the distance from the introital segment to the proximal vagina, many can be approached from the perineum only, however, if there is any tension or ischemia, redo stenosis and strictures are not uncommon. Longer distances between the distal and proximal vagina often require grafts to bridge the gap which increases the potential morbidity of the procedure and longterm morbidity of graft complications. In the last 5 years, we have utilized laparoscopy in the mobilization of the upper vagina and used a combined abdominoperineal surgical approach for these patients. We review our experience and propose a protocol for managing these patients.

Methods: A retrospective review from 2011–16 was performed of cases performed by our multidisciplinary surgical team. 8 cases of isolated distal vaginal agenesis or transverse vaginal septum were identified where laparoscopy was used in the surgical approach. We excluded any patients with a diagnosis of a cloaca, but included patients with an anorectal malformation and vaginal atresia.

Results: 8 patients were identified that had laparoscopic mobilization of the vagina as a primary pullthrough. Patients with a cloaca were excluded; however, 1 patient had a history of a rectovestibular fistula and DVA. 5 patients had DVA and 2 patients had TVS. 1 patient had a urogenital sinus from CAH. The age of the patients ranged from 12 to 19 years of age. The distance from the perineum to the upper vagina seen on preoperative imaging ranged from 1.5 to 8 cm. All were treated with mobilization of the upper native vagina laparoscopically, dividing all attachments. Uterine blood supply was preserved and if possible, the round ligament was preserved on at least one side. All had preservation of the ovaries and fallopian tubes. 1 patient had a uterine anomaly with a left unicornuate uterus and a right sided uterine remnant, and a 1 patient had uterine didelphys. All others had normal uterine anatomy. One patient had a robotic approach. There were no immediate postoperative complications. 2 patients developed vaginal stenosis; Both required a second procedure using a buccal mucosa graft to allow a vagina adequate for intercourse.

Oral Abstracts

Discussion: The repair of complex vaginal anomalies can be a challenging reconstruction if the distance to the upper vagina is greater than 3 cm. Surgical options include mobilization of the upper vagina and pullthrough of native vagina or interposition grafts. We have recently used the approach of a laparoscopic mobilization of the upper vagina with a primary vaginal pullthrough, combined with a perineal approach. This technique has been successful in increasing the number of patients who have a fully native vagina and minimizing surgical risk by avoiding bowel grafts. This approach, if applied to the appropriate patients can limit the of intestinal interpositions and potentially improve functional outcomes.

(S042) TRANSINGUINAL LAPAROSCOPIC EXPLORATION FOR IDENTIFICATION OF CONTRALATERAL INGUINAL HERNIAS IN PEDIATRIC PATIENTS.

Gulnur Gollu, Ufuk Ates, Kutay Bahadir, Ergun Ergun, Aydin Yagmurlu, Murat Cakmak, Tanju Aktug, Huseyin Dindar, Meltem Bingol-Kologlu, Ankara University Faculty of Medicine Department of Pediatric Surgery

BACKGROUND: Inguinal hernia repair is a common procedure in daily paediatric surgical practice. Although children mostly present with unilateral symptomatic groin hernia, 6% can develop metachronous hernia on the contralateral side. The use of transinguinal laparoscopy for contralateral groin exploration during unilateral inguinal hernia repair has gained popularity. The aim of this study is to compare the patients who underwent transinguinal laparoscopic exploration (TILE) and the ones who did not have TILE regarding the incidence of contralateral metachronous hernia development.

METHODS: A retrospective review of 791 patients who underwent inguinal hernia repair was done. The parents were called to get the latest information. The patients who were explored laparoscopically through the ipsilateral hernia sac to assess the contralateral groin were compared with the ones who did not have TILE.

RESULTS: A total of 791 children underwent open inguinal hernia repair. 566 (71,5%) of the patients were male and 225 (28,5%) of them were female. Mean age of the patients were 31 ± 39 months (20 days–16 years). 472 (59,7%) and 233 (29,5%) of the patients had right and left sided inguinal hernia, respectively. 86 (10,8%) of the patients presented with bilateral hernia. TILE was performed in 479 (67,9%) of the 705 patients with one sided hernia and a hernia or contralateral patent processus vaginalis was found in 28,8% of them ($n = 138$). No complications occurred. TILE was not performed in 226 (32,1%) of the patients. 15 (3,1%) of the patients who had TILE and 31 (13,6%) of the patients who did not have TILE developed metachronous hernia. Mean follow-up time was 55.2 ± 36 months. When the videos of 15 patients who developed contralateral hernia after TILE were reviewed, overlooked patent processus vaginalis was found in 10 patients who had TILE during early phases of learning curve.

CONCLUSION: Diagnostic intraoperative transinguinal laparoscopic evaluation of the contralateral side during pediatric inguinal hernia repair is a simple, fast, and effective method to assess the contralateral hernia or patent processus vaginalis. This approach clearly reduces the incidence of a metachronous hernia at a later date. The main drawback of this study is the short follow-up period which may reflect a lower incidence of metachronous hernia development in patients who did not have laparoscopic groin exploration.

opic groin exploration.

Oral Abstracts

(S043) MINIMALLY INVASIVE SURGERY AND ITS ROL IN CLOACAL RECONSTRUCTION . EXPERIENCE IN A SINGLE CENTER

Maria M Bailez, MD, Natalia Ordonez, MD, Lucila Alvarez, MD, Victor Dibenedetto, MD, Garrahan Childrens hospital

The aim of this study is to define the rol of MIS in cloacal reconstruction after our experience in 32 patients since October 2001

M&M: We divided the patients in groups according to the variety of approach associated to laparoscopic pullthrough (LPT) required for simultaneous genitourinary reconstruction. Group 1(G1) included 14 patients(43%) that were successfully reconstructed with a LRP associated with total urogenital mobilization (TUM) done through a perineal approach in lithotomy position. Group 2 (G2) 4 (12%) who underwent a combined posterior sagittal approach (PSARP) either before or after the LRP. A pffannestiel incision was used in 7 patients (21%) (G 3). Two patients with complete vaginal agenesis and simultaneous vaginal replacements were considered separately as Group 4 (G 4) and 5 (15%) operated elsewhere required a redo cloacal reconstruction (G 5).

Results: G1: Mean age was 115,63 months (9 –204) and the mean length of the cloaca channel was 4.44 cm (4–9 cm). Sacral RA-TIO average was 0.3 (0,1–0.6) (3 had partial sacral agenesis). Eighty five %had a duplicated vagina and uterus. After an initial MIS treatment of the rectovaginal fistula , a TUM through a perineal approach was achieved exteriorizing the vagina and uretra .Rectal pullthrough was completed .Additional laparoscopic dissection of the vagina was needed in 5 patients . Mean operative time was 379,54 minutes (250–490). There where no intraoperative complications or conversions. One presented a mild rectal prolapse and 1 a vaginal stenosis without reintervention.

G2: All were operated before 2007 The very first 2 patients are in this group . Sacral RATIO average was 0.4 two patients with sacral dysplasia . Fifty %had a duplicated uterus and vagina We started with a PSARP and then replaced the abdominal approach with an MIS one .mean operative time 419 minutes (360–510). CL channel was 3.8 cm (1–4 cm). One presented a recurrent rectovaginal fistula that was treated laparoscopically.

G3: Included channels where everything ended in the bladder neck. Sacral RATIO average was 0.5 (0.5–0.8). The pffannestiel was added to resect a megarectum in 1p ,to perform a vaginal switch in 2 , for ureteral reimplantation in 2, to complete vaginal pull-through in 2. Their mean age was 33.45 months (22 –55) and the average of the cloaca channel was 5.8 cm (5.5–7). Mean operative time was 421 minutes (400–670).

G4: Both underwent a simultaneous vaginal replacement using ileum in 1 and the distal colon in 1 with a mean age of 88 m. Mean operative time was 421 minutes (340–600).

G5: A redo procedure was indicated for hematometrocolpos or redo LPT after a failed reconstruction done elsewhere. Three had a Mitroffanoff done in an umbilical position .The mean age was 88 months (26–140) and the average of the cloaca channel was 5.8 (3.5–7). Mean operative time was 421 minutes (340–600). There were no intraoperative complications or conversions

Conclusion: 1) 64% of CL were totally reconstructed using MIS assisted perineal approach (G1,4,5). G1includes the ideal CL to use MIS .2)MIS redo CL was possible even after multiple laparotomies in a reasonable operative time

(S044) A COMPARISON BETWEEN LAPAROSCOPIC AND RETROPERITONEOSCOPIC APPROACH FOR PARTIAL NEPHRECTOMY IN CHILDREN WITH DUPLEX KIDNEY. RESULTS OF A MULTICENTRIC SURVEY.

Ciro Esposito¹, Go Miyano², Paolo Caione³, Maria Escolino¹, Francois Varlet⁴, Fabio Chiarenza⁵, Giovanna Riccipetitioni⁶, Alessandra Farina¹, Atsuyuki Yamataka², Mariapina Cerulo¹, Francesco Turrà¹, Dariusz Patkowski⁷, Alessandro Settimi¹, Marco Castagnetti⁸, Holger Till⁹, Jean-Stephane Valla¹⁰, ¹Federico II University of Naples, Naples, Italy, ²Juntendo University School of Medicine, Tokyo, Japan, ³Bambino Gesù Children Hospital, Rome, Italy, ⁴Hopital Nord, University Medical Center, Saint-Etienne, France, ⁵San Bortolo Hospital, Vicenza, Italy, ⁶Buzzi Children Hospital, Milan, Italy, ⁷Wroclaw Medical University, Wroclaw, Poland, ⁸University of Padua, Padua, Italy, ⁹Medical University of Graz, Graz, Austria, ¹⁰CHU Lenval, Nice, France

Aim: We aimed to compare the laparoscopic and retroperitoneoscopic approach for partial nephrectomy in infants and children with duplex kidney.

Methods: The data of 102 patients underwent partial nephrectomy in a 5-years period using MIS procedures were analyzed. Fifty-two children underwent laparoscopic partial nephrectomy (LPN) and 50 children underwent retroperitoneoscopic partial nephrectomy (RPN). Average age at surgery was 4.2 years. Statistical analysis was performed using χ^2 test with Yates corrections and t-student test.

Oral Abstracts

Results: The overall complications rate was significantly higher after RPN (21/50– 42%) than after LPN (10/52–19%) [$\chi^2 = 0.05$]. In LPN group, complications (4 urinomas, 2 symptomatic refluxing distal ureteral stumps (RDUS) with recurrent UTIs and 4 urinary leakages) were managed conservatively. In RPN group, complications (6 urinomas, 8 symptomatic RDUS, 6 peritoneal perforations and 1 opening of remaining calyces) required a re-operation in 2 patients. Operative time (LPN:166.2 minutes vs RPN: 255 minutes; $p<.001$) and hospitalization (LPN: 3.5 days vs RPN: 4.1 days; $p<.001$) were significantly shorter in LPN group. No post-operative loss of renal function was reported in both the groups.

Conclusions: Our results demonstrated that RPN remains a technically demanding procedure with a significantly higher complications and re-operation rate compared to LPN, also in expert hands. LPN seems to be faster, safer and technically easier compared to RPN due to a larger operative chamber available, a good overall exposure of the anatomy of the kidney and the possibility to perform a complete ureterectomy in refluxing systems, avoiding to leave a refluxing ureteric stump.

(S045) CLINICAL EXPERIENCE OF LAPAROSCOPIC PYELOPLAST ON 466 CASES URETEROPELVIC JUNCTION OBSTRUCTION(UPJO)

Aiwu Li, Department of Pediatric Surgery, Qilu Hospital, Shandong University

Background: Although laparoscopic pyeloplast has become the main stream in treating Ureteropelvic junction obstruction(UPJO), large series of case reports and clinical analysis are still seldom found. Here, we described our clinical experience of 466 UPJO cases with laparoscopic procedures and discussed the surgical skill.

Methods: This retrospective study included 466 UPJO patients who were treated from January 2008 to January 2016 with laparoscopic pyeloplast (marked as Group 1) and contemporaneous and previous 191 UPJO patients treated with open approach (marked as Group 2). Operative indication was as follows: evidence of UPJO, progressive lesion of renal function and complications as abdominal pain, infection or calculi. All patients were studied about the preoperative data such as age, gender, degree of the lesion; operative details such as operative time, blood loss; and postoperative outcomes. Statistical comparison was made with unpaired t tests, X² tests and Fisher exact probability, with P value less than 0.05 were considered significant.

Results: 1. Laparoscopic surgery was accomplished in all of the 465 cases (Group 1) except 1 recurrence case.

2. In the comparison of patients of UPJO between laparoscopic surgery and open surgery, laparoscopic surgery has a similar operative time (129.7±37.2 versus 116.6±34.7 minutes, $P>0.05$), the less blood loss (3.8±1.4 vs 15.4±3.7 ml, $P<0.05$) and the less hospital stays (6.9±1.4 vs 13.3±2.6 days, $P<0.05$). However, for the first 20 cases, operative time of laparoscopy was longer than open approach (163±47.2 vs 116.6±34.7 minutes, $P<0.05$).

3. 4 urinary infection cases and 1 case double pigtail tube out were in Group 1 compared to 5 cases and 2 cases respectively in Group 2. Postoperative recurrence was found both 1 case in two groups which were both reoperated by laparoscopy. The reason of postoperative recurrence was adhesion oppression of anastomotic stoma by detection.

Conclusions: Compared to open surgery, laparoscopic surgery has many benefits such as small trauma, less blood loss, fast post-operative recover and beautiful incision. Especially for Severe hydronephrosis infants less than 3 months, laparoscopic surgery was still safe and effective.

(S046) LAPAROSCOPIC HEPATICOJEJUNOSTOMY VS HEPATICODUODENOSTOMY FOR CHOLEDOCHAL CYST

Ravindra Ramadwar, Dr., Bombay Hospital

Aim: Laparoscopic excision of choledochal cyst with hepaticojejunostomy (HJ) or hepaticoduodenostomy (HD) is considered as a good alternative to open surgery. The aim of our study was to compare these two procedures.

Methods: Data were collected prospectively since 2003 and results were analyzed

Results: Since 2003, 126 patients (age 2 months – 18 years), (weight 2.5 – 52 kg) with choledochal cyst were managed laparoscopically. HJ was performed in 74 patients and HD was performed in 52 patients. Mean operative time was 175 min for HJ and 140 min for HD. 2 HJ converted to open. There was bile leak in 4 HJ (treated conservatively) and in 1 HD (Converted to HJ). Recurrent postoperative pain was seen in 3 HJ and 8 HD (all resolved over 3 months).

Conclusion: HD is a good alternative to HJ. It reduced operative time however biliary leak should be treated aggressively. HD has a higher incidence of postoperative pain due to bile gastritis.

Oral Abstracts

(S047) A LONG-TERM FOLLOW-UP OF A NEW SURGERY METHOD (LAPAROSCOPE-ASSISTED HEART-SHAPED ANASTOMOSIS) FOR HIRSCHSPRUNG'S DISEASE

Chunlei Jiao, PhD, Jie Xiong Feng, Professor, Department of Pediatric Surgery, Tongji hospital

Background: Endoscopic surgery is widely used in the treatment for Hirschsprung's disease (HD). However, constipation and soiling are still the main long-term complications. Our medical center has improved the surgery method by creating a new type of anastomosis, which is characterized by heart-shaped colorectal anastomosis after splitting the posterior aspect of rectum to the place that is about 0.5cm above dentate line. This study was to find the long-term effect of laparoscope-assisted heart-shaped anastomosis (LHSA) and compare it to a more generally applied approach, laparoscope-assisted Soave procedure (LSP).

Patients and Methods: In this retrospective study, we investigated the symptoms of chronic constipation and soiling in 56 patients after LHSA and 54 patients after LSP between 2005 and 2011.

Results: For LHSA, the median age at surgery was 1.4 years (0.2–7.3) and the median follow-up time was 7.1 years (5–11.3). And for LSP, the median age at surgery was 1.2 years (0.1–6.2) and the median follow-up time was 7.0 years (5–9.3). Constipation was less frequently after LHSA than LSP (7.1 vs. 22.2%, $p=0.025$), but soiling showed no difference after LHSA and LSP (8.9 vs. 14.8 %, $p=0.339$).

Conclusions: The improved anastomosis of LHSA retains internal anus sphincter and relieves stenosis as well. In the long-time follow-up, incidence of constipation after LHSA declined when compared with LSP and soiling after LHSA also showed a satisfactory result. Our medical center has performed laparotomy-assisted heart-shaped anastomosis since 1990s and LHSA since 2000s. Because of their well functional outcome, we have proposed it to many medical centers in China. With good long-term effects on avoiding constipation as well as soiling, LHSA may provide a new choice for HD operation.

(S048) EARLY OUTCOMES OF ROBOTIC SURGERY FOR CHOLEDOCHAL CYST (CYST EXCISION AND ROUX EN Y HEPATICOJEJUNOSTOMY ANASTOMOSIS) WITH 39 PATIENTS

Pham D Hien¹, Nguyen T Liem², Vu M Hoan¹, ¹Central Children's Hospital, ²Vinmec International Hospital

Objective: to describe the technical details and outcomes of complete robotic cyst excision and Roux-en-Y hepaticojejunostomy for choledochal cyst.

Methods: The operation was performed using five ports (4 ports for Robot arms and 1 for assistance). The instruments used including: 5mm hook monopolar, 5mm Maryland bipolar, 5mm round tip scissor, 5mm needle holder and 8mm Maryland forceps. The technical operation is based on our laparoscopic technique for choledochal cyst. The cystic duct was identified and divided. The liver was elevated by two stay sutures: one on the round ligament, the other on the distal cystic duct. The choledochal cyst was isolated and removed completely. The jejunum was exteriorized and the jejuno-jejunosnomy was carried out extracorporeally 30 cm far from biliary anastomosis. The Roux limb was brought retrocolic to the hepatic porta. The jejunum was opened on the antimesenteric border. Hepaticojejunosnomy was fashioned by Robot and using PDS 5/0. Using two running sutures if common bile duct is bigger than 1 cm, otherwise we will use interrupted sutures.

Results: From February 2013 to Aug 2016, 39 patients were operated. There were 30 girls and 9 boys. Ages ranged from 5 months to 9 years old. The diameter of the cyst ranged from 10mm to 112 mm. The operating time ranged from 150 minutes to 330 minutes (mean 192.7 minutes). There were no postoperative death and no conversion to open surgery was required. No blood transfusion was required. No Postoperative complications such as: Incision infection, Pancreas or biliary leakage, intestinal obstruction. Postoperative hospital stay ranged from 4 days to 7 days (mean: 5.1 days). Follow up from 2 weeks to 40 months was obtained in 39/39 patients (100%). Of these patients, there were no cholangitis occurred, and no cholelithiasis nor anastomosis stenosis. There were no Gastritis nor duodenal ulcer. No reoperation was required. However the cost of instrument for 1 operation is still expensive (100 million VND).

Conclusion: Robotic surgery complete cyst excision and hepaticojejunosnomy is safe and feasible procedure for choledochal cyst. However the instrument is still expensive at that moment.

Keywords: Choledochal Cyst, Robotic, Hepaticojejunosnomy

(S049) THE INCIDENCE AND MANAGEMENT OF CBD STONES IN A PEDIATRIC SERIES

Mohannad Alghammas, MD, Osama A Bawazeer, MD, Abdullah Bamajboor, MD, Salman Almalki, Nadeem Kausar Hussain, MD, Anies Mahomed, MD, King Faisal Specialist Hospital & Research Center

Oral Abstracts

The frequency and management of CBD stones in a Pediatric Series

Background: The prevalence of gallstones in children is circa 1.9%. In addition, between 2.9 to 10.3% will also have choledocholithiasis (CBD Stones). Detection and expeditious management of CBD stones is critical to avoiding complications of obstructive jaundice, recurrent pancreatitis and ascending cholangitis.

Aim: To review the incidence and management of CBD stones in a series of laparoscopic cholecystectomies.

Method: Retrospective review of a prospectively recorded series of a single consultant experience at 2 tertiary Pediatric Centers of cases with cholelithiasis over a 13 year (2003–16) period. A subgroup with CBD stones was identified and analyzed.

Results: A total of 59 cases underwent laparoscopic cholecystectomy. CBD Stones were suspected in 10 patients presenting with recurrent pancreatitis (4), obstructive jaundice (5) and cholangitis (1). All patients were subjected to MRCP. Three with confirmed CBD stones and with jaundice, underwent ERCP and successful stone extraction followed by uneventful cholecystectomy. Two patients had intraoperative cholangiogram, one of whom had an incidental discovery of and dis-impaction of a cystic duct stone pre-study (video). None of these were found to have CBD stones. On medium term follow up no patients had recurrent disease.

Conclusion: The incidence of CBD stones in this study was 5.1%. A management strategy of preoperative MRCP in suspected cases followed by ERCP and sphincterotomy for confirmed CBD stones is effective. For institutions offering the facility of both MRCP and ERCP, the real value of intra-operative cholangiogram for CBD stone management in children has to be questioned.

References:

1– Mah D1, Wales P, Njere I, Kortan P, Masiakos P, Kim PC.

Management of suspected common bile duct stones in children: role of selective intraoperative cholangiogram and endoscopic retrograde cholangiopancreatography.

J Pediatr Surg. 2004 Jun;39(6):808–12

2– Bonnard A1, Segulier-Lipszyc E, Liguory C, Benkerrou M, Garel C, Malbezin S, Aigrain Y, de Lagausie P.

Laparoscopic approach as primary treatment of common bile duct stones in children.

J Pediatr Surg. 2005 Sep;40(9):1459–63.

3–Wesdorp I, Bosman D, de Graaff A, Aronson D, van der Blij F, Taminiau J.

Clinical presentations and predisposing factors of cholelithiasis and sludge in children.

J Pediatr Gastroenterol Nutr. 2000 Oct. 31(4):411–7.

4– Tannuri AC, Leal AJ, Velhote MC, Gonçalves ME, Tannuri U.

Management of gallstone disease in children: a new protocol based on the experience of a single center.

J Pediatr Surg. 2012 Nov. 47(11):2033–8.

(S050) LAPAROSCOPIC-ASSISTED DUHAMEL PROCEDURE WITH EX-ANAL RECTAL TRANSECTION FOR TOTAL COLONIC AGANGLIONOSIS

Shaotao Tang, Xi Zhang, Li Yang, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology

Purpose: Laparoscopic-assisted Duhamel procedure has been and remains one of the selectively performed for total colonic aganglionosis (TAC). However, the benefit of Duhamel procedure is controversial in different studies and this technique is difficult to apply to infants. Here, we reviewed TCA cases treated by modified laparoscopic Duhamel procedure with ex-abdominal colectomy and ex-anal rectal transection focusing on advantage of the technique, complications and functional outcomes.

Oral Abstracts

Methods: Between Feb 2011 to Jan 2015, 18 patients with TCA underwent two stage modified laparoscopic Duhamel pull-through (LDPT), ex-abdominal partial colectomy colon through abdominal stoma opening and laparoscopic mobilization of remaining colon and dissection of the retro-rectal space. The sigmoid colon was grasped and pulled down through the retrorectal tunnel and an incision on posterior rectum, the rectum was extra-anally divided perpendicular to the anus for short-pouch and the side-to-side colorectal anastomosis was completed trananally by using the Endo-GIA Stapler. Six TCA patients who underwent the modified laparoscopic Soave pull-through (LSPT) between Feb 2009 and Feb 2011 were used as control group. Follow-up data were collected by chart reviews and telephone interviews using a standardized questionnaire. The functional outcomes were assessed by using a score system. TCA has been defined as aganglionosis extending from the anus to at least the ileocaecal valve but no more than 50 cm proximal to the ileocaecal valve.

Results: The procedure was successfully performed in all patients. Mean age and operative time in MLDP group were 5.6 months (range, 2–17 months) and 178 min (range, 140–250 min) in the LDPT group. No intraoperative complications and anastomotic leak was observed. The number of bowel movement after 1, 6, 12 and 24 months postoperatively, was 15 ± 6.8 , 5.3 ± 2.4 , 4.2 ± 1.9 and 2.7 ± 1.3 ($p < 0.05$) per day, respectively, in the LDPT group. The incidence of the soiling in the LDPT group was significantly lower than control group with in the first postoperative year (33.3 vs 50.0%; $p < 0.05$) and the second postoperative year (11.1 vs 33.3%; $p < 0.05$). The incidence of postoperative HAEC in the LDPT group was similar to control group within the first and second postoperative year. No pouchitis and severe perianal excoriation was found and only one case needed anal dilation for 1 months in MLDP group after surgery. There was no significant difference between two groups in clinical outcomes and total score over 3 years old, but the LDPT group was better in terms of bowel movement, severe perianal excoriation and soiling.

Conclusions: Laparoscopic-assisted Duhamel procedure combined with ex-anal rectal transection is feasible and safe for TCA. This modified technique is less difficult to perform, and avoids the complications and disadvantages of abdominal manipulation and has satisfactory results.

(S051) LAPAROSCOPIC KASAI PORTOENTEROSTOMY IN INFANTS WITH BILIARY ATRESIA: OUR PRELIMINARY OUTCOMES

Hiroo Uchida, MD, Yujiro Tanaka, MD, Takahisa Tainaka, MD, Wataru Sumida, MD, Chiyo Shirota, MD, Naruhiko Murase, MD, Kazuo Oshima, MD, Kazuki Yokota, MD, Ryo Shirotuki, MD, Kosuke Chiba, MD, Department of Pediatric Surgery, Nagoya University Graduate School of Medicine

Background. Biliary atresia (BA) is one of the most common causes of obstructive jaundice in infancy. The etiology of BA remains unclear, but the treatment of BA requires a correct diagnosis and the proper surgical procedure. The open Kasai portoenterostomy (Open-Kasai) is the conventional procedure for the surgical treatment of BA. With recent rapid advances in minimally invasive surgery, further reports of Laparoscopic Kasai portoenterostomy (Lap-Kasai) have been published. However, the replacement of Open-Kasai with Lap-Kasai is currently controversial. Several studies have suggested that Lap-Kasai requires a longer operative time and an extensive learning curve for pediatric surgeons, and that Lap-Kasai is a poor treatment for BA, with a survival rate with the native liver of < 2 years. However, Lap-Kasai offers the obvious advantages of excellent visibility, less scarring, and less pain.

We hypothesized that the excellent visibility of the porta hepatis during laparoscopy would allow a precise and reproducible portoenterostomy procedure. We have performed Lap-Kasai with a reproducible procedure since December 2013, and our early results have been promising and encouraging. The aim of this study was to confirm the effectiveness of Lap-Kasai.

Methods. We analyzed our data for patients with BA treated with Open-Kasai or Lap-Kasai between January 2011 and December 2015. Revision open or laparoscopic portoenterostomy was performed in patients who displayed abrupt cessation of bile flow.

Results. We performed 19 Open-Kasai cases and 15 Lap-Kasai cases. The median operative time was significantly longer in Lap-Kasai (308 min) than in Open-Kasai (220 min), but the median blood loss was significantly less in Lap-Kasai (25ml) than in Open-Kasai (70ml). The jaundice-free survival rate with the native liver 12 months after portoenterostomy was similar after Open-Kasai and Lap-Kasai (68.4% and 66.6%, respectively; $P=1$). Other reported comparative studies of Lap-Kasai and Open-Kasai were reviewed. One prospective study showed that the survival rate with the native liver was significantly lower after Lap-Kasai than after Open-Kasai, whereas other studies have reported that these rates did not differ significantly.

Conclusion. The excellent visibility possible with our operative procedures of Lap-Kasai and its feasibility ensures at least the same outcomes as Open-Kasai.

(S052) COMBINED-LAPAROSCOPIC-ENDOSCOPIC-PROCEDURES IN THE TREATMENT OF TYPE I CHOLEDOCHAL CYST IN CHILDREN

Oral Abstracts

Jiangbin Liu, PhD, Zhibao Lv, Shanghai Children's Hospital

Objective: Combined-laparoscopic-endoscopic-procedures (CLEP) is a technical advance in minimally invasive approaches, here we review the experience of the CLEP on the excision of type I choledochal cyst (CC) in children.

Methods: We compared a series of recent 27 cases of type I CC treated by CLEP from September 2015 to June 2016 (group 1) with 66 cases of CC patients only treated by tradition laparoscopy between November 2013 and August 2015 (group 2), focusing on the procedures of laparoscopic excision of CC combined with a fine pediatric cystoscope on the intrahepatic bile duct (IHBD) and intra-pancreatic bile duct (IPBD) during the surgery. The following data such as IHBD and IPBD stone formation, IPBD complete resection, intraoperative hepaticoplasty and postoperative pancreatitis were analysed.

Results: In group 1, CLEP identified IHBD debris in 8 cases (29%) and IPBD protein plugs in 13 patients (44%). In group 2, the data was 15% and 22% respectively. Distal IPBD was measured by a 7F neonatal cystoscopy and dissected accurately without any pancreatic duct in group 1. Follow-up MRI in 18 patients from group 1 showed no distal IPBD in any case, but 3 from group 2 had residual of IPBD by MRI scanning. 2 children in group 1 and 4 children in group 2 were received intraoperative hepaticoplasty. The incidence of postoperative pancreatitis to date was 0% in group 1 and 4.5% (3/66) in group 2.

Conclusions: CLEP, combining the advantages of both laparoscopy and endoscopy, is a technical advance in minimally invasive approaches, which improves the outcomes and enhances the precision and efficacy in the treatment of CC in children. Especially on the bile duct stone removal, precise total CC excision and lower incidence of postoperative pancreatitis.

(S053) APPLICATION OF DIAGNOSTIC AND THERAPEUTIC ERCP IN CHOLEDOCHAL CYST OF CHILDREN

Yeming Wu, Junqi Zhang, Shanghai Xinhua Hospital

Background/Purpose: Endoscopic retrograde cholangiopancreatogram (ERCP) is an important procedure in the diagnosis and treatment of pancreaticobiliary disease, whose feasibility and safety in pediatric patients have been well demonstrated. With the widespread of MRCP and the development of ERCP therapeutic technology, the application of ERCP in choledochal cyst has recently been shifting to therapy. However ERCP still have some advantages in diagnosis. We aim to review the indications, effects and benefits in the management of choledochal cyst.

Methods: From 2013 to 2015, 196 pediatric patients had definitive surgery of choledochal cyst in our hospital, 31 of them underwent ERCP before surgery. Their clinical presentations, implications for ERCP, pre- and post-ERCP lab test and imaging, and choice of procedure (laparoscopic or open) were retrospectively reviewed.

Results: 31 children with choledochal cyst underwent pre-operation ERCP [median age was 3 (range 0.5–9.3) years; lowest weight was 7kg]. The cannulation success rate in overall procedures was 32/33. The indications of ERCP are as follow: CDC with complicated conditions, e.g. acute biliary infection, obstructive jaundice, biliary pancreatitis (23/31), differential diagnosis with compensated biliary dilation by relieving obstruction (8/31), diagnostic only (2/31). ERCP provided a good delineation of pancreaticobiliary junction (83.9%), and detected 17 cases of anomalous pancreaticobiliary ductal (54.8%). Therapeutic interventions were performed in 31 cases (96.7%), including papillary dilation (81.3%), sphincterotomy (43.6%), endoscopic naso-biliary drainage (87.5%), endoscopic retrograde biliary drainage (3.1%) and stone extraction (31.3%, success rate 9/10). Abnormally elevated liver transaminase, bilirubin, and amylase significantly reduced after ERCP, only one case of jaundice didn't get relieved. Ultrasound showed decreased biliary diameter. All symptoms got improved. No major post-ERCP complication occurred. All patients were performed total resection of choledochal cyst and Roux-en-Y hepaticojejunostomy after ERCP, with median time interval of 10 days (range 4–578 days). 20 patients finished the surgery within the same hospital stay. 18 cases were laparoscopic (58.1%), 8 cases were open procedure (25.8%), 5 cases were conversion from laparoscopic to open (16.1%).

Conclusion: When choledochal cyst complicated with acute biliary infection, obstructive jaundice, biliary pancreatitis and liver function impairment, ERCP is an effective and safe method to relieve biliary obstruction and treat complications, which avoids external drainage and keeps the chance of laparoscopy. In addition, ERCP is still the best method to detect APBDJ. ERCP also plays a role in differential diagnosis of obstructive biliary dilation, which is reversible and not necessarily need operation, through its therapeutic intervention.

(S054) THE EFFECTIVENESS OF THE LONG TERM BIOFEEDBACK THERAPY IN THE PATIENTS WHO TREATED FROM ANORECTAL MALFORMATION AND HIRSCHSPRUNG DISEASE AND DEVELOPED FECAL INCONTINANCE

Farid Khanmammadov, Ufuk Ates, Gulnur Gollu, Murat Cakmak, Aydin Yagmurlu, Tanju Aktug, Huseyin Dindar, Meltem Bin-

Oral Abstracts

göl-Kologlu, Ankara University Faculty of Medicine Department of Pediatric Surgery

Introduction: There are few studies on the biofeedback therapy, which consists of teaching the defecation dynamics with visual and auditory stimulations and aims to improve sfincter muscle function for treatment of fecal incontinence in children with Hirschsprung Disease (HD) and anorectal malformation (ARM) and long term results are not known. Therefore we planned a prospective cohort study to evaluate effects of long term biofeedback training in patients having fecal incontinence despite standard bowel control program following definitive surgery for HD and ARM.

Patients and method: Patients, 5 to 18 years old, who are treated for fecal incontinence due to HD and ARM and not benefitted enough from standard bowel control program, were included in the study. All patients received biofeedback therapy four times a week for 12 months either with a home device or in hospital. Holschneider Continence Scores, Wexner Incontinence Scores and Fetal Quality of Life Scores of the patients prior to biofeedback therapy and after the therapy were compared. Mean anal and rectal resting pressure, maximum squeeze pressure and duration, first feeling and maximum rectal distention volumes, and external anal sphincter response to the cough test were evaluate and the values obtained prior to biofeedback therapy were compared with the values recorded after therapy.

Results: After long term biofeedback therapy, mean Holschneider and life quality scores of the patients were significantly increased and mean Wexner scores were significantly decreased in the both HD and ARM groups. In both groups; mean anal resting pressure, mean maximum squeezing pressure and duration were increased and mean rectal resting pressure was decreased and respond of external sphincter to the cough test was increased. Mean maximum tolerated volume was increased while mean first feeling volume was decreased. In ARM group long term biofeedback therapy was completely succesfull in 35% of the patients and partially succesfull in 65% of the patients. In HD group, the treatment was completely succesfull in 90% of the patients and partially succesfull in 10% of the patients. A positive correlation was shown between biofeedback therapy success and half life of maksimum anal squeezing pressure in patients with HD. Biofeedback treatment was more succesfull in patients with shorter half life of maksimum anal squeezing pressure.

Conclusion: Long term biofeedback training found to be effective in patients suffering from fecal incontinence resistant to bowel management programs in both HD and ARM groups. The higher success rate in HD group may be a result of better developed and preserved anatomical structures which provides continence. Biofeedback therapy with bowel control program makes a significant effect to improve of life quality of these patients.

(S056) FETOSCOPIC SURGERY FOR AMNIOTIC BAND SYNDROME: A 10-YEAR SINGLE CENTER EXPERIENCE.

Jose L Peiro, MD, PhD¹, Enrique Gil-Guevara, MD¹, Ramiro Diaz, MD¹, William J Polzin, MD¹, Timothy M Crombleholme², Aimen F Shaaban, MD¹, Foong Y Lim, MD¹, ¹Cincinnati Fetal Center. CCHMC. Cincinnati, OH. USA., ²Children's Hospital Colorado. Aurora, CO. USA.

Introduction: Amniotic Band Syndrome (ABS) is a group of congenital abnormalities caused by disrupted bands of amnion occurring early in gestation that attach and entangle in the fetus. Abnormalities result from constrictions that lead to webbing of fingers or toes, amputation of limbs, severe defects of the head, umbilical cord or body wall during gestation.

The fibrous non-elastic bands of amnion can encircle the limbs, resulting in tourniquet-like defects that generate intrauterine limb amputations with important postnatal handicaps for these patients. Antenatal diagnosis by conventional ultrasounds or fetal MRI allows the possibility of intrauterine intervention to release the constrictive bands, which can be minimally invasive by a fetoscopic approach.

Methods: we reviewed the cases evaluated at the Cincinnati Fetal Center during a period from 2006 until 2016, which encompasses a total of 49 pregnant women with fetal ABS as an isolated or accompanying diagnosis. Fetal ultrasounds, Doppler and MRI were used for the evaluation and parent counseling.

Results: In 17 (30%) of those 49 patients, fetoscopic surgery was indicated, offered and performed after extensive counseling and informed consent from the parents.

The indications for fetal surgery included a life-threatening condition with involvement of the umbilical cord, or more commonly, potential limb amputation. In our surgical cases, there was decreased Doppler blood flow distally in the extremities affected, and limb edema was present in 65% of them. Umbilical cord involvement was concomitantly present in 53% of cases.

Oral Abstracts

In those cases that required fetal intervention, the median gestational age at evaluation was 22+6 weeks and the gestational age at surgery was 23+5 weeks (range 17–31 w).

The rationale for performing fetoscopic lysis or release of constricting extremity amniotic bands is based on the fact that progressive fetal growth will lead to amputation. Amniotic bands were cut or removed fetoscopically, using one or two ports, and with diode laser in 65% of cases, microdissection endoscopic instruments in 12%, and both in 24% of cases.

The median gestational age at delivery among the 17 surgical cases was 30+1 weeks, while in the group that did not have surgery (32 cases) delivery was at 33+5 weeks, without significant statistical difference ($p=.057$). Most likely, the explanation for such an early delivery lies in the fact that the original cause for ABS is a disruption in the amnion, which besides the fetoscopic procedure, predisposes for a premature rupture of membranes with a consequent preterm delivery.

The survival rate among the surgical cases was 88% (15 live births out of 17 surgical cases) with an average birth weight of 1635 grams, showing in the postnatal follow-up a good recovery in function of the extremities in all cases, although some of them required Z-plasties to surgically correct a residual band-like postnatal deformation.

In conclusion, fetoscopic surgery for ABS has shown to be feasible and effective to prevent fetal limb amputation with an excellent survival rate and postnatal outcomes. Since it is technically challenging, these procedures should be limited to Fetal Therapy Centers with high volume and extensive experience in fetoscopy.



(S057) ENDOSCOPIC PILONIDAL SINUS TREATMENT IN ADOLESCENTS: A MINIMALLY INVASIVE SOLUTION.

Joana Barbosa Sequeira, Ana Coelho, Ana Sofia Marinho, Fátima Carvalho, João Moreira-Pinto, Centro Hospitalar do Porto

Aim of the study: The aim of this study is to evaluate the safety and effectiveness of Endoscopic Pilonidal Sinus Treatment (EPSiT), a recent minimally invasive approach to pilonidal disease, in the pediatric population.

Methods: A prospective analysis of a total of 21 patients with chronic pilonidal disease submitted to EPSiT procedure in a single institution was performed. Surgical outcomes such as wound healing and recurrence rate, healing time and intra and postoperative complications were registered.

Results: Of a total of 21 patients, 76.2% were male; the mean age at time of surgery was 16.2 ± 0.93 years; (14.5; 17.8). The median intraoperative time was 30 minutes (20; 90). There were no reported major intraoperative complications, while minor intraoperative complications, such as bleeding, occurred in 4.8% ($n=1$). Complete wound healing occurred in all patients (100%), with a median healing time of 28 days (15; 270). Recurrence occurred in only one case (5.6%). There was no significant relation between wound closure timing or recurrence and the number or location of the external openings ($p>0.05$). EPSiT was the first pilonidal sinus procedure in 61.9% patients, while others had experienced another (33.3%) or multiple (4.8%) previous procedures. There were no differences in total healing time when EPSiT was performed as a first-line treatment as opposed to after an unsuccessful approach ($p>0.05$). The median duration of follow-up was 5.7 months (0.47; 9).

Conclusions: Minimally invasive strategies providing improved post-operative recovery outcomes and cosmetic results are encouraged when considering children. Although additional studies with an extended long-term follow-up are needed, our results suggest that EPSiT might be a safe and effective approach to pilonidal disease in the pediatric population.

(S058) THE DIAGNOSTIC AND THERAPEUTIC ROLE OF MINIMALLY INVASIVE SURGERY IN PEDIATRIC SURGICAL ONCOLOGY: THE EXPERIENCE OF A SINGLE PEDIATRIC CANCER INSTITUTION

Oral Abstracts

Abdelhafeez H Abdelhafeez, John A Sandoval, Bhaskar N Rao, Stephen J Shochat, Andrew M Davidoff, Israel Fernandez-Pineda, Department of Surgery, St. Jude Children's Research Hospital, Memphis, TN, United States

Aim: The purpose of this study is to describe the applications of minimally invasive surgery (MIS) at a children's cancer hospital.

Method: Retrospective review of the medical records of pediatric cancer patients treated with MIS at a single institution between 2000 and 2014.

Results: A total of 304 MIS procedures were performed, 117 laparoscopic (38%) and 187 thoracoscopic (62%). MIS was utilized for diagnostic purposes in 59% of the cases (146 thoracoscopic, 34 laparoscopic), therapeutic resection in 24% (39 laparoscopic, 33 thoracoscopic), and treatment of cancer related complications in 17% (52 cases). The 39 cases of laparoscopic tumor resection included 18 neurogenic tumors (median size: 3; range: 1.3 cm to 8 cm) and 21 other abdominal tumors, the most common tumor type being germ cell tumors. The 33 thoracoscopic tumor resections included 21 cases of pulmonary metastasectomies (10 osteosarcomas, 6 sarcomas, 4 Wilms tumors and one hepatoblastoma), 7 neurogenic tumors (median size: 3.4 cm; range: 1.5 cm to 5.3 cm), and 5 other mediastinal tumors (3 germ cell tumors, one mediastinal vascular malformation, and one benign mediastinal cyst). Seven cases of osteosarcoma single nodule metastasectomies were completed thoracoscopically without conversion to open approach. Recurrence in this subgroup of patients occurred in 4 patients and 3 of these patients have died (Median follow-up: 4 years; range 2 years to 8 years). Conversion to open procedure occurred in 18 tumor resection (6%) and in 22 diagnostic biopsies (7%) mostly due to technical challenges in identifying or mobilizing tumors. Complications occurred in 7 tumor resections (2%) and included three pneumothoraces, two bleeding complications, one incidence of bowel injury and one wound infection. Complications occurred in 10 diagnostic biopsies (3%), mostly prolonged pneumothoraces. No tumor upstaging or trocar site recurrences have been observed.

Conclusions: MIS in pediatric oncology is a safe diagnostic and therapeutic modality. Careful patient selection is paramount to ensure oncologic principles are not violated and to minimize the potential for complications. The diagnostic role of thoracoscopic pulmonary metastasis is well established; however, a therapeutic role is controversial for certain histologies, including osteosarcoma. Further larger study is required to evaluate the role of therapeutic MIS single osteosarcoma nodule metastasectomy.

Oral Abstracts

(S059) THE ROLE OF MINIMALLY INVASIVE SURGERY (MIS) IN NEUROBLASTIC TUMORS: A SINGLE CENTER EXPERIENCE.

Claudia Filisetti, MD, Francesca Destro, [Claudio Vella](#), Sara Costanzo, Marcello Carlucci, Giovanna Riccipetoni, Department of Pediatric Surgery– Buzzi Children's Hospital – Milan – Italy

Introduction: Neuroblastic tumors (NT) represent one of the largest field of application of MIS. However the indication for MIS still remains a highly debated subject, requiring a careful assessment of each individual case. We retrospectively evaluate in a NT series indications and results of MIS surgery.

Materials and Methods: We analyze the therapeutic process and outcome of NB observed from January 2008 to November 2016, studied with CT/MRI to determine anatomy, vascularization and relationships with vital structures (IDRFs) in order to define the indication to MIS biopsy/surgical excision. Neonatal cases were treated according to LINES Protocol.

Results: 47 NB were treated at our center in the period of the study: one cervical; one cervico–thoracic; 6 thoracic; 39 abdominal (10 infants). Biopsy was performed in 16 cases (1 neck; 15 abdomen), 9 with MIS technique (56%). Primary surgery was performed in 21 cases (6 chest; 15 abdomen). MIS technique was applied in 13/21 cases (62%); 9/15 were abdominal (60%) and 4/6 were thoracic (66.6%). Of the 16 patients who were biopsied and received chemotherapy, 3 healed and 13 underwent a secondary open surgery (1 neck, abdomen 12). Of the 10 infants with prenatal diagnosis of adrenal NB and treated conservatively, 4 required surgical treatment and 6 (60%) experienced regression. We did not have any intraoperative complications neither conversions to open surgery. None of the patients developed local relapse. Only one patient affected by autoimmune disease, presented pleural collection after thoracoscopic ganglioneuroma removal. All the specimens permitted histological diagnosis: 13 neuroblastoma, 4 ganglioneuroblastoma and 5 ganglioneuroma.

Discussion: With the introduction of IDRFs in 2009, Minimally Invasive Surgery has won a role in the diagnosis and treatment of NB, in the full respect of oncological criteria. In this view, the diagnostic–therapeutic strategy of NB is not allowed without a multidisciplinary approach. Adherence to internationally recognized selection criteria promotes the standardization and comparison of results, thus improving the effectiveness of therapeutic strategies for patients with NB.

Conclusion: MIS has been performed in 22/47 cases (47%) and represented 62% of the primary surgery with a higher incidence in thoracic surgery (86%). Minimally invasive surgery applied to neurogenic tumors is safe when there are not image defined risk factors (e.g. tumors size higher than 5–6 cm, involvement of vascular structure) and it permits an efficient resection. Surgical experience and multidisciplinary approach are a key point for success.

(S060) PERCUTANEOUS TRACHEOSTOMY BY GRIGGS TECHNIQUE UNDER RIGID BRONCHOSCOPIC GUIDANCE IS SAFE AND FEASIBLE IN CHILDREN.

Gulnur Gollu, MD¹, Ufuk Ates¹, Ergun Ergun¹, Ozlem Selvi Can², Tanil Kendirli³, Aydin Yagmurlu¹, Murat Cakmak¹, Tanju Aktug¹, Huseyin Dindar¹, [Meltem Bingol-Kologlu](#)¹, ¹Ankara University Faculty of Medicine Department of Pediatric Surgery, ²Ankara University Faculty of Medicine Department of Pediatric Anesthesiology, ³Ankara University Faculty of Medicine Department of Pediatric Intensive Care

OBJECTIVE: The aim of this study is to report prospective data of pediatric cases that underwent percutaneous tracheostomy (PT) to show that PT is a safe and feasible procedure in children even in small infants.

PATIENTS AND METHODS: PT was done in 57 consecutive patients. Demographic data, indications, complications and outcome were recorded prospectively. Initial 6 PT was done by Giaglia technique whereas the Griggs technique was used in the consecutive 51 patients.

RESULTS: Fifty-seven patients with mean age of 39±54months(1month–17years) underwent PT. Chronic neurological disease (70%) was the underlying pathology followed by neuromuscular condition(16%) and chronic pulmonary, cardiac and metabolic conditions(14%). 50(88%) patients were younger than 10 years and 22(39%) patients were less than 12 months. The mean weight of patients was 12 ± 13 kgr ranging between 2.7 and 50kgr. Laparoscopic Nissen fundoplication and gastrostomy tube placement (n:16), percutaneous endoscopic gastrostomy (n:5) were additional procedures done concurrently with PT. The only major complication was perforation of esophagus (n=1, 1,7%) which was recognized early and immediately repaired by cervical approach. This complication occurred in the 6th case done with the Giaglia technique. After conversion to the Griggs technique no major complication was encountered in the consecutive 51 procedures. The mean period of follow up was 45±46,07 months. Narrowing of the stoma site requiring simple dilation was developed in 3 patients.

CONCLUSION: PT is a safe and easy procedure and a less invasive alternative to surgical tracheostomy even in small infants. We

Oral Abstracts

strongly recommend PT done by Griggs technique in children. It is important that it should be done in an operating room setting and under rigid bronchoscopic guidance.

(S061) DECREASING PAIN AND ANALGESIC REQUIREMENTS AFTER LAPAROSCOPIC HERNIA REPAIR IN CHILDREN

Eilidh Bruce, Merrill Mchoney, PhD, Royal Hospital for Sick Children

Introduction and Objectives: To compare analgesic consumption, anaesthetic blockade and postoperative pain outcomes in open and laparoscopic inguinal hernia repair in children, and analyse the impact of intra-peritoneal local anaesthetic infiltration in laparoscopy.

Methods: Following ethical approval, a retrospective review of all children undergoing laparoscopic repair from January 2010 to September 2016 versus a historic cohort of all open repairs between January 2010 and December 2011 was conducted. The FLACC Score was used to record post-operative pain scores. Analgesic consumption scores were calculated from recorded consumption throughout admission (usually 4–24 hours) using the WHO Pain Ladder. In a sub-group of laparoscopic patients peritoneal infiltration was used as supplementary perioperative analgesia. Groups were compared by statistical analyses as appropriate: P values <0.05 were considered significant.

Results: One hundred fifty five patients (119 males, 36 females) underwent laparoscopic repair, compared with 150 (125 males, 25 females) open. Median age at operation in the laparoscopic group was 221 days (range, 16 days– 14.77years) compared with 194 days (range, 17 days–13.47years) in the open group (P= 0.604). There were 153 daycase procedures compared with 148 inpatient operations (P=0.61).

The type of anaesthetic blocked used varied widely between approaches (P= <0.001). 92% of open cases had a local block of some form, in comparison to 23.6% of laparoscopic cases; with 62.7% of open cases having caudal blocks compared to 21.6% of laparoscopic cases. However laparoscopic patients received more intra-operative analgesia (P= <0.001), and had port site infiltration. 8.8% of patients without caudal block required rescue analgesia in recovery compared to 1.6% of caudal block patients (P= 0.008: Figure 1).

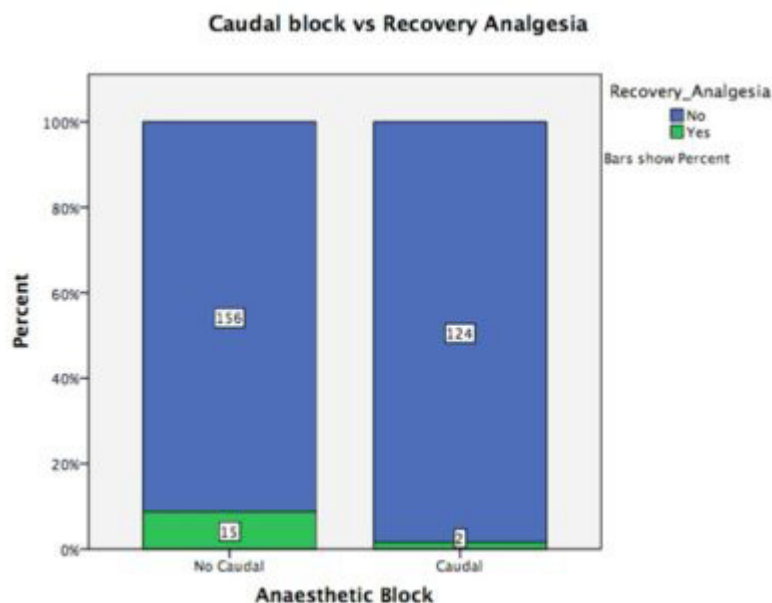


Figure 1 Requirement for rescue analgesia vs caudal block use

Overall median post-operative analgesic consumption score was not different in the daycase group (P=0.81); but significantly higher in the laparoscopic patients in the inpatient group (P<0.001). Peritoneal infiltration was associated with lower analgesic consumption scores in the laparoscopic group (P=0.038; Figure 2).

Oral Abstracts

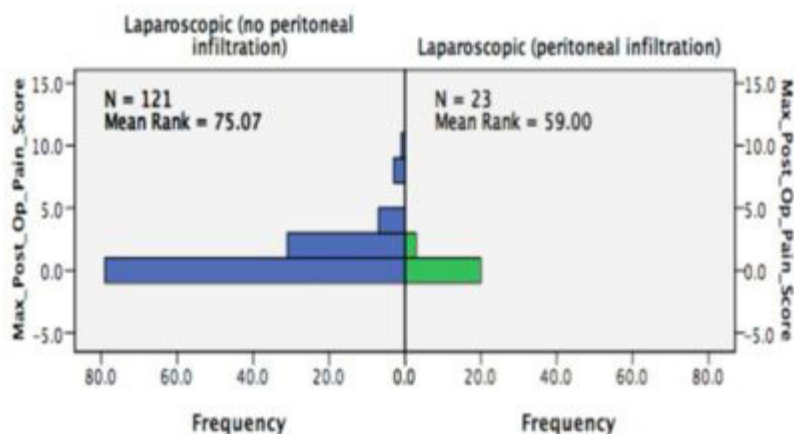


Figure 2. Frequency distribution of pain scores in the laparoscopic group based on peritoneal infiltration.

Conclusions: The optimal analgesic strategy for laparoscopic hernias in children remains undefined. Laparoscopy was associated with increased requirement for rescue analgesia in recovery in the peri-operative period. Laparoscopic patients had less caudal anaesthetic, but there was a significant reduction in the need for rescue analgesia with use of caudal anaesthetic. It seems that intra-peritoneal infiltration of local anaesthetic is associated with better pain control. The combination of caudal and peritoneal infiltration may prove a useful combination of adjunctive analgesia in these patients.

Oral Abstracts

(S062) ALGORITHM OF LAPAROSCOPIC TECHNIQUE IN PEDIATRIC INGUINAL HERNIA: RESULTS FROM EXPERIENCE OF TEN YEARS

Sherif M Shehata, MCh, CST, MD, PhD, Mohamed A Attia, MD, Ashraf A El Attar, MD, MRCS, Akram M Elbatarny, MD, MRCS, Mohamed M Shalaby, MD, Section of Pediatric Surgery, Faculty of Medicine, Tanta University, Tanta, Egypt

Introduction: Laparoscopic repair of pediatric inguinal hernia became routine. Despite that, no single technique is suitable for all cases.

Purpose: To propose an algorithm for proper allocation of pediatric inguinal hernia to certain laparoscopic technique results in the best outcomes in pediatric age group.

Patients and Methods: Along 10 years period, 459 pediatric cases with unilateral inguinal hernia were treated in Tanta University Hospital and other affiliated hospitals. In the first 5 years (phase I), 214 cases were treated then an algorithm for stratification was designed and applied in the second 5 years period (phase II) where 245 cases managed after implementation of this algorithm. This algorithm included evaluation of the hernia side and contralateral side. Open processus of diameter < 3 mm or 1 cm length considered negative for exploration. In cases where the internal ring (IR) diameter range between 4 mm and 15 mm; herniotomy or complete sac disconnection is used. The IR diameter is measured from inside by a piece of suture and measured outside on ruler at maximum diameter considering shape of the ring. In cases where the IR diameter ranged between 15 and 25 mm a purse string or figure of 8 stitch is added. In cases with IR diameter > 2.5 cm or recurrent cases, the interrupted muscular arch repair employing 3– 4 sutures after sac disconnection is employed. Mesh is only used in bilateral cases with weak musculature. Recurrence was compared in both phases.

Results: In phase I, we have 214 cases; 170 boys and 44 girls with age ranged between 6 months and 15 years. All cases managed by laparoscopy where 84 managed by herniotomy, 82 by purse string after sac disconnection and 44 by interrupted muscular arch repair including 15 recurrent cases. In phase II, we have 245 cases; 180 boys and 65 girls with age ranged between 3 months and 15 years. All cases managed by laparoscopy where 80 managed by herniotomy, 137 by purse string after sac disconnection, 25 by interrupted muscular arch repair including 12 recurrent cases. Five boys with bilateral hernia were managed by mesh hernioplasty in the two phases. Follow up period ranged between 3 months and 5 years. Recurrence rate decreased significantly in phase II to 1.2% (3 out of 245) after application of Tanta algorithm as compared to 3.7% (8 out of 212) in phase I.

Conclusions: No single laparoscopic technique is suitable for all inguinal hernia as we are facing a disease of wide range. We apply the golden steps of open repair in different laparoscopic techniques. All types of pediatric inguinal hernia can be managed laparoscopically without conversion. Application of Tanta algorithm reduces the recurrence rate significantly. The laparoscopic technique should be tailored according to criteria of each group of pediatric inguinal hernias in order to get the best outcome and reduced recurrence rate.

(S063) FETOSCOPIC LASER ABLATION FOR FETAL TRACHEAL PERMEABILIZATION IN CONGENITAL HIGH AIRWAY OBSTRUCTION SYNDROME (CHAOS): A NOVEL APPROACH.

Jose L Peiro, MD, PhD, Amir Alhajjat, MD, Ramiro Diaz, MD, Enrique Gil-Guevara, MD, Sammy M Tabbah, MD, Aimen F Shaaban, MD, Foong Y Lim, MD, Cincinnati Fetal Center. CCHMC. Cincinnati, OH. USA.

Congenital high airway obstruction (CHAOS) is a rare condition characterized by obstruction of the fetal upper airway tract. Retention of the intrapulmonary fluid during gestation leads to a dramatic pulmonary hyperplasia with mediastinal compression and ascitis. Left untreated, it is uniformly lethal. Recently, the EXIT procedure has been used in the delivery of affected fetuses. However, the high prenatal and postnatal mortality necessitates the innovation of prenatal intervention strategies. Herein, we report a novel technique for the prenatal management of this highly lethal condition.

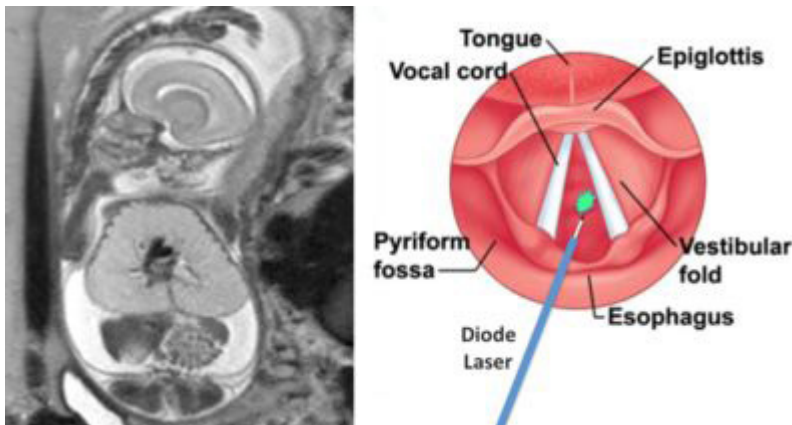
In our Cincinnati Fetal Center, 12 fetal CHAOS cases has been prenatally diagnosed and managed in the last 10 years. EXIT procedure with fetal tracheostomy for neonatal pulmonary ventilation was the usual perinatal management, but all the cases, besides the last one, died on the postnatal period because dysfunctional hyperplastic lungs. Last case survived and was also specifically treated prenatally with a novel percutaneous fetoscopic tracheal decompression.

We report a 35 years old G1P0 female who presented to our care at 24 weeks with findings consistent with fetal CHAOS with the most likely etiology being laryngeal atresia and an obstruction measuring 6.7 mm thickness. No features to suggest a syndromic abnormality were found. She was reevaluated at 28 weeks and found to have evidence of obstruction measuring 11mm and evidence of non-immune hydrops. Subsequently, the patient underwent fetoscopic intervention at 28 weeks. Under epidural anes-

Oral Abstracts

thetia and inhalation gases for uterine relaxation, a 3.3 mm (10Fr) cannula was placed into the amniotic cavity by Seldinger technique and under ultrasound guidance. Then a 2.7 mm curved fetoscope was passed through. The scope was guided towards the oral cavity and subsequently through the vocal cords. A subglottic obstruction was observed. A 600 micron laser fiber was passed through the scope and positioned in between the vocal cords. The obstructive lesion was perforated with Diode Laser until the lesion was penetrated and the fetoscope was able to navigate into the fetal trachea with visualization of a dilated trachea and dense intrapulmonary fluid. The pregnancy continued with improvement of the hydrops. At 31 weeks gestation, the mother developed premature rupture of membranes and maternal contractions. The baby was then delivered emergently via cesarean section with establishment of endotracheal intubation, bronchoscopy and peripheral IV insertion on placental support. The baby was then delivered and a tracheostomy was matured. After a period on mechanical ventilation, now the baby is 6 months old alive and waiting a tracheal reconstructive surgery in a near future.

In conclusion, the high perinatal mortality from CHAOS necessitates the innovation of novel techniques in its management. Fetoscopy has been shown to be safe and effective in the management of several other prenatal conditions. Fetoscopy with laser ablation of the obstruction to create a iatrogenic fistulization on the fetal trachea may provide effective prenatal management strategies that alter the devastating natural history of this condition, especially when combined with controlled delivery and safe airway establishment.



(S064) SCROTAL/TESTICULAR STATUS AFTER REPAIR OF RECENT SEVERE INCARCERATED INGUINAL HERNIA IN MALE INFANTS LESS THAN 12 MONTHS OLD. LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE VERSUS CONVENTIONAL OPEN REPAIR.

Go Miyano, MD, Hiroki Nakamura, MD, Katsunori Tabata, MD, Soichi Shibuya, MD, Takanori Ochi, MD, Hiroshi Murakami, MD, Manabu Okawada, MD, Takashi Doi, MD, Hiroyuki Koga, MD, Geoffrey J Lane, MD, Atsuyuki Yamataka, MD, Juntendo University School of Medicine

PURPOSE: We retrospectively reviewed 41 male infants less than 12 months old who presented to our emergency department between 2014 and 2016 with severe incarcerated inguinal hernia. Laparoscopic percutaneous extraperitoneal closure (LPEC) or conventional open repair (CO) were performed by 5 board certified pediatric consultants or by junior staff under their direct supervision.

METHODS: For LPEC, a 3mm cannula was placed in the center of the umbilical ring for the laparoscope and a 2mm cannula on the right side of the abdomen for grasping forceps. A 19-gauge LPEC needle was inserted at the internal inguinal ring. The orifice of the hernia sac was closed extraperitoneally by circuit suturing around the internal inguinal ring using the LPEC needle. For CO, a classic Champierrhaphy involving high ligation and possible removal of the hernia sac was performed. Operative times and intraoperative findings were evaluated. During LPEC we noted anatomic features such as the condition of the internal inguinal ring, including where the peritoneum was edematous, defined as swelling or whitish color change. Scrotal/testicular status was assessed directly by the operating surgeon and a consultant pediatric surgeon preoperatively, and 1 and 4 weeks after surgery.

RESULTS: There were 21 boys treated by LPEC and 20 by CO. Mean ages and mean weights at surgery for LPEC and CO were 8.7 months/8.4kg and 8.6 months/8.5kg, respectively. In the LPEC group, bilateral hernia repairs were indicated in 2 cases with single incarceration and 2 cases with concurrent umbilical hernia had them repaired with their inguinal hernias simultaneously. Mean

Oral Abstracts

operative time was 19.7 minutes for LPEC and 45.8 minutes for CO ($p: <.05$). In LPEC, the peritoneum was edematous in 13 cases (61.9%); 1 case involving all visible peritoneum (360 degrees) and the rest just ventrally (at 12 o'clock). Wound infection was observed in 1 case in CO at the inguinal crease incision site and in 1 case in LPEC at the umbilicus.

Postoperative scrotal/testicular swelling was observed in 4 cases at 1 week and 2 cases at 4 weeks in CO and in 1 case at 1 week and 0 cases at 4 weeks in LPEC. These differences were not statistically significant. Postoperative testicular elevation was observed on the operated side in 2 cases in CO and 0 cases in LPEC both at 1 week and 4 weeks. In each of these cases the testis was located high in the upper scrotum but could be reduced to the lower scrotum by manual manipulation and orchidopexy was not indicated. Testicular atrophy has not been observed in either group after mean follow-up of 12.4 months in LPEC and 14.6 months in CO. There have been no recurrences in either group (TABLE). All parents are satisfied with postoperative wound cosmesis.

CONCLUSION: LPEC would appear to be more efficient because of significantly quicker operative time. While there were no statistically significant differences in scrotal/testicular status identified, a larger study is warranted to prove that LPEC is associated with less surgical stress compared with conventional open repair.

(S065) COMPARISON OF OPERATIVE PROCEDURE FOR INGUINAL HERNIA IN INFANTS YOUNGER THAN 3 MONTHS: CONVENTIONAL OPEN APPROACH VERSUS LAPAROSCOPIC PERCUTANEOUS EXTRAPERITONEAL CLOSURE.

Soichi Shibuya, MD, PhD¹, Yoshie Toba, MD, PhD², Eiji Miyazaki, MD, PhD³, ¹Department of Pediatric General and Urogenital Surgery, Juntendo University Hospital, ²Department of Anesthesiology, Seirei Hamamatsu General Hospital, ³Department of Pediatric Surgery, Seirei Hamamatsu General Hospital

Introduction: Laparoscopic percutaneous extraperitoneal closure (LPEC) has become a common procedure for repairing inguinal hernia. However, as a relatively new approach, controversy remains around its application for very young patients, particularly those younger than 3 months. In our institution, we switched the operative procedure for inguinal hernia repair from the conventional open approach (OA) to LPEC in 2009. The aim of this study was to evaluate the feasibility of LPEC in patients under 3 months old.

Method: This descriptive single-center study used consecutive clinical data from patients who underwent surgery for inguinal hernia between January 2004 and June 2016. Patients who were younger than 3 months at surgery were divided into two groups: conventional OA group and LPEC group (LP). Detailed operative information were compared between OA and LP.

Results: During the study period, 3,049 patients underwent surgery for inguinal hernia. Of these, 334 patients were under 3 months old at the time of surgery. Among those, the first 167 patients underwent OA and the remaining 167 patients underwent LP. No significant difference in the ratio of males and females was seen between the OA group (109:58) and the LP group (108:59). The OA group included 16 low birth weight infants (LBWI), 3 very low birth weight infants (VLBWI), and 2 extremely low birth weight infants (ELBWI). The LP group included 10 LBWI, 3 VLBWI, and 2 ELBWI. Bilateral repair was performed for 18 patients in the OA group (10.8%) and 90 patients in the LP group (53.8%). No recurrences were seen in either cohort, but 15 patients (10.1%) who underwent OA after unilateral repair surgery developed contralateral hernia. Concurrent orchidopexy for undescended testis was performed in 3 patients from the OA group, but was not performed in the LP group. Concurrent umbilical hernia repair was performed for 3 patients in the OA group and 36 patients in the LP group. Mean operative time for bilateral repair was significantly shorter in the LP group (30.5 ± 7.8 min) than in the OA group (37.3 ± 8.5 min), whereas no significant difference was seen with unilateral repair. In contrast, mean anesthesia time was significantly longer for bilateral repair of LP (76.2 ± 24.7 min) and unilateral repair of LP (61.8 ± 9.6 min) than for bilateral repair of OA (57.4 ± 8.2 min) or unilateral repair of OA (40.5 ± 8.6 min).

Conclusion: In terms of preventing contralateral hernia and short operative time, LPEC offered advantages over the conventional OA, even in patients younger than 3 months. However, LPEC required longer anesthesia time than the OA, due to the need for deeper anesthesia to maintain pneumoperitoneum. These results suggest that younger age was not a contraindication for the application of LPEC, but operative indications should be determined prudently, considering the anesthetic risk.

(S066) FETOSCOPIC SURGERY OF NEURAL TUBE DEFECTS: EVOLUTION IN TECHNIQUES

Carlos Giné¹, Silvia Arévalo¹, Anna Maroto¹, Nerea Maíz¹, José Andrés Molino¹, Carlota Rodó¹, Elida Vázquez¹, Ampar Cuxart¹, César G Fontecha¹, Susana Manrique¹, Antonia Poca¹, Manuel López¹, José L Peiró², Elena Carreras¹, ¹Hospital Univeritari Vall d'Hebron. Barcelona, ²Cincinnati Children's Hospital Medical Center

Introduction: Fetal treatment of neural tube defects (NTD) has been increasing its popularity since the publication of MOMS trial in 2011. Open fetal surgery was considered standard of care but fetoscopic approach has gained ground in order to minimize the effects of surgery, mostly on the mother. Some groups have already reported their experience. We describe hereby our journey from

Oral Abstracts

open fetal surgery to the three port fetoscopic technique that we are currently performing.

Methods: Since 2011 to 2016 all patients with an antenatal intervention for NTD were reviewed attending the surgical technique, demographic data and surgical, obstetrical and neonatal outcome. Three periods were clearly identified (all after maternal Pfannenstiel laparotomy):

- *Group 1 – Open Fetal Surgery:* hysterotomy, dissection of the placode, coverage of the defect by a synthetic patch and application of a synthetic sealant over it (Patch & Glue).
- *Group 2 – Fetoscopic Patch & Glue:* one to two port fetoscopic Patch & Glue technique.
- *Group 3 – Fetoscopic skin closure:* three port fetoscopic skin closure of the defect after dissection and untethering of the placode.

Continuous variables are reported as median and range and categorical variables as number and percentage. Comparison between categorical data was done by Chi-square test, and for nonparametric continuous data Kruskal-Wallis test was used.

Results: 29 patients were operated: 7 in group 1, 12 in group 2 and 10 in group 3. One patient is still on-going at the time of submitting this abstract and final data may change. Gestational age at surgery was 23.7, 23.9 and 24.5 weeks respectively. Surgical time was 200, 217 and 155 min ($p=0.009$).

Obstetric complications were: premature rupture of membranes (57.1%, 33.3% and 80%), chorioamnionitis (14.3%, 8.3% and 10%), 4(57.1%) persistent oligohydramnios with intraabdominal leakage in group 1, and a fetal demise 2 weeks after surgery in group 3. Two patients (22.2%) in group 3 delivered vaginally.

Gestational age at birth was 31.4, 37 and 34.6 weeks respectively and the weight, 1450, 2750 and 2235 g ($p=0.046$). Watertight closure was achieved in 7/7(100%), 1/12(9.1%) and 7/8(87.5%) of live patients ($p=0.001$). Need for shunt was (6/6)100%, 1/12(9.1%) and 5/9(62.5%). Chiari II malformation was present at birth in all cases of group 1 and 2 while in the third group was absent in 4 patients (44.4%), mild in 3 (33.3%) and not better in 1 (11.1%). One patient in group 1 died in the early neonatal period due to an extreme prematurity (26.3w).

Neurological level at birth was improved or maintained in 5/6(83.3%), 7/12(58.3%) and (8/8)100% respectively.

Conclusion: Fetoscopic surgery may add some advantages in the antenatal treatment of NTD, particularly to the mother. Skin closure of the defect seems to be superior to the patch and glue coverage.

(S067) ENDOSCOPIC CAUTERIZATION WITH PNEUMATIC DISTENSION FOR PIRIFORM FOSSA SINUS TRACTS.

María Elena Carazo Palacios¹, Ignacio Miró Rubio¹, Georgina Sanchís Blanco², Carlos Gutiérrez Sanromán¹, Vicente Ibáñez Pradas¹, José Enrique Barrios¹, Juan José Vila Carbó¹, ¹Hospital La Fe, Valencia, Spain, ²Hospital universitario Son Espases Mallorca, Spain

INTRODUCTION: Piriform fossa sinus tracts (PFST) are a cause of recurrent neck infections in the pediatric population. Conventional management required open resection, but over recent years minimally invasive endoscopic approaches to obliterate the PFST sinus have been performed in many institutions. Various methods of obliterating the PFST have been described: electrocautery, laser, trichloroacetic acid, silver nitrate...

MATERIAL AND METHODS: The authors present a technical modification of endoscopic sclerosis with diathermy (ESD): continuous infusion of air flow through the flexible endoscope was used to distend the pyriform sinus and facilitate recognition of the fistula opening. The sinus obliteration was performed with a wire guide and diathermy.

We present a retrospective review of the medical records of 12 children (aged 4 months to 14 years) with pyriform fossa sinus tracts treated with this endoscopic technique between 2000 and 2016 at a tertiary care children's hospital.

RESULTS: Clinical presentation of the 12 affected children included neck tumor (7 [58 %]), neck abscesses (4 [33 %]), thyroiditis (5 [41 %]). All lesions occurred on the left side. All of the patients underwent an ultrasonography and barium esophagography, 6 (50%) a tomography and 3 (25%) underwent MR imaging.

Two patients were treated with ESD after the open approach was failed. There was not procedure-related morbidity. In this moment

Oral Abstracts

there is no recurrence.

CONCLUSION: In our experience, endoscopic sclerosis with pneumatic distension is a simple technique, reproducible, not invasive and very effective. ESD could be considered as a primary option and for revision after open surgery in pediatric patients with PFST.

(S068) THE PITFALLS OF LAPAROSCOPIC EXTRAPERITONEAL CLOSURE IN RELATION TO METACHRONOUS CONTRALATERAL INGUINAL HERNIA

Takahiro Jimbo, MD, PhD¹, Hori Tetsuo, MD, PhD¹, Aya Ushiyama, MD¹, Kouji Masumoto, MD, PhD², ¹Tsuchiura Kyodo General Hospital, Jpn, ²Department of Pediatric Surgery, University of Tsukuba Hospital

Background and Aim: Inguinal herniorrhaphy is the most common procedure performed by pediatric surgeons and the management of contralateral patent processus vaginalis (cPPV) has been unclear. Conversely, the performance of laparoscopic percutaneous extraperitoneal closure (LPEC) for inguinal hernia has become widespread in the last decade. One of the advantages of LPEC is that it allows for the evaluation of the contralateral inguinal region. If cPPV is confirmed, extraperitoneal closure can be performed to prevent metachronous contralateral inguinal hernia (MCIH). Recently, a few reports on MCIH following negative cPPV findings have been reported. We herein report the pitfalls of LPEC in relation to exploratory laparoscopy to find cPPV.

Material and method: A retrospective study was performed to investigate the results of exploratory laparoscopy to find cPPV. We analyzed 143 consecutive patients with inguinal hernia who underwent surgery at our institution from December 2011 to June 2016. The patients' age, weight and height, length of operation, the rate of recurrence as a complication, and findings of cPPV and MCIH were analyzed. With regard to the findings of cPPV, we classified cPPV into three types: Type 1, peritoneal veil; Type 2, pin-hole; and Type 3, slit (Fig.1).

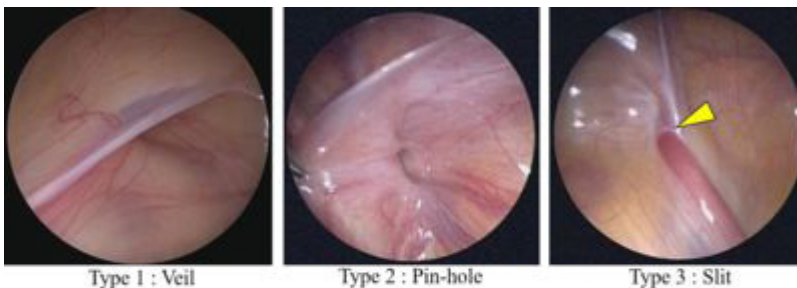


Fig.1 The findings of Contralateral Internal Inguinal Ring

Results: One hundred forty-three patients underwent LPEC during the study period. There were 63 boys and 80 girls who ranged from 11 months to 12 years of age (median: 4.2 years). Eighty-three patients had right side unilateral inguinal hernia, 56 had left side unilateral inguinal hernia, and 4 had bilateral inguinal hernia. Contralateral PPV was confirmed in 22 boys (36.1%) and 37 girls (47.4%) with unilateral inguinal hernia. In 7 of the 22 boys (31.8%) and 9 of the 37 girls (23.7%), cPPV was detected by contralateral exploration using forceps. The rate of cPPV did not differ to a statistically significant extent between the boys and girls. The cPPV classifications were as follows: Type 1, 1 boy and 4 girls; Type 2, 6 boys and 1 girl; and Type 3, only 4 girls. There was no recurrence after LPEC; however, MCIH after LPEC was only found in one patient who was negative laparoscopic findings for cPPV (0.70%). Our MCIH case was not detected cPPV instead of a careful exploration of the internal inguinal ring region at the primary LPEC (Fig. 2).

Oral Abstracts

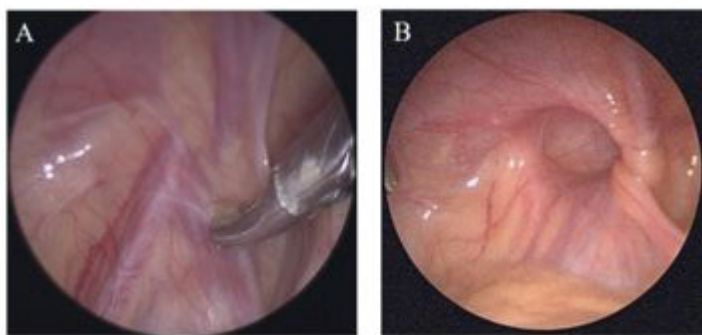


Fig. 2 The laparoscopic view of MCIH

A: the negative findings of contralateral inguinal ring at primary LPEC

B: the findings of MCIH at 16 months from the primary LPEC

Conclusion: The outcome of our study showed that the contralateral exploration using forceps was an essential technique. Type 1 contralateral findings were detected more easily than type 2 and 3 findings. Conversely, type 2 findings were mainly detected in boys, while type 3 findings were often detected along a round ligament. LPEC with exploration using forceps contributed to a decreased incidence of MCIH in comparison to previous reports. On the other hand, false-negative CPPV findings should be considered after the postoperative period following unilateral LPEC.

(S069) LAPAROSCOPIC OOPHORECTOMY FOR OVARIAN TISSUE CRYOPRESERVATION IN PREPUBERTAL AND YOUNG ADOLESCENT FEMALES: A REVIEW OF SURGICAL OUTCOMES

Kristine Corkum, MD, Erin Rowell, MD, Ann & Robert H. Lurie Children's Hospital of Chicago

Introduction: Pediatric cancer patients today experience an increased overall survival and prolonged life expectancy due to continued advancements in medical therapy. Their increased risk of infertility has been identified as a significant quality of life concern by adult survivors of childhood cancer. The surgeon's role in prepubertal and young adolescent fertility preservation has evolved. Historically, surgical transposition of the ovaries was available for females undergoing local pelvic irradiation. Now, oocyte and ovarian tissue cryopreservation (OTC) have emerged as promising, yet experimental options for pediatric patients with fertility threatening conditions or those who will be exposed to high-risk chemo/radiation therapies, and/or stem cell transplant. Currently, OTC is the only pre-treatment option available to preserve fertility in prepubertal females. Numerous operative techniques have been described for obtaining ovarian tissue for cryopreservation across many surgical subspecialties with various training backgrounds. It is essential that a safe operation is identified for OTC given its experimental nature. There is limited data available regarding surgical outcomes of prepubertal and young adolescent fertility preservation procedures, therefore we reviewed our institution's experience and outcomes with laparoscopic oophorectomy for OTC.

Methods: A retrospective review of our institution's fertility preservation and hormone restoration program from January 2011 to October 2016 was performed using electronic medical records and the program registry. All females who underwent an operative procedure for OTC were included in the study regardless of age or medical diagnosis. Laparoscopic oophorectomy was performed using a 10-mm umbilical trocar and two 5-mm trocars in the right lower quadrant and midline suprapubic location. The majority of tissue dissection/division was performed using an ultrasonic energy device with dissection proceeding from medial to lateral along the mesovarium and the vascular pedicle divided as the last step of the oophorectomy.

Results: OTC was performed in 38 patients. Average age was 11 years old (21 months to 20 years). Nineteen (50.0 %) patients were prepubertal. Most common diagnoses were musculoskeletal and hematologic malignancies making up 31/38 (81.6 %) patients. Laparoscopic oophorectomy was performed in 37/38 (97.3%) of patients, of which 27/38 (70.1 %) had OTC performed in conjunction with another procedure such as a central venous port insertion, bone marrow biopsy, and/or lumbar puncture. Average EBL of 9 cc. There were no documented intraoperative or 30-day postoperative complications. Ninety-two percent of patients were admitted less than 24-hours, of those 52.6% (20/38) were performed as same-day surgeries. No reported delays to start of medical therapy. Of the ovarian specimens obtained, 35/38 (92.1 %) had normal follicular patterns.

Conclusion: Laparoscopic oophorectomy is a safe and timely operative technique for ovarian tissue cryopreservation as a fertility preservation measure in prepubertal and young adolescent females. It can be effectively paired with other necessary procedures to minimize the patient's exposure to sedation and general anesthesia. Continued investigation should be undertaken to ensure

Oral Abstracts

minimal operative risk while maximizing the quality and quantity of ovarian follicles for future re-implantation and restoration of fertility.

(S070) CURRENT PRACTICES IN THE MANAGEMENT OF CONGENITAL DIAPHRAGMATIC HERNIA (CDH) PATIENTS REQUIRING EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO): RESULTS OF AN INTERNATIONAL SURVEY OF PEDIATRIC SURGEONS

Sophia Abdulhai, MD, Ian C Glenn, MD, Todd A Ponsky, MD, Avraham Schlager, MD, Akron Children's Hospital

INTRODUCTION: There is little consensus on optimal surgical approach or timing of intervention for cases of CDH requiring ECMO. Although approximately 15% of CDH cases require ECMO support, meaningful comparisons of the outcomes of the various approaches has been limited as the number of cases in any given institution remains low. Additionally, because ECMO requires a cooperative multidisciplinary framework, institutions tend to have a uniform approach further limiting the individual surgeon's exposure to alternative practices. The goal of this study is to survey the international pediatric surgery community to describe the current practice trends.

METHODS: A survey was distributed by email to all IPEG (International Pediatric Endosurgery Group) members and posted on pediatric surgery social media groups. Statistical analysis was conducted using chi-squared test.

RESULTS: A total of 123 pediatric surgeons completed the survey, 91 (74%) of whom currently perform ECMO.

Method of ECMO: Among respondents, 89% work at institutions that offer both veno-atrial (VA) and veno-venous (VV) ECMO. Although 69% currently perform VA ECMO for CDH, only 46% felt VA was the "optimal method" for CDH, of whom 35% have never attempted VV for CDH.

VV to VA Conversion: Amongst VV proponents, 21% believe the rate of VV to VA conversion to be below 5% and only 16% believe it to be greater than 30%, compared to 0% and 40% respectively in their VA counterparts.

Timing of CDH Repair: The responses for the optimal timing of CDH repair was as follows: 46% Post-ECMO repair, 22% Early ECMO Repair, 15% whenever stabilized on ECMO, 14% Late ECMO repair, 2% pre-ECMO repair. Up to 64% (71/111) would perform a CDH repair if the patient was unable to be weaned off ECMO, and 27% (30/111) report successful decannulation after an "on ECMO" CDH repair of a patient who had been unweanable on ECMO for greater than two weeks.

Exit to ECMO: 92% do not perform exit-to-ECMO. The primary indication listed for exit-to-ECMO was imaging evidence of pulmonary hypoplasia.

CONCLUSION: There are significant practice variations in both the timing and surgical approaches to CDH-ECMO. The majority of pediatric surgeons perform VA ECMO in CDH patients; however, a significant percentage of those believe VV to be the more optimal approach. This discrepancy is not accounted for by the few VA-only institutions. Additionally, the perception of the VV to VA conversion rate appears to be higher in those that believe VA ECMO to be the more optimal method. Timing for CDH repair varies greatly. Although the post-ECMO CDH repair is the most common approach among respondents, the majority would perform a repair "on ECMO" if the patient was unable to be weaned. Additionally, although many pediatric surgeons believe the "last ditch repair" for the unweanable patient to be futile, 27% have reported success with these repairs. Exit-to-ECMO for CDH remains a minority practice.

(S071) MINIMALLY INVASIVE SURGERY REPAIR FOR CONGENITAL DIAPHRAGMATIC HERNIA USING A NOVEL TWO-HOOKED CORE HERNIA APPARATUS IN NEONATES AND INFANTS

Suolin Li, MD, Xuelai Liu, Na Geng, Yongting Zhang, The Second Hospital of Hebei Medical University

BACKGROUND: Congenital diaphragmatic hernia (CDH) has traditionally been repaired via a laparotomy. More and more reports on minimally invasive surgery (MIS) repair are being published. However, the intracorporeal placement and tying of suture can be challenging, leading to prolonged anesthesia and morbidity. We describe our initial experience with the use of a novel two-hooked core hernia apparatus as a simplified suture technique that permits a safe and efficient advanced MIS reconstruction in neonates and infants.

METHODS: From August 2014 to November 2016, 12 infants with CDH underwent diaphragmatic reconstruction utilizing a two-hooked core hernia apparatus to introduce and withdraw a prolene suture between the edges of diaphragmatic defects through the same stitch's skin entrance site. In Bochdaleck hernia, the early placement of transthoracic traction stitches can facilitate visceral

Oral Abstracts

reduction and tension-free closure of possible residual V-shaped defects. In Morgagni hernia, 3 to 5 pinholes, each 1.5 mm in size and 1 cm apart, were made in the substernal region of the anterior abdominal wall at the anterior edge of the defect. The 2 ends by entering and exiting a suture formed a U shape to tie a knot extracorporeally within the subcutaneous plane for obliterating the defect.

RESULTS: Thoracoscopic or laparoscopic CDH repairs were carried out in all children, including 9 Bochdaleck and 3 Morgagni hernias. There were 8 males and 4 females with a mean age of 9 days (range, 1–180 days). The mean operative time was 41.5 ± 7.2 minutes for Bochdaleck hernia repairs. For Morgagni hernia, the mean operative time was 30.6 ± 6.5 minutes. All cases were completed without conversion. One patient had a hernia recurrence and was repaired similarly, whereas the others had uneventful recovery at a median follow-up of 13.5 months (range, 1–26 months).

CONCLUSION: The two-hooked core hernia apparatus is an innovative and safe tool that can facilitate endoscopic repair of CDH and the extracorporeal traction stitches without creating skin incisions and closing wider defects is the simple and time saving option for pediatric MIS. This initial experience demonstrates the technique's effectiveness and its excellent cosmetic outcomes.

Video Abstracts

(V001) TWO-PORT ENDOSCOPIC FETAL CLOSURE OF MYELOMENINGOCELE

Jacob Cherian, MD, Michael A Belfort, MD, PhD, Alireza A Shamshirsaz, MD, Jimmy Espinoza, MD, Olutoyin A Olutoye, MD, Darrell L Cass, MD, Oluyinka O Olutoye, MD, PhD, William E Whitehead, MD, Baylor College of Medicine

Open neural tube defects are a common congenital abnormality with significant consequences for affected children and their families. Issues include paraplegia, walking difficulties, bowel and bladder incontinence, and hydrocephalus. The Management of Myelomeningocele Study published in 2011 established fetal closure as a treatment option. Fetal closure reduces the incidence of hydrocephalus and improves motor outcomes compared to conventional postnatal closure. Fetal closure, however, typically necessitates hysterotomy and significantly increases the risk of premature rupture of membranes, oligohydramnios, preterm delivery, and uterine dehiscence. In this video abstract, we describe our multidisciplinary endoscopic approach for fetal closure that eliminates the need for hysterotomy.

https://www.youtube.com/watch?v=TSP1_-ldohc

(V002) CYSTOSCOPIC-ASSISTED LAPAROSCOPIC EXCISION OF PROSTATIC UTRICLE

Ibrahim A Mostafa, IMRCS, MS, Mark N Woodward, FRCS, paed surg, Mohamed Shalaby, FRCS, paed surg, Bristol Royal Hospital For Children

A case of 46XY DSD who had a scrotal hypospadias, bifid scrotum, penoscrotal transposition and a right retractile testis. Initial MCUG revealed a prostatic utricle but failed to opacify the bladder. The patient was asymptomatic, therefore, a hypospadias repair was done in two stages together with correction of the penoscrotal transposition and the bifid scrotum. After the hypospadias repair, the patient started to suffer from recurrent urinary infections and epididymo-orchitis. Examination of the meatus under anaesthesia was unre-
makable and a catheter was passed cystoscopically to repeat the MCUG which showed the utricle in relation to the bladder. This video presentation demonstrates the cystoscopic-assisted laparoscopic excision of the prostatic utricle and demonstrates the tricks used to facilitate complete dissection of the utricle

<https://www.youtube.com/watch?v=s16PQ6oDjIs>

(V003) THORACOSCOPIC CERVICOTHORACIC SYMPATHECTOMY

Sophia Abdulhai, MD, Ian C Glenn, MD, Todd A Ponsky, MD, Akron Children's Hospital

INTRODUCTION: Left cardiac sympathectomy is an effective treatment for patients with life threatening cardiac arrhythmias. It is indicated for patients who have failed medical treatment and have had multiple ICD firings. This video will describe the use of a left thoracoscopic cardiac sympathectomy in two patients.

METHODS/TECHNIQUE: A left thoracoscopic cardiac sympathectomy is performed in the right lateral decubitus position after placement of a double lumen endotracheal tube and defibrillating pads. Three 5 mm ports are placed, and the pleura is incised using hook cautery over the sympathetic chain, just above the 4th rib. Lidocaine is injected into the sympathetic chain to prevent cardiac arrhythmias. After dissecting out the sympathetic chain from the stellate ganglion to the 5th rib, the sympathetic chain is ligated just distal to the T4 ganglion. The stellate ganglion is then partially resected using clips and scissors. Electrocautery is avoided when ligating the stellate ganglion to prevent complete damage to it, which may result in Horner's syndrome. The air is evacuated using a red rubber catheter and the lung is re-inflated.

RESULTS: Successful left thoracoscopic cardiac sympathectomies were performed in both patients. Both

Video Abstracts

patients had complete resolution of their symptoms without any further ICD firings.

CONCLUSION: Left cardiac sympathectomy is an effective treatment for patients with life threatening cardiac arrhythmias.

<https://www.youtube.com/watch?v=qqbvWVRC7Kg>

(V004) LAPAROSCOPIC DISTAL SPLENO-ADRENAL SHUNT FOR THE TREATMENT OF PORTAL HYPERTENSION IN CHILDREN WITH CONGENITAL HEPATIC FIBROSIS

Long Li, Jinshan Zhang, Capital Institute of Pediatrics

Objective: To assess the effectiveness and feasibility of laparoscopic distal spleno-adrenal shunt for the treatment of portal hypertension in children.

Methods: From December 2015 to August 2016, four children with upper gastrointestinal bleeding underwent laparoscopic distal spleno-adrenal shunt. Portal hypertension and splenomegaly were demonstrated on the preoperative computed tomography (CT) and sonography. The distal splenic vein was mobilized and anastomosed to the left adrenal vein laparoscopically. All patients were followed-up postoperatively.

Results: The laparoscopic distal spleno-adrenal shunt was successfully performed in all patients. The liver fibrosis was diagnosed by postoperative liver pathology. The operative time ranged from 180 to 360 min. The blood loss was minimal. The length of hospital stay was 6-13 days. The duration of following-up was 1-9 months (median: 3 months). The portal pressure and splenic size were decreased postoperatively. The complete blood count normalized and the biochemistry tests were within normal range after surgery. Postoperative ultrasound and CT confirmed shunt patency and satisfactory flow in the spleno-adrenal shunt in all patients. No patient developed recurrence of variceal bleeding.

Conclusions: The laparoscopic spleno-adrenal shunt is a feasible treatment of portal hypertension in children.

<https://www.youtube.com/watch?v=IN1PQYipsDk>

Video Abstracts

(V005) LAPAROSCOPIC GASTROESOPHAGEAL DISSOCIATION IN NEUROLOGICALLY IMPAIRED CHILDREN WITH SEVERE, RECURRENT GASTROESOPHAGEAL REFLUX

Jonathan H Deantonio, MD, Dan W Parrish, MD, Shannon F Rosati, MD, Claudio Oiticica, MD, David A Lanning, MD, PhD, Children's Hospital of Richmond at Virginia Commonwealth University

Introduction: Neurologically impaired children with severe, recurrent gastroesophageal reflux disease (GERD), after a failed fundoplication, are frequently readmitted to the hospital due to recurrent aspiration and respiratory illness. These children are often managed with a redo laparoscopic Nissen fundoplication. However, over the last 5 years, we have performed a laparoscopic gastroesophageal dissociation (LGED) on 21 patients for this problem. This video demonstrates our technique.

Minimally Invasive Methods: Incisions were made as would be done for a typical redo fundoplication with the addition of a 12mm trocar on the right lower quadrant. Extensive adhesions from a prior Nissen fundoplication were taken down with electrocautery. The anterior and posterior vagus nerves were clearly identified and persevered. Once the gastroesophageal junction was mobilized into the abdomen, the large hiatal hernia defect was closed with multiple 2-0 silk sutures and the esophagus was anchored to the crura at the cardinal positions. An Endo-GIA stapler was then used to transect the esophagus at the gastroesophageal (GE) junction. The jejunum was also transected with another stapler at 20cm distal to the ligament of Treitz. The roux limb was passed through the mesocolonic defect and behind the stomach towards the hiatus taking care to prevent twisting. An antimesenteric enterotomy was made approximately 2cm proximal to end of roux limb, and the staple line was removed from the esophagus. Multiple interrupted 4-0 vicryl sutures were placed to create the esophagojejunal (EJ) anastomosis, which was then checked to ensure that it was air tight with a leak test. Petersen's defect was then closed, and a stapled jejunojejunostomy was created approximately 30cm distal to the EJ. Lastly, two round channeled drains were placed near the EJ.

Results: Twenty-one neurologically impaired patients (14 months-17 years) with severe, recurrent GERD underwent a LGED with 19 of them having had at least one prior fundoplication (max=3). Patients weighed 7.9-57kg (avg=23.6kg), length of stay ranged from 5-20 days (avg=12 days), estimated blood loss ranged from <5cc-450cc (avg=69cc, median=25cc), and duration of operation ranged from 299-727min (avg=477min). One patient died from gram-negative sepsis on postoperative day 18, and two others died during the follow-up period due to unrelated causes. There were only 4 readmissions among the 19 remaining patients, one for a dislodged feeding tube, another with an internal hernia, and two with viral illnesses. Every patient had resolution of their GERD (follow-up avg=9.2months, max=19months) with minimal to no retching or vomiting.

Conclusions: In neurologically impaired patients with severe, recurrent GERD, relying on long-term gastrojejunostomy feeds or redoing the fundoplication often leads to significant complications and long-term problems. After having a LGED, our cohort of patients had resolution of their retching and vomiting, a reduction in readmissions for reflux-related respiratory illness and few complications or problems. In neurologically impaired patients with severe, recurrent GERD, a LGED may be a viable alternative to traditional treatments in this challenging patient population.

<https://www.youtube.com/watch?v=cFtK2BoJlho>

(V006) MALROTATION WITH ISOMERISM: LAPAROSCOPIC LADD PROCEDURE

Jordan Krieger, BS, Justin Cardenas, BS, Ashwin Pimpalwar, MD, Baylor College of Medicine

Introduction: Isomerism is a rare congenital condition in which one side of the body is a mirror image of the

Video Abstracts

opposite side of the body. Abdominal manifestations include abnormal stomach positioning with possible malrotation of the intestines. If malrotation occurs, a laparoscopic Ladd procedure is performed. Runtime of video is 4 mins 59 secs.

Materials and Methods: This video shows a laparoscopic Ladd procedure done in a 9-month old male with right-sided isomerism and asymptomatic intestinal malrotation. Access to the right lower quadrant was achieved by a modified Hasson technique with a Step™ trocar (Auto-Suture) placed through a 5 mm incision in the umbilicus. Pneumoperitoneum was established using 5 L/minute of carbon dioxide under 12 mm Hg of pressure. A 30° telescope camera was inserted into the peritoneal cavity for proper visualization. Next, two 3 mm incisions were made in the lower right and left abdominal quadrants. A 3 mm port was placed on the right and a 5 mm port was placed on the left with Step™ trocars (Auto-Suture). Important structures were immediately identified. The liver was located in the center of the abdomen and the spleen was absent, suggestive of right-sided isomerism. The attachment between the splenic flexure of the colon and the left lateral abdominal wall was divided. The colon was then reflected downwards, exposing the centrally located stomach. Duodenal loops were released from the Ladd bands, allowing for visualization of the pancreas lying inside of the C-loop of the duodenum. While looking for the distal portion of the jejunum, it was discovered that the entire jejunum was trapped retroperitoneally, creating a mesocolic hernia. Using hook diathermy, the entire bowel was released down to the ileocecal region, which was in its normal anatomical location in the right lower quadrant. The appendix appeared normal. Using hook diathermy, the mesentery of the appendix was taken down. The appendix was ligated with two 3/0 Vicryl ties, resected, and removed through a port site. All of the small bowel was placed on the right side of the abdomen, and all of the large bowel was placed on the left. An intrinsic duodenal obstruction was ruled out, and the rest of the abdomen was re-examined. The bowel appeared completely viable. Ports were withdrawn after desufflating the pneumoperitoneum. The umbilical port site was closed with 2-0 Vicryl UR-6 single suture. All other port sites were closed with Dermabond glue.

Results and Conclusions: There were no postoperative complications. The patient began tolerating feeds on POD #3 and was discharged on POD #4.

No competing financial interests exist.

References

Hill SJ. Heterotaxy syndrome and malrotation: does isomerism influence risk and decision to treat. J Pediatr Surg. 2014;49:934-947.

<https://www.youtube.com/watch?v=KwfOdVwguCo>

(V007) THE THORACIC RESECTION OF A MATURE MEDIASTINAL TERATOMA

Alexander Sterlin, MD, Jan Goedeke, MD, Oliver J Muensterer, MD, PhD, University Medicine Mainz

Background: Mediastinal teratomas are the most common extra-gonadal germ cell tumors. Most of these lesions are currently removed by open surgery.

Objective: This video is a step by step depiction of the thoracoscopic mobilization and resection of a mature mediastinal teratoma.

Indication: The mediastinum is the most common extragonadal location in which germ cell tumors are found (5-10%). The most frequently found tumor is a mature teratoma. We present the case of a 13 year old boy who presented with recurrent episodes of asthma and who was incidentally found to have a right anterior medias-

Video Abstracts

tinal mass.

Method: Thoracoscopic surgery was performed in partial left lateral position with three 5 mm ports in triangular position. We used a 5 mm 45° optic and two 5 mm laparoscopic grasping forceps and Overholt clamps. Coagulation and dissection was performed with a laparoscopic 5mm diathermy Sealer and hook electrocautery. The main challenges of the operation were the dissection of dense adhesions to the lung without compromising the tumor capsule, as well as the careful dissection of the phrenic nerve which was sandwiched between the medial aspect of the tumor and the pericardium.

Results: As demonstrated in the video, an R0 resection was achieved without damage to the lung or the phrenic nerve. Histology showed a G0 mature teratoma. The patient had no complications and was doing well on follow up.

Conclusion: Thoracoscopic tumor mobilization affords the advantage of clearly identifying the mass and safely ligating the primary tumor supplying vascular structures, thereby avoiding the risk of major bleeding throughout the subsequent tumor mobilization. The thoracoscopic approach also allows accurate dissection of neural structures, including the phrenic nerve, under direct vision. By avoiding a thoracotomy, longterm consequences such as scoliosis and scapula alata can be avoided. Therefore the thoracoscopic mobilization and resection of mediastinal teratomas is safe and feasible, and should become the standard of care.

<https://www.youtube.com/watch?v=vCpg6EKJaFo>

Video Abstracts

(V008) BRONCHIAL INJURY DURING RESECTION OF FOREGUT DUPLICATION CYST

Katherine J Baxter, MD, MS, Erik G Pearson, MD, Matthew S Clifton, MD, Emory University, Children's Health-care of Atlanta

The patient is a 16 year old male elite track athlete, who presented with chest pain on exertion and mild dysphagia. Physical exam was unremarkable, a full cardiac workup was negative and a chest x-ray showed a rounded mediastinal lesion near the carina. A computed tomography (CT) scan was ordered which demonstrated a 5.1 cm cystic mediastinal structure posterior to the carina, adjacent to the pulmonary artery, pulmonary vein, azygos vein, and descending aorta. This was most consistent with a foregut duplication cyst. Given his symptoms, thoracoscopic cyst resection was recommended. The patient was intubated with a double lumen endotracheal tube and placed in the left lateral decubitus position. A 44 Fr bougie was placed in the esophagus. The chest was accessed with a Veress needle and insufflated to 4mmHg. Three 5mm trocar were placed, followed by a fourth to aid in retraction. The cyst was dissected from a lateral to medial approach. While dissecting an adherent portion of the cyst with electrocautery, a full thickness injury was created in the right mainstem bronchus. The injury was immediately recognized and repaired thoracoscopically in a longitudinal fashion using interrupted 4-0 absorbable monofilament suture. The repair was reinforced with a mediastinal pleural flap and fibrin glue. The patient was extubated postoperatively with no issues and there was no air leak from the chest drain on leaving the room. The patient was discharged on postoperative day 4 and has returned to his regular activity. The final pathology report was consistent with an esophageal foregut cyst.

<https://www.youtube.com/watch?v=B9KJYlCLMWI>

(V009) ENDOSCOPIC TRANSORAL DIVERTICULOSTOMY FOR POST-TRAUMATIC ESOPHAGEAL DIVERTICULUM USING 5MM STAPLER IN A CHILD

Keith A Kuenzler, MD¹, Jason C Fisher, MD¹, Huma A Quraishi, MD², Luciana D Roman, APN², ¹New York University School of Medicine, ²Hackensack University Medical Center

This video presents the case of a 12-year-old girl who had developed a pharyngoesophageal diverticulum several months after an esophageal perforation caused by an ingested glass shard. She described symptoms of dysphagia and regurgitation of undigested food, as well as the need to swallow multiple times with neck flexion to allow solids to pass. Although transoral diverticulostomy with a GIA stapler is well established in adults with pulsion esophageal diverticula, we are not aware of any previous descriptions in the pediatric population. We demonstrate the successful transoral diverticulostomy using a 5mm endoscopic stapler, with complete resolution of the child's symptoms, and elimination of the diverticulum by contrast esophagram.

<https://www.youtube.com/watch?v=e5X3YY65slk>

Video Abstracts

(V010) TRANSPERITONEAL LAPAROSCOPIC NEPHRO-SPARING SURGERY OF A RENINOMA TUMOR

Javier Ruiz, Juan Corbetta, MD, Santiago Weller, Gustavo Villoldo, MD, Ramiro Perea, MD, Enrique Lago, MD, Cristian Sager, MD, Carol Burek, MD, Victor Duran, MD, Juan Carlos Lopez, MD, Hospital de Pediatría J. P. Garrahan Buenos Aires Argentina

Reninoma is a juxtaglomerular cell tumor and a rare but treatable cause of hypertension. This type of benign renal neoplasm has elevated plasma renin activity with secondary hyperaldosteronism and it is usually well localized using computed tomography or magnetic resonance imaging. The first choice of treatment consists in the surgical resection of the tumor with a nephron-sparing approach.

Objective: A well circumscribed and 20 mm diameter tumor was found with ultrasound and computed tomography images in the lower pole of the right kidney of a 14-year-old girl with a history of severe high blood pressure.

The patient was positioned laterally with sand bag underneath the lumbar region, and the table was put in a reverse Trendelenburg position. A transperitoneal laparoscopic approach was performed using 4 ports. After mobilization of the colon, the Gerota's fascia was opened and the tumor located on the anterior surface of the lower renal pole. Both polar and principal renal arteries were dissected and secured with vessel loops. The tumor was resected using an ultrasonic energy device with an 8-minute polar artery clamping. The transected renal surface was closed using 2 continuous barbed sutures and the tumor was removed using a handmade endobag. There were no perioperative complications and a perianastomotic drainage was left for 4 days.

The patient was discharged 2 days after surgery with decreasing blood pressure measurements and normal plasma renin activity levels without any medication. The surgical pathology confirmed the typical reninoma immunohistochemically features.

Conclusion: Reninoma is a rare but benign renal tumor and because of its nature and localization it represents an ideal tumor for minimally invasive nephron-sparing surgery.

<https://www.youtube.com/watch?v=ieeRRoxvcGg>

(V011) LAPAROSCOPIC RADICAL NEPHRECTOMY IN AN ADOLESCENT WITH NEOPLASTIC DISEASE AS INITIAL THERAPY

Jeffrey W Gander, MD, Sara K Rasmussen, MD, PhD, University of Virginia Children's Hospital

Introduction: Pediatric renal tumors are typically resected through a large abdominal incision to prevent tumor rupture. If this occurs, staging will be increased with more therapy needed. However, the large incision can cause significant post-operative pain and a disfiguring scar. Laparoscopic resections of kidney tumors have been reported, however this is typically after neoadjuvant therapy to decrease tumor size. We present a case of a patient with a kidney tumor resected laparoscopically with adherence to oncologic principles as the initial therapeutic intervention.

Case History: A 13 y/o girl presented with a 3 month history of hematuria and left sided abdominal pain. A CT scan showed a 5 cm heterogeneous left renal mass centered within the renal pelvis. The mass was concerning for a Wilms tumor or a renal cell carcinoma. A metastatic workup was negative.

Surgical Technique: A laparoscopic approach was undertaken. Four 5 mm ports were used for the dissection with one port being later upsized to a 10 mm port for the stapler.

Video Abstracts

The operation began by dividing the white line of Toldt and retroperitoneal attachments to retract the left colon away. The ureter was dissected as low as possible in the pelvis. The kidney attachments were then dissected widely to leave the perinephric fat and Gerota's fascia with the specimen in case of any local tumor invasion.

While dissecting the renal hilar vessels, the patient was found to have a circumaortic left renal vein. The ureter was then stapled and divided. The renal vessels were individually stapled. After dividing the remaining attachments to the kidney, lymph node sampling was performed for staging purposes. The specimen was removed in an endocatch bag through a Pfannenstiel incision without any rupture. The patient recovered well, going home on post-operative day #2. Final pathology showed a renal cell carcinoma.

Conclusion: We demonstrate that kidney tumors in children can be safely resected laparoscopically without need for neoadjuvant chemotherapy. Oncologic principles can be followed and the laparoscopic approach can lessen the morbidity of an open incision.

<https://www.youtube.com/watch?v=kFg3MUcg3E0>

(V012) LAPAROSCOPIC NEOAPPENDICOSTOMY

Steven Z Lu, DO, MPH¹, Michael J Leinwand, MD², ¹Western Michigan University School of Medicine, ²Bronson Children's Hospital

A 5 year old boy was born with an imperforate anus and rectourethral fistula. He initially underwent colostomy with mucous fistula. Later, he underwent laparoscopic ligation of the rectourethral fistula and was found to have intestinal malrotation, so a Ladd's procedure was performed. Concomitantly, he underwent colostomy closure, and PSARP. Due to refractory constipation and encopresis, a MACE procedure was desired. Since he no longer had an appendix, a laparoscopic neoappendicostomy was performed. The open operation has been well documented by Levitt, et al (JPS 2011). We present the first known publication and video demonstration of a laparoscopic neoappendicostomy including some helpful tips and tricks. The entire procedure time was four hours, and the patient was discharged home on postoperative day two. At 16 months follow up, he is doing well without complications.

<https://www.youtube.com/watch?v=VfzRPpYOUHA>

Video Abstracts

(V013) THORACOSCOPIC REPAIR OF STRICTURE FOLLOWING ESOPHAGEAL ATRESIA REPAIR: EXPERIENCE WITH 2 CASES

Ravi P Kanojia, MD, MRCS, PGIMER Chandigarh India

Aim: to present our experience of Thoracoscopic repair of stricture following Esophageal atresia repair.

Patients & Methods: patient 1 was a 6 months old child who had undergone open EA-TEF repair in the new born period. He had documented stricture of esophagus on contrast esophagogram. After failed attempts of multiple esophageal dilatations. He underwent thoracoscopic resection of stricture and end to end anastomosis. Patient 2 was a 1 month old baby who had undergone Thoracoscopic Repair of Esophageal Atresia & TracheoesophagealFistula (TREAT) in the new born period and had completely obliterated anastomosis as seen on esophagogram. He underwent a re do thoracoscopy and resection anastomosis of stricture.

Results: Both the patients did well in post op the 2nd patient required esophageal dilatation twice and is now doing well.

Conclusion: With growing expertise in thoracoscopy and increasing number of patients undergoing TREAT the strictures arising out of these procedures are feasible to be treated by thoracoscopy again. The adhesions from the previous surgery are a deterrent. Resection of the stricture segment gives a long term solution to the patient and saves the morbidity from repeated dilatation.

<https://www.youtube.com/watch?v=dbDZUL7jkX4>

(V014) LAPAROSCOPIC URETEROVESICAL ANASTOMOSIS FOR ECTOPIC URETER AND SMALL BLADDER. CASE REPORT.

Tomas Ferraris, MD, Luciana Lerendegui, MD, Jimena Esnaola, MD, Anahi Salomon, MD, Francisco De Badiola, MD, Juan Moldes, MD, Hospital Italiano de Buenos Aires

INTRODUCTION: Ectopic ureter is an infrequent anomaly of the upper urinary tract. It is commonly associated with ureterocele or complete renal duplication. In females, ureteral meatus can terminate in the urethra, bladder neck or vagina. It can be asymptomatic or present urinary incontinence, vesicoureteral reflux, ureteral obstruction or urinary infections. We present the case of a laparoscopic approach of a patient with ectopic ureter and vesicoureteral reflux in a non-duplicated kidney and contralateral renal dysplasia.

CASE REPORT: We report the case of a patient with 33 weeks of gestational age diagnosed with bilateral fetal pyelectasis. At birth she did not present complications and was discharged past the first three days of life. At the age of 1 month she presented in our hospital with urosepsis treated for 10 days with IV antibiotics. The US showed absence of left kidney and Uretero Pielo caliceal dilatation. With the cystourethrogram (VCUG) we diagnosed a right ectopic ureter in bladder neck and a small bladder (volume less than 10 cc).

Giving these results, we performed a Radio-renogram which showed the right kidney with normal function but delayed transit time of the radioisotope in the pelvic junction and no response to furosemide. Left kidney showed no function.

We performed a cystoscopy which confirmed normal urethra, ectopic right ureter arriving to the bladder neck, and a small defunctionalized bladder. A double J catheter was placed under radioscopic guide and a Foley catheter is left into the bladder. After the cystoscopy, we performed a laparoscopic exploration. Three ports were placed: a 10 mm umbilical port and two 3 mm ports in each iliac fossa. We identified the bladder

Video Abstracts

with the Foley catheter inside and the right ureter with the double J catheter passing through it. Distal ureter was dissected. It was opened in a longitudinal direction. Right face of the bladder was dissected and opened. Latero-lateral Uretero-Bladder anastomosis was performed with PDS 6-0, previously inserting the distal end of the double J catheter into the bladder through the anastomosis. Control of leakage and hemostasis was performed. A drainage was left inside the pelvis. Ectopic implantation of the right ureter was left intact.

Patient had no complications after surgery and was discharged home two days after surgery. Double J catheter was extracted 1 month later. Within the next nine months, the patient presented three episodes of urinary infection even with prophylaxis antibiotics. In the new VCUG the bladder gain volume with a total capacity of 100 ml with a persistent reflux grade V. An open Lich-Gregoir reimplant was performed after nine months. No immediate complications were found and with 8 months of follow up the patient is doing well with no urinary tract infections and a minimal residual hydronephrosis.

CONCLUSION: Ectopic ureter associated with abnormal small bladder is a rare finding in patients with one kidney. Laparoscopic anastomosis allowed the bladder grow up in a short period of time and do in a second time a reimplant with the benefit of finding better quality of the tissues.

<https://www.youtube.com/watch?v=5PcgcQmIMws>

(V015) EMBOLIZATION FOLLOWED BY THORACOSCOPY AS AN APPROACH FOR SAFE AND MINIMALLY INVASIVE RESECTION OF A CONGENITAL PULMONARY MALFORMATION

Tiago A Tuna¹, Mariana B Dias¹, Jorge Moreira², Tiago Henriques-Coelho, PhD¹, José Estevão-Costa, PhD¹,

¹Pediatric Surgery Department, Hospital São João, Faculty of Medicine, Porto, Portugal, ²Pediatric Cardiology Department, Hospital São João, Porto, Portugal

Background: Intralobar bronchopulmonary sequestration (IBPS) associated with congenital pulmonary airway malformation (CPAM) is a rare congenital malformation. Percutaneous artery embolization may be advantageous in the management of IBPS by decreasing the lesion dimension and minimizing bleeding during surgery.

Clinical case: A 2-year-old girl was diagnosed with CPAM of the left lower lobe in the second trimester gestational ultrasound scan. After birth, CT scan confirmed CPAM and revealed associated IBPS with large feeding arteries originating in the descending thoracic aorta and celiac trunk, communicating with the inferior homolateral pulmonary vein. The infant started furosemide and spironolactone for high-output cardiac failure and remained asymptomatic. There were no episodes of respiratory infection. At one year of age, she underwent percutaneous plug occlusion of part of the aberrant arteries, with reduction of the lesion size although with partial persistence of arteriovenous shunt. At two years of age, we conducted a thoracoscopic left lower lobectomy, under selective bronchial intubation. The procedure was performed through three 5mm trocars and a small incision for the portless introduction of a 3mm grasper. The postoperative course was uneventful, the child being discharged home after six days. Histopathological analysis confirmed the diagnosis.

Discussion: Percutaneous artery embolization of IBPS is effective and may be used as a bridge to surgery, enabling a safer minimally invasive resection.

<https://www.youtube.com/watch?v=x52auviKQwM>

(V016) MRI-OR GUIDED LAPAROSCOPIC ANORECTOPLASTY UTILIZING A NOVEL PATIENT POSITIONING APPARATUS

Video Abstracts

Cory N Criss, MD, Marcus D Jarboe, MD, C.S. Mott Children's Hospital

Traditional approaches to imperforate anus include the PSARP or posterior sagittal anorectoplasty and the recent advent of the laparoscopic assisted approach. While this allows for a minimally invasive technique, the straight trajectory of the blind approach does not guarantee central sphincter involvement. While there are many advantages to this technique, one of the most significant challenges is maintaining a central sphincter trajectory while placing the needle from skin to peritoneum. The sphincter is usually curved in its course and not straight. With the blind laparoscopic assisted approach, there is the possibility of missing the sphincter complex. For this reason, an image guided method was proposed utilizing a step-wise process of MRI images. The technique presented involves MRI-guided placement of percutaneous needle through the center of the sphincter complex. Laparoscopic mobilization and dissection of distal rectum with ligation of recto-urethral fistula. Anorectal trocar placement through new rectal tract, and laparoscopic pull through with anorectoplasty. In addition, an MRI compatible patient positioning apparatus was fashioned from various materials, maintaining positioning and easy transition from MRI table to operating table, preventing needle dislodgement. In this video, we demonstrate this technique, demonstrating the step-wise process of dilations and placement of a trocar externally through the new rectal tract and laparoscopic pull through of the distal rectal stump. A standard anorectoplasty is performed once the rectum is successfully pulled through. This technique not only provides the patient with a minimally invasive approach, but also takes the necessary steps to ensure the sphincter complex is maintained.

<https://www.youtube.com/watch?v=UpTEtpVQbBM>

(V017) INFANT ROBOTIC URETEROURETEROSTOMY FOR UPPER URINARY TRACT DUPLICATION ANOMALIES

Brendan Caprio¹, Paul H Noh, MD², ¹University of Cincinnati, ²Cincinnati Children's Hospital Medical Center

Objective: To demonstrate a robotic ureteroureterostomy for the management of an upper urinary tract duplication anomaly in an infant.

Methods: The patient is 9-month-old female with a left sided urinary tract duplication anomaly including upper pole hydroureteronephrosis due to ureterocele. The lower pole moiety was normal without vesico-ureteral reflux. Renogram showed that the upper pole moiety was functional. A lower pole ureteral stent was placed, prior to starting the robotic procedure. A daVinci Xi robotic surgical system was utilized, with a total of 3 trocars for the procedure. Upper pole to lower pole end to side ureteroureterostomy was performed with 5-0 PDS.

Results: The robotic surgery console operative time was 66 minutes. There was no blood loss or intraoperative complication. The lower pole ureteral stent was removed in 1 month. No complications occurred in early postoperative course. Postoperative ultrasound demonstrated decompression of the upper pole system during 2 year follow-up period.

Conclusion: Robotic upper urinary tract reconstruction can be safely and effectively performed in infants.

<https://www.youtube.com/watch?v=ytD58P301Nc>

(V018) A NOVEL TECHNIQUE OF POSTEROLATERAL SUTURING IN THORACOSCOPIC DIAPHRAGMATIC HERNIA REPAIR

Yoon Jung Boo, MD, PhD¹, Stephan Rohleder, MD², Oliver J Muensterer, MD, PhD², ¹Department of Pediatric

Video Abstracts

Surgery, Korea University College of Medicine, ²Department of Pediatric Surgery, University Medicine of the Johannes Gutenberg University Mainz

Background: Closure of the posterolateral defect in some cases of congenital diaphragmatic hernia (CDH) can be difficult and prolong the operation time. Percutaneous transcostal suturing is often helpful to create a complete, watertight closure of the diaphragm. A particular challenge with percutaneous suturing, however, is passing the needle out the same tract that it entered, so that no skin is caught or retracted when the knots are laid down into the subcutaneous tissue.

Objective: This report describes a novel technique using a Tuohy needle to percutaneously suture the posterolateral defect during thoroscopic repair of CDH in a child without catching skin or unnecessary soft tissue, and thereby place the sutures correctly around the ribs.

Case: We report a case of a 6-week infant who presented with a CDH and associated ipsilateral intrathoracic kidney that was repaired using thoroscopic approach. After reduction of the hernia content, the anterior and medial parts of the defects were closed by intracorporeal sutures. The posterolateral part of the defects was repaired by percutaneous transcostal suturing and extracorporeal knot-tying. In order to assure correct placement of the sutures and knots deep in the subcutaneous tissue, a Tuohy needle was used to guide the suture around the rib and out through the same subcutaneous tract by “mating” the suture and Tuohy needles intrathoracically. By laying down a total of 5 monofilament sutures and thereby applying even tension, the posterolateral portion of the defect was successfully repaired in a watertight fashion. Results: The total operative time was 145 minutes and there were no peri- or intraoperative complications. The initial symptoms of feeding difficulty and tachypnea resolved. The patient was followed-up for 3 months, during which time, there was no recurrence.

Conclusion: Our percutaneous Tuohy technique for closure of the posterolateral part of congenital diaphragmatic hernias enables a secure, rapid and tensionless repair. By guiding the sutures to the outside through the same cutaneous tract, the knots are laid down in the correct, deep tissue plane exactly on the ribs. Thereby, skin entrapment and retraction are avoided.

<https://www.youtube.com/watch?v=76pAH0oiqM0>

(V019) SIDE-TO-SIDE TRANSPERITONEAL URETERO-URETEROSTOMY FOR FUNCTIONING AND NON-DILATED ECTOPIC URETER IN A DUPLEX SYSTEM KIDNEY

Javier Ruiz, MD, Juan Corbetta, MD, Santiago Weller, MD, Ramiro Perea, MD, Enrique Lago, MD, Cristian Sager, MD, Carol Burek, MD, Victor Duran, Juan Carlos Lopez, MD, Hospital Pediatria J. P. Garrahan Buenos Aires Argentina

We report a case of a 10 years old girl with a history of continuous incontinence. A complete right duplex system with a functioning upper moiety and ectopic ureter to vagina was found in the magnetic resonance images.

A 3F ureteral catheter was placed in the lower moiety via cystoscopy. A transperitoneal laparoscopic approach was used with three 3,5 mm ports. We identified both ureters at the level of the crossing over the iliac vessels. We performed a side-to-side uretero-ureterostomy with two running sutures of PDS 6-0 and a ureteral stent was passed through the anastomosis in a retrograde way. The ureter of the upper moiety was ligated distal to the anastomosis using a Roeder's extracorporeal Knot. The surgical time was 90 minutes.

Video Abstracts

The urethral Foley catheter was removed and the patient discharged after 48 hs with no incontinence.

Side-to side anastomosis shows as an attractive, easier and faster alternative in comparison to end-to-side for minimally invasive uretero-ureterostomy.

<https://www.youtube.com/watch?v=S20cOz0dFfQ>