IPEG’s
13th Annual Congress for Endosurgery in Children

SPONSOR:
IPEG
International Pediatric Endosurgery Group
11130 West Olympic Blvd., Suite 600
Los Angeles, CA 90064 USA
Phone: (310) 437-0553
Fax: (310) 437-0585
E-mail: admin@ipeg.org
Website: www.ipeg.org

CONGRESS:
IPEG’s 13th Annual Congress for Endosurgery in Children

LOCATION:
Wailea Marriott Outrigger Resort
Wailea, Maui, Hawaii

DATES:
May 5 - 8, 2004

IPEG GRATEFULLY ACKNOWLEDGES THE FOLLOWING CORPORATE MEETING SUPPORTERS:

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Adobe

Sponsored by the International Pediatric Endosurgery Group

May 5 - 8, 2004
Maui, Hawaii

FINAl PROGRAM
Accreditation

This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the Society of American Gastrointestinal Endoscopic Surgeons (SAGES) and the International Pediatric Endosurgery Group (IPEG). The Society of American Gastrointestinal Endoscopic Surgeons is accredited by the ACCME to provide continuing medical education for physicians and designates this Continuing Medical Education activity for:

- 4.00 credit hours for the Digital Video Workshop Course
- 3.00 credit hours for the Intensive Urology: How-To Course
- 7.50 credit hours for the Live Surgery Course
- 11.50 credit hours for the Scientific Session

in Category 1 of the Physicians Recognition Award for the American Medical Association. Note: Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

The American Medical Association determined that physicians not licensed in the US who participate in this CME activity are eligible for AMA PRA category 1 credit.
A FREE AFTERNOON

Wailea Golf Club
At Wailea’s heart are three award-winning golf courses that command the devotion of golfers around the globe; Wailea Gold Course, Wailea Emerald Course and the Wailea Blue Course. Plan to spend some of your “off” time at one of these Courses.
Toll-free 888-328-MAUI Local 808-875-7450 Website: www.waileagolf.com

Mandara Spa at the Outrigger Wailea Resort
Plan to spend some time being pampered at the Mandara Spa. Many recipes for relaxation are available from the Natural Elegance massage, to the 80 minute Hawaiian Pohaku (Heated smooth lava rock), to the 80 minute deluxe pedicure. To make an appointment for pampering contact: Mandara Spa at Outrigger Wailea Resort Local 808-891-8774, E-mail:Hawaii@mandaraspa.com
Website: www.mandaraspa.com

General Business Meeting Announcement:
Friday, May 7, 2004
11:00 - 11:30 am
All IPEG members are invited to attend the annual IPEG business meeting, at which the committee chairs will update the membership on business conducted during the past year. Additionally, the new slate of officers will be presented for approval.

Submitting a membership application to IPEG makes good sense!

REASON 1: You can save the equivalent of one year’s dues by registering at the member rate if you attend more than one course.

REASON 2: The benefits of membership extend throughout the year, including journal subscriptions, content-rich websites, electronic newsletters, etc.

Applications are available on-line or by contacting the administrative office.

IPEG Office: 310-437-0553 or www.ipeg.org/whyjoin.html

Wailea Marriott Outrigger Resort Excursions Desk
Phone: (808) 879-6160
Children’s programs are available at the Marriott Outrigger Resort including the children’s pool and waterslide!

LUAAU - Outrigger

Date: Friday, May 7, 2004
Time: 5:30 - 8:30 PM (approx)
Place: Wailea Marriott Outrigger Resort
Fee: No Fee for IPEG Registrants & Registered Guests
Dress: Casual – bring your Hawaiian shirts!
Winner of the Hawaii Visitor’s Bureau Kahili Award for perpetuating the essence of Hawaii.

Traditional Luau Buffet
Magnificent Oceanfront Setting
Authentic Hula Show
Imu and Torchlighting Ceremonies
Three-Time World Champion Fire Knife Dancer
Wednesday, May 5, 2004
6:30 am Registration for Digital Course – Kukui Terrace
7:00 am - 11:00 am Digital Video Workshop – Chair Steven Schwitzberg, MD
11:00 am - 1:00 pm Lunch On Your Own
11:30 am - 4:00 pm IPEG Committee Meetings (Invitation Only)
12:30 pm Registration for Urology Course
1:00 am - 4:00 pm Intensive Urology How-To – Chair Craig Peters, MD
3:00 pm - 5:30 pm Meeting Registration Opens – Kukui Terrace
5:30 pm - 6:30 pm Mai Tais With The Professors – Pacific Terrace (rooftop)

Thursday, May 6, 2004
7:00 am Breakfast for registered Live Surgery Course attendees
7:00 am Meeting Registration Opens – Kukui Terrace
7:30 am - 3:00 pm Live Surgery Course
10:00 am - 6:30 pm Poster Room Open
11:30 am Lunch for all registered Live Surgery Course attendees
5:00 pm - 6:30 pm Welcome Opening Reception in the Exhibit Hall for all Participants

Friday, May 7, 2004
6:30 am - 7:30 am Breakfast Video Session – Bariatric mini-symposium
7:30 am - 8:30 am Abstract Presentations – Basic Science
8:00 am - 5:00 pm Poster Room Open
8:30 am - 9:00 am Coffee break in Exhibit Hall
9:00 am - 10:00 am General Session: Panel 1 - General Complications
10:00 am - 10:30 am Keynote Lecture Fetel Therapy & Stem Cell Research, Alan W. Flake, MD
10:30 am - 11:00 am Break & Snack in the Exhibit Hall
11:00 am - 11:30 am IPEG GENERAL BUSINESS MEETING
11:30 am - 12:45 pm Abstract Presentations – Thoracoscopy
12:00 pm Exhibit Hall Closes
12:45 pm - 1:05 pm Special Presentation: Experience in Baghdad, Role of MIAS – Vincenzo Jasonni, MD & Girolamo Mattioli, MD
1:05 pm - 2:05 pm Oral Poster Abstract Presentations
AFTERNOON FREE
5:30 PM - 8:30 PM Hawaiian Luau for all Participants at Outrigger

Saturday, May 8, 2004
6:30 am - 7:30 am Breakfast Video Session – Robotics/Thoracoscopy
7:30 am - 8:00 am Abstract Presentations
8:00 am - 5:00 pm Poster Room Open
8:00 am - 8:10 am Presidential Address – CK Yeung, MD
8:10 am - 8:40 am Keynote Lecture State-of-the-Art Robotics, Ara Darzi, MD
8:40 am - 9:00 am Coffee break in Exhibit Hall
9:00 am - 10:00 am General Session: Panel 2 – Hepatobiliary
10:00 am - 10:10 am Introduction of President Elect – Klaas Bax and Venice Meeting
10:10 am - 10:40 am Keynote Lecture Technology & Minimally Invasive Surgery, Steven Schwitzberg, MD
10:40 am - 11:15 am Break & Snack in the Exhibit Hall
11:15 am- 12:30 pm Abstract Presentations
12:00 pm Exhibit Hall Closes
12:30 pm - 1:30 pm Poster Abstract Presentations
1:30 pm Lunch On Your Own
AFTERNOON & EVENING FREE
**Who Should Attend**

The 13th Annual Congress for Endosurgery in Children has elements that have been specifically designed to meet the needs of practicing pediatric surgeons, urologists & other related specialties including, physicians-in-training, GI assistants and nurses who are interested in minimally invasive surgery in children & adolescents. The IPEG Program Committee recommends that participants design their own attendance schedule based on their own personal educational objectives.

**IPEG 2004 Corporate Supporters**

**Platinum Level Supporters:**
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- Taut, Inc.

**In Kind Contribution:**
- Adobe

**Goals**

IPEG's 13th Annual Congress for Endosurgery in Children

- To advance the general understanding of endoscopic surgical techniques as they apply to pediatric patients
- To explore the value of new techniques, innovations and concepts applicable to the care of children undergoing endoscopic surgery
- To provide an opportunity for younger surgeons to acquire a knowledge of basic concepts through exposure to experts in the field
- To discuss controversial topics in pediatric surgery and the future role of endosurgery
- To provide meaningful workshops to disseminate practical information
- Discussion of the efficacy and outcomes of endosurgery versus conventional surgery
Course Description:
This award winning digital video editing workshop has been updated for the latest developments in video technology. In addition to hands-on opportunities to edit and produce digital video at customized computer stations, we will explore a variety of the latest ways to manipulate and capture the operating room video signal, including direct DVD capture and streaming video. Once captured – editing, titling, transitioning, adding audio (not to mention a few special effects) will be demonstrated so that tape, CD, DVD or Web-based material can be produced. Mastering these skills will aid in the production and creation of superior medical educational materials for patients and colleagues.

Objectives:
At the completion of this course, the participant will be able to:
- Demonstrate a working knowledge as to how the video signal used to perform laparoscopic surgical procedures is transferred to a variety of digital formats (e.g. CD, DVD, digital tape) for the purposes of creating materials that could be used for electronic medical records, patient education, formal presentation at medical meetings, website presentation for patient or physician education, and archival needs
- Manipulate the acquired digitized video material for the purposes above by methods utilizing skills such as editing, titling, transitions, annotation with audio, addition of still photography and selected special effects to create effective medical educational materials
- Produce output of the acquired and manipulated digital material for specific needs in the medical educational arena including videotape, web based media files, CD ROM and DVD

COURSE SCHEDULE:

Part One: Capturing the Signal
- A. Laparoscopic video captured to:
  - DV tape
  - DVD
- B. DV tape and DVD to computer

Part Two: Editing the Video
- A. Edits
- B. Titles
- C. Transitions
- D. Audio

Part Three: Producing the Final Product
- A. Tape
- B. CD/DVD
- C. Web-based video

IPEG gratefully acknowledges a generous educational grant in support of this course from
Olympus America, Inc. • Stryker Endoscopy
Adobe – Contribution in Kind
INTENSIVE UROLOGY HOW-TO COURSE

Course Co-chairs: Craig Peters, MD & Gordon MacKinlay, MD

Time: 1:00 - 4:00 PM
Location: Main Session Room

Course Objectives:
At the completion of the program, the attendee will:

■ Understand the principle techniques of laparo-endoscopic access in pediatric urology, transperitoneal and retroperitoneal, with their specific advantages and limitations
■ Know the fundamental methods for laparo-endoscopic procedures related to pediatric urology, including new robotic methods
■ Be familiar with the indications and outcomes of basic pediatric urological laparo-endoscopic procedures

COURSE SCHEDULE:

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>1:00 PM</td>
<td>Introduction</td>
<td>Craig Peters, MD</td>
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<tr>
<td>1:00 - 1:15 PM</td>
<td>Surgical Access for Retroperitoneoscopic Renal Surgery</td>
<td>Jean-Stephane Valla, MD</td>
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<td></td>
<td>Discussion</td>
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<tr>
<td>1:25 - 1:40 PM</td>
<td>Orchidopexy</td>
<td>Heip Nguyen, MD</td>
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<td></td>
<td>Standard</td>
<td>Mark Wulkan, MD</td>
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<td></td>
<td>Robotic</td>
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<td></td>
<td>Discussion</td>
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<tr>
<td>1:50 - 2:05 PM</td>
<td>Nephrectomy</td>
<td>Alaa El-Ghoeimi, MD</td>
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<tr>
<td>2:05 - 2:20 PM</td>
<td>Heminephrectomy</td>
<td>Jean-Stephane Valla, MD</td>
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<td></td>
<td>Discussion</td>
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<tr>
<td>2:25 - 2:55 PM</td>
<td>Ureteric Reimplantation</td>
<td>Craig Peters, MD</td>
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<td></td>
<td>Extravesical</td>
<td>C. K. Yeung, MD</td>
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<td></td>
<td>Pneumovesicum</td>
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<td></td>
<td>Discussion</td>
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<tr>
<td>3:05 - 3:25 PM</td>
<td>Dismembered Pyeloplasty</td>
<td>Alaa El-Ghoeimi, MD</td>
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<td></td>
<td>Standard</td>
<td>Craig Peters, MD</td>
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<td></td>
<td>Robotic</td>
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<td></td>
<td>Discussion</td>
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<tr>
<td>3:35 - 3:50 PM</td>
<td>Adrenalectomy</td>
<td>Craig Albanese, MD</td>
</tr>
</tbody>
</table>

IPEG gratefully acknowledges a generous educational grant in support of this course from Ethicon Endo-Surgery, Inc. • Karl Storz Endoscopy • Olympus America, Inc.

MAI TAI S WITH THE PROFESSORS

Time: 5:30 PM - 6:30 PM
Location: Pacific Terrace (rooftop)

Please join IPEG experts for this festive educational event to be held on the Pacific Terrace rooftop. With a backdrop of the Pacific Ocean on one side and the summit of Haleakala on the other, IPEG faculty will lead round table discussions on the following topics:

Robotics - Ara Darzi, MD
Biliary Surgery - George Holcomb, MD
Digital Discussion - Steven Schweitzberg, MD
Thoracoscopic Aortopexy - Klaas (N) M. A. Bax, MD
Imperforate Anus & Pull Through - Keith Georgeson, MD
Bladder Surgery - C. K. Yeung, MD
Thoracoscopic Surgery - Steven Rothenberg, MD
Atresia - Marcelo Martinez-Ferro, MD
Hirschsprung Surgery: The Complications - Vincenzo Jasonni, MD
IPEG \textit{2004 Live Surgery Course}

\textbf{Time:} 7:30 AM - 3:00 PM  \\	extbf{Location:} Main Session Room with Broadcast from Kapi'olani Medical Center for Women & Children, Honolulu

\textbf{Description of Course:}  
Pediatric surgeons value opportunities to observe expert faculty perform advanced laparoscopic procedures. In the face of ongoing advancements in technology and surgical treatment, observing surgery and the use of state of the art device systems is crucial for surgeons to provide optimum patient care. This one-day educational activity will feature surgical cases broadcast live to the hotel in Maui and moderated on-site by a faculty member. Operations will be performed in Honolulu at the Kapi'olani Medical Center for Women & Children. Participants will be encouraged to address questions to the moderator for discussion with the surgeon and peers. Live surgeries will provide the springboard to focus on clinical decision-making. Discussion will include clinical results and steps to prevent and manage complications.

Although the case list will be finalized immediately prior to the course, we will attempt to include the following minimally invasive surgery cases (if possible): pulmonary lobectomy, imperforate anus repair, nissen fundoplication, hemi-nephrectomy, ureteral reimplant, and hernia.

\textbf{Objectives:}  
Upon completion of this course, participants will be able to:

\begin{itemize}
    \item Discuss important preoperative considerations for the various cases presented.
    \item View the optimal room configuration, patient positioning and equipment selection.
    \item Understand the numerous technical factors for successful performance of the operation.
    \item Address alternative surgical options for each procedure performed.
    \item Describe key steps in preventing and managing common problems and complications.
    \item Discuss patient outcomes and ways in which to optimize both short and long term results.
\end{itemize}

\textbf{Faculty:}  
\begin{itemize}
    \item Course Chair: C. K. Yeung, MD
    \item Course Co-Chair: Daniel Robie, MD
    \item Moderator in Maui: Klaas (N) M. A. Bax, MD
    \item Surgeons: Craig Albanese, MD, Keith Georgeson, MD, Thom E Lobe, MD, Steven Rothenberg, MD, Jean-Stephane Valla, MD, C. K. Yeung, MD
    \item Surgical Assistant: Leonard Hamby
\end{itemize}

\textit{IPEG gratefully acknowledges the following companies and organizations for their support of this course:}

\begin{itemize}
    \item \textit{Kapi'olani Medical Center for Women & Children}
    \item \textit{Karl Storz Endoscopy}
    \item \textit{Daniel Robie, MD, Pediatric Surgeon}
    \item \textit{Tandberg USA /HealthCare Division}
    \item \textit{Tyco Healthcare}
    \item \textit{Auto Suture}
\end{itemize}

\textbf{IPEG Welcome Reception}  
\begin{itemize}
    \item \textbf{Date:} Thursday, May 6, 2004
    \item \textbf{Time:} 5:00 - 6:30 PM
    \item \textbf{Place:} Exhibit Hall
    \item \textbf{Fee:} No Fee for Registrants & Registered Guests
    \item \textbf{Dress:} Casual – bring your Hawaiian shirts!
    \item \textbf{Note:} Children under the age of 14 will not be permitted in the Exhibit Hall due to safety considerations.
\end{itemize}
Course Description:
This section of the IPEG meeting includes panels with invited faculty who will speak on specific topics and sessions of oral, video and poster presentations of abstracts selected by the IPEG Program Committee. It also includes an informal time with the faculty and two video abstract breakfast sessions. Panel information and information about the video and abstract presentations session is found elsewhere in this final program.

What Is Included:
Fee includes entrance to the session room & poster room on Thursday, Friday and Saturday, a copy of the Final Program, Live Surgery Course, entrance to the Exhibit Hall, Mai Tais With The Professors, Exhibit Reception, continental breakfast and breaks, and the Main IPEG Social Event.

Scientific Session Objectives:
- At the end of this session, participants will understand the current and emerging practices and procedures in minimal access surgery and other developing applications.
- Participants will acquire information which relates to indications, contraindications, diagnosis, technique, prevention and management of complications, and results of minimal access surgery, endoscopic, and general surgical procedures.
- Participants will recognize the scientific and physiologic basis of minimal access surgery, endoscopy and emerging surgical technology (e.g. robotics).

Breakfast Video Session 1 – Bariatric mini symposium

The program committee is pleased to bring you an IPEG first. This year we included for your viewing and learning pleasure two video symposia. The first will focus on upper gastrointestinal surgery and will include a special session on Pediatric Endoscopic Bariatric Surgery. The second will explore advanced techniques in Endosurgery of the Genito Urinary and Biliary Tract. We hope you enjoy this addition to the program.

Video Session 1A: Gastric Surgery
Friday, May 7, 2004, 6:30 - 7:30 AM
Moderators: Maria Bailez Marcela, MD & Antonio Messineo, MD

V01, Gastric Duplication Cyst: Laparoscopic Surgery In The Sysdiaphragmatic Space Priscilla Chiu, Peter Kim, The Hospital For Sick Children, Toronto, ON, Canada

V02, Laparoscopic Gastric Tube Cardioplasty: A new Surgical Approach In The Treatment Of Pediatric Gastroesophageal Reflux Disease B. Haluk Guvenc, Levent Avtan, Ufuk Senel, Selaml Sozubir, Gulsen Ekingen, Departments of Pediatric Surgery, Kolaeli University School of Medicine & General Surgery, Istanbul University School of Medicine, Kolaeli, Turkey

Video Session 1B: Mini Symposium on Surgery for Morbid Obesity
Discussant: Carroll Harmon, MD

V03, Roux en Y Gastric Bypass With Hand Sewn Gastrojejunostomy for Adolescent Morbid Obesity Thomas H. Inge, MD, PhD, Victor F. Garcia, MD, Cincinnati Childrens Hospital Medical Center, Cincinnati, OH USA

V04, One-Stich Laparoscopic Gastric Bypass For Treatment Of Morbid Obesity In An Adolescent Patient Atul K Madan, MD, Thom E. Lobe, MD, University Of Tennessee Health Sciences Center, Department of Surgery, Memphis, TN, USA

IPEG gratefully acknowledges support of the Video Session by Ethicon Endo-Surgery, Inc.
SS01: Original Investigation
Friday, May 7, 2004, 7:30 - 8:30, Main Session Room
Moderators: Jeff Valla, MD & Keith Georgeson, MD

S01, Radiofrequency Ablation for Fetal Anomalies . Kerilyn K Nobuhara, MD, Diana L Farmer, MD, Jody Farrell, RN, Michael R Harrison, MD, Hanmin Lee, MD, University of California, San Francisco, ca, USA

S02, Endoscopically assisted minimal access repair, a new technique of correcting pectus carinatum in adolescents . Klaus Schaarschmidt, MD, A Kolberg-Schwerdt, MD, M Lempe, MD, F Schlesinger, MD, Helios Centre of Pediatric Surgery, Berlin-Buch, Germany

S03, Tracheal Occlusion for Severe Congenital Diaphragmatic Hernia: An Update . Michael R Harrison, MD, Hanmin Lee, MD, Kerilyn K Nobuhara, MD, Diana L Farmer, MD, Jody Farrell, RN, University of California, San Francisco, CA, USA

S04, Effect of elevated intraabdominal pressure (IAP) on intestinal structure and bacterial translocation in rat . I. Sukhotnik, MD, A. Bernshteyn, None, I. Srugo, MD, J. Mogilner, MD, J. Bejar, MD, Bnai Zion Medical Center.Rappaport Medical School.Technion.Israel

S05, Anuria during pneumoperitoneum in infants and children - a prospective study . Barbara H Gómez Dammeier 1, MD, Benno M Ure 1, MD, Eva Karanik 1, None, Sylvia Gluer 1, MD, Natalie K Jesch 1, MD, Jochen F Kuebler 1, MD, Kay Latta 3, MD, Robert Sumpelmann 2, MD, 1Department of Pediatric Surgery, 2Department of Anesthesia, 3Department of Pediatric Nephrology, Hannover Medical School, Hannover, Germany

S06, IMPACT OF PROLONGED PNEUMOPERITONEUM ON HEMODYNAMICS AND OXYGENATION . Natalie K Jesch, MD, Dirk Haertel, None, Robert Sumpelmann, MD, Gernot Marx, MD, Benno M Ure, MD, Tobias Schuerholz, MD, Department of Pediatric Surgery and Anaesthesia, Hannover Medical School, Germany, University Department of Anaesthesia, University of Liverpool, United Kingdom

S07, Endoscopic submucosal injection of deflux (R) into the distal esophagus for Gerd Treatment - an experimental study in piglets. Felix F Schier, MD, George G Kaehler, MD, Stefan S Beyerlein, MD, Pediatric surgical department, University medical center Jena, Germany

S08, IMPACT OF MINIMAL INVASIVE SURGERY ON ACUTE PHASE RESPONSE AND RISK OF INFECTIOUS COMPLICATIONS IN PAEDIATRIC PATIENTS. Mariano Barbalace, MD, Gordon A MacKintosh, MD, Giovanna Riccipetitoni, DO, Royal Hospital for Sick Children, Department of Paediatric Surgery, Edinburgh, Scotland

S09, THE FUTURE OF VIRTUAL REALITY IN PEDIATRIC ENDOSCOPIC SURGERY . Klaas (N) M.A. Bax, PhD, David C. Van der Zee, PhD, Dept. Pediatric Surgery, University Medical Center Utrecht, NetherLands

S10, A New Tissue-Specific Electro thermal Vessel Ligating System for Surgical Hemostasis . Keith Georgeson, MD, University of Alabama School of Medicine, Birmingham, AL, USA

8:30 am - 9:00 am Coffee Break in Exhibit Hall

IPEG gratefully acknowledges support of all coffee breaks by our Bronze Level Supporters:
Olympus America • SurgRx, Inc. • Taut, Inc.

Panel 1 General Complications
Friday, May 7, 9:00 AM - 10:00 AM
Moderators: Klaas (N) M. A. Bax, MD & Azad Najmaldin, MD

Schedule:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>General Complications and Complications of Access</td>
<td>Allen Browne, MD</td>
</tr>
<tr>
<td>Complications of Laparoscopy</td>
<td>Mark Wulkan, MD</td>
</tr>
<tr>
<td>Complications of Thoracoscopy</td>
<td>Steve Rothenberg, MD</td>
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<tr>
<td>Complications of Endo-Urology</td>
<td>Craig Peters, MD</td>
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<tr>
<td>Discussion</td>
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</table>

IPEG gratefully acknowledges support of this session by Ethicon Endo-Surgery, Inc.
KEYNOTE LECTURE – FETAL THERAPY & STEM CELL RESEARCH

Friday, May 7, 10:00 AM - 10:30 AM

Alan W. Flake, MD

Alan W. Flake, MD is a Professor of Surgery and Obstetrics and Gynecology at the University of Pennsylvania School of Medicine, and is the Director of the Children’s Institute for Surgical Science, Director of Pediatric Surgery Residency Training Program, and the Ruth and Tristram C. Colket, Jr. Chair in Pediatric Surgery at the Children’s Hospital of Philadelphia. He has a long term clinical and research interest in fetal biology and therapy and has been integrally involved in the early development of the field of Fetal Surgery. His primary research interest is the translational development of Fetal Stem Cell and Gene Therapy.

IPEG gratefully acknowledges support of this session by Tyco Healthcare Auto Suture

10:30 am - 11:00 am Coffee Break in Exhibit Hall

IPEG gratefully acknowledges support of all coffee breaks by our Bronze Level Supporters:

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General Business Meeting:

Friday, May 7, 2004 11:00 - 11:30 am

All IPEG members are invited to attend the annual IPEG business meeting, at which the committee chairs will update the membership on business conducted during the past year. Additionally, the new slate of officers will be presented for approval.

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In Kind Contribution:

Adobe
SS02: Thorax & Abdomen
Friday, May 7, 2004 11:30 AM - 12:45 PM

Moderators: Girolamo Mattioli, MD & Marc Levitt, MD

S11, Endoscopic thoracic sympathectomy (ETS) and endoscopic thoracic sympathetic block (ESB), strategies for a differential therapy of disabling Hyperhidrosis and Erythrodermia of childhood and adolescence. A Kolberg-Schwerdt, MD, M Lempe, MD, Klaus Schaarschmidt, MD, Helios Centre of Pediatric Surgery, Berlin-Buch, Germany

S12, A 10 years' experience of thoracoscopic apical pleurodesis for spontaneous pneumothorax of children and adolescents. M Lempe, MD, A Kolberg-Schwerdt, MD, K Uschinski, MD, Klaus Schaarschmidt, MD, Helios Centre of Pediatric Surgery, Berlin-Buch, Germany

S13, LAPAROSCOPIC PYLOROMYOTOMY IN INFANTILE HYPERTROPHIC PYLORIC STENOSIS: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL. G Podevin, MD, C Camby, MD, V Plattner, MD, C Laplace, MD, Y Heloury, MD, MD Leclair, MD, E Mirallie, MD, Pediatric Surgery Department. Hospital Mere-Enfant. Nantes. France

S14, Thoracoscopic Repair of Congenital Diaphragmatic Hernia. Megan M Durham, MD, Amina M Bhatia, MD, Mark L Wulkan, MD, Emory University School of Medicine/Children's Healthcare of Atlanta, Atlanta, GA, USA

S15, THE PHYSIOLOGIC ADVANTAGE OF MINIMAL ACCESS EXTRAPLEURAL ESOPHAGOESOPHAGOSTOMY. Joselito G Tantoco, MD, Laramie N Dixey, RN, Philip L Glick, MD, Jon Rossman, MS, Celeste M Hollands, MD, Miniature Access Surgery Teaching, Training, and Robotic Research Center, SUNY at Buffalo, Buffalo, NY, USA

S16, 12 Year Experience with Empyema in Children Since Introduction of Video Assisted Thorascopic Surgery. Steven Z Rubin, MD, Karen A Bailey, MD, Juan Bass, MD, Children's Hospital of Eastern Ontario, University of Ottawa, Canada

S17, Video-assisted Thoracic Surgery and Mini-thoracotomy: Our Experience in Children. Hiroyuki Kobayashi, None, Masakatsu Sunagawa, None, Takeshi Miyano, None, Takashi Tsuchioka, None, Atsuyuki Yamataka, None, Toshio Fujiwara, None, Ryuji Yoshida, None, Department of Surgery 1, Dokkyo University School of Medicine, Hong Kong, China

S18, THE ROLE OF LAPAROSCOPY IN ABDOMINAL TUMOURS OF THE SYMPATHETIC NERVOUS SYSTEM. Jon Pritchard, MD, Gordon A MacKinlay, MD, Amanda J McCabe, MD, Fraser D Munro, MD, W Hamish B Wallace, MD, The Royal Hospital for Sick Children, Edinburgh, Scotland

S19, Percutaneous Endoscopic Colostomy (PEC) of the Left Colon: An Update. M Haddad, MD, S A Clarke, MD, N Geoghegan, RN, DJ Rawat, MD, J Fell, MD, Department of Paediatric Surgery & Gastroenterology, Chelsea & Westminster Hospital, London, UK

S20, DOSE, EFFICACY AND ACCEPTABILITY OF ORAL SODIUM PHOSPHATE SOLUTION FOR BOWEL PREPARATION IN CHILDREN AND ADOLESCENTS: A RANDOMIZED SINGLE BLINDED STUDY. Mahmoud Sabri, MD, Seema Khan, MD, Wendy Henderson, None, Carlo Di Lorenzo, MD, Children's Hospital of Pittsburgh, University of Pittsburgh, School of Medicine, Pittsburgh, PA, USA

S21, Laparoscopic Colectomy and Ileal Pouch-Anal Anastomosis. Rene Romero, MD, Kurt F Heiss, MD, Mark L Wulkan, MD, Thomas Heffron, MD, Emory University School of Medicine/Children's Healthcare of Atlanta, Atlanta, GA, USA

S22, ONE STAGE TRANSANAL ENDORECTAL PULL-THROUGH FOR HIRSCHSPRUNG’S DISEASE: PRESENCE OF DILATED GANGLIONIC SEGMENT DOES NOT POSE MAJOR DIFFICULTY. Oguz Ates, MD, Gulce Hakguder, MD, Feza M Akgur, MD, Mustafa Olguner, MD, Department of Pediatric Surgery, Dokuz Eylul University, Medical School, Izmir, Turkey

S23, Laparoscopic Redo Nissen Fundoplication in Infants and children. Steven S Rothenberg, MD, The Mother and Child Hospital at Presbyterian 1st St. Lukes Medical center, Denver, Co, USA

IPEG gratefully acknowledges a general educational grant in support of this session by Karl Storz Endoscopy.
Oral Poster Guided Tours:
Friday, May 7, 2004 1:05 pm - 2:05 pm
Location: South Pacific Ballroom

Join our Poster Moderators in a guided tour of the oral poster presentations. During the tour, participating authors will have the opportunity to make a brief (2 minute) presentation of their poster and discuss their work with interested participants. The poster tours are divided by subject. Below you will find a tour number and the posters assigned to that tour. Each tour will last 1 hour and will include about 15 posters. Look for your tour guide outside the South Pacific Ballroom just before the scheduled tour time.

Tour 1
Friday 1:05 pm - 2:05 pm
Moderator: Mario Lima, MD
Cancer (Poster # 1-4)
Instrumentation (Poster #53-56)
Neonatal (Poster # 57-65)

Tour 2
Friday 1:05 pm - 2:05 pm
Moderator: Benno Ure, MD
Colon/Bowel (Poster # 5-22)

Tour 3
Friday 1:05 pm - 2:05 pm
Moderator: Hector Azuara Fernandez, MD
Forgut (Poster # 23-35)

Tour 4
Friday 1:05 pm - 2:05 pm
Moderator: Craig Peters, MD
Genito-Urinary (Poster #36-52)

IPEG gratefully acknowledges a generous education grant in support of this portion of the meeting by Valleylab
Video Session 2: Advanced Video Techniques
Saturday, May 8, 2004, 6:30 - 7:30 AM

Moderators: Francisco Berchi Garcia, MD

V05, Thoracoscopic Division of a Vascular Ring Amina M. Bhatia, Mark L. Wulkan, Children’s Healthcare of Atlanta & Emory University, Atlanta, GA, USA

V06, Trans-Mesenteric Robot Assisted Laparoscopic Pyeloplasty David Chou, Louis Eichel, Ori Melamud, Allan Shanger, University of California Irvine Medical Center, Irvine, CA, USA

V07, Thoracoscopic Resection of Neuroloma in a Child Arnold G. Coran, MD, Saleem Islam, MD, C.S. Mott Children’s Hospital, Ann Arbor, MI, USA

V08, Pediatric Robotic Adrenalectomy John Meehan, John Lawrence, Laura Phearman, Anthony Sandler, The Children’s hospital of Iowa, University of Iowa Hospitals & Clinics, Iowa City, Iowa USA

V09, Laparoscopic Robotic Assisted Mitrofanoff Israel Franco, New York Medical College, New York, NY, USA

V10, Laparoscopic Excision of Choledochal Cyst B. Banieghbal, CH Baragwandth Hospital, Johannesburg, South Africa

SS03: Genito Urinary & Biliary Tract
Saturday, May 8, 2004 7:30 - 8:00 AM

Moderators: Gordon MacKinlay, MD & David Van der Zee, MD

S24, Transvesicoscopic Ureteric Reimplantation 40 Cases : Preliminary Results. J. Breaud, None, J.-S. Valla, MD, H. Steyaert, MD, L. Carfagna, None, J Baez, None, Servise de Chirurgie Viscérale Pédiatrique, Fondation Lenval, Nice, France

S25, Retroperitoneal laparoscopic versus open dismembered pyeloplasty in children . Yves Aigrain, BA, Arnaud Bonnard, BA, Alaa El Ghoneimi, BA, Hôpital Robert Debré, AP-HP, Université of Paris VII, Paris, France

S26, BILIO INTESTINAL LAPAROSCOPIC ENTEROSTOMY (BILE) AVOIDS POSTOPERATIVE ADHESIONS AND FACILITATES LIVER TRANSPLANTATION IN PATIENTS WITH BILIARY ATRESIA . Guillermo Cervio, MD, Horacio Questa, MD, Oscar Inventarza, MD, Marcelo Martinez-Ferro, MD, National Pediatric Hospital J.P. Garrahan. Buenos Aires. Argentina

S27, OUTCOME AFTER LAPAROSCOPIC TREATMENT FOR BILIARY ATRESIA . Miguel Ottaiano, MD, Marcelo M Ferro, MD, Bernardina B Modesto, MD, Ruy E Pereira, MD, Edward Esteves, PhD, Division of Pediatric Surgery, Goias Federal University, Goiania (GO), Brazil

S28, LAPAROSCOPICALLY ASSISTED HEPATIC DUCTOPLASTY FOR CHOLEDOCHAL CYST . Li Long, MD, Fu Jingbo, PhD, Department of Pediatric Surgery, the first Affiliated Hospital, Peking University, Beijing, CHina

S29, ROBOT-ASSISTED KASAI PORTOENTEROSTOMY IN AN INFANT WITH BILIARY ATRESIA . Craig Albanese, MD, Lucile Packard Children’s Hospital, Stanford, CA, USA

PRESIDENTIAL ADDRESS
8:00 am – 8:10 am
CK Yeung, MD
Professor Of Surgery, Chief Of Paediatric Surgery & Paediatric Urology, Chinese University Of Hong Kong, Hong Kong, CHINA
STATE-OF-THE-ART LECTURE – ROBOTICS
Saturday, May 8, 8:10 – 8:40 AM

Sir Ara Darzi, MD
Professor of Surgery and Head of Department, St. Mary’s Hospital NHS Trust, London, U.K.

Introduction by CK Yeung, MD

Professor Sir Ara Darzi is currently Chair of Surgery, Imperial College, Science, Technology and Medicine and Honorary Consultant Surgeon at St. Mary’s Hospital NHS Trust. Professor Darzi helped to set the national guidelines in education and training in Minimal Access Surgery for the U.K. He obtained his fellowship in surgery from the Royal College of Surgeons in Ireland and an M.D. degree from Trinity College, Dublin. He was subsequently granted fellowships in the Royal College of Surgeons of England, The American College of Surgeons, and is an Honorary fellow of the Royal College of Surgeons and Physicians in Glasgow.

Professor Darzi is an acknowledged innovator in minimal invasive therapy, including imaging and biological research. He relentlessly campaigns for the need for improved inter-disciplinary research with a closer integration of information technology, biotechnology and physical sciences. He recently published the national guidelines for day care surgery and is also involved in setting the future model of diagnostic and treatment centers.

Professor Darzi was knighted by the Queen as a Knight Commander of the most excellent Order of the British Empire (KBE) in December 2002.

IPEG gratefully acknowledges a generous educational grant in support of this lecture by Ethicon Endo-Surgery, Inc.

8:40 am – 9:00 am Coffee break in Exhibit Hall

IPEG gratefully acknowledges support of all coffee breaks by our Bronze Level Supporters:
Olympus America • SurgRx, Inc. • Taut, Inc.

Panel 2 Hepatobiliary
Saturday, May 8, 9:00 AM - 10:00 AM

Moderators: Jean-Martin Laberge, MD & Gadi Lotan, MD

Schedule:

<table>
<thead>
<tr>
<th>Choledocholithiasis</th>
<th>Thom E Lobe, MD</th>
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<td>Pancreas – Insulin Producing Lesions of the Pancreas</td>
<td>Klaas (N) M. A. Bax, MD</td>
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<td>Kasai (including Jaundiced patient)</td>
<td>Marcelo Martinez Ferro, MD</td>
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<td>Choledochal Cyst</td>
<td>C. K. Yeung, MD</td>
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<td>Discussion</td>
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IPEG gratefully acknowledges a generous educational grant in support of this lecture by Tyco Healthcare Auto Suture

Introduction of President Elect Klaas Bax, MD & 2005 Venice Meeting
10:00 am - 10:10 am

CK Yeung, MD
KEYNOTE LECTURE – TECHNOLOGY AND MINIMALLY INVASIVE SURGERY

Saturday, May 8, 10:10 - 10:40 AM

Steven Schwitzberg, MD

Associate Professor of Surgery, Tufts University School of Medicine Director of MIS, Tufts-New England Medical Center

Steven D. Schwitzberg, MD FACS is Associate Professor of Surgery and Head and Neck Surgery at Tufts University School of Medicine and serves as Director of MIS and is Chairman of the Institution Review Board (IRB) at Tufts-New England Medical Center. He also is Multimedia Editor for Surgical Endoscopy, serves on the Editorial Boards of the Journal of Laparoendoscopic and Advanced Surgical Techniques and Same Day Surgery. His military experience includes Major USAR (Ret) Chief of Surgery 365 Evac Hospital in Operation Desert Storm. His recent awards include Computerworld Laureate Award in Medicine 2002, Boston Area Top Doctors Award 2003, and America Best Doctors Award 2003.

IPEG gratefully acknowledges a generous educational grant in support of this lecture by Ethicon Endo-Surgery, Inc.

10:40 am – 11:15 am Coffee break and snack in Exhibit hall

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NEW! BEST BASIC SCIENCE ABSTRACT AWARD - $1000

The new Best Basic Science Abstract Award will be a cash prize of $1000 to be presented during the Saturday session of the Abstract Presentations. The Award recipient will be selected by the program committee.

IPEG gratefully acknowledges a generous educational grant in support of this award from Ethicon Endo-Surgery, Inc.
SS04: Research & Hernias
Saturday, May 8, 2004 11:15 AM - 12:30 PM

**SS030**: Laparoscopic adrenal surgery in children: a case-control study. Ahmed Nasr, MD, Paul W Wales, MD, Jacob C Langer, MD, Justin T Gerstle, MD, The Hospital for Sick Children, Toronto, Ontario, Canada

**SS031**: Laparoscopic repair of traumatic bowel injury in children. Thom E Lobe, MD, John B Pietsch, MD, Harold N Lovorn, MD, Christian J Streck, MD, University of Tennessee-Memphis Health Science Center and Vanderbilt University School of Medicine, Memphis, TN, USA

**SS032**: Laparoscopic assisted bowel resections compared to open surgery for Crohn's disease in children. JA Taminiau, PhD, CM Kneepkens, PhD, WA Bemelman, PhD, R van Baren, MD, HA Heij, PhD, MA Cuesta, PhD, Pediatric Surgical Center Amsterdam, locations VU University Medical Center and Emma Children's Hospital AMC, departments of Surgery and Pediatric Gastroenterology in VU and AMC, Amsterdam, The Netherlands

**SS033**: Prenatal transabdominal partial amnioexchange plus postnatal minimal intervention management: ideal combination for the minimal invasive treatment of gastroschisis. Oguz Ates, MD, K Demir, MD, Gulce Hakguder, MD, Feza M Akguur, MD, Mustafa Olguner, MD, Dep. of Pediatric Surgery and Obstetrics and Gynecology Dokuz Eylul University, Medical School, ?zmir, TURKEY

**SS034**: Re-operation after minimally invasive surgery: why is it required, and how should it be performed? Kiki Maoate, MD, Russell Blakelock, MD, Spencer W Beasley, MD, DEPARTMENT OF PAEDIATRIC SURGERY, CHRISTCHURCH HOSPITAL, Christchurch, New Zealand

**SS035**: Laparoscopic surgery in presence of scarred abdomen. Behrouz Banieghbal, MD, Michael R Davies, MD, Division of Paediatric surgery, CH Baragawanath Hospital, University of the Witwatersrand, Johannesburg, South Africa

**SS036**: Nitinol U-Clips for Robot-Assisted Laparoscopic Bowel Anastomosis. Adrien J Kant, MD, Karen M Forman, BA, Joseph L Lelli, MD, Scott E Langenburg, MD, Children's Hospital of Michigan, Detroit, MI, USA

**SS037**: Clinical lessons in robotic surgery. Anthony Sandler, MD, Laura Phearman, RN, John Lawrence, MD, John J Meehan, MD, University of Iowa - The Children's Hospital of Iowa

**SS038**: Laparoscopic assisted pediatric inguinal hernia repair: assessment of results and safety in an animal model. KE Georgezon, MD, GT Tekant, MD, A Yamgru, MD, H Narasimhamurthy, MD, Y Hammers, MD, CM Harmon, MD, Departments of Pediatric Surgery and Pathology/Laboratory Medicine, The Children's Hospital of Alabama, Birmingham, AL, USA.

**SS039**: Tissue Adhesive Injection into an Inguinal Hernia Sac: A New Repair. Yoshifumi Katou, MD, Takeshi Miyano, MD, Sawako Asano, MD, Mihoko Ishihara, MD, Geoffrey J Lane, MD, Hiroyuki Koga, MD, Eri Tei, MD, Atsuyuki Yamataka, MD, Go Miyano, MD, Department of Pediatric General and Urogenital Surgery, Juntendo University School of Medicine, Tokyo, Japan

**SS040**: Comparison of LMA and ETT usage on ventilation and intragastric pressure in pediatric laparoscopic inguinal hernia repair. Gulsen Ekingen, MD, Kamil Toker, MD, Selami Sozubir, MD, Mine Solak, MD, Haluk B Guvenc, MD, Dilek Ozdamar, MD, Departments of Anesthesiology & Reanimation and Pediatric Surgery, Kocaeli University, School of Medicine, Kocaeli/TURKEY

**SS041**: Evaluation of the utilization of laparoscopic hernioplasty in infants and children: a clinical analysis in 2000 cases. Yuzhou Li, MD, Gan Yao, MD, Jiansheng Liang, MD, Department of Pediatric Surgery, No.1 People's hospital of Foshan, Guangdong, P.R.China

**SS042**: Laparoscopic flip-flap hernioplasty: Our first One hundred Repairs. MKW. Li, MD, KF Yip, MD, PKH Tam, MD, Department of Surgery, Pamela Youde Nethersole Eastern Hospital, Hong Kong SAR China

IPEG gratefully acknowledges a general educational grant in support of this session by Tyco Healthcare Auto Suture

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**Oral Poster Guided Tours:**
Saturday May 8, 2004 12:30 - 1:30 pm
Location: South Pacific Ballroom

Join our Poster Moderators in a guided tour of the oral poster presentations. During the tour, participating authors will have the opportunity to make a brief (2 minute) presentation of their poster and discuss their work with interested participants. The poster tours are divided by subject. Below you will find a tour number and the posters assigned to that tour. Each tour will last 1 hour and will include about 15 posters. Look for your tour guide outside the South Pacific Ballroom just before the scheduled tour time.

IPEG gratefully acknowledges a generous educational grant in support of this portion of the meeting by Valleylab

**Tour 1**
Saturday 12:30 - 1:30
Moderator: Klaus Schaarschmidt, MD
Orthopedics/Other (Poster # 64-82)

**Tour 2**
Saturday 12:30 -1:30, Moderator: Marc Levitt, MD
Otolaryngology (Poster # 83)
Robotics (Poster # 84-89)
Spleen/Solid Organ (Poster # 90-105)

**Tour 3**
Saturday 12:30 - 1:30
Moderator: Atsuyuki Yamataka, MD
Thoracoscopy (Poster # 106-124)
Craig Albanese, MD, Professor And Chief, Division Of Pediatric Surgery, Director Of Pediatric Surgical Services, Stanford University Medical Center, Stanford, CA.

Ara Darzi, MD, Professor Of Surgery and Head Of Department Of Surgical Oncology And Technology, Imperial College London, London, UK

Leonard Hamby, MD, Presbyterian/St Lukes Medical Center, Certified Pediatric Surgical Assistant, Hospital For Infants & Children, Highlands Ranch, CO.

William A. Arnold, MD, New England Medical Center, Boston, MA

Alaa El-Ghoneimi, MD, Professor Of Pediatric Surgery And Urology, Consultant Of Pediatric Urology, Hospital Robert Debre, University Of Paris, Paris, FRANCE

Caroll M. Harmon, MD, Associate Professor Of Surgery, Surgical Director, Weight Management Center, Co-Director, Alabama Institute Of Minimally Invasive Surgery, Children's Hospital, Birmingham, Alabama, Birmingham, AL,

Maria Marcela Bailez, MD, General Pediatric Surgeon, Assistant Professor, Garraham Hospital, Buenos Aires, ARGENTINA

Hector Azuara Fernandz, MD, Chief Of Pediatric Group, Pediatric Surgeon, Hospital MIG Mexico City, Col. Lindavista CP, MEXICO

George Holcomb, MD, Professor Of Surgery, University Of Missouri At Kansas City School Of Medicine, Surgeon In Chief, Children's Mercy Hospital, Kansas City, MO,

Klaas Bax, MD, Head, Department Of Pediatric Surgery, Professor Of Pediatric Surgery, Wilhelmina Children's Hospital, University Medical Center, AB Utrecht, NETHERLANDS

Alan W. Flake, MD, Director, Childrens Institute For Surgical Science, Ruth & Tristram C. Colket Jr.Chair In Pediatric Surgery, Professor Of Pediatric Surgery, The Children's Hospital Of Philadelphia, Philadelphia, PA,

Celeste Hollands, MD, Associate Professor Of Surgery & Pediatrics, Department Of Pediatric Surgery, Children's Hospital Of Buffalo, Buffalo, NY,

Allen Browne, MD, Associate Professor Of Clinical Surgery, University Of Illinois At Chicago, University Of Illinois At Chicago, Chicago, IL,

Keith Georgeson, MD, Professor Of Surgery, Joseph M. Farley Chair; Director, UAB Division Of Pediatric Surgery, Surgeon In Chief, The University Of Alabama School Of Med, Birmingham, AL,

Vincenzo Jasonni, MD, Director, Pediatric Surgery Gaslini Institute, Professor Of Surgery, University Of Genova, Genoa, ITALY

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Jean-Martin Laberge, MD, Director, Division Of Pediatric General Surgery, Associate Professor, McGill University, The Montreal Children's Hospital, Montreal, QC, CANADA

Marc Levitt, MD, Assistant Professor Of Surgery And Pediatrics, Albert Einstein College Of Medicine, Schneider Children's Hospital, North Shore - LIJ Medical Center, New Hyde Park, NY,

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Gad Lotan, MD, Pediatric Surgery, Assaf Harofeh Medical Center, Zerifin, ISRAEL

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Daniel Robie, MD, Consultant Pediatric Minimally Invasive Surgery, Kapiolani Medical Center For Women And Children, Assistant Profess Of Surgery, University Of Hawaii School Of Medicine, Honolulu, HI,

Steve Rothenberg, MD, Chief, Pediatric Surgery; Assistant Clincial Professor, University Of Colorado, Denver, CO,

Klaus Schaarschmidt, MD, Director, Helios Center Of Pediatric Surgery, Berlin, GERMANY
IPEG MEETING FACULTY

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Benno Ure, MD, Professor Of Pediatric Surgery, Medical University Hannover, Hannover, GERMANY

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David Van Der Zee, MD, Wilhelmina Children's Hospital University Medical Center Utrecht, Utrecht, NETHERLANDS

Mark Wulkan, MD, Assistant Professor Of Surgery & Pediatrics, Emory University/Children's Healthcare Of Atlanta, Atlanta, GA,

C.K. Yeung, MD, Professor Of Surgery, Chief Of Paediatric Surgery & Paediatric Urology, Chinese University Of Hong Kong, Hong Kong, CHINA
DISCLOSURES

In the spirit of full disclosure, the faculty members listed below have voluntarily disclosed that they have a professional affiliation with the following companies who are either sponsors or exhibitors at the 13th Annual Congress for Endosurgery in Children, or whose products may relate to their presentation. The affiliations are not necessarily financial but may also include research grants, volunteer input, etc. IPEG requires speakers who have such affiliations to disclose this verbally prior to their presentation if it is not disclosed in writing. IPEG also requires that speakers disclose if a product is not labeled for the use under discussion or if the product is still investigational.

Akgür, Feza: None
Albanese, Craig: None
Arnold, William A.: Did not submit disclosure
Azuara Fernandz, Hector: None
Bailey, Karen: None
Bailez, Maria Marcela: None
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Browne, Allen: None
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Flake, Alan W.: None
Georgeson, Keith: None
Guvenc, Haluk: None
Hamby, Leonard: None
Harmon, Carroll M.: None
Holcomb, George: None
Hollands, Celeste: None
Jasoni, Vincenzo: None
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Schwaitzberg, Steven: None
Streck, Christian: None
Tantoco, Joselito: None
Tekant, Gonca: None
Ure, Benno: None
Valla, Jean-Stephane: None
Van Baren, Robertine: None
Van der Zee, David: None
Wulkan, Mark: None
Yeung, C.K.: None
Yip, KF: None
Yoshida, Ryuji: None
EAES and IPEG
Joint Meeting

June 1 - 4, 2005

Venice, Italy
s01
RADIOFREQUENCY ABLATION FOR FETAL ANOMALIES, Hannin Lee MD, Diana L Farmer MD, Kerilyn K Nobuhara MD, Jody Farrell RN, Michael R Harrison MD, University of California, San Francisco
Introduction: Prenatal surgery can successfully salvage fetuses with anomalies that would otherwise portend in utero demise. However, manipulation of the uterus either via hysterotomy or via hysteroscopic often leads to preterm labor and fetal demise. Ultrasound-guided ablation of fetal tissue using radiofrequency technology allows minimal access intervention that may decrease preterm labor thereby increasing fetal survival.
Methods: A retrospective review was performed for fetuses undergoing radiofrequency ablation for twin reversed arterial perfusion sequence (TRAP), congenital cystic adenomatoid malformation (CCAM), and sacrococcygeal teratoma (SCT) at a single institution. Operative technique is described and survival calculated.
Results: 36 fetuses underwent radiofrequency ablation for TRAP, CCAM, and SCT. Anesthesia varied from local/regional to general. Ultrasound guidance was used to direct the radiofrequency device. A stab wound was made on the maternal skin, and with real time ultrasound direction and the tip of the catheter was directed to the fetal point of interest. The myometrium was traversed in an area away from the placenta. Once the tip of the catheter was correctly positioned, the prongs of the radiofrequency device were deployed. Ablation was performed until doppler showed no further flow in the vessels of interest. Thirty-two out of 36 fetuses survived. Survival was calculated as discharge from the hospital.
Summary/Conclusion: Radiofrequency ablation is an effective method for in utero intervention for certain life-threatening fetal anomalies. Continued improvements in fetal imaging will allow increasing image guided procedures potential decreasing both maternal and fetal morbidity.

s02
ENDOSCOPICALLY ASSISTED MINIMAL ACCESS REPAIR, A NEW TECHNIQUE OF CORRECTING PECTUS CARINATUM IN ADOLESCENTS, Klaus Schaarschmidt MD, A Kolberg-Schwerdt MD, M Lempe MD, F Schlesinger MD, Centre of Pediatric Surgery, Berlin-Buch
Objective of the study:
Minimally invasive Nuss repair of pectus excavatum has stood the test of time, but no comparable method for pectus carinatum has been devised so far. Based on a personal experience of 132 conventional Hegemann Willital pectus carinatum repairs (6/84-6/2001) and a new method for correcting prominent costal arches in Nuss repairs, this study intended to establish and standardize a new method of endoscopically assisted minimal access repair of pectus carinatum corresponding to a modified Hegemann Willital procedure.
Methods and procedures:
So far minimal access repair of pectus carinatum was limited by the need of an extensive dissection of sternum and entire ventral thoracic cage ranging from one axillary line to the opposite one. This was achieved by bilateral CO2-inflation of the submuscular space and endoscopic dissection of both serratus and pectoral muscles from the ribs and sternum from xiphoid to jugulum. Thus the entire dissection was performed endoscopically. From multiple segmental rib resections and sternotomy were performed under endoscopic assistance in a semiopen way from a 3-5 centimetre midline (in girls submammar) incision. Two transternal struts were introduced and fixed pericostally in the same way from a 3-5 centimetre midline (in girls submammar) incision. Two

s03
TRACHEAL OCCLUSION FOR SEVERE CONGENITAL DIAPHRAGMATIC HERNIA: AN UPDATE, Hannin Lee MD, Kerilyn K Nobuhara MD, Diana L Farmer MD, Jody Farrell RN, Michael R Harrison MD, University of California, San Francisco
Fetoscopic tracheal occlusion has been a promising technique for induction of lung growth in fetuses diagnosed with severe congenital diaphragmatic hernia (CDH). Results of our prospective-randomized trial showed no difference in survival between the control group and the prenatal tracheal occlusion group. Survival in both groups was about 75%. Survival in the control group was significantly higher than calculated according to historical controls and likely demonstrates the trial effect commonly seen. We hypothesized that the benefits of lung growth in the fetal surgery group were offset by the complications of preterm labor. With this in mind, we evaluated the effectiveness of fetal surgery in the subset of only the most severely affected infants with CDH, those with lung-to-head ratio (LHR)<1.1 and/or hydrops fetalis. Even within our trial, survival in this group was exceedingly poor. A retrospective review was performed for fetuses undergoing fetoscopic tracheal occlusion for CDH with LHR<1.1 and/or hydrops fetalis. Fetuses with both left and right sided CDH were considered for this study. Ten out of 14 infants survived postnatally. Fetoscopic tracheal occlusion remains a promising therapy for fetuses with severe CDH. Newer strategies that are currently being employed include late gestational tracheal occlusion as this may avoid the problems of severe prematurity. Alternatively, another strategy also being employed is early tracheal occlusion with subsequent in utero removal of the balloon. Increasingly, maternal laparotomy is avoided and procedures are being done percutaneously. Tracheal occlusion remains a promising therapy for severe congenital diaaphragmatic hernia, and future studies should delineate which, if any, fetuses would benefit, and what the optimal timing and technique for tracheal occlusion should be.

s04
EFFECT OF ELEVATED INTRAABDOMINAL PRESSURE(IAP) ON INTESTINAL STRUCTURE AND BACTERIAL TRANSLOCATION IN RAT, I. Sukhotnik MD, J. Bejar MD, A. Bernshteyn I. Srugo MD, J. Mogilner MD, Bnai Zion Medical Center, Rappaport Medical School, Technion, Israel
Aim: Elevated IAP has been shown to adversely effect the barrier and metabolic functions of the small intestine, reduce mesenteric blood flow and cause histological damage. The purpose of the present study was to evaluate the effects of IAP on intestinal structural changes and concomitant bacterial translocation in rat.
Methods: Male Sprague-Dawley rats were subjected to insert Foley catheters through stab wounds in their abdominal walls and inflation of air intraperitoneally to create the elevated IAP. Rats were divided into three groups: Sham rats (Group A) were subjected to IAP of 0 mm Hg, IAP-15 rats (Group B) were subjected to IAP of 15 mm Hg, and IAP-25 rats (Group C) were subjected to IAP of 25 mm Hg. Intestinal structural changes including bowel and mucosal weight, mucosal DNA and protein, villi height and crypts ratio, villus/crypts ratio, were determined at sacrifice. The degree of intestinal injury was evaluated on a grading scale from 0 to 8 as described by Park. Cultures of mesenteric lymph nodes, spleen, liver, portal and peripheral blood was studied to determine bacterial translocation.
Results: IAP-15 rats (Group B) demonstrated a significant decrease in bowel weight in duodenum (19 ± 1 vs 23±1, p<0.05), jejunum (14 ± 1 vs 18±1, p<0.05), ileum (15 ± 1 vs 18±1, p<0.05), mucosal weight in duodenum (6 ±0.3 vs 8±0.4, p<0.05), jejunum (5 ± 0.5 vs 6.4±0.4, p<0.05), ileum (4.5 ± 0.4 vs 6±0.5, p<0.05), mucosal DNA and protein in jejunum, ileum, villus height in jejunum, crypt depth in jejunum and ileum (p<0.05) compared to Sham animals. IAP-25 rats (Group C) also showed a significant decrease in bowel and mucosal weight in all segments, mucosal DNA and protein in jejunum and ileum and villus height and crypt depth in jejunum and ileum compared to sham animals. There was no difference in macroscopic and microscopic bowel appearance between Groups B and C animals. The median grade of injury was significantly greater in jejunum in IAP-15 and IAP-25 rats compared to control animals. Bacterial translocation was observed in 40% of sham rats, 60% of IAP-15 and in 70% of IAP-25 animals with E.coli and Enterococcus faecalis as a most common bacteria. Conclusions: Elevated IAP induces mucosal injury, impaired integrity of the gastrointestinal mucosa and increase bacterial translocation in rat.
s05
ANURIA DURING PNEUMOPERITONEUM IN INFANTS AND CHILDREN
- A PROSPECTIVE STUDY, Barbara H Gümze Dammeyer 1 MD, Eva Karonik 1, Sylvia Gluer 1 MD, Natalie K Jesch 1 MD, Jochen F Kubler 1 MD, Kay Latta 3 MD, Robert Sumpelmann 2 MD, Benno M Ure 1 MD, 1Department of Pediatric Surgery, 2Department of Anesthesiology, 3Department of Pediatric Nephrology, Hannover Medical School, Hannover, Germany

Introduction: Transient oliguria during laparoscopic surgery is a known phenomenon. Currently, no data on the impact of pneumoperitoneum on renal function in children are available.

Patients and methods: Thirty children with normal kidney function, who underwent laparoscopic surgery were included in a prospective study. A transurethral catheter was placed to measure urine output during and six hours after operation. Renal blood flow (resistive index) was evaluated by doppler ultrasound of a segmental renal artery before surgery, every 15 minutes during laparoscopy, and after 24 hours. Blood and urine samples were studied before and 24 hours after surgery. Haemodynamic parameters were monitored continuously during standardised anaesthesia, including a standardised intravenous infu- smon regimen.

Results: Urine output decreased within 45 minutes of pneumoperitoneum in all patients. Seven out of eight (88%) children under one year of age developed anuria versus three out of 22 (14%) children aged one to fifteen years (p<0.001). Nine children aged one year and older (32%) developed oliguria. There was a significant recovering in the mean urine output until 12 hours after pneumoperitoneum in both age groups. No significant alterations of the renal blood flow (resistive index), the serum and urine levels of cystatin C, creatinine, and urea nitrogen were evident until 24 hours postoperatively. The volume of infusion during pneumoperitoneum did not correlate with urine output.

Conclusion: Pneumoperitoneum leads to anuria in most children under one year of age and to oliguria in about one third of older children. This is a completely reversible phenomenon. Urine output should not be taken into consideration for calculating intravenous fluid administration during pneumoperitoneum in children.

s06
IMPACT OF PROLONGED PNEUMOPERITONEUM ON HEMODYNAMICS AND OXYGENATION, Natalie K Jesch MD, Tobias Schuerholz MD, Gernot Marx MD, Dirk Haertel MD, Robert Sumpelmann MD, Benno M Ure MD, Department of Pediatric Surgery and Anaesthesia, Hannover University Medical School, Germany, University Department of Anaesthesia, University of Liverpool, United Kingdom

Introduction: Little data exist on the impact of laparoscopy on hemodynamics and circulating blood volume in neonates and infants. Therefore, we investigated associated pathophysiologic changes due to prolonged pneumoperitoneum in a rabbit model.

Methods and procedures: New Zealand rabbits (n = 11, mean weight 3.7 kg) were anesthetized and mechanically ventilated. A central venous line and an arterial catheter were inserted. Animals were divided into two study groups, anesthesia alone or with pneumoperitoneum of 8 mmHg for 3.5 hours. Circulating blood volume, systemic hemodynamics, and oxygenation were measured to compare the two groups before, during, and 30 min after desufflation. For statistical analysis Friedman test with post-hoc Wilcoxon was performed.

Results: The cardiac output, circulating blood volume, and central venous oxygen saturation were reduced during and 30 min after pneumoperitoneum. Central venous pressure peaked during pneumoperitoneum (8-10 mmHg) compared to anesthesia (5-6 mmHg) or baseline values (6-7 mmHg) before returning to normal after desufflation (5-7 mmHg). Compared to anesthesia, values for mean arterial pressure, pH, base excess, and oxygen saturation were lower. However, there were no statistical relevant changes concerning mean arterial pressure or pH at the different time points during pneumoperitoneum.

Conclusion: Commonly used clinical parameters like pH, mean arterial pressure, and central venous pressure do not indicate the impairment of systemic hemodynamics, oxygenation, and reduction of circulating blood volume during laparoscopy in this experimental model. Interestingly, this compromise of the hemodynamic system continued to increase even after releasing the pneumoperitoneum while continuing anesthesia. These findings might improve our knowledge about specific pitfalls after long laparoscopic operations in small children and help us to optimize postoperative care.

s07
ENDOSCOPIC SUBMUCOSAL INJECTION OF DEFLEX (R) INTO THE DISTAL ESOPHAGUS FOR GERD TREATMENT - AN EXPERIMENTAL STUDY IN PIGLETS, Stefan S Beyretein MD, George G Kaehler MD, Felix F Schier MD, Pediatric surgical department, University medical center Jena, Germany

Purpose: The purpose of this study was to evaluate the efficiency of a minimal invasive alternative technique for treatment of gastro-esophageal reflux, based on the principle of the widely used STING procedure for vesico-ureteral reflux.

Methods: With ACC approval, eight piglets (weight 10.2 to 15 kg, median 12.6) underwent endoscopic submucosal injection of 1cc DEFLEX(R) (Dextranomer/Hyaluronic acid copolymer) at three different sites, 120 degrees apart, immediately above the distal gastro-esophageal junction. Trans- esophageal manometry was performed before and immediately after injection and repeated 2 and 4 weeks postoperatively. Two piglets served as controls. The animals were sacrificed three months postoperatively and studied histologically. Statistical evaluation was performed.

Results: The Injection raised the mean lower esophageal sphincter pressure (LES) from 8.47 mmHg (range 5.86 to 12.44) to 16.66 mmHg (range 11.99 to 22.85). The pressure remained elevated two weeks and four weeks postoperatively (16.61mmHg, range 10.03-25.97 and 13.63 (range10.25 to 20.83) respectively. The difference, compared to controls is significant at p< 0.05. The injected material was clearly identified histologically and produced only minimal reaction.

Conclusion: The present study demonstrates that submucosal injection of a new synthetic material above the esophageal-gastric junction effectively raises the LES pressure. This increased pressure should prove sufficient to prevent gastro-esophageal reflux. If so, this simple technique may be an welcome addition to the management of reflux, particularly in high-risk children with failed fundoplications.

s08
IMPACT OF MINIMAL INVASIVE SURGERY ON ACUTE PHASE RESPONSE AND RISK OF INFECTIOUS COMPLICATIONS IN PAEDIATRIC PATIENTS, Mariano Barbalace MD, Gordon A MacKinnay MD, Davovanna Ricipicottino MD, Rick Children, Department of Paediatric Surgery, Edinburgh, ? Scotland, UK

Introduction: Surgery induce a state of transient immunosuppression. Open Laparotomy is followed by changes in defence mechanisms which may be important for the development of post-operative infections. Laparoscopic surgery is believed to lessen surgical trauma and cause less distress on immune function. The mechanisms which permits to laparoscopic surgery to be associated with reduced post-operative complications, are unclear. In adults laparoscopic surgery appears to be associated with similar metabolic responses compared with open surgery. In the paediatric population the data available are poor. Aim of our study is to determine the peri-operative IL-1, IL-6, TNF and CRP level in children undergoing minimal invasive surgery compared with open surgery.

Methods and Procedures: Sixty patients with a mean age of 9.9 ± 2.99 years agreed to enter the study and were prospectively investigated. 30 of them (group I) were submitted to both laparoscopic and retroperito-neoscopic procedures and 30 (group II) underwent open surgical operations. A blood sample (2ml) was taken just before induction (T0), at the end of the procedure (T1) and day 1 post-operative (T2). Plasma was obtained by centrifugation and kept frozen until required for assay. To determine the acute phase response IL-1, IL-6, TNF and CRP levels were investigated and compared among groups.

Results: Comparing the two groups of patients in the post-operative period (T1-T2) the plasma level of TNF ranged 192 ± 99 pg/ml and 271 ± 99 respectively in the group I versus 280 ± 99 and 422 ± 99 in the group II; IL-1: 188 ± 99 pg/ml and 244,7 ± 99 versus 301 ± 99 and 404 ± 99; IL-6: 194 ± 99 pg/ml and 205,11 ± 99 versus 295 ± 99 and 322 ± 99 and CRP: 51 ± 20 mg/ml and 78 ± 99 versus 220 ± 99 and 288 ± 99.

Conclusions: These values were higher in both groups, but significantly lower in the patients in group I. Laparoscopy in children seems to cause less surgical trauma and so less immunologic changes. This results in a decreased incidence of infectious complications. These preliminary data could explain the better post-operative results in terms of recovery, also indicate an additional benefit of much reduced post operative pain.
THE FUTURE OF VIRTUAL REALITY IN PEDIATRIC ENDOSCOPIC SURGERY, David C. van der Zee PhD, Klaas (N) M.A. Bax PhD, Dept. Pediatric Surgery, University Medical Center Utrecht, NL

Introduction
With the increasing acceptance of the endoscopic approach in pediatric surgery it becomes obvious that training and accreditation in pediatric endoscopic surgery should be enforced.

Methods and procedures
Through a multi-center multinational study is set up to gather data retrieved from large groups of participants throughout the world that have participated in this virtual reality training study, in order to define standards that should be met to obtain accreditation in pediatric endoscopic surgery. Three groups of participants will be defined. Novices, intermediate and experts.

Results
For each group the mean value can be calculated of the results obtained from the predefined tests with a virtual reality trainer.

Discussion
The outcomes of the results are the basis for defining the criteria for accreditation in pediatric endoscopic surgery. The mean value calculated from the results could be set as a criterion for different kind of procedures.

Important point of discussion will be whether an organization such as IPEG will support such criteria and whether pediatric endoscopic groups will accept the criteria defined for accreditation.

Such would be a huge leap forward in quality assessment and could be followed by other organizations such as SAGES.

ENDOSCOPIC THORACIC SYMPATHECTOMY (ETS) AND ENDSOCOPIC THORACIC SYMPATHECTOMY BLOCK (ESB), STRATEGIES FOR A DIFFERENTIAL THERAPY OF DISABLING HYPERPHIDROSIS AND ERYTHRODERMIA OF CHILDHOOD AND ADOLESCENCE, Klaus Schaarschmidt MD, M Lempe MD,A Kolberg-Schwerdt MD, Helios Centre of Pediatric Surgery, Berlin-Buch

Objectives of study: Severe palmar, axillary and facial hyperhidrosis or facial erythrodermia are disabling conditions. The children are socially excluded, can’t work with paper, don’t shake hands and several have intended or attempted suicide. Antidiarrhies, AI, lontophoresis, botulinus, -blockers, antidepressives and psychotherapy may be disappointing. Functional sympathetic surgery is free of the risk of complications and Horner’s syndrome. This study intends to standardize surgery, minimize interference with sympathetic innervation and introduce a potentially reversible procedure for high risk facial procedures.

Methods and procedures: In 48 children and adolescents (age 17.8 ± 8.9 y, range 11-25 y) unresponsive to conservative treatment for > 5 years, a thoracoscopic sympathetic procedure as limited as possible was performed. In 48 patients 65 sympathectomies and 33 symmetric blocks were employed, in all except two bilaterally. For axillary hyperhidrosis a T4 sympathetic block, palmar hyperhidrosis a T3 sympathetic block and an increasing T3 sympathetic block and in facial hyperhidrosis or erythrodermia a 19 T2 and 15 sympathetic blocks were performed. Due to anatomical variability of the ganglia and inconsistent presence of Kunzke’s nerve utmost attention to anatomical details is indispensable.

Results: There was no intra- or postoperative complication, no haemorrhage, no Horner’s but one severe transient dorsal compensatory sweating after T3 + 4 sympathetic for palmar + axillary hyperhidrosis. In two early patients the limited procedure was not satisfactory on one side and a redo T2 sympathetic block or T3 sympathetic were performed and two children required a 24h intercostal drainage for residual pneumothorax. After this, all children were cured from hyperhidrosis or erythrodermia and after 20.4 ± 9.8 months (range 32.2 - 5.4 mo) all patients would have decided to have the procedure done again.

Conclusions: So far, extensive procedures like T2+T3 sympathetic for palmar hyperhidrosis have been employed in children. Although small in number this study seems to indicate, that a much more conservative approach affecting only one ganglion is sufficient in most cases. Moreover, sympathetic block (reversible for at least 4-6 weeks) is equally effective as sympathectomy and thus in children may be preferable to ablative sympathetic surgery. Compensatory sweating is underestimated!

A 10 YEARS’ EXPERIENCE OF THORACOSCOPIC APICAL PLEURODESI S FOR SPONTANEOUS PNEUMOTHORAX OF CHILDREN AND ADOLESCENTS, Klaus Schaarschmidt MD, K Uschinski MD,A Kolberg-Schwerdt MD, M Lempe MD, Helios Centre of Pediatric Surgery, Berin-Buch

Objectives of study: Spontaneous pneumothorax occurs in 3.4-10000 hospitalized infants and 1/10000 hospitalized children, in cystic fibrosis above age 10 the incidence is 5.1%. Primary therapy is thoracic drainage, but thoracoscopic pleurodesis is indicated in persisting fistula (>72 h), recurrent or bilateral pneumothorax or apical adhesions. Apical pleurodesis is based on two facts: firstly that bullous changes are usually restricted to the supramamillar thorax, secondly, that complete pleurodesis to the diaphragm results in severely restricted ventilation.

Methods and procedures: From 1993-2002, 121 adolescents (12 ? 26 y, 96 male, 25 female) were treated with thoracoscopic apical pleurodesis for 56 left and 66 right pneumothoraces (one bilateral), preferably by apical pleural abrasion, 10 had previous drainage for contralateral pneumothorax, 6 underlying disease like Cystic fibrosis, Stevens-Johnson, Marfan, Histiocytosis X, Hodgkin’s disease or posttraumatic pneumothorax, 6 under lytic disease Cystic fibrosis, Stevens-Johnson, Marfan, Histiocytosis X, Hodgkin’s disease or posttraumaic pneumothorax. Preoperatively high resolution multislice CTs is superior to X-rays, because 50% of the cases are unrecognized in conventional X-rays, double lumen endotracheal intubation and epidural anesthesia are required. Pleurodesis, consists of three steps: thorough inspection of the lung, resection of adhesive bands and bullae and apical pleurodesis. The difficult part is abrasion of the mediastinal pleura close to the lung hilum, phrenic nerve and sympathetic chain, where nerves and vascular injuries are possible. Results: In 122 thoracoscopic pleurodeses there was no lethality and no nervous injury, but four patients needed thoracotomy for recurrent pneumothorax, persisting fistula, postoperative hemorrhage and parenchymal tear at the staple line, while two patients required a thoracoscopy for recurrent pneumothorax and haemorrhage. 8 Patients got a subsequent tube thoracotomy drainage; for three recurrent pneumothoraces, one persisting fistula and 4 pleural infection following previous long-standing tube drainage.

Conclusions: The most secure method for pleurodesis with least complications is talcum poudrage (Rodgers 1979), but it induces so firm scarring that subsequent thoracotomy may be virtually impossible (Cardillo 2000). Thus talcum poudrage should be avoided in young patients and is contraindicated if later lung transplantation is considered. Therefore we use pleural abrasion as standard technique and pleurectomy (highest risk of haemorrhage) in rare problem cases.
s13
LAPAROSCOPIC PYLOROMYOTOMY IN INFANTILE HYPERTROPHIC PYLORIC STENOSIS: A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL,
MD Leclair MD, V Plattner MD, G Podevin MD, E Mirallie MD, C Camby MD, C Laplade MD, Y Heloury MD, Pediatric Surgery Department, Hospital Mere-Enfant, CHU de Nantes, 44093 Nantes, France
We report the results of a prospective randomized controlled trial (RCT) comparing laparoscopic and conventional surgery for pyloromyotomy in hypertrophic pyloric stenosis (HPS). Methods: From 1998 to 2003, 102 consecutive infants (85 males/17 females) presenting with HPS were randomized to either laparoscopy (n=50) or open surgery (n=52) after parental consent was obtained. There was no statistical difference between the two groups considering age, duration of the preoperative symptoms, weight loss, serum electrolytes at diagnosis, size of the pylorus or gastro-esophageal reflux. In both groups, an extramucosal pyloromyotomy was performed under general anesthesia, using the same standardized anesthetic procedure. Laparoscopy was performed using a 5mm telescope through an umbilical port, and two 3mm operating ports foratraumatic grasps and endotome. Conventional open surgery was conducted through a peri-umbilical incision. According to a standardized protocol, all the infants restarted feeding at 18 hours postoperatively, with a progressive increase to achieve normal feeding at 24 hours. Postoperative pain was assessed using the Amei-Tison score. All the postoperative care and assessment were performed following a blinded procedure. The main criteria evaluated was the incidence of postoperative emesis. Data regarding to surgical morbidity were also analysed.
Results: The overall incidence of postoperative emesis was 55%. There was no difference of postoperative emesis between the two groups, as 58% in the laparoscopy group compared to 52% in the open group presented multiple vomiting episodes requiring specific anti-reflux treatment (p=0.68). There was no difference in postoperative pain between the two techniques. Laparoscopy had to be converted to open procedure in 3 cases, due to mucosal perforation (n=1), difficulties of exposition (n=1), or hemodynamic instability after pneumoperitoneum insufflation (n=1). The overall complication rate was 6%. A mucosal perforation occurred in each group, and one case of wound dehiscence was observed in the open group. In the laparoscopy group, 3 infants with unsuccessful laparoscopic pyloromyotomy required redo-open pyloromyotomy. Conclusions: Laparoscopy remains a safe and feasible option in the surgical management of HPS. However, this RCT performed in a teaching university institution demonstrates the risk of specific morbidity, and suggests the absence of benefit in terms of postoperative discomfort.

s14
THORACOSCOPIC REPAIR OF CONGENITAL DIAPHRAGMATIC HERNIA, Amina M Bhatha MD, Megan M Durham MD, Mark L Wulkan MD, Emory University School of Medicine/Children’s Healthcare of Atlanta, Atlanta, GA, USA
Background: The role of thoracoscopy in the evaluation and repair of congenital diaphragmatic hernia (CDH) has yet to be described in the literature. The purpose of this study is to evaluate the role of thoracoscopy in the evaluation and repair of CDH, to describe lesions amenable to thoracoscopic repair and to evaluate the efficacy and shortcomings of thoracoscopic repair of CDH.
Methods: A retrospective review of all patients with CDH at a single institution undergoing thoracoscopic repair was performed.
Results: Twelve patients with CDH underwent thoracoscopic repair. Eight were successfully repaired thoracoscopically (67%). Reasons for conversion were a large hernia early in our experience (3), and a large combination Bochdalek/hiatal hernia (1). Ten of the twelve patients required intubation and ventilatory support prior to repair. Two patients required ECMO preoperatively. None had associated cardiac or other major congenital anomalies. Two patients had right-sided hernias, nine had left sided hernias and one patient had bilateral Morgagni hernias. Eight of the twelve patients had documented hernia sacs. The average hospital days prior to repair was 6.5 days. Of those repaired thoracoscopically, 6/8 (75%) were primary closures, 3/6 (50%) were hernia sacs. The average hospital days prior to repair was 6.5 days. Of those repaired thoracoscopically, 6/8 (75%) were primary closures, 3/6 (50%) were hernia sacs. The average hospital days prior to repair was 6.5 days. Of those repaired thoracoscopically, 6/8 (75%) were primary closures, 3/6 (50%) were hernia sacs. The average hospital days prior to repair was 6.5 days. Of those repaired thoracoscopically, 6/8 (75%) were primary closures, 3/6 (50%) were hernia sacs. The average hospital days prior to repair was 6.5 days. Of those repaired thoracoscopically, 6/8 (75%) were primary closures, 3/6 (50%) were hernia sacs. The average hospital days prior to repair was 6.5 days. Of those repaired thoracoscopically, 6/8 (75%) were primary closures, 3/6 (50%) were hernia sacs.
Conclusions: The use of thoracoscopy at our institution has shown to be an effective and safe method to repair congenital diaphragmatic hernias. Currently, one surgeon at our institution performs thoracoscopy on all patients with CDH. The other surgeons perform thoracoscopic selectively. At this time no specific patient or defect characteristics have been identified to be absolute contraindications to this minimally invasive technique.

s15
THE PHYSIOLOGIC ADVANTAGE OF MINIMAL ACCESS EXTRAPELVIC ESOPHAGEOESOPHAGOSTOMY, Joselito G Tantoco MD, Jon Rossman MS, Laramie N Dixey RN, Philip L Glick MD, Celeste M Hollands MD, Miniature Access Surgery Teaching, Training, and Robotic Research Center, SUNY at Buffalo, Buffalo, New York, USA
INTRODUCTION. Minimal access repair of esophageal atresia is gaining acceptance but usually requiring a transperitoneal approach. Use of a thoraco-scopic transpleural approach lacks some of the potential benefits attributed to an extraperitoneal repair. The advantages of the extraperitoneal approach seem obvious but remain unproven. The purpose of this study was to compare the technique of minimal access extraperitoneal esophageoesophagostomy with tho-racoscopic transpleural repair.
MATERIALS AND METHODS. Twelve piglets (5-10kg) were divided into a transpleural group (n=6) and an extraperitoneal group (n=6). All procedures were performed with the subjects in semi-prone position, with use of three, 5 or 3 mm trocars. Carbon dioxide (ETO2) and arterial blood gases were periodically monitored and serially recorded during the procedures. The anastomoses were evaluated for narrowing, leak, and mucosal approximation. Results between the groups were descriptively analyzed and tested for statistical significance. A value of p<0.05 was considered statistically significant.
RESULTS. All procedures were completed without any complications except for 2 cases in the transpleural group (both euthanized prior to completion of the anastomosis due to difficult ventilation). Transpleural cases averaged 42 minutes faster than the extrapleural group (p<.05). Evaluation of the anasto-moses, showed no narrowing, no leak, and good mucosal approximation in both groups. There was no statistically significant difference between the two groups for the rest of the parameters measured except for the blood ph, PCO2 and PO2 levels (p<.05).
CONCLUSIONS. Similar to the thoracoscopic transpleural approach, minimal access extraperitoneal esophageoesophagostomy is feasible and reproducible with similar immediate technical results. In addition, our data demonstrated a defined physiologic difference between the two approaches, in terms of bet-ter ph, PCO2 and PO2 levels in the extraperitoneal group. The significance of this difference needs further study before any advantage could be proposed for the extraperitoneal approach.

s16
12 YEAR EXPERIENCE WITH EMPYEMA IN CHILDREN SINCE INTRO-DUCTION OF VIDEO ASSISTED THORACOSCOPIC SURGERY, Karen A Baillie MD, Juan Bass MD, Steven Z Rubin MD, Children’s Hospital of Eastern Ontario, University of Ottawa, Canada
A retrospective review of pediatric patients with empyema at our center since the introduction of Video Assisted Thoracic Surgery (VATS) from 1991-2003 was conducted. A total of 50 patients confirmed to have empyema by pleural fluid analysis, cultures or surgery were identified by medical records. Patients on admission ranged in age from 1 day to 17 years (mean(m)=6.25 years), 28 patients being male and 22 female. There was a variable delay from the onset of symptoms to patient presentation at our hospital (range:1-35 days (d), m=11.9), 1.3 patients (26%) received inpatient care at another hospital prior to transfer, 22% came from northern communities including the arctic where health care is limited. Symptoms at presentation included: fever (100%), shortness of breath (42%), chest pain (40%), abdominal pain (83%). All 50 patients received intravenous antibiotics (range:0-37 d, m=17 d).
In addition to antibiotics 3 patients had thoracostomies, 15 closed-tube thoracostomy, closed-tube thoracostomy with: thoracostomy (21, 2 converted to thoraco-tomy), thoracoctomy (7, mini-thoracotomy (3), thoracostesis (3). Operating times were: thoracostomy (m=95 minutes), thoracotmy (m=119 minutes), mini-thoracotmy (m=85 minutes). A trend was seen towards shorter operating times for thoracoscopy as experience was gained. The use of thoracostomy has declined over the past 12 years. Length of stay was: thoracostomy (m=16.4d), thoracoto-my (m=19.6d), mini-thoracotomy (m=21.8 d). The preoperative length of stay was: thoracostomy (m=4.2 d), thoracotomy (m=10.6d), mini-thoracotomy (m=3d). The postoperative length of stay was: thoracostomy (m=10.8d), thoraco-tomy (m=9d) and mini-thoracotomy(m=18.7d).
The majority of patients had an underlying pneumonia (96%), The commonly associated organisms were: pneumococcus (24%), group A streptococcus (8%), tuberculosis (3%). No organism was identified in 32% of patients. One patient with empyema was trauma related and one was related to complications of esophageal strictureplasty following a caustic injury.
Conclusions: The 12 year experience at our center has demonstrated that VATS is a safe and efficacious procedure for empyema. The decreased length of stay amongst the thoracoscopic group is mainly related to earlier surgical intervention allowing a more rapid resolution of the underlying disease process. Early surgical referral is encouraged in patients with suspected empyema.
VIDEO-ASSISTED THORACIC SURGERY AND MINI-THORACOTOMY: OUR EXPERIENCE IN CHILDREN, Ryuji Yoshida, Toshio Fujiwara, Atsuyuki M Haddad MD, J Fell MD, DJ Amanda J, Carlo Di Lorenzo MD, Wendy Henderson, Seema Khan MD, Masakatsu Sunagawa, Takeshi Miyano, Department of Surgery 1, Dokkyo University School of Medicine

Purpose: A combination of video-assisted thoracic surgery (VATS) and mini-thoracotomy may be effective for preventing serious complications. We report our experience of VATS and mini-thoracotomy in children. Methods: We performed VATS in 50 children over the past seven years, and of these, eleven had mini-thoracotomy and VATS (lobectomy in five patients and partial lung resection in six). Single lung ventilation, in order to obtain good surgical exposure, was not required. Rates of complications, operating time, duration of hospitalization, use of analgesia, and cosmetic outcome were evaluated.

Results: The length of the mini-thoracotomy incision was only about 3cm in each case. Good exposure was obtained in all patients using a mini lung retractor inserted through the mini-thoracotomy incision. No complications were encountered intra- and post-operatively. Operating times ranged from 45 to 180 minutes, which were similar to conventional thoracotomy, even though a larger incision is used. In all patients, an epidural catheter inserted for pain control was removed 1 or 2 days after surgery, and there was no intravenous or oral analgesia required thereafter. Hospitalization ranged from 7 to 10 days, which was shorter than for conventional thoracotomy. All patients and their families were satisfied with cosmetic outcome.

Conclusion: VATS with mini-thoracotomy gives excellent exposure and is safe in children, and provides better cosmetic outcome because the scar is smaller.


Aim: The conventional approach to neuroblastoma and ganglioneuroma is through a wide laparotomy incision. In stage 4 neuroblastoma, painstaking dissection to remove all residual tumour is accepted practice. Having gained experience in laparoscopic resection of adrenal cortical tumours and phaeochromocytomas the authors used laparoscopy in five cases of neural crest tumours.

Method and Results: In a 10 year old female a right adrenal mass was successfully completely resected laparoscopically, histology showed a ganglioneuroma. In a 2 year old female with a urinary tract infection, ultrasound suggested a pelvic cyst. This was not visualised on an initial ultrasound. In another 5-year-old boy with a similar tumour on the left adrenal mass respectively. These were removed laparoscopically and histology in each case showed a ganglioneuroblastoma. In a 5-year-old boy and a 2-year-old girl with stage 4 neuroblastoma, a painful incision leaving only minor scarring.

Conclusions: The distal PEC is a simple alternative to the established methods of delivering antegrade enemas which is less invasive and on reversal leaves only minor scarring.
**s21**

LAPAROSCOPIC COLECTOMY AND ILEAL POUCH-ANAL ANASTOMOSIS, Kurt F Heiss MD, Mark L Wulkan MD, Rene Romero MD, Thomas Heffron MD, Emory University School of Medicine/Children’s Healthcare of Atlanta, Atlanta, GA, USA

**Purpose:** Little has been written regarding the safety and feasibility of laparoscopic general surgery procedures in the post-transplant population. We present the successful management of 2 liver transplant patients who developed subsequent ulcerative colitis requiring surgery and were managed with laparoscopic colectomy and subsequent ileal pouch-anal anastomosis.

**Methods:** A retrospective chart review of both patients.

**Results:** Two pediatric patients with previous liver transplants were diagnosed subsequently with ulcerative colitis, unresponsive to maximal medical management. Both successfully underwent laparoscopic colectomy with Hartman’s pouch formation. Assessment of transverse colon mobility was the initial step to determine if the procedure could be completed laparoscopically. The first patient had a roux limb biliary reconstruction and required a “finger-assisted” mobilization of the transverse colon. The second patient required no modifications of the procedure. Neither patient’s operation was made more difficult due to adhesions from the previous OLT. Both had an uncomplicated post-surgical course. The second patient has had a successful ileal pouch-anal anastomosis and subsequent closure of a diverting ileostomy. The first patient has enjoyed excellent health for 2 years and is currently scheduled for her ileal pouch-anal anastomosis.

**Conclusions:** Laparoscopic colectomy is a safe and feasible method of ileal pouch-anal anastomosis in liver transplant patients. Procedural modifications may be necessary if a roux biliary reconstruction is present. This appears to be the first report of these procedures in the liver transplant population.

**s22**

ONE STAGE TRANSEANAL ENDORECTAL PULL-THROUGH FOR HIRSCHSPRUNG’S DISEASE: PRESENCE OF DILATED GANGLIONIC SEGMENT DOES NOT POSE MAJOR DIFFICULTY, Oguz Ates MD, Olcu Hakgder MD, Mustafa Olguner MD, Feza M Akgür MD, Department of Pediatric Surgery, Dokuz Eylul University, Medical School, Izmir, Turkey

**Introduction**
Colostomy performed during staged operations for Hirschsprung’s disease (HD) helps in reduction of the ganglionic colon segment caliber. One stage transanal endorectal pull-through (TERP) for HD poses preoperative problems such as inability to reduce the caliber of the ganglionic segment despite vigorous colonic irrigations especially in infants beyond neonatal period. Much concern is focused on the performance of TERP in the presence of a dilated ganglionic colonic segment. We herein present our experience with one stage TERP in patients with a dilated ganglionic segment.

**Methods and procedures**
Twelve patients (11 boys, 1 girl, aged 17 days to 3 years) underwent one stage TERP for HD. Among them 7 patients had dilated ganglionic segments. Hospital and digital video records of all patients were evaluated.

Discrepancy between calibers of the dilated ganglionic colonic segment and the anal anastomotic site might have caused puckering between interrupted anastomotic sutures. The undesired puckering between sutures is prevented by placing the consecutive sutures in the middistance of the 4 quadrant stay sutures. Rests of the sutures are placed in the middistance of the neighboring sutures.

**Results**
No intraoperative complications have been encountered. Duration of operation was slightly longer in dilated ganglionic segment group (median 244 min vs 328 min) Postoperative recovery was uneventful in all cases.

Postoperative follow up of the patients ranged 3 to 54 months. No anastomosis related complications such as cuff abscess or stricture were encountered in any patients. One patient from each group experienced enterocolitis during postoperative follow up.

**Conclusion**
Although presence of a dilated ganglionic segment despite vigorous perioperative colonic irrigations poses difficulty during intraoperative dissection of the colonic mesentery of the dilated ganglionic segment, usage of the aforementioned caliber adaptation Anastomosis technique prevents postoperative anastomosis related complications.

**s23**

LAPAROSCOPIC REDO NISSEN FUNDOPLICATION IN INFANTS AND CHILDREN, Steven S Rothenberg MD, The Mother and Child Hospital at P/SL

**Introduction**
Anti-reflux procedures are one of the most common operations performed in infants and children, but are associated with a relatively high failure rate often requiring a redo procedure. This paper evaluates the safety and efficacy of a laparoscopic approach for redo fundoplication.

**Methods:** From January 2004 to September 2003 95 patients with recurrent GERD following a fundoplication underwent a laparoscopic redo Nissen procedure. Ages ranged from 6 months to 19 years (avg 7 yrs) and weight from 6.4 Kg to 85 Kg. 58 patients had a previous open fundoplication (47 Nissen, 10 Thal, 1 Toupet) 36 patients had a previous laparoscopic Fundoplication. 13 patients had had more then one redo.

**Results:** All procedures were completed successfully laparoscopically. The average operative time was 100 minutes. The intra-operative complication rate was 1.1%. The average time to full feeds was 1.8 days and average hospital stay was 2.2. The post-operative complication rate was 3.2% including one delayed perforation on pod # 3. The wrap failure rate at an average of 48 months follow-up is 6%. Three have undergone laparoscopic revision and one an open revision. All are currently intact.

**Conclusion:** Laparoscopic redo Nissen fundoplication is a safe and effective procedure. It is associated with the same benefits as a primary laparoscopic fundoplication with low morbidity and a shorter hospital stay. Early follow up suggests the long term outcome is better then that associated with redo-open fundoplications.

32
**s24**

**TRANSVESICOSCOPIQUE URÉTÉRICAL REIMPLANTATION 40 CASES : PRELIMINARY RESULTS.**

**J.S. Valia MD, H. Steyaert MD, J. Breaud, L. Carfagna, J. Baez, Serviçe de Chirurgie Viscèra E PDIatrique, Fondation Lenuval**

Summary (Key Words: vesico-ureteral-reflux, mega-ureter, pneumovesicocopy)

**Aim of the study:** To evaluate our results with a new method of intravesical ureteric reimplantation using minimal access surgical techniques in children.

Material and methods: 40 patients (mean age 5.2 years, range 6 months to 14 years) with primary vesico-ureteral-reflux with COHEN reimplantation (38 cases) or LAEBETTER reimplantation (2 cases) with CO2 pneumovesicocopy.

The 5 mm port was inserted suprapubically in the bladder. A 5 mm scope provided intravesical vision. All steps were performed using 3 mm instruments; intravesical mobilization of the ureters, creation of a submuscosal tunnel and ureteric reimplantation using 5/0 and 6/0 absorbable sutures. A urethral catheter was maintained for 2 or 3 days.

Results: 6 cases were converted to open procedures, all of them in our first 20 cases. The mean operative time was 102 min. for unilateral reimplantation; 145 min. for bilateral reimplantation. Two cases were complicated by a postoperative perivesical urinoma (1 drainage, 1 reoperation). All the other patients recovered uneventfully. Out of the 35 completed procedures a follow-up cystogram was performed in 18 patients which showed complete resolution of reflux. No urinary obstruction was detected at follow-up ultrasound.

Discussion: The advantages of this technique are a smaller opening in the abdominal and no one in the bladder wall, which reduces postoperative pain, hematuria, bladder spasm, and urinary retention. However this technique is technically demanding (intracorporeal suturing in a limited space) and not suitable for large mega-ureters. Some technical problems remained to be solved.

Conclusions: Transvesicoscopic ureteric reimplantation with CO2 insufflation of the bladder is technically feasible with a high success rate. The high conversion rate (12%) and postoperative complication rate (5%) are related to the learning curve and should decreased with practice.

**s25**

**RETORETONEAL LAPAROSCOPIC VERSUS OPEN DISMEMBERED PYELOPLASTY IN CHILDREN.**


Introduction and objective: The indications for laparoscopy in pediatric urology are expanding, yet the advantages over open surgery remain unclear. We compared the results of retroperitoneal laparoscopic versus open pyeloplasty for pyelo-ureteral junction obstruction (PUJ) in children.

Methods: Between 1999 and 2005, 22 children (mean age 88 months, range 25-192) underwent laparoscopic dismembered pyeloplasty by retroperitoneal approach. In a flank position with three to four ports (5 or 3 mm), the PUJ was resected and the anastomosis made using 6/0 absorbable sutures. An additional 17 consecutive children (mean age 103 months, range 37-206) underwent similar procedures by open surgery through flank incision. As in our practice the minimum age for laparoscopic pyeloplasty was 2 years, younger children operated by open procedure were excluded from the study.

We retrospectively analysed and compared the operative time, the use of analgesics (acetaminophen or morphine derivatives), and the hospital stay. We used the Mann-Whitney test for statistical analysis.

Results: Two patients of the laparoscopy group required conversion to open surgery at the beginning of our experience and were excluded from the study. Both groups were similar on mean age and weight at surgery. Mean operative time was significantly shorter in open surgery group (96 minutes, range 50-150) compared to laparoscopy group (219 minutes, range 140-310) (p<.0001). Hydronephrosis was secondary to aberrant vessels in 10 and 7 children in the laparoscopy and open groups respectively. The mean postoperative use of acetaminophen (1.9 versus 3.22 days, p=0.03) and morphine derivatives (1.9 versus 3.06 days, p=ns) was less in laparoscopy group.

Mean hospital stay was shorter in laparoscopy group (2.4 days range 1-5) than in open surgery group (5 days range 3-7) (p<.0001). All children had improved their hydronephrosis and are asymptomatic except one child who required a redo pyeloplasty in the laparoscopy group.

Conclusions: The operative time of laparoscopic pyeloplasty remains significantly longer than open procedure in children. The main advantage of the laparoscopic approach is that it significantly decreases the hospital stay compared with that after an open procedure. Though, in our study the use of analgesics was less after laparoscopy, our results should be confirmed by a prospective randomised study.

**s26**

**BILIO INTESTINAL LAPAROSCOPIC ENTEROSTOMY (BILE) AVOIDS POSTOPERATIVE ABDOMINAL PAIN: EXPERIENCE IN 35 CONSECUTIVE PATIENTS WITH BILARY ATRESIA.**

Marcelo Martinez-Ferro MD, Horacio Questa MD, Guillermo Cervio MD, Oscar Inventarza MD, Division of Pediatric Surgery, National Pediatric Hospital J.P. Garrahan, Buenos Aires. Argentina.

**Introduction:** The role of BILE in infants with biliary atresia who received liver transplantation remains controversial. The aim of this study was to evaluate the role of BILE in young children under 5 years of age who received liver transplantation.

**Patients:** From December 2001 to December 2004 we treated 14 patients with biliary atresia using a previously described laparoscopic approach (BILE). Ages ranged from 48 days to 4 months. During follow-up, five patients needed liver transplantation. Ages at transplantation ranged from 6 to 18 months.

**Results:** BILE was accomplished in all 14 patients without conversions. Mean operative time was 220 minutes (150 and 270 minutes). No major complications were observed during or after surgery. Four (28.5%) patients remain anicteric and five (37.5%) needed liver transplantation. In contrast to what is observed after open Kasai, in all cases the presence of adhesions from the liver to the abdominal wall or other viscera were significantly less or completely absent. In consequence less blood transfusion volume was needed and operative time was diminished significantly in all cases.

**Conclusion:** BILE is a safe and effective technique. Apart of the excellent cosmetical outcomes, the absence of postoperative adhesions, seems to be the main benefit of this approach in the eventuality of a liver transplant.

**s27**

**OUTCOME AFTER LAPAROSCOPIC TREATMENT FOR BILIARY ATRESIA.**

**Edward Esteves PhD, Miguel Ottaiano MD, Marcelo M Ferro MD, Bernardina B Modesto MD, Ray E Pereira MD,**

Division of Pediatric Surgery, Goias Federal University, Goiania (GO), Brazil.

**Introduction:** The Kasai Roux-en-Y portoenterostomy has usually been accomplished through one of the largest incisions in pediatric surgery. In 2001 we described the laparoscopic techniques (BILE = bilio-intestinal laparoscopic enterostomy) and the novel transumbilical approach for jejunum-jejuneostomy (JJ) for biliary atresia. The purpose of this paper is to present the outcome and the learning curve for our first 13 cases.

**Patients and Methods:** Eight girls and 5 boys with biliary atresia, 25 to 76 days old, were submitted to BILE with 3 or 4 ports. The Roux-en-Y JJ was performed extracorporeally through the umbilical 10-mm port with a stapler (n=9) or hand-sutured (n=4). All data concerning technical details and modifications, bile drainage, jaundice, complications, hospitalization, esthetics, liver function and liver transplantation (LT) have been registered and evaluated prospectively.

**Results:** During the 3-year experience, the mean operative time declined from 200 minutes on the first 5 cases to 150 minutes on the last ones. No conversion. There was no anesthetic or surgical complication, except for a portal vein perforation by the needle, immediately closed by the suture. There was very little pain and no postoperative ventilatory support was necessary. Two cases needed transposition of 40-50 mL. Mean time for feeding: 36 hours. Mean time for first stool: 18.5 hours. Mean hospital staying: 41 days. Mean follow-up time: 19.5 months. Early cholangitis occurred in 2 cases (15%) and late cholangitis in other 2. Six patients remain anicteric and five (35.7%) needed liver transplantation. Ages at transplantation ranged from 6 to 14 years (38 cases) or LAEBETTER reimplantation (2 cases) with CO2 pneumovesicocopy.

**Conclusions:** Despite a small series of patients, BILE showed to be safe and effective as a liver and abdominal wall technique with a comparable outcome. The absence of postoperative adhesions seems to be the main benefit of this approach in the eventuality of a liver transplant.
s28

LAPAROSCOPICALLY ASSISTED HEPATIC DUCTOPLASTY FOR CHOLEDOCHAL CYST, LI Long MD, Fu Jingbo PhD, Department of Pediatric Surgery, the First Affiliated Hospital, Peking University.

Purposes: Laparoscopy has been accepted as a technique in treatment for choledochal cyst, but there has been little experience using it as a therapeutic modality for hepatic duct stenosis. The aim of this study was to present our experiences in laparoscopic excision of biliary stenosis and Roux-Y reconstruction for choledochal cyst in children.

Methods: Eight patients (median age 3.6 years, 3 boys and 5 girls) associated with hepatic ductal stenosis underwent laparoscopic excision of the cyst and the stenosis with Roux-Y hepatointerostomy between July 2001 to September 2003. Seven of eight patients had common hepatic ductal stenosis with intrahepatic ductal dilatation and one had right hepatic outlet stenosis with right hepatic ductal dilatation. Four tocos were utilized with 3 to 5 mm instrumentation. Under laparoscopic guidance, the gallbladder and the dilated bile duct were completely excised. The strictures of the hepatic bile duct were treated laparoscopically at the hepatic hilum by hepatic ductoplasty. A wide stoma was created by incising along the anterior wall of the hepatic duct following excision of the narrowed segment of the common hepatic duct.

Results: Median duration of operation was 4.3 hours (3.8 to 5.6 hours), intraoperative bleeding was minimal without necessity for blood transfusion. Hospital stay after the operation ranged from 4 to 6 days without delayed complication on three months to two and half years follow-up visits.

Conclusion: Laparoscopically assisted hepatic ductoplasty was effective and safe for children with choledochal cyst.

s29

ROBOT-ASSISTED KASAI PORTOENTEROSTOMY IN AN INFANT WITH BILIARY ATRESIA. Russell Woo, M.D., David Le, M.D., Thomas Krummel, M.D., Louise Furikawa, M.D.*, Craig Albanese, M.D., Department of Surgery, Department of Anesthesia, Stanford University Medical Center and Lucille Packard Children’s Hospital Background: The Kasai portoenterostomy remains the only treatment option short of liver transplant for infants with biliary atresia. Recently, few authors have described the feasibility of laparoscopic Kasai procedures. However, this procedure remains technically challenging. Computer-assisted robotic surgical systems have been using increasingly in adult and pediatric minimally invasive surgery as they provide increased dexterity and stereoscopic visualization. We present a case of robot-assisted laparoscopic Kasai portoenterostomy in an infant with biliary atresia.

Case Report: A nine-week-old, 4.1 kg male infant underwent robot-assisted laparoscopic Kasai portoenterostomy using the da Vinci® Surgical System (Intuitive Surgical, Sunnyvale, CA). The patient was placed in supine position with the aid of reverse Trendelenburg and elevated 4 inches of the operating table on blankets and foam to allow for downward pitch of the instrument back-ends. 5 ports were utilized: one 12mm endoscopic port at the umbilicus, two 5mm robotic instrument ports on both sides of the umbilicus, one 3mm left subcostal port for liver retraction, and one LLQ 5 mm assistant port. Newly available 5mm wristed robotic instruments were used. The choledochostomy, dissection of the extrahepatic biliary tree and portal plate, and portoenterostomy were performed robotically. The enterointerostomy for the creation of the roux limb was performed extracorporeally through the umbilical incision. A long suture was placed on the roux limb to aid in intracorporeal identification and manipulation. Total robotic setup time (preparation, port placement, docking) was 53 minutes. Total operating time was 2.15 hours, time to liquid diet (2.67 days), time to regular diet (3.32 days), and time to discharge (4.02 days) after laparoscopic bowel repair compared favorably with patients managed by laparotomy (n = 41). No early (missed injury, wound infection, bleeding) or late (need for re-operation) complications resulted after primary laparoscopic repair. An additional 8 patients had a laparoscopic-assisted bowel repair or resection after exteriorization of the ruptured intestine through a short (< 4cm) extension of a nearby port incision.

Conclusion
Laparoscopic exploration and either primary or assisted repair of injured bowel in hemodynamically stable patients who sustain focal abdominal trauma is an appropriate surgical option and may be associated with a more prompt return of intestinal function and shorter hospital stay.

s30

LAPAROSCOPIC ADRENAL SURGERY IN CHILDREN: A CASE-CONTROL STUDY, Ahmmed Nasr MD, Paul W Wales MD, Jacob C Langer MD, Justin T Gerstle MD, The Hospital for Sick Children, Toronto, Ontario, Canada

INTRODUCTION: While various authors have suggested that laparoscopic adrenalectomy leads to a better outcome in children, few reports have compared the laparoscopic approach (LA) to the open procedure (OA). We analyzed these procedures in children who had been matched for specific clinical variables to determine which procedure results in a better clinical outcome.

METHODS AND PROCEDURES: Twelve LA cases were matched by age, type of tumour (malignant versus benign) and tumour size to 12 OA controls. Two patients in each group had complications. There were no tumour recurrences.

CONCLUSIONS: LA in children is associated with a significant reduction in post-operative narcotic requirements and time to oral intake. There is no significant difference in operative time, blood loss, length of stay, complication and recurrence rates. This is one of the first studies to directly compare these procedures, demonstrating the safety and efficacy of the minimal access approach in children.

s31

LAPAROSCOPIC REPAIR OF TRAUMATIC BOWEL INJURY IN CHILDREN, Christian J Streck MD, Harold N Lovvorn MD, John B Pietsch MD, Thom E Lobe MD, University of Tennessee-Memphis Health Science Center and Vanderbilt University School of Medicine

Introduction
The purpose of this study was to evaluate a minimally invasive approach to intestinal injury after focal abdominal trauma in children.

Methods
A retrospective review was conducted of all patients age less than 16 years who required surgery for traumatic bowel injuries (ICD 98630.0 - 863.59) over a 5-year period at two university children’s hospitals. Hemodynamically stable patients who sustained suspected or proven intestinal injury after isolated, focal energy transfer to the abdomen comprise the study population. Patients who sustained blunt force multi-system injuries, gun shot wounds, or who were hemodynamically unstable were excluded.

Results
Fifty-seven stable children were explored for intestinal injury after isolated, focal energy transfer to the abdomen (15 penetrating, 42 blunt mechanisms). Indications for exploration were peritonitis, pneumoperitoneum on abdominal radiograph, unexplained intra-peritoneal free fluid on CT scan or evisceration. Laparoscopic repair was performed for intestinal perforation (n = 6 patients; 4 jejunal, 2 gastric, 1 colonic), duodenal hematoma (n = 1) or colonic diversion (n = 1). Intracorporeal suture repair was accomplished typically via three, 5 mm ports. No attempt to repair bowel laparoscopically required open conversion. Mean operating time (2.15 hours), time to liquid diet (2.67 days), time to regular diet (3.32 days), and time to discharge (4.02 days) after laparoscopic bowel repair compared favorably with patients managed by laparotomy (n = 41). No early (missed injury, wound infection, bleeding) or late (need for re-operation) complications resulted after primary laparoscopic repair. An additional 8 patients had a laparoscopic-assisted bowel repair or resection after exteriorization of the ruptured intestine through a short (< 4cm) extension of a nearby port incision.

Conclusion
Laparoscopic exploration and either primary or assisted repair of injured bowel in hemodynamically stable patients who sustain focal abdominal trauma is an appropriate surgical option and may be associated with a more prompt return of intestinal function and shorter hospital stay.
s32  
LAPAROSCOPIC ASSISTED BOWEL RESECTIONS COMPARED TO OPEN SURGERY FOR CROHN'S DISEASE IN CHILDREN, R van Baren MD, MA Cuesta PhD,D,W Bemelman PhD,CM Kneepkens PhD,JA Taminiau PhD,HA Heij PhD, Pediatric Surgical Center Amsterdam, locations VU University Medical Center and Emma Children's Hospital AMC, departments of Surgery and Pediatric Gastroenterology in VU and AMC, Amsterdam, The Netherlands  
Purpose: To compare surgical procedures in children, aged below 18 years, who underwent bowel resections for Crohn’s disease between 1990 and 2004.  
Patients and methods: A total of 35 children was reviewed retrospectively. 18 Children who had open resections were compared to 17 children operated by laparoscopic assisted surgery (prospective database) for indications and duration of surgery, complications, length of stay, recurrence disease and re-operation. The groups were comparable with respect to sex, age of onset and operation, height and weight. In the open group in all but 4 children an ileocecal resection was performed, including a subtotal colectomy with ileostomy in three and closing of an enteric-enteric fistula in one. Two patients had a left hemicolecotomy (one with colostomy), one a sigmoidectomy and one a partial jejunitomy. In the laparoscopic group all 17 children had an ileocecal resection, including a right hemicolecotomy in two (one with closure of an ceco-sigmoidal fistula) and a partial jejunitomy in one. There were three conversions to an open procedure.  
Results: Indications: most of the children had persistent abdominal pain and/or intestinal stenosis, while 1/3 had growth retardation. The outcome of surgical treatment was in favor of the open group with a mean of 1.18 min. SD 35 min. vs. 143 min. SD 36 min. in the laparoscopic group, p=0,050. The length of stay was shorter in the laparoscopic group: mean 5 days SD 1.6 days vs. 13 days SD 11.8 days in the open group, p=0,011. The other three variables reached no significance. The majority in the open group and almost half of the laparoscopic group had recurrent disease, requiring continuation of medication or even re-operation.  
Conclusions: Growth retardation was an important indication for surgery in our patients. Laparoscopic assisted surgery takes longer, but results in shorter hospital stay. The high rate of recurrences fits the chronic nature of Crohn’s disease. Therefore follow-up by the (pediatric-) gastroenterologist is indispensable.

s33  
PRENATAL TRANSABDOMINAL PARTIAL AMNIOEXCHANGE PLUS POSTNATAL MINIMAL INTERVENTION MANAGEMENT: IDEAL COMBINATION FOR THE MINIMAL INVASIVE TREATMENT OF GASTROSCHISIS, Oguz Ates MD,Gülce Hakguder MD,Mustafa Olguner MD,Nam&305;Demir MD, Feza M Algür MD, Dep. of Pediatric Surgery and Obstetrics and Gynecology Dokuz Eylûl University, Medical School, -zmir, TURKEY  
Introduction: An innovative postnatal minimal intervention management of gastroschisis described by Bianchi and Dickinson has advantages over conventional management. General anesthesia is not required, enteral feeding can be started early and the esthetic results are excellent. However, complications such as intestinal ischemia or enterocutaneous fistula may occur if the intestines are too edematous.  
Amnioexchange is the prenatal treatment modality that protects the gastroschisis bowel from the harmful effect of amniotic fluid. The method was invented in our department in 1995 and applied clinically since 1998. In these cases pretreated with amnioexchange babies are born with normal intestines (without edema, thickening and fibrous peeling) that can be easily placed into the abdominal cavity with conventional methods without difficulty. We present our first case in which we combined the two methods; prenatal amnioexchange and postnatal minimal intervention management (Bianchi’s method).  
Methods and procedures: The patient was referred with the prenatal diagnosis of gastroschisis at 16 weeks gestation. Amnioexchange was started at 30 weeks of gestation and performed every two weeks until labor. Amniotic fluid was partially withdrawn and replaced by saline. A baby girl was delivered at 37 weeks gestation with cesarean section and admitted neonatal intensive care unit. The exteriorized intestines were normal. There was no edema or fibrous peel formation. Bedside closure was performed easily. Oral feedings were started on the 8th day and the infant discharged on the 10th postoperative day.  
Conclusion: Amnioexchange is an innovative method that protects the gastroschisis bowel from the harmful effect of amniotic fluid during the gestation. Postnatal minimal intervention management (Bianchi’s method) is another innovative method that can be harmoniously combined with amnioexchange. Amnioexchange may overwhelm the difficulties encountered during the minimal intervention management.

s34  
RE-OPERATION AFTER MINIMALLY INVASIVE SURGERY: WHY IS IT REQUIRED, AND HOW SHOULD IT BE PERFORMED?, Kiki Magate MD, Spencer W Beasley MD,Russell Blakeleok MD, DEPARTMENT OF PAEDIATRIC SURGERY, CHRISTCHURCH HOSPITAL  
Introduction: Minimally invasive surgery (MIS), like open surgery, occasionally leads to complications that require further surgery. As experience increases with MIS techniques, the nature and incidence of these complications is becoming more apparent, as are the factors that contribute to them. The appropriateness of dealing with them by a further MIS procedure, on the basis of our institutions experience in children, is assessed.  
Method: This reviews our institution’s experience with laparoscopic and thoracoscopic surgery in children over the last five years. Patients who required further surgery following MIS were identified and analysed.  
Results: Laparoscopic Nissen fundoplication was performed in 183 children of whom five developed hiatus hernia, five wraps unravelled, and one had a gastric perforation. All were revised laparoscopically, and apart from adhesions between the wrap and liver, presented few technical difficulties. Redo surgery for complications following more than 500 laparoscopic appendicectomies was indicated for small bowel obstruction and ongoing pelvic sepsis. Eight were treated laparoscopically with two of these converted to laparotomy; and two proceeded directly to laparotomy. The incidence of these complications was related to the severity of peritoneal contamination at the initial operation and to the experience of the operator. A single case of a recurrent left congenital diaphragmatic hernia was repaired thoracoscopically without complication following a laparotomy for the initial approach. No further surgery was required after laparoscopic cholecystectomy, splenectomy, Ladd procedure and nephrectomy, or after thoracoscopic surgery.  
Conclusion: Our experience would suggest that when further surgery is required for complications following MIS it can usually be performed safely using a further MIS approach. Factors that influence the incidence of re-operation include the underlying pathology, the technique chosen, and the experience of the surgeon.

s35  
LAPAROSCOPIC SURGERY IN PRESENCE OF SCARRED ABDOMEN, Behrouz Banieghbal MD, Michael R Davies MD, Division of Paediatric surgery, CH Baragwanath Hospital, University of the Witwatersrand, Johannesburg, South Africa  
BACKGROUND: Presence of scarred abdomen has been regarded as a contra-indication to laparoscopic surgery by some leading authors in minimally access surgery. In this study, we would like to dispute this assertion.  
METHODS: A retrospective study of all laparoscopic surgery undertaken over a 4 year period in a single institution. The children who had previously open surgery and underwent an unrelated laparoscopic surgery were further analyzed.  
RESULTS: During this period, 430 laparoscopic procedures were performed by one surgeon. 14 children had previous open abdominal surgery. Nissen fundoplications were performed in 10 children; 6 had a prior open gastrostomy insertion, 3 children had a previous ventriculo-peritoneal shunt and one child had an open Ladd’s procedure for mid-gut volvulus.  
One teenage girl with multiple lower-midline laparotomies for ovarian tumor underwent laparoscopic cholecystectomy. Laparoscopic liver biopsy and on-table cholangiogram were performed in 2 jaundiced infants who have had laparotomy for necrotizing enterocolitis as neonates. Diagnostic laparoscopy for abdominal pain was done in one child who had an ileal conduit.  
All procedures were completed without any complications, all children benefited from the minimally access surgery, vis-f-vis reduced pain, an early hospital discharge as well as minimizing any additional scars.  
CONCLUSION: Laparoscopic surgery in presence of scarred abdomen is realistic, feasible and is strongly encouraged as it has similar advantages for these children as those who have had no previous open surgery.
Patient size limitations remain a significant issue but can be overcome ing a case, and the inability to move the camera from port to port. The absence of tactile feedback, difficulty in changing patient positioning dur-
and the articulating point of the robotic instrument.

Patients, trocar placement required careful planning in relation to trocar order to maximize the range of motion of the robot arms. For smaller unique issues. Preoperative planning proved to be critical. Additional
lation of the instrument arms in the neonatal chest. No other complica-

Discovered in the head of the pancreas. Three patients with abdominal opening in the other. One patient was opened after a malignancy was
were opened because of bleeding. Although one of these was unrelated to the robot, the lack of tactile feedback contributed to the requirement for opening in the other. One patient was opened after a malignancy was discovered in the head of the pancreas. Three patients with abdominal tumors underwent complete excision using the robot. The CDH repair was compared to a thoracoscopic case due to a lack of room for articulation of the instrument arms in the neonatal chest. No other complica-
tions occurred. With such a wide variety of cases, each case presented unique issues. Preoperative planning proved to be critical. Additional patient positioning requirements included the use of risers and bumps in order to maximize the range of motion of the robot arms. For smaller patients, trocar placement required careful planning in relation to trocar length, target area of work, the robotic instrument arm remote center, and the articulating point of the robotic instrument.

Conclusion: Robotic surgery is a safe and effective technology for a wide variety of surgical procedures in children. Limitations include a complete absence of tactile feedback, difficulty in changing patient positioning dur-
- ing a case, and the inability to move the camera from port to port. Patient size limitations remain a significant issue but can be overcome with careful planning.

PATIENT SIZE LIMITATIONS REMAIN A SIGNIFICANT ISSUE BUT CAN BE OVERCOME IN A CASE, AND THE INABILITY TO MOVE THE CAMERA FROM PORT TO PORT. THE ABSENCE OF TACTILE FEEDBACK, DIFFICULTY IN CHANGING PATIENT POSITIONING DURING A CASE, AND THE INABILITY TO MOVE THE CAMERA FROM PORT TO PORT. PATIENT SIZE LIMITATIONS REMAIN A SIGNIFICANT ISSUE BUT CAN BE OVERCOME WITH CAREFUL PLANNING.
**s40**

**COMPARISON OF LMA AND ETT USAGE ON VENTILATION AND INTRAGASTRIC PRESSURE IN PEDIATRIC LAPAROSCOPIC INGUINAL HERNIA REPAIR**, Dilek Ozdamar MD, Haluk B Guvenc MD, Mine Solak MD, Selami Sozubir MD, Gulseren Ekingen MD, Kamil Toker MD, Departments of Anesthesiology & Reanimation and Pediatric Surgery, Kocaeli University School of Medicine, Kocaeli/TURKEY

Laryngeal mask anesthesia (LMA) is thought to cause gastric distention and ventilatory insufficiency during laparoscopic lower abdominal procedures when compared to endotracheal intubation (ETT) owing to leakage of fresh gases. We investigated the ventilatory and intragastric pressure (IGP) differences between LMA and ETT anesthesia, in patients undergoing laparoscopic hernia repair.

Methods and material: 30 children (3 mo-12 y), ASA I-II were randomly divided into two groups. Premedication and Sevoflurane induction anesthesia was followed by 0.1 mg/kg vecuronium administration. A nasogastric tube was inserted, and LMA or ETT was introduced thereafter. The patients were ventilated with a tidal volume of 10ml/kg and frequency of 15/min. Maintenance was obtained with 2% sevoflurane, 33% O2 and 66% N2O. Peak airway pressure, SPO2, ETCO2, IGP and any possible side effects were monitored.

Results: Average operating time was recorded as 71±29 minutes. A significant difference between IGP and peak airway pressures at 75th minute (p<0,05) and difference in SPO2 at 105th minute (p<0,05) were observed using T-test analysis.

Discussion: There is no significant difference between ETT and LMA observed using T-test analysis.

**Conclusion:** Laparoscopic flip-flap hernioplasty is easy to perform and has a number of theoretical advantages. The early result was promising. There were three cases of recurrence in 68 repairs before the technical modification. With our modified technique there was no recurrence noticed in our last 36 repairs. Mean operative time was around 27 minutes in unilateral cases and 38 minutes in bilateral cases.

**Introduction:** Laparoscopic hernia repair is especially advantageous in bilateral or recurrent diseases in children in avoiding vas injury. We have developed and improved a method of laparoscopic hernia repair which is easy and secure.

**Method:** The hernia opening was repaired with a peritoneal flip flap, which was anchored with a single tension-free intra-corporeal suture. The vas and testicular vessel was completely untouched throughout the repair. The valve mechanism of the flip flap helped to avoid scrotal collection and prevent hernia recurrence. After reviewing our initial series, we proposed that omentum might have herniated into a space in inguinal canal adjacent to the flap, and it might account for the development of recurrence. In further cases we sutured the peritoneal edge to inguinal ligament in order to obliterate the space.

**Result:** We have performed 104 repairs in 84 patients aged from 1 month-old to 17 year-old. Early result was promising. There were three cases of recurrence in 68 repairs before the technical modification. With our modified technique there was no recurrence noticed in our last 36 repairs. Mean operative time was around 27 minutes in unilateral cases and 38 minutes in bilateral cases.

**Conclusion:** Laparoscopic flip-flap hernioplasty is easy to perform and has a number of theoretical advantages. The early result was promising especially after the technical modification, but the long-term result still needs to be evaluated.

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**s41**

**EVALUATION OF THE UTILIZATION OF LAPAROSCOPIC HERNIOPLASTY IN INFANTS AND CHILDREN: A CLINICAL ANALYSIS IN 2000 CASES**, Yuzhou Li MD, Jiansheng Liang MD, Gan Yao MD, Department of Pediatric Surgery, No.1 People’s hospital of Foshan, Guangdong, P.R.China

Abstract

**Aim:** To compare the clinical results between traditional and laparoscopic hernioplasty in infants and children so as to explore the clinical worth of the utilization of laparoscope in hernioplasty in infants and children.

**Methods:** We analyzed 2000 cases drew randomly from over 2200 cases laparoscopic hernioplasty done by us from year 1998 on retrospectively in the following aspects:(1)operative principles;(2)incisions;(3)damage level;(4)scar;(5)complications;(6)recurrence rate;(7)insidious opposite hernia treatment, with 2000 cases done in traditional method in the same period. Results: The operative principle of both methods is high ligature of the hernia sac. But there are some disadvantages in traditional method which can be improved by the laparoscopic technique. The self-decided needle-like instrument and the draw and insert method we applied in laparoscopic hernioplasty proved to be a good way to complete the operation. The laparoscopic method has the advantages of no anatomic dissection of spermatic cord which lead to minor damage, small incision, no postoperative scar, significantly low complication rate and recurrence rate(P<0,05) compared with the traditional method. The new method also has the advantages of short operative time (finish in about 5 minis) easy operative skills, speedier recovery. Conclusions: The laparoscopic hernioplasty has ideal clinical effects compared with the traditional method. It is warmly welcome by the patients’ parents and is accepted by the surgical fellows. It is worthy to be populated.
IPEG 2004 POSTER ABSTRACTS

Cancer

P001, Aayed R Al-Qahtani, “Laparoscopic excision of a huge portal vein teratoma in an infant.”

P002, Gordon A MacKinlay, “LAPAROSCOPIC NPHRECTOMY FOR WILMS’ TUMOUR – FOOLHARDY OR A FEASIBLE BENEFIT?”

P003, Amulya K Saxena, “LAPAROSCOPIC RESECTION: B-NON HODGKIN LYMPHOMA PELVIC INFILTRATE”

P004, Natsumi Tanaka, “AN EX-VIVO PORCINE LAPAROSCOPIC RESECTION: B-FORUM”

P005, Natsumi Tanaka, “AN EX-VIVO PORCINE LAPAROSCOPIC RESECTION: B-FORUM”

P006, BRICE ANTAO, “LAPAROSCOPIC APPENDECTOMY IN PEDIATRIC ACUTE APPENDICITIS: RESULTS OF A NATIONAL SURVEY IN SPAIN”

P007, Juan Bass, “Interval Appendectomy - Old-new Operation”

P008, Francisco Jose Berchi Garcia, “Anorectal Atresia: Correct indication and which role has the Laparoscopy”

P009, Francisco Berchi Garcia, “LAPAROSCOPIC APPENDECTOMY FOR MECKEL DIVERTICULUM”

P010, NORDINE BOUHADIBA, “MINIMALLY INVASIVE SURGERY IN YOUNG INFANTS CAUSES MINIMAL PHYSIOLOGICAL DISTURBANCES”

P011, Ulf Buehligen, “Poster Presentation: Intraabdominal adhesion, adhesiotomy techniques, prevention of adhesion, new classification”

P012, DAN CATANA, “COLONOSCOPIC POLYPECTOMY IN CHILDREN”

P013, Dae-Yeon Kim, “Laparoscopic Appendectomy for Perforated Appendicitis in Children”

P014, Hiroyuki Koga, “Is Laparoscopy Assisted Ano-recto-plasty (LAARP) better than PSARP?”

P015, T K Lama, “LATOM: LAPAROSCOPIC ASSISTED TRANS-UMBILICAL MECKEL’S DIVERTICULECTOMY”

P016, ANIES MAHOMED, “ELECTIVE LAPAROSCOPIC APPENDECTOMY FOR CHRONIC RIGHT Iliac Fossa Pain in Children”

P017, Evan P Nadler, “The Utility of Laparoscopic Appendectomy in Children with Perforated Appendicitis”

P018, Hiromi Okuyama, “INTRAOPERATIVE PERINEAL SONOGRAPHY DURING LAPAROSCOPICALLY ASSISTED ANORECTAL PULL-THROUGH FOR RECTO-URETHRAL FISTULA: A NEW TECHNIQUE”

P019, K.R. Srimurthy, “Is Laparoscopy Assisted Ano-recto-plasty (LAARP) better than PSARP?”

P020, J Duncan Philips, “SUCCESSFUL TREATMENT OF PYELO-PHLEBITIS COMPLICATING RUPTURED APPENDICITIS WITH ANTIBIOTICS / ANTICOAGULATION AND INTERVAL LAPAROSCOPIC APPENDECTOMY”

P021, Gonca Tekant, “UTILITY OF LAPAROSCOPIC SURGERY FOR MECKEL DIVERTICULUM”

P022, Hiroom Uchida, “New and reliable method of laparoscopically assisted anorectoplasty, using light-guided device and muscle stimulator”

Forgut

P023, Behrouz Banieghbal, “Day-case Laparoscopic Nissen Fundoplication”

P024, Naira Baregamian, “LAPAROSCOPIC PYLOROMYOTOMY: THE STANDARD FOR HYPERTROPHIC PYLORIC STENOSIS”

P025, Edward Esteves, “New technique for removing large gastric trichobezoars: the transumbilical approach”


P027, Aaron Jensen, “AN EX-VIVO PORCINE LAPAROSCOPIC NISSEN FUNDOPLICATION TRAINING MODEL- A USEFUL TOOL FOR RESIDENT EDUCATION”

P028, Stephen S Kim, “Pyloromyotomy: A Comparison of Laparoscopic, Circumumbilical, and Right Upper Quadrant Operative Techniques”

P029, Hiroyuki Koga, “Laparoscopy-assisted Gastropexy for Gastric Volvulus in a Child with Situs Inversus, Asplenia and Major Cardiac Anomaly”

P030, Stanley Lau, “The Learning Curve Associated with Laparoscopic Pyloromyotomy”

P031, Atul K Madan, “LAPAROSCOPIC ONE-STITCH GASTRIC BYPASS IN TEENAGERS”

P032, ANIES A MAHOMED, “RARE ASSOCIATION OF ACHALASIA WITH BENIGN OESOPHAGEAL STENOSIS SUCCESSFULLY TREATED WITH LAPAROSCOPIC HELLER’S CARDIOMYOTOMY AND WATSON’S FUNDOPLICATION.”


P034, David Partrick, “PRESERVATION OF AN ABERRANT LEFT HEPATIC ARTERY DURING LAPAROSCOPIC NISSEN FUNDOPLICATION”

P035, Hidecko Yamauchi, “Laparoscopic assisted removal of a large gastric trichobezoar”

Genito-Urinary


P037, Edward Esteves, “LAPAROSCOPIC PERCUTANEOUS HERNIORRAPHY WITH NEEDLE (LAPHEN)”

P038, Walid A Farhat, “RETROPERITONEAL ASSISTED LAPAROSCOPIC PYELOPLASTY (RALP) IN CHILDREN: MID-TERM FOLLOW-UP”

P039, Walid A Farhat, “THE DEVELOPMENT OF LAPAROSCOPIC SURGICAL SKILLS IN CHILDREN: 2-YEAR OUTCOME OF A MENTORSHIP-TRAINING MODEL”

P040, Rita Gobet, “Retroperitoneoscopically assisted repair of a giant abdominoscrotal hydrocele”

P041, Harsh Grewal, “MINIMALLY INVASIVE APPROACH TO THE NONPALPABLE TESTIS IN THE CHILD”

P042, Andrew R Hong, “Laparoscopic Inversion Herniotomy”
IPEG 2004 Poster Abstracts

Orthopedics
P065, Suzanne M Yoder, “Laparoscopic Approach to Iliopsoas Tendon Release”

Other
P066, Craig T Albanese, “Laparoscopic Resection of Type I Choledochal Cysts in Infants”
P067, DAN CATANA, “The Endoscopic Dilatations in the Pediatric Esophageal Stenosis”
P068, DAN CATANA, “Pseudotumoral Form of Bleeding in H.Pylori Infection”
P069, M Claire Clark, “Incidence of Complications of Minimally Invasive Surgery in a Paediatric Hospital”
P072, HIROKI ISHIBASHI, “Endoscopic excision of cavernous lymphangioma in the thoracic and abdominal wall”
P073, Stephen G Kimmel, “Endosurgical Resection of Congenital Vascular Malformations”
P074, Jorge G Mogilner, “The use of Hypnotherapy in the induction to surgery and pain control”
P076, T Oue, “Contralateral Exploration and Measurement of SAC and Processus Vaginalis During Laparoscopic Herniorrhaphy in Girls”
P078, Minoru Yagi, “Can Supplementary Device Improve the Precision of Laparoscopic Evaluation via Ipsilateral Hernia SAC for a Contralateral Patent Processus Vaginalis in the Patients with Unilateral Inguinal Hernia?”
P080, KF Yip, “Laparoscopic Flip-flap ligation: An innovative technique in Paediatric hydrocele surgery”
P081, Awan Muhammad Younas, “Minimal Invasive procedures in children for Adrenal / Renal pathologies. KFSH Experience”
P082, Jeffrey L Zitsman, “Teaching the Team: Nurse Education in Pediatric Minimal Access Surgery”

Otolaryngology
P083, Martin L Van Niekerk, “Laparoscopic Anti Reflux Surgery in Pediatric Gastro Esophageal Reflux Induced Otolaryngological Disease”

Instrumentation
P053, M. Bahr, “The Veroscope, a new tool for safer laparoscopy”
P054, Gerald Gollin, “Simple Simulators for Complex Operations”
P055, Makoto Suzuki, “Usefulness of a Loop Retractor in Pediatric Endoscopic Surgery”
P056, Michael V Tirabassi, “Unique Hooked Rod Delivery System for U-Clips in Minimally Invasive Pediatric Surgery”

Neonatal
P057, Hossein ALLAL, “Thoracoscopic repair of short and long gap esophageal atresia”
P058, Hossein ALLAL, “Laparoscopic treatment of duodenal obstruction in neonates”
P059, Aayed R Al-Qahtani, “Laparoscopic assisted sigmoid resection for colonic ectasia in a neonate”
P060, Tarun Kumar, “Safety & Efficacy of Endosurgery in Newborns”
P061, Pablo Laje, “One Surgery, Double Approach, for Transdiaphragmatic Thoracoabdominal Enteric Duplications”
P062, Dana Steinsky, “Laparoscopy and the Newborn”
**Robotics**

**P084, Amber Anderson**, "Robotic Assisted Extrapleural Esophageal Repair"

**P085, Jennifer S Beaty**, "Robotically-Assisted Resection of a Bronchogenic Cyst in a Newborn"

**P086, Felicia A Ivascu**, "Experience with Robotic Laparoscopic Nissen Fundoplication in Children at a Single Institution"

**P087, Colin G Knight**, "Computer-assisted, Robot-enhanced Open Microsurgery in an Animal Model"

**P088, Colin G Knight**, "Robot-Enhanced Laparoscopic Morgagni Hernia Repair in Children"

**P089, John J Meehan**, "Robotic Total Proctocolectomy with Ileoanal Pultthrough"

**Spleen/Solid Organ**

**P090, Feza M Akgür**, "CONTROL OF VARICEAL HEMORRHAGE DUE TO EXTRAHEPATIC PORTAL VEIN THROMBOSIS: PROPHYLAXIS OR DEFINITIVE TREATMENT"

**P091, Muhammad younas Awan**, "LAPAROSCOPIC SPLENECTOMY IN CHILDREN, FROM 5 TO 3 PORTS"

**P092, Stefan Beyerlein**, "The endoscopically placed cysto-enteral (ECE) stent as an innovative technique for drainage of cystic lesions of the spleen in three children"

**P093, Jean-François Colombani**, "Comparison of two methods of cholecystectomy in children with sickle cell disease"

**P094, Edward Esteves**, "LAPAROSCOPIC TREATMENT FOR CHOLEDOCAL CYSTS"

**P095, Sidney M Johnson**, "LAPAROSCOPIC MANAGEMENT OF BENIGN SPLENIC CYSTS"

**P096, Takuya Kimura**, "LAPAROSCOPIC CORRECTION OF CONGENITAL PORTO-systemic SHUNT IN CHILDREN: REPORT OF TWO CASES"

**P097, Kim G Mendelson**, "PANCREATIC INJURY DOES NOT ADVERSELY AFFECT OUTCOME IN CHILDREN UNDERGOING LAPAROSCOPIC SPLENECTOMY"

**P098, Go Miyano**, "Diagnostic Laparoscopy in Infants with Prolonged Jaundice"

**P099, Faisal G Qureshi**, "IS LAPAROSCOPIC SPLENECTOMY IN CHILDREN ADVANTAGEOUS?"

**P100, Frank M Robertson**, "LAPAROSCOPIC SPLENIC CYSTECTOMY: A RATIONAL APPROACH"

**P101, Jan O Rutqvist**, "Recurrence of hyperbilirubinemia after Laparoscopic Subtotal Splenectomy"

**P102, Martin L Van Niekerk**, "Laparoscopic Adrenalectomy for an Androgen secreting Tumor in a two year old child."

**P103, Robert Weinsheimer**, "Laparoscopy in the management of suspicious hepatic masses detected antenatally"

**P104, Rene Wijnen**, "Laparoscopic ultrasound and enucleation of an insulinoma in a child"

**P105, Makoto Yagi**, "Laparoscopic Splenic Cystectomy using Liga Sure"

**Thoracoscopy**

**P106, Feza M Akgür**, "PECTUS TEMPLATE DICTATED BY ANTROPOMETRIC MEASUREMENTS OF INDIVIDUAL PATIENTS FACILITATES BENDING OF THE SUPPORT BAR FOR NUSS PROCEDURE"

**P107, Francisco José Berchi Garcia**, "Esophageal Atresia: New Experience in the Surgical Treatment Thoracoscopy, Ergonomic Tools"

**P108, NORDINE BOUHADIBA**, "THE SCOPE OF THORACOSCOPY IN PEDIATRICS"

**P109, Alaa El Ghoneimi**, "Pulmonary sequestration in children: does the thoracoscopic approach is a good option?"

**P110, Wojciech J Górecki**, "AGGRESSIVE APPROACH TO THORACOSCOPIC SAMPLING FOR MEDIASTINAL LYMPHOMA"

**P111, Haluk B Guvenc**, "VIDEO-ASSISTED TREATMENT OF DIAPHRAGMATIC DEFECTS IN CHILDREN"

**P112, Felicia A Ivascu**, "Advanced Thoracostopy for Mediastinal Disease in Children"

**P113, Aaron R Jensen**, "UTILIZATION OF A TRANSSTERNAL SPINAL NEEDLE FOR RETROGRADE SUTURE PASSAGE DURING THORACOSCOPIC AORTOPEXY"

**P114, Steven L Lee**, "THORACOSCOPIC PLICATION FOR DIAPHRAGMATIC EVERTATION"

**P115, Mark A Levitt**, "Infrared Illumination During Thoracoscopic Excision of Mediastinal Bronchogenic Cysts"

**P116, Marcelo Martinez-Ferro**, "THE NUSS PROCEDURE. A TECHNIQUE WITH A LONG LEARNING CURVE."

**P117, Meera Menon**, "THORACOSCOPIC DRAINAGE OF A MEDIASTINAL ABSCESS IN A FOUR YEAR OLD CHILD."

**P118, Nam X Nguyen**, "Thoracoscopic Repair of Esophageal Atresia and Tracheoesophageal Fistula: A Report of Initial Experience"

**P119, David Partrick**, "EFFICACY OF LEFT THORACOSCOPY AND BLUNT MEDIASTINAL DISSECTION DURING THE NUSS PROCEDURE FOR PECTUS EXCAVATUM"

**P120, Andrew Rozmiarek**, "Primary thoracoscopic repair of diaphragmatic hernia with peri-costal sutures: a novel approach"

**P121, K.R. Srimurthy**, "THORACOSCOPIC LIGATION OF AORT-PULMONARY FISTULA"

**P122, Philipp O Szavay**, "Thorascopic Surgery in Children: A Right Middle Lobectomy and the Repair of a right-sided CDH"

**P123, Ricardo Villalpando Canchola**, "Lung Biopsy With Ultrasonic Scalpel In Pediatric Patients."

**P124, Hidecko Yamauchi**, "Thoracoscopic removal of an anterior mediastinal teratoma"
There are obvious benefits to the patient in a speedy recovery with minimally invasive surgery being shown to benefit in reducing the discomfort and accelerating the recovery after major surgery. Hence, a decision was made to perform a nephrectomy laparoscopically. The tumour was resected along with three 5mm working ports were used. After mobilizing the resection bed, a Pfannenstiel incision was used for the removal of the kidney. Histology confirmed an intermediate renal cell carcinoma. Therefore, the patient responded well to chemotherapy and the intra-operative blood loss and duration until start of the chemotherapy were examined.

Results: All the biopsy was performed successfully and sufficient specimen was obtained. No case was converted to open surgery. There was no significant difference in the age, weight, operation time and anesthesiaw time between the two groups. Operation time of Group O and L were 143 +/- 61.9 min. and 167.2 +/- 29.4 min., respectively (P=0.42). Intra-operative blood loss was significantly less in Group O than in Group L (85.1 +/- 120.7 ml vs. 106.6 +/- 8.1 ml; p=0.05). Postoperative recovery was rapid in the laparoscopic group therefore chemotherapy could be started within two days.

Conclusions: Our results have shown that laparoscopic biopsy could be done safely and could reduce the intra-operative blood loss in advanced NB. Laparoscopic biopsy was less invasive therefore following chemotherapy could be immediately started. We conclude that laparoscopic biopsy for advanced NB has advantage over open method.

**Cancer – p004**

**OPEN VERSUS LAPAROSCOPIC BIOPSY IN THE PATIENTS WITH ABDOMINAL ADVANCED NEUROBLASTOMA**, Natsumi Tanaka MD, Takaharu Oue MD, Akio Kubota MD, Hisayoshi Kawahara MD, Hiroomi Okuyama MD, Osaka Medical Center For Maternal & Child Health background/purpose: The role of laparoscopy in children with abdominal neuroblastoma (NB) has not been fully defined. Recently, we introduced laparoscopic approach to the abdominal NB; laparoscopic resection in localized cases and biopsy in advanced cases. In this study, we compared surgical outcome of laparoscopic biopsy with open biopsy in order to elucidate the advantages of laparoscopic approach.

Patients and methods: Medical records of children with advanced NB who underwent a biopsy from 1993 through 2003 were reviewed. They were 8 boys and 7 girls with mean age of 10.3 months. We performed open biopsy in 10 cases (stage III 6 and stage IV 4) between 1993 and 2001 (Group O), and laparoscopic biopsy in the remaining 5 cases (stage III 3 and stage IV 2) after 2002 (Group L). Laparoscopic biopsy was performed with three-trocar transperitoneal approach. Hemostasis was obtained by raising the intra-abdominal pressure to 10-12cmH2O. Central catheter insertion was performed after biopsy to perform the following chemotherapy. The operating time, intra-operative blood loss and duration until start of the chemotherapy were examined.

Results: All the biopsy was performed successfully and sufficient specimen was obtained. No case was converted to open surgery. There was no significant difference in the age, weight, operation time and anesthesia time between the two groups. Operation time of Group O and L were 143 +/- 61.9 min, and 167.2 +/- 29.4 min, respectively (P=0.42). Intra-operative blood loss was significantly less in Group O than in Group L (85.1 +/- 120.7 ml vs. 106.6 +/- 8.1 ml; p=0.05). Postoperative recovery was rapid in the laparoscopic group therefore chemotherapy could be started within two days.

Conclusions: Our results have shown that laparoscopic biopsy could be done safely and could reduce the intra-operative blood loss in advanced NB. Laparoscopic biopsy was less invasive therefore following chemotherapy could be immediately started. We conclude that laparoscopic biopsy for advanced NB has advantage over open method.

**Cancer – p003**

**LAPAROSCOPIC RESECTION: B-NON HODGKIN LYMPHOMA PELVIC INFILTRATE**, Ksawena MD, Michael Paulussen MD, Gunter H Willtal MD, Department of Pediatric & Neonatal Surgery, Westfälische Wilhelms University, Munster, Germany

The case of a female patient referred to our University Hospital after the diagnosis of a pelvic tumor from the family physician is presented. Computer Tomography as well as a Tri-phase Skeletal Scintigraphy Tc 99m-MDP confirmed the pre-sacral location of the tumor. Further diagnostics confirmed the presence of an infiltration of a highly malignant Non-Hodgkin Lymphoma (NHL) of the diffuse large cell B-Cell type in Stadium II/III. The patient underwent a poly-chemotherapeutic treatment according to the NHL-BFM-95 protocol. The patient responded well to chemotherapy and a drastic reduction in the size was achieved.

However, 5 months later, a residual tumor infiltrate non-responsive to the treatment was still evident and a laparoscopic resection was undertaken. Due to the localization of the tumor a 0-degree Storz® optic along with three 5mm working ports were used. After mobilizing the rectum as well as the salpingo-ovarial complex, the entire mass was removed without any complications. The intra-operative localization as well as the laparoscopic technique employed to remove this adherent mass is presented.

**Cancer – p002**


Aim: Children with cancer suffer considerably from the treatment given to endeavour to achieve cure. Minimally invasive surgery has been shown to be of benefit in reducing the discomfort and accelerating the recovery after major surgery as well as maintaining a good body image. Having found it to be of benefit in surgery for stage IV neuroblastoma we sought to avoid a large transverse upper abdominal incision, in removal of a nephroblastoma and instead perform the nephrectomy laparoscopically.

Method: A 3-year-old girl with haematuria was found to have a mass arising from the right kidney. Laparoscopically guided trucut biopsies confirmed this to be a nephroblastoma. Pre-operative chemotherapy as per the SIOP-WT 2001 was administered with a reasonable response and in the 6th week the tumour was reassessed laparoscopically.

Results: A transperitoneal mobilisation of the kidney was successfully achieved with no breach of the tumour. The kidney was removed in a bag via a Pfannenstiel incision. Histology confirmed an intermediate grade stage II nephroblastoma. The tumour did not extend to the resection margins.

Conclusion: Minimally invasive surgery for Wilms? tumour is feasible and safe allowing normal maintenance of oncological surgical principles. There are obvious benefits to the patient in a speedy recovery with minimal discomfort and early continuation of post-operative chemotherapy.

**Cancer – p005**

**AN UNIQUE OPPORTUNITY FOR THE TREATMENT OF HIGH ANORECTAL MALFORMATIONS: LAPAROSCOPY**, G.Ice Hakg der MD, Oguz Ates MD, Mustafa Olguner MD, Feza M Akg ur MD, Department Pediatric Surgery, Dokuz Eyl u, University, Medical School, İzmir, TURKEY

Introduction: Georgeson et al have reported a new technique for the treatment of high anorectal malformations (ARM). With this new technique, anorectal pull-through is performed without a posterior sagittal incision with laparoscopic assistance. Herein we report our experience with laparoscopy assisted anorectal pull-through (LAARP).

Methods and Procedures: The hospital and digital video records of 4 high ARM male patients that underwent LAARP during January 2002-January 2003 were evaluated.

Results: Three patients had colostomies and LEARP was performed in the presence of colostomy. One stage LEARP without colostomy was performed in the 12 days old patient that also had duodenal atresia. This patient died unexpectedly on the postoperative third day after a successful laparoscopic pull-through. The clinical features of the patients are summarized in the table.

Conclusion: LAARP procedure has precisely defined landmarks during intersphincteric pull-through of the neorectum, that enables placement of the neorectum to its embryologically correct place.
Colon/Bowel – p006
LAPAROSCOPIC ASSISTED TRANSANAL ENDORECTAL COLOANAL ANASTOMOSIS FOR HIRSCHSPRUNG’S DISEASE, BRICE ANTAO, JULIAN ROBERTS MS, PAEDIATRIC SURGICAL UNIT, SHEFFIELD CHILDREN’S HOSPITAL, WESTERN BANK, SHEFFIELD S10 2TH
INTRODUCTION: There has been a recent trend in the use of laparoscopic assisted one stage pull through in the management of Hirschsprung’s disease. We describe our initial experience using laparoscopy with a transanal endorectal coloanal anastomosis technique as described by Rintala for Hirschsprung’s disease.
METHODS: Four children with biopsy confirmed Hirschsprung’s disease underwent a laparoscopic assisted pull through using the Rintala’s transanal endorectal coloanal anastomosis technique over the last 2 years. The procedure was done through one 5-mm camera port and two 5-mm working ports. The transition zone was identified by seromuscular biopsies obtained laparoscopically. The sigmoid colon and proximal rectum were mobilised laparoscopically. A transanal endorectal mucosal dissection and a coloanal anastomosis were done using an absorbable monofilament 5/0-polyglyconate suture.
RESULTS: Four children aged 1 month to 36 months underwent this procedure laparoscopically. Two cases had to be converted to an open procedure as a result of dense pelvic adhesions. The entire mobilisation of the bowel as well as biopsy confirmation of the transition zone was done laparoscopically in all the 4 cases. The mean operative time was 120 minutes. All 4 children tolerated full enteral feeds after 48 hours and the mean hospital stay was 7.5 days. There were no early post-operative complications. The functional outcome was good in all cases with no soiling, stool incontinence, constipation or enteroctosis at a mean follow-up period of 13.5 months.
CONCLUSION: Laparoscopic assisted pull through apart from being cosmetic permits both obtaining biopsies as well as an adequate mobilisation of the bowel. The transanal endorectal coloanal anastomosis technique is simple and easy to perform with a minimal dissection, which causes less damage to the internal sphincter and pelvic nerves.

Colon/Bowel – p007
INTERVAL APPENDECTOMY - OLD-NEW OPERATION, Steven Z Rubin MD, Juan Bass MD, Childrens Hospital of Eastern Ontario
Traditionally appendicitis has been managed by open appendectomy with or without drainage. This paper reports the increasing use of non-operative management of complicated appendicitis followed by an interval laparoscopic appendectomy (IA) and compares the results with urgent appendectomy (UA) on admission to hospital.
The incidence of delayed normal intestinal motility, wound infection, intraabdominal abscess, adhesive obstruction and the total length of hospital stay was compared in two age/sex comparable cohorts of 30 patients. All children had histories compatible with delayed diagnosis of appendicitis. The diagnosis was confirmed pretreatment by ultrasonography, computer tomography (CT) scan or laparoscopy and postappendectomy by histopathology. While there was no statistical difference overall in the length of ileus, incidence of intraabdominal abscess or total length of hospital stay, there was a statistically significant decrease in wound infections and mechanical intestinal obstructions in IA.
The safe use of IA must include availability of reliable ultrasonography, CT and experienced laparoscopy.

Colon/Bowel – p008
ANORECTAL ATRESIA: CORRECT INDICATION AND WHICH ROLE HAS THE LAPAROSCOPY, Francisco Jose Berchi Garcia PhD, Indalecio Cano MD,Juan AntUn-Pacheco MD, HUMI 12 de Octubre. University Complutense, Pediatric Surgery Dept., Madrid/Spain
We report 5 cases with previously colostomy. Laparoscopically sharp dissection was used to expose the rectal pouch down to urethral or bladder/vaginal fistula, which was sutured and divided. The levator sling and pelvic musculature was identified. Perineal electrostimulation. A B-10 mm incision was made in center of anal dimple. Trocar was passed through this defined plane in external sphincter muscle complex and advanced into pelvis between the 2 bellies of pubococcygeus muscle, guided by laparoscopic visualization. Rectal end was grasped through perineal trocar and exteriorized to perineum. At the moment was a endoanal ultrason and performed to confir that rectal end was in correct position: In center of the straited muscle complex and levators. We finish procedure with an anorectal anastomosis and dilatation (to state anal outcome of the analcaliber). In all cases the electromyography (pre- and post-operation) and the intra-operative endo-anal ultrasound was correct. A complete laparoscopically mobilization has been possible and symmetric contraction with perineal electrostimulation was confirmed.

Colon/Bowel – p009
LAPAROSCOPIC APPENDECTOMY IN PEDIATRIC ACUTE APPENDICITIS: RESULTS OF A NATIONAL SURVEY IN SPAIN, Carlos Miguel Martinez-Almoyna Rullan PhD, Victor Alvarez Muoz MD, Francisco Berchi Garcia MD, Hospitales Universitario Central de Asturias (Oviedo) y HUMI Doce de Octubre (Madrid)
INTRODUCTION. Pediatric surgeons have shown some reluctance to accept the routine use of laparoscopic appendectomy (LA) and the surveys are scarce. METHODS AND PROCEDURE. A survey has been sent by post to all the PSS of the National Health System of Spain (42), all them in tertiary Hospital (except 2), about medical staff and Residents on duty (number, formation in Endosurgery), and indications of LA in simple and complicated pediatric acute appendicitis, referred to September 2003. A second call has been made to the PSS, which surveys have not received. RESULTS. The national survey has been completely answered by a 64,2 % of all the PSS, which are the sample of the study. 1. Human resources: a) A 56% of the PSS have on duty a 20%-60% of the medical staff formed in Endosurgery. b) A 40% of the accredited PSS to form Residents, give them formation in Endosurgery. c) A 56% of the PSS present some type of internal maladjustment (medic staff) and external (nurses, anesthesiologists, training, endosurgery material) that difficult the use of LA. 2. Opinion polls: A 33% of the PSS consider the LA indicated in all the appendicitis, a 14.6% only in the simple acute appendicitis and a 22 % has no formed opinion about the best indications for LA. 3. Use of LA: a) A 37 % of the PSS never use LA and a 7,4% in all the cases and all the days. b) In a 55,6% of the PSS, they use LA if there are some pediatric surgeons formed in Endosurgery, but never occur more than 15 days in a month. c) The timing is important in 18,5% (no later than 22 hours) and 7,4% of the PSS (no later than 24 hours). d) The first external difficulties are the nurses, the second, the medical training and the third the anesthesiologists. To be precise, medical training represent the first problem in one of each four Spanish PSS. 4. Indications: Some of the PSS presents some restrictions in cases of perforitis (18,5%), intestinal occlusion (18,5%) and intraabdominal abscesses (18,5%). CONCLUSIONS: There are important difficulties to use LA on duty, in the pediatric acute appendicitis, in a significant number of PSS of Spain, in spite of a good disposition to use it. The staffs on duty of the PSS and the medical training are some of the more important problems. These results demand deeper studies and proposals to improve the care of some pediatric surgical emergencies and improve the training of pediatric surgeons on endosurgery.
Colony/Bowel – p010
MINIMALLY INVASIVE SURGERY IN YOUNG INFANTS CAUSES MINIMAL PHYSIOLOGICAL DISTURBANCES, NORDINE BOUHADIDA MD, GORDON MACKINLAY MD, FRASER MUNRO MD, WILLIAM MANSON, Royal Hospital for Sick Children, 9 science raod, EH1 1LF EDINBURGH
Background: The use of laparoscopic surgery has recently increased exponentially, including the most complex procedures in very young patients. The purpose of this study was to evaluate the physiological changes and safety of this technique in group of infants less than one year old
Methods: Since 1996, all infants less than one year old, who have been operated on in one institution using a minimally invasive surgery, have been evaluated.
105 patients, 70 boys, and 35 girls, aged 9 days - 11 months (3 months), have been included.
An open technique for the primary port was used in all patients. 1.5 ports (median 3) were used per procedure. Pneumoperitoneum pressure varied from 4 to 10 mmhg (median 8mmhg).
Results: The duration of the surgery was between 10 min- 4 hours, median (58 minutes). Preoperative heart rates ranged from 100 ?180bpm (110 bpm), and changed in 6% of all patients, dropping by 18% in laparoscopic pyelotomy, and increasing by 22% in laparoscopic pull through( Soave type). The preop blood pressure was between 60 and 120 (80) and rose by 28% in 4% of patients. The temperature varied between 35- 37.8 _C (36.8 _C), EtCO2 varied between 2.2- 7kpa (4.3), increasing by 30 % in only 3% of all patients, mainly the intussusception group, presumably due to CO2 absorption. Only 16% required postop HDU/ITU. The median days of analgesia use was 2 (1-7), using morphine 13%, paracetamol 80%, diclofenac 4%, ibuprofen 3%. There were four conversions (4%), (3 intussusions, 1 appendicular mass). Two complications (4%) occurred, (1 colon perforation day 6 post op after pull through, 1 redo pyelotomy). The overall patient distribution was: pyelotomies 50 (48%); pull through 16 (15%); fundoplications 18(17%); intussusceptions 4(4%); imperforate anus 3(3%), hernia repair 3(3%) (bilateral 1, unilateral 3), ovarian cyst 2(2%); hydrocolpos 2(2%); NEC 2(2%); PEG 1; ambiguous genitalia 1(1%); nephrectomy 1 (1%); liver biopsy 1(1%); appendectomy 1(1%).
Conclusion: Minimally invasive surgery is an established technique in paediatric patients. This study shows its effectiveness and safety in small infants and even in neonates. Low morbidity, early discharge and better cosmetic results highlight its advantages, and outweigh the already low co

Colony/Bowel – p011
POSTER PRESENTATION: INTRAABDOMINAL ADHESION, ADHESIOTOMY TECHNIQUES, PREVENTION OF ADHESIONS, NEW CLASSIFICATION, Ulf Buehligien MD, Clinic for Pediatric Surgery University of Leipzig
In spite of all efforts, postoperative adhesions still have an unchanged relevance. In many cases even multiple revisions have to take place. The slighter the operating trauma and the wound, the smaller is the probability of fresh adhesions.
A concept of treatment is introduced which includes laparoscopic procedures in one-trocar-technique, laparoscopy with bipolar instruments and open surgical methods. This technique uses an angled optic with integrated working channel (3.5 mm). To the same time the abdomen can be inspected and, if necessary, an adhesiotomy can be carried out. The usage of 3.5 mm instruments under laparoscopic circumstances allows a subtle approach. To prevent new adhesions we use a barrier building hydrocolloid gel in laparoscopic as well as in open procedures. We use a classification of adhesions which has been worked out in our hospital. Criteria are the seriousness of the adhesions, the topography and the macroscopic alterations of the intestine. So it is possible to attain comparable assessments of the seriousness of the disease.
With this new concept 54 patients have been evaluated and treated so far. A good classification of the adhesions was possible in every case. Comparative studies in more than one hospital are now possible.
Conclusion: We expect that with this new overall concept of treatment there will be less adhesions with children. With the introduced new classification the intraabdominal situation is easily assessable. In case of a new revision the assessment of the results of the operation before is possible. Intraabdominal adhesions have become possible to classify and to compare with no consideration of which hospital is doing this. A prevention of adhesion is possible laparoscopically as well as in the bounds of laparotomy. The hydrocolloid gel covers the areas prone to adhesions. A protective layer is built up which separates the tissues. The ability of the intestine loops to slide remains good. Over a period of seven days this protective layer will be completely resorbed again and is no longer detectable.

Colon/Bowel – p012
COLONOSCOPIC POLYPECTOMY IN CHILDREN, DAN CATANA PhD, STIJN VAN LOON RN, IULIU CATANA MS, MSCURIE HOSPITAL DIG. END. DEP. BUCHAREST ROMANIA
INTRODUCTION: Polyp are relatively common in infants and children occurring in up to1% of preschool-and school-aged children. They clearly represent the most frequent gastrointestinal tumor in the pediatric age group and the most frequent cause of rectal bleeding during the middle years of childhood.
MATERIAL AND METHODS:
We undertook a retrospective study of series of children who were found to have elevated lesion ?polyps at videocolonoscopy,after experiencing suggestiv symptoms:rectal bleeding,anemia.The records of all colonoscopies performed by Digestive Endoscopy Laboratory between 1997 till July 2003.PREPARATION-for polypectomy using FORTRANS ?Macrogol 4000 (BEAUFOUR) solution for 1-2 days.Polyps were removed safely by endoscopic polypectomy using:ACCUSNARE,ERBOTOME Electrosurgical unit. Removal of polyps THE WEB EXTRCTION BASKET(COOK)The polipectomy is was performed under General Anesthesia.The report of histopathologic examinations were extracted from the files of the department of Morphopathology.
RESULTS:
Between February 1997 and july 2003, 128 children had endoscopic examination for rectal bleeding.Age from 1 to 18,Males 67,Females 61. Sex ratio 1,098.Rectal bleeding etiology:COLIC POLYS 69 FISSURA ANNALIS 28,HEMORROIDIS.13.INFLAMATORY BOWEL DISEASE 9,OTHER 8;COLIC HEMANGIOMATOSIS 1,First place Colic polyps-60, Multipule-5-Polipos-4 Anatomic location of polyps: ANORECTAL,17-RECTOSIGMOID,17-LEFT SIDED,25 -RIGHT SIDED,0-PAN COLONIC.4. The most frequent location is at around 15-25cm,from the anus. In 60 cases polyps are pediculated and in 9 sessile.Dimensions of polyps between 0.3 cm to 4 cm.Juvenile polyps.67 Adenomatous polyps.2
COMPLICATIONS:
-PERFORATION,0 HEMORRAGEA.early.1. In a case of adenomatous polyp of 74 cm diameter,at 44 cm of anus;the hemorrhage stopped after local treatment,no recurrence after 1 year,16 years old boy.-POLYP REMOVAL IMPOSSIBLE.2-POLYP WENT FAR IN THE COLON.2
CONCLUSION:
1. Colonoscopic polypectomy in children is safe,it permits a safe check-up of rectum,sigmoid, colon,rarely we need barium enema before the procedure.2.Short hospital stay only three days .3.Few complication-bleeding,4.To improve polyp retrieval it is necessary to put the torax in a proclive position.

Colon/Bowel – p013
LAPAROSCOPIC APPENDECTOMY FOR PERFORATED APPENDICITIS IN CHILDREN, Dae-Yoon Kim MD, Seong-Chul Kim MD, In-Koo Kim MD, University of Ulsan College of Medicine and Asan Medical Center
Laparoscopic appendectomy has become a common approach to appendicitis in childhood in many centers. Many studies favor laparoscopic appendectomy in simple appendicitis, but the role of laparoscopy in perforated appendicitis is controversial. Data on 32 children with perforated appendicitis at Asan Medical Center from November 2002 to October 2003 were retrospectively analyzed with regard to operative technique, operating time, length of stay, morbidity, and mortality.
Among these patients, 13 had laparoscopic appendectomies (LA); 17 had open appendectomies (OA). In two cases, laparoscopic procedures were converted to open procedures because the dissection became dangerous with severe adhesion. The indications for the type of procedure varied between 35- 37.8 _C (36.8 _C), EtCO2 varied between 2.2- 7kpals (4.3), increasing by 30 % in only 3% of all patients, mainly the intussusception group, presumably due to CO2 absorption. Only 16% required postop HDU/ITU. The median days of analgesia use was 2 (1-7), using morphine 13%, paracetamol 80%, diclofenac 4%, ibuprofen 3%. There were four conversions (4%), (3 intussusions, 1 appendicular mass). Two complications (4%) occurred, (1 colon perforation day 6 post op after pull through, 1 redo pyelotomy). The overall patient distribution was: pyelotomies 50 (48%); pull through 16 (15%); fundoplications 18(17%); intussusceptions 4(4%); imperforate anus 3(3%), hernia repair 3(3%) (bilateral 1, unilateral 3), ovarian cyst 2(2%); hydrocolpos 2(2%); NEC 2(2%); PEG 1; ambiguous genitalia 1(1%); nephrectomy 1 (1%); liver biopsy 1(1%); appendectomy 1(1%).
Conclusion: Minimally invasive surgery is an established technique in paediatric patients. This study shows its effectiveness and safety in small infants and even in neonates. Low morbidity, early discharge and better cosmetic results highlight its advantages, and outweigh the already low co

INTRODUCTION:
Pernicious symptoms:rectal bleeding,anemia.
The mean operating time was 98.7 minutes in LA groups and 67.1 minutes in OA groups (p<0.05). There was statistically significant difference in the length of stay between LA groups 9.9 days and OA groups 7.8 days (p<0.05). There were two wound infections in LA group, one stitch abscess in converted appendectomy group, and one intra-abdominal abscess in OA group. There was no statistically significant difference in complications between LA groups and OA groups. Once being skilled, laparoscopic appendectomy can be an alternative to open procedure in children with perforated appendicitis.
**Colon/Bowel – p014**

"CHINESE FAN SPREAD" DISTRACTION TECHNIQUE OF LAPAROSCOPIC REDUCTION OF INTUSSUSCEPTION, Thichen K Lama MD, C H Chui MD, A S Jacobsen MD, KK Women’s and Children’s Hospital, Singapore.

Objective: To describe the "Chinese fan spread" distraction technique of reducing intussusception laparoscopically and its benefits.

Method: This procedure was attempted in 4 children with intussusception, after failed gas enema reduction. Pneumoperitoneum was created and the laparoscope inserted via the umbilicus, two other ports allowed use ofatraumatic instruments? bowel and oviduct graspers. These instruments were crossed inaperitoneally and used to gently pull out the intussusceptum and push away the intussusensors. This sustained traction?countertraction with crossed instruments gives the appearance of the CHINES FAN SPREAD. This technique can be done without any pneumatic or hydrostatic assistance.

Results: The "chinese fan spread" distraction technique allowed us to successfully manipulate and reduce the intussusception in 3 patients (2 of whom required resection and anastomosis of bowel via the transumbilical route). However, the fourth required conversion to a laparotomy for resection of extensive dead bowel.

Conclusions: Laparoscopic reduction of intussusception remains uncommon after failed gas enema, and although several cases have been reported, they have been done with pneumatic assistance. The "chinese fan spread" distraction allows laparoscopic reduction without the need for per rectal pneumatic insufflation with no complications. Our technique obviates the problem of uncontrolled insufflation pressures, bowel distension making manipulation in the abdominal cavity difficult, pericatheter leakage of gas and soiling that occurs during per rectal pneumatic insufflation.

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**Colon/Bowel – p015**

LATUM: LAPAROSCOPIC ASSESSED TRANS - UMBILICAL MECKELS DIVERTICULUM, C H Chui MD, Thichen K Lama MD, A S Jacobsen MD, Department of Pediatric Surgery, KK Women’s and Children’s Hospital, Singapore.

Objective: The study aims to describe, in detail, the method of resection of Meckel’s diverticulum in our hospital - LATUM.

Method: Laparoscopy has been established as a safe and effective method for diagnosis and treatment of Meckel’s diverticulum. We present 9 patients, ranging from one year to fourteen years of age, diagnosed with Meckel’s diverticulum, who underwent LATUM. Our treatment strategy is to laparoscopically locate the Meckel’s diverticulum and then mobilise it with the adjacent ileum out from the umbilicus, resect a cuff of ileum together with the diverticulum and then perform a single layer ileo-ileal anastomosis, extracorporally. This allows us to palpate the ileum so as to avoid leaving ectopic tissue behind, and also, by not using an endoGIA stapler it lowers cost of surgery. Other advantages include less post operative pain, shorter hospital stay, better cosmetics with the smaller incisions, and we hope to decrease the incidence of adhesive intestinal obstruction.

Results: All patients underwent LATUM safely and successfully. All the children were well when seen in the follow up clinic and none have been admitted for intestinal obstruction so far.

Conclusion: We recommend LATUM for diagnosis and treatment of Meckel’s diverticulum. As an extrapolation of the LATUM we would like to recommend the transumbilical approach for resection of small bowel for other lesions like infarcted intussusception, small bowel biopsy, omental infarction.

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**Colon/Bowel – p016**

ELECTIVE LAPAROSCOPIC APPENDECTOMY FOR CHRONIC RIGHT ILLIAC FOSSA PAIN IN CHILDREN, ANIES MAHOMED MD, LINGA PAN-CHALINGAM MD, CHRIS DRIVER MD, DEPARTMENT OF PAEDIATRIC SURGERY, ROYAL ALEXANDER CHILDRENS HOSPITAL, BRIGHTON AND ROYAL ABERDEEN CHILDREN’S HOSPITAL, ABERDEEN, SCOTLAND.

Aim: To determine whether elective laparoscopic appendectomy is justified for chronic right iliac fossa pain of undetermined origin. Patients and Methods: A retrospective audit of all laparoscopic appendicectomies between Jan 1997 and August 2003 was performed. The expanded medical audit system (EMAS) and a Microsoft Access Database of operative records were used to identify patients with chronic right iliac fossa pain subjected to elective appendicectomy. Case notes were reviewed for patient demographics, duration of symptoms including clinic visits and admissions, operative findings, histological analysis and post operative performance. A correlation between histological findings and final outcome was investigated.

Results: 98 patients underwent laparoscopic appendicectomy during the period of the study. A total of 11 cases with chronic RF pain were identified. Demographic data showed 81.8% were female and 18.2% male. Ages ranged from 9 to 14 years with a mean of 11.9 yrs. The number of clinic visits and admissions for chronic RF pain ranged between 2-8 with a mean of 4.5. Duration of symptoms ranged from 1-36 months with a mean of 12.1 months. Detailed history, clinical examination, serological and radiological investigations failed to reveal a cause of the pain in all cases. Patients were followed up for a mean of 16.1 months. Histology showed acute inflammation (3 cases), faecoliths (2 cases), lymphoid hyperplasia (1 case), lymphoid hyperplasia noted within the appendix. One patient with persistent pain 6 years post operatively had a normal appendix.

Conclusion: This study demonstrates that a significant number of patients with chronic RF pain have pathology within the appendix and will benefit from an appendicectomy. It is critical however that other possible causes of pain in the RF are excluded. Laparoscopy is an integral part of the diagnosis and management of this particularly difficult group of patients.

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**Colon/Bowel – p017**

THE UTILITY OF LAPAROSCOPIC APPENDECTOMY IN CHILDREN WITH PERFORATED APPENDICITIS, Evan P Nadler MD, Kim K Reblock RN, Faisal G Qureshi MD, Daivd J Hackam MD, Barbara A Gaines MD, Timothy D Kane MD, Department of Surgery, Children’s Hospital of Pittsburgh.

Purpose: There is persistent controversy regarding the optimal surgical therapy for children with perforated appendicitis. While many have suggested that laparoscopic appendectomy as standard of care, there is little data to support this approach. In fact, recent reports suggest that laparoscopic appendectomy (LA) is no more efficacious than open appendectomy (OA), and is perhaps associated with a higher incidence of intra-abdominal abscess formation. However none of these reports focus solely on children with perforated appendicitis. We have recently adopted LA in lieu of OA for children with perforated appendicitis. We hypothesized that LA would be as effective as OA in preventing postoperative complications.

Methods: We reviewed the medical records of all children admitted to our hospital between January 1, 1998 and March 1, 2003 with the diagnosis of perforated appendicitis confirmed at appendectomy. Only patients who underwent operation within the first 24 hours of admission were included in the analysis. Patients were divided into two groups based on the operative approach: LA vs. OA. Approach was determined by surgeon’s preference.

Demographic data, duration of presenting symptoms, initial WBC, length of stay (LOS), and complications were abstracted. Categorical data were compared via Chi square analysis; continuous variables were compared using Student’s t test when the data were normally distributed and the Mann-Whitney test when the data were skewed.

Results: There was no difference between the LA (n=43) and OA (n=77) groups with respect to gender, duration of presenting symptoms, initial WBC, or LOS. However, patients in the LA group had a significantly lower complication rate than those in the OA group (6/43 (29%) vs. 23/77 (30%), p=0.05). Infectious complications including wound infections and intra-abdominal abscesses were no different in the LA group (8/43 v. 14/77, p=0.55). Patients in the LA group tended to be older than patients in the OA group (10.6±3.3 v. 8.5±4.1, p=0.003).)

Conclusion: Laparoscopic appendectomy for children with perforated appendicitis is associated with the same infectious complication rate and a lower overall complication rate than open appendectomy. A prospective study with standardized post-operative care would be needed to determine definitively whether laparoscopic appendectomy for children with perforated appendicitis should be considered the treatment of choice, but until then it remains an attractive alternative.
Colon/Bowel – p018

INTRAOPERATIVE PERINEAL SONOGRAPHY DURING LAPAROSCOPICALLY ASSISTED ANORECTAL PULL-THROUGH FOR RECTO-URETHRAL FISTULA: A NEW TECHNIQUE, Hiromi Okuyama PhD, Akio Kubota PhD, Hisayoishi Kawahara PhD, Takaharu Oue PhD, Yuko Tazuke PhD, Natsumi Tanaka MD, Department of Pediatric Surgery, Osaka Medical Center for Maternal and Child Health

INTRODUCTION: Recently, several new techniques for repairing imperforate anus using laparoscopy have been reported. However, it is still difficult to create an accurate pull-through canal in boys with recto-urethral fistula because of the limited space between the urethra and the pubo-rectal muscle sling. The aim of this study is to describe our new technique using intraoperative perineal sonography to create accurate pull-through canal and to avoid urethral injury.

METHODS AND PROCEDURES: After laparoscopic dissection of the colon and the rectum, the recto-urethral fistula was ligated at its insertion on the posterior urethra and was divided sharply. Subsequent dissection of the midline of the pubo-rectal muscle was performed along the urethra. Externally, the anal area of the perineum was mapped with a transcutaneous muscle stimulator. A 1.5 cm skin incision was made over the center of the strongest muscle contraction, and perineal dissection was performed in the center of the external anal sphincter muscle. The urethral catheter was clearly visualized by sonographic scan with a 7.5 MHz standard probe from the perineum between the scrotum and the proposed anus. Under sonographic monitoring and direct laparoscopic observation of the levator muscle contraction, the pull-through canal was created just behind the urethra within the pubo-rectal muscle sling using grasping forceps. The forceps were replaced by a Penrose drain, and a series of dilators of increasing size were passed along the drain to create a pull-through canal. Then, the rectal pouch was pulled through, and an anoplasty was performed.

RESULTS: We used our new technique during laparoscopically assisted anorectal pull-through in 2 patients with recto-urethral fistula (high type 1, intermediate 1). There were no intraoperative complications. Postoperative contrast enema in both cases revealed good anterior angulation of the anorectum. Functional outcome of this procedure should be assessed in the long-term follow-up.

CONCLUSION: Intraoperative perineal sonography can facilitate an accurate creation of pull-through canal during laparoscopically assisted anorectal pull-through for recto-urethral fistula.

Colon/Bowel – p019

IS LAPAROSCOPY ASSISTED ANO-RECTOPLASTY (LAARP) BETTER THAN PSARP?, P. R. Srinathmurthy S. Ramesh, Narendra Babu, The Bangalore Hospital & Indira Gandhi Institute of Child Health, Bangalore, India

Introduction

We present our series of 21 cases of Laparoscopy Assisted Ano-rectoplasty (LAARP) and compare the experience with our PSARP results. Methods and Procedures

In the last 4 years, we have performed 21 cases of LAARP for high level Ano-rectal malformations. One was a female with High rectovaginal fistula ? the rest were males. The age range varied from 3 months to 2 years (mean : 5.3 months). All of them had a neonatal colostomy and adequate pre-operative colonic washouts. The colorectum was dissected laparoscopically till the fistula and ligated / divided. The centre of the perineal muscle complex was identified and the proximal rectum brought down after dilating the tract. The technical details will be highlighted with video.

Results

Our results have been satisfactory 7 had anal stenosis early in our series, of which 4 settled with anal dilatation and one required a perineal revision. Two had port site adhesions and one had endotoxemia. All of them have done well on short and medium range. Even though long term results are awaited, they are definitely better than the PSARP group in that there was no risk of urethral injury and continence mechanism is least disturbed.

Conclusion

In our series, LAARP is definitely a better option than PSARP as it offers an excellent magnified view of the fistula and also of centre of the levator ani thereby enabling accurate placement of the bowel. The risk of urethral damage is avoided. In addition, Laparoscopy offers the benefit of simultaneous management of intra-abdominal associated anomalies.

Colon/Bowel – p020

SUCCESSFUL TREATMENT OF PYELOPHLEBITIS COMPROMILING RUPTURED APPENDICITIS WITH ANTIBIOTICS / ANTICOAGULATION AND INTERVAL LAPAROSCOPIC APPENDECTOMY, Karyn B Stitzenberg MD, Paul Monahan MD, J. Duncan Phillips MD, University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, North Carolina

PURPOSE: The aim of this study is to assess the utility of laparoscopic surgery for Meckel diverticulitis disease. METHODS: After IRB approval, a retrospective review collected data about patients who underwent Meckel diverticulectomy from 1998 to 2003. Data collected included demographics, diagnostic methods, surgical indications, operative details, postoperative hospital stay, complications, and pathologic findings. Analyses were performed using Student’s t test, Chi square and multivariate analysis. RESULTS: 32 patients underwent surgical treatment for Meckel diverticulitis. Eight patients incidentally found to have Meckel diverticulitis at the time of another operation were not included. The remaining 24 patients are summarized below. In the 16 patients in the laparoscopic group, 8 had an intracorporeal diverticulectomy, 5 had an extracorporeal resection, and 3 were converted to open surgery (2 nonmechanical intussusception; 1 gangrenous bowel). Heterotopic nielloosa was confirmed in all bleeding patients, 2 patients with intussusception and 2 patients with bowel obstruction. No complications were encountered in the laparoscopic group. There was one postsurgical bowel obstruction and one wound infection in the open group. While there were statistically shorter operative times and postoperative length of stays in the laparoscopic group, this difference was not significant when multivariate analysis was used to account for presentation. CONCLUSION: Laparoscopy is useful and reliable for the treatment of bleeding Meckel diverticulitis. Our limited experience with laparoscopic management of other complications of Meckel diverticulism is encouraging.

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Colon/Bowel – p021

UTILITY OF LAPAROSCOPIC SURGERY FOR MECKEL DIVERTICULUM, GT Tekant MD, H Narasimhamurthy MD, CM Harmon MD, KE Georgeson MD, R Barnett MD, Division of Pediatric Surgery, University of Alabama at Birmingham/The Children’s Hospital of Alabama, Birmingham, AL, USA

PURPOSE: The aim of this study is to assess the utility of laparoscopic surgery for Meckel diverticulitis disease. METHODS: After IRB approval, a retrospective review collected data about patients who underwent Meckel diverticulectomy from 1998 to 2003. Data collected included demographics, diagnostic methods, surgical indications, operative details, postoperative hospital stay, complications, and pathologic findings. Analyses were performed using Student’s t test, Chi square and multivariate analysis. RESULTS: 32 patients underwent surgical treatment for Meckel diverticulitis. Eight patients incidentally found to have Meckel diverticulitis at the time of another operation were not included. The remaining 24 patients are summarized below. In the 16 patients in the laparoscopic group, 8 had an intracorporeal diverticulectomy, 5 had an extracorporeal resection, and 3 were converted to open surgery (2 nonmechanical intussusception; 1 gangrenous bowel). Heterotopic nielloosa was confirmed in all bleeding patients, 2 patients with intussusception and 2 patients with bowel obstruction. No complications were encountered in the laparoscopic group. There was one postsurgical bowel obstruction and one wound infection in the open group. While there were statistically shorter operative times and postoperative length of stays in the laparoscopic group, this difference was not significant when multivariate analysis was used to account for presentation. CONCLUSION: Laparoscopy is useful and reliable for the treatment of bleeding Meckel diverticulitis. Our limited experience with laparoscopic management of other complications of Meckel diverticulism is encouraging.

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Colon/Bowel – p022

NEW AND RELIABLE METHOD OF LAPAROSCOPICALLY ASSISTED ANORECTOPLASTY, USING LIGHT-GUIDED DEVICE AND MUSCLE STIMULATOR, Hiroshi Uchida PhD, Tadashi Iwanaka PhD, Hiroshi Kawashima MD, Akira Nishi MD, Sumi Kudou MD, Ryosuke Satake MD, Department of Pediatric Surgery, Saitama Children’s Medical Center, Saitama, Japan

Aim: To report that levator muscles with high-type anorectal malformation can be easily located by a light-guided device and laparoscopic muscle stimulator in laparoscopically assisted anorectoplasty (LAARP).

Methods: A boy with rectourethral fistula and a girl with rectocloacal fistula underwent LAARP. After dissection of the distal rectum, gender-appropriate urethroscopy or vaginoscopy was performed to detect the site of the divided fistula. Using the urethroscopic/vaginoscopic light-guide and muscle stimulator, we accurately detected the innermost levator muscles on the dorsal side of the urethra/vagina. After dissecting the levator muscles from the surrounding organs, a guideewire and a dilatation balloon catheter were inserted between the levator muscles and urethra/vagina for creating a pull-through tunnel. Thus, laparoscopically assisted anorectal pull-through was successfully completed.

Results: Eight-one patients had Nissen fundoplication in this period. Only 6 patients had appropriate inclusion for day-case surgery (7% of cases). All patients were seen in the outpatient department one week later, and they were discharged 8 hours after surgery as regional anesthesia, by caudal or spinal epidural, lasting for a minimum of 4 hours postoperatively. The surgical procedure in all cases was performed using both Nissen fundoplication and the light-guided device and laparoscopic muscle stimulator. The division site of fistula as well as the edge of the levator muscles, thereby enhancing accurate positioning of pull-through rectum.

Conclusion: Our innovative procedure offers good visualization of the levator muscles and fistula with a reconstruction technique that minimizes trauma to the surrounding tissues and organs.

Foregut – p024

LAPAROSCOPIC PYLOROMYOTOMY: THE STANDARD FOR HYPER- TROPIC PYLORIC STENOSIS, Naira Baregiaman, M.D., Edward Shlasko, M.D., John Conrad, M.D., Division of Pediatric Surgery, Department of Surgery, Maimonides Medical Center, Brooklyn, NY, USA 11219

Objective: In our institution, Laparoscopic Pyloromyotomy (LP) has been a standard of care for Hypertrophic Pyloric Stenosis for years, demonstrating a comparable if not uneventful alternative to conventional open approach. In light of increasing popularity of laparoscopic techniques in pediatric surgery since early 90’s, there has been a strong interest, growing experience, excellent results and shift toward minimally invasive technique as a mainstay for treating this common infantile disorder. LP is becoming a new standard that offers the advantage of being less costly with a shorter operative time, less tissue trauma, shorter hospitalization and better tissue cosmetic appearance. LP is a safe alternative that, in addition to advantages aforementioned, may also provide less post-operative pain in infants.

Methods: We present a large series of seventy-six neonates/infants (66 males, 10 females) with Hypertrophic Pyloric Stenosis (HPS) that underwent LP over a four-year period. Technique involves using 5mm umbilical port for a 30-angled scope and two upper quadrant stab wounds for a duodenal grasper, a retractable blade and a pyloric spreader.

Results: Average operation time was less than 15 minutes (12.6 min 7). There were no conversions from LP to Open Pyloromyotomy (OP). We report three complications: one mucosal tear and two cases of post-operative vomiting. The mucosal tear was repaired primarily laparoscopically. One case of post-operative vomiting resolved spontaneously and one responded to treatment with atropine. There were no other complications. Patients tolerated fluids immediately after operation. Post-operative cosmesis was excellent in both immediate and long-term follow up, with no notable scar hypertrophy. Costs were feasible with reusable equipment. Patients were discharged on post-operative days one and two.

Summary: LP is a safe, fast, cost-effective procedure with shorter hospital stay, very low complication rates and better cosmesis. It is a simple neonatal laparoscopic operation and can be mastered quickly. Although, accurate pain assessment may be limited in this patient population, nevertheless, it should not be discounted as another advantage of laparoscopic technique. Laparoscopic Pyloromyotomy should be the standard of care for treating Pyloric Stenosis.

Foregut – p025

NEW TECHNIQUE FOR REMOVING LARGE GASTRIC TRICHOBEZOARS: THE TRANSMILBILICAL APPROACH, Edward Esteves PhD, Charles D Goncalves Jr MD, Bernadina B Modesto MD, Ruy E Pereira MD, Division of Pediatric Surgery, Goias Federal University, Goiania (GO), Brazil

Introduction: The gastric bezoars can be diagnosed in several sizes. Most cases present symptoms after reaching large dimensions, when they are treated surgically, generally through laparotomy. Some small bezoars can be removed endoscopically. Two papers recently published removing gastric bezoars combining laparoscopy and a separated laparotomy to get them out in bags. The purpose of this paper is to describe a new technique for removing large gastric trichobezoars, through just one umbilical port, using the stomach as a natural bag.

Patients and Methods: Two girls and one boy aging respectively 5, 6 and 10 years old presented large gastric bezoars, the biggest one with 18x11 cm. Through a semilunar intraumbilical incision, the stomach was identified with the laparoscope in the first case but it showed to be unnecessary and was not used in the others. Then a part of the antral wall was exteriorized for a small everting gastrotomy isolating the peri-toneal cavity. The bezoar was fragmented and removed using a Kelly, Cherron or Allis forceps, by pulling out portions of hairs repeatedly. By the end of the procedure, the gastroscopy even with a laparoscope or an endoscope confirmed total withdrawn of all hairs. The gastric wound was closed with running non-absorbable suture, the umbilical incision cleaned with saline and PVPI before closure, leaving just a tiny intraumbilical scar. All children received antibiotics for 48 hours.

Results: All patients recovered uneventfully, fed by the following day with liquids and soup, and going home on the third day. One presented umbilical secretion without cellulitis, cured with topic PVPI and oral cephalaxin. After a follow-up of 9-28 months they remain asymptomatic with shortly cut hairs, without signs of recurrence, and practically no visible scars.

Conclusions: Gastric bezoars can be fragmented and removed by a minimally invasive surgery, even without video or intraperitoneal bags through an umbilicotomy, with low cost, quick recovery and excellent esthetics.
FOREGUT – P026
LAPAROSCOPIC OESOPHAGOMYOTOMY IN THE TREATMENT OF ACHALASIA IN CHILDREN, Adonis S Ioannides MD, James Morecroft MD, Richard Steward MD, Munther J Haddad MD, Department of Paediatric Surgery, Chelsea & Westminster Hospital, London
OBJECTIVES We aimed to assess the efficacy of laparoscopic oesophagomyotomy, without an adjunctive antireflux procedure, in the treatment of achalasia of the oesophagus in children.
METHODS & PROCEDURES We reviewed the experience of one surgeon (MH) from 1999 to 2003. Laparoscopic oesophagomyotomy without an antireflux procedure was performed in 12 patients, 5 girls and 7 boys. Ages ranged from 5 to 15 years and weight from 15 to 53 kg. All patients were evaluated for operative time, complications, time to resumption of soft diet, hospital stay and symptoms of achalasia at follow up.
RESULTS Median operative time was 87 minutes. The procedure was completed successfully using minimally invasive techniques in 10 patients and converted to open in one patient with oesophageal perforation and another with suspected mucosal injury. One patient had aspiration on induction of anaesthesia. The 9 patients without complications were started on clear fluids at 6 to 8 hours postoperatively and fed with in 20 to 24 hours. Hospital stay in these patients averaged 3 days. At surgical follow up (mean of 28.4 months), all patients were well and thriving and had no vomiting. Nine patients were entirely symptom free whereas 3 described mild dysphagia. All three were evaluated with an upper gastrointestinal contrast study and upper gastrointestinal endoscopy, which revealed no gastro-oesophageal reflux and no evidence of oesophageal inflammation with normal oesophageal biopsies. In one patient, an area of narrowing was identified on both contrast study and endoscopy and this was relieved by laparoscopic release of adhesions at the site of the oesophagomyotomy. Another patient was evaluated with oesophageal manometry that showed normal lower oesophageal sphincter pressure and oesophageal hypoperistalsis.
CONCLUSIONS These results support the notion that laparoscopic oesophagomyotomy should be the primary treatment of choice in children with achalasia. In our experience, an adjunctive antireflux procedure is not required as none of the children in our series showed evidence of gastro-oesophageal reflux. We believe that oesophageal dysmotility can largely account for symptoms of residual dysphagia. This is not surprising given that achalasia is a functional disorder and that the characteristic oesophageal hypoperistalsis is unlikely to improve following oesophagomyotomy. Furthermore, in the context of persistent hypoperistalsis, an antireflux procedure would be undesirable.

FOREGUT – P027
AN EX-VIVO PORCINE LAPAROSCOPIC NISSEN FUNDOPPLICATION TRAINING MODEL- A USEFUL TOOL FOR RESIDENT EDUCATION, Aaron Jensen BS, Richard Milner BS, Harsh Grewal MD, Pediatric Surgery, Temple University Children’s Medical Center & Temple University School of Medicine
Introduction: Many techniques are being utilized to teach the technically challenging skills of laparoscopic surgery outside of the operating room (OR). We recently implemented the use of an ex vivo porcine model to teach residents how to perform a laparoscopic Nissen Fundoplication. Materials and methods: Intact porcine esophagus, stomach, and spleen were placed into a video-trainer. Trainers were equipped with 10mm 0-degree telescopes and laparoscopic towers. The technique of Nissen Fundoplication was demonstrated to residents and they were subsequently allowed to perform the procedure themselves. Major educational goals stressed included both intra- and extra-corporeal knot tying as well as the use of the harmonic scalpel. Following the training session, residents were asked to complete a survey containing demographic information and a course evaluation.
Results: Training level ranged from R1 to R4. All residents agreed that the exercise was a valuable use of their limited time, and 90% of residents felt repeating the exercise would be of additional benefit. In addition, all residents reported that it will improve their ability to perform or assist in an actual case in the OR, and 90% of residents feel that the surgical principles learned using this model will transfer to modified laparoscopic cases. Significant (p<0.001, pre-training vs post-training) subjective improvements were reported in resident comfort level in performing a laparoscopic Nissen Fundoplication.
Conclusion: The use of an ex-vivo porcine training model increases resident comfort level in performing a Nissen Fundoplication in the operating room. In addition, residents reported that it was a valuable educational tool.

FOREGUT – P028
PYLOROMYOTOMY: A COMPARISON OF LAPAROSCOPIC, CIRCUM-UMBILICAL, AND RIGHT UPPER QUADRANT OPERATIVE TECHNIQUES, S Kim MD, S Lau MD, S Lee MD, R Schaller MD, P Healey MD, D Ledbetter MD, R Sawin MD. J Waldhausen MD, Children’s Hospital, Seattle
Hypertrophic pyloric stenosis (HPS) is a common problem of infants. Ramstedt pyloromyotomy via a right upper quadrant (RUQ) transverse incision has been the traditional, laparoscopic approach. Recently, laparoscopic circum-umbilical (UMB) approaches have been introduced as alternative methods to improve cosmesis, however, concerns of greater operative times, costs, and complications remain. This study compares the LAP, RUQ, and UMB approaches to the treatment of HPS and examines the advantages and complications rates for these techniques. Methods: A retrospective study of 290 patients who underwent pyloromyotomy at a children’s hospital between January 1, 1997 and June 30, 2003 was performed. Data including age, weight, operative technique, operative time, complications, time to ad lib feeding, incidence of postoperative emesis, length of postoperative stay, and charges for surgery, anesthesia, and recovery room were analyzed using ANOVA and Chi-squared analysis. Results: 290 patients underwent pyloromyotomy via the LAP (n=49), RUQ (n=190), or UMB (n=49) approaches. Patient characteristics were similar in all groups. The complication rate (LAP 4%, RUQ 10%, UMB 14%), time to ad lib feeding (LAP 26±22, RUQ 22±14, UMB 26±19 hrs), incidence of postoperative emesis (LAP 51%, RUQ 56%, UMB 59%), and postoperative length of stay (LAP 1.8±1.3, RUQ 1.6±0.9, UMB 1.8±1 days) did not differ significantly between groups. Two LAP cases were converted to RUQ approach. Mucosal perforation occurred in 3 patients each in the RUQ and UMB groups but none in the LAP group. Mean operative time was significantly less for LAP (25±9 min) compared to RUQ (32±9 min) and UMB (42±12 min) (p<0.05) groups. Mean operative time for UMB was significantly greater than RUQ (p<0.05). The charges related to surgery and anesthesia were significantly greater for UMB ($1,574±433, $731±190) compared to the other 2 groups (p<0.05), but did not differ between LAP ($1,294±311, $958±137) and RUQ ($1,237±411, $578±167) groups. Conclusions: Advantages of the LAP approach include a shorter mean operative time without higher complications or costs. Although statistical significance is not achieved, there is a trend toward a lower complication rate for the LAP group compared to the RUQ and UMB groups. The UMB approach is associated with the longest mean operative time and higher costs. LAP pyloromyotomy is a safe, effective, and cosmetically superior approach to the treatment of HPS.

FOREGUT – P029
LAPAROSCOPY-ASSISTED GASTROPEXY FOR GASTRIC VOLVULUS IN A CHILD WITH SITUS INVERSUS, ASPLENIA AND MAJOR CARDIAC ANOMALY, Hiroiuky Koga MD, Aitsukeyu Ymataka MD, Toshihiro Yanai MD, Hiroyuki Kobayashi MD, Geoffrey J Lane MD, Takeshi Miyano MD, Department of Pediatric General and Urogenital Surgery, Juntendo University School of Medicine
Aim To report a laparoscopy-assisted gastroxy in a child with situs inversus, asplenia and major cardiac anomaly.
Case A 15-month old boy with asplenia syndrome was admitted for treatment of intermittent gastric volvulus. He presented with a sudden onset of epigastric pain, severe vomiting of several hours duration and associated nausea and vomiting. Upper gastrointestinal contrast study showed non-rotation of the intestine and a stomach in the right upper quadrant, suggesting situs inversus. CT scan showed hepatic symmetry. To prevent recurrent gastric volvulus, anterior gastroxy was undertaken laparoscopically. His weight at operation was 8.1 kg. At surgery a periumbilical 5mm trocar was inserted and pneumoperitoneum was created using carbon dioxide insufflation. His weight at operation was 8.1 kg. At surgery a periumbilical 5mm trocar was inserted and pneumoperitoneum was created using carbon dioxide insufflation. The stomach was held in the umbilical area and the anterior stomach was anchored firmly to the right upper quadrant abdominal wall. The technique of anterior gastropexy was undertaken laparoscopically. The stomach was effaced and its position in the right upper quadrant was confirmed by laparoscopic examination. The stomach was everted and anterior gastropexy was performed laparoscopically. The anterior stomach was anchored firmly to the right upper quadrant abdominal wall. The patient was allowed oral fluids one day after surgery, and an unrestricted diet on day 2. The sutures over the bolsters were removed at the outpatient clinic visit 4 weeks after surgery. He has since undergone Fontan procedure for his cardiac anomaly. He is now aged 4-years, and doing well with no recurrence of gastrointestinal symptoms.
Conclusion This is the first report indicating that laparoscopy can be safely applied to gastroxy in a child with gastric volvulus, situs inversus, major cardiac anomaly and asplenia.
Foregut – p030
THE LEARNING CURVE ASSOCIATED WITH LAPAROSCOPIC PYLOROMYOTOMY, Stephen S Kim MD, Stanley Lau MD, Steven Lee MD, John H Waldhausen MD, Stanford University Medical Center, Children’s Hospital and University of Washington Medical Center
Purpose: Laparoscopic pyloromyotomy (LAP) has gained popularity in recent years. This study examines the learning curve associated with LAP. Methods: Retrospective analysis was performed for patients who underwent LAP at a children’s hospital between January 1, 1997 and June 30, 2003. Information including age, weight, complications, operative time, time to ad lib feeding, and length of postoperative stay were analyzed using the Student’s t-test. Results: 51 patients underwent LAP during the study period. Patient characteristics were similar throughout the study period. Operative time ranged from 12 to 55 minutes, with a mean of 25 minutes for all patients. Mean operative time decreased significantly from 31±11 minutes for the first 15 patients, to 25±6 minutes for the second 15, to 20±7 minutes for the last 15 patients (p<0.05). Operative times were erratic for the early cases but became more consistent over time, especially after about 30 cases. Conversion to an open procedure occurred in the 19th and 36th patients. Complications included an umbilical port site wound dehiscence (patient #6) and readmission for persistent vomiting (patient #33). There were no mucosal perforations. Time to ad lib feeding and postoperative length of stay did not differ significantly. Conclusions: LAP has a steep learning curve especially in the first 15 patients after which operative times decrease, becoming more consistent after about 30 cases. Despite the learning curve, LAP can be performed safely and effectively without increase in complications.

Foregut – p031
LAPAROSCOPIC ONE-STITCH GASTRIC BYPASS IN TEENAGERS, Atul K Madan MD, Thom E Lobe MD, University of Tennessee Health Science Center, Memphis
Introduction: Morbid obesity is growing as an epidemic, especially in our teenage patient population. While bariatric surgery has been shown to be the only effective method of the treatment in morbidly obese adult patients for well over a decade, the laparoscopic approach to bariatric surgery has been a relatively newer option. This study hypothesizes that laparoscopic gastric bypass in teenagers is a feasible procedure with good short-term results in a predominantly adult bariatric program.
Methods: All patients who were under the age of 20 and underwent a laparoscopic one-stitch gastric bypass from 12/2002 to 12/2003 were included in the study. Records were reviewed for data including preoperative evaluations, operative time, complications, and hospital stay.
Results: Out of 202 patients, 4 (2%) were under the age of 20 (17-19). The average height was 68 inches (60-75), weight was 321.6 lbs (227-394), and the average BMI was 48 (43-65). All patients underwent negative preoperative cardiac, pulmonary, and psychological evaluations. In addition, preoperative upper endoscopies demonstrated a significant hiatal hernia in 100% of the patients. While the mean operative time was 150 minutes (130-172 minutes), all patients also had a hiatal hernia repair, liver biopsy, and umbilical hernia repair. One patient had an intraoperative endoscopy to inspect the anastomosis. There were no conversions or deaths in this small subset of patients. All patients had negative upper radiological studies on postoperative day 1 and discharged on postoperative day 2.
Conclusions: Laparoscopic gastric bypass is uncommon in teenagers. In the short-term, this laparoscopic approach is a technically feasible option with excellent results comparable to adults. Laparoscopic bariatric surgery in teenagers can be performed safely in an adult bariatric program.

Foregut – p032
RARE ASSOCIATION OF ACHALASIA WITH BENIGN OESOPHAGEAL STENOSIS SUCCESSFULLY TREATED WITH LAPAROSCOPIC HELLER’S CARDIOMYOTOMY AND WATSON’S FUNDOPULATION, Aneeq Mahomed, Dhayang Aziz MD, Department of Paediatric Surgery, Royal Alexandra Hospital For Sick Children, Brighton, BN1 3NJ, UK
Objective: Achalasia is an uncommon paediatric disease. An association with a bariatric heller? MD, John H Waldhausen MD, Stanford University Medical Center, Children’s Hospital and University of Washington Medical Center
Purpose: Laparoscopic pyloromyotomy (LAP) has gained popularity in recent years. This study examines the learning curve associated with LAP. Methods: Retrospective analysis was performed for patients who underwent LAP at a children’s hospital between January 1, 1997 and June 30, 2003. Information including age, weight, complications, operative time, time to ad lib feeding, and length of postoperative stay were analyzed using the Student’s t-test. Results: 51 patients underwent LAP during the study period. Patient characteristics were similar throughout the study period. Operative time ranged from 12 to 55 minutes, with a mean of 25 minutes for all patients. Mean operative time decreased significantly from 31±11 minutes for the first 15 patients, to 25±6 minutes for the second 15, to 20±7 minutes for the last 15 patients (p<0.05). Operative times were erratic for the early cases but became more consistent over time, especially after about 30 cases. Conversion to an open procedure occurred in the 19th and 36th patients. Complications included an umbilical port site wound dehiscence (patient #6) and readmission for persistent vomiting (patient #33). There were no mucosal perforations. Time to ad lib feeding and postoperative length of stay did not differ significantly. Conclusions: LAP has a steep learning curve especially in the first 15 patients after which operative times decrease, becoming more consistent after about 30 cases. Despite the learning curve, LAP can be performed safely and effectively without increase in complications.

INTRODUCTION: Long-term feeding access in children with foregut dysfunction has traditionally been achieved by gastrostomy tube placement with or without fundoplication. Alternatives, after failed procedures, have included re-do fundoplication, trans-pyloric gastrojejunostomy tube placement, jejunostomy tube placement, jejunal feeding jejunostomy (open or laparoscopic), and open roux-en-Y jejunostomy. We describe a new technique, laparoscopic roux-en-Y feeding jejunostomy (LRFJ), which offers a minimally-invasive option in providing long-term enteral access to these children.
METHODS: Five children, ages 10 months to 9 years (mean 3.4 years), weighing 8.8-15.2 kilograms (mean 12.3 kg), underwent LRFJ. Four had mental retardation/cerebral palsy. In three children, LRFJ was the only intra-abdominal procedure performed. One child had LRFJ done in conjunction with laparoscopic repair of a paraesophageal hernia, takedown of a previous Nissen fundoplication, and creation of a Thai fundoplication. One child underwent concurrent laparoscopic cholecystectomy and pyloromyotomy. In operations in which LRFJ was the sole procedure, three ports were used. The jejunum, 10 cm distal to the ligament of Treitz, was transected with an endoscopic stapler. The proximal jejunum was then approximated, end-to-side, using a stay suture, to the distal jejunum 5-6 cm distal to the transection. The stay suture was subsequently pulled out through the umbilicus, allowing for extracorporeal creation of a hand-sewn, single-layer, end-to-side jejunostomy jejunostomy. The Roux limb was secured to the undersurface of the abdominal wall at the left lower quadrant trocar site, the trocar was removed, and a feeding tube was then placed, using a series of dilators and a laparoscopic gastrostomy kit (Cook).
RESULTS: No technical complications related to the procedure were observed. Mean operative time was 98 minutes in the children in which LRFJ was the only procedure examined. Enteral feeds were typically started by POD #5. One child died on POD #3 due to unrelated cause. Follow-up has ranged from 12 to 30 months (mean 23). All four survivors remain on full jejunal feedings and are doing well. One child developed sternal stenosis requiring dilation.
CONCLUSIONS: LRFJ can be performed safely in children with gastric dysfunction, may be performed in conjunction with a variety of other laparoscopic procedures, and offers a new option for nutritional access in this challenging pediatric population.
Foregut – p034

**PRESENTATION OF AN ABERRANT LEFT HEPATIC ARTERY DURING LAPAROSCOPIC NISSEN FUNDOPLICATION**, Richard J Hendrickson MD, John K Petty MD, Jennifer L Brundy MD, Dennis D Bensard MD, David A Partick MD, Frederick M Karrer MD, Department of Pediatric Surgery, The Children’s Hospital/University of Colorado, Denver, CO

**INTRODUCTION:** During laparoscopic Nissen fundoplication in children, an aberrant left hepatic artery (ALHA) makes dissection around the esophageal hiatus more difficult. Although some recommend dividing the ALHA, this may be associated with significant hepatic ischemia. We have routinely preserved the ALHA during laparoscopic Nissen fundoplication and therefore sought to determine 1) the incidence of ALHA and 2) the results following preservation of the ALHA.

**METHODS:** Over a two year study period, 195 laparoscopic Nissen fundoplications were performed. We documented intraoperative findings of each procedure and reviewed postoperative radiographic studies and clinic visits.

**RESULTS:** An ALHA was identified intraoperatively in 30 of 195 patients (30%). None of these cases required transaction of the artery for safe hiatal dissection. All dissections were performed laparoscopically with the Nissen fundoplication positioned cephalad to the ALHA. There were no injuries to the ALHA. Postoperatively, two patients (6%) had evidence of wrap failure. One patient had an intact wrap with minor herniation of the stomach through the wrap, but no gastrosophageal reflux. The other patient had large volume reflux with a hiatal hernia requiring revision. The remaining patients have had normal radiographic studies or no clinical evidence of reflux on follow-up visits.

**CONCLUSIONS:** An ALHA may be encountered in approximately 15% of neonates and children undergoing laparoscopic Nissen fundoplication. Safe dissection around the esophageal hiatus can be accomplished without transecting the ALHA, thus avoiding the risk of hepatic ischemic injury.

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**Foregut – p035**

**LAPAROSCOPIC ASSISTED REMOVAL OF A LARGE GASTRIC TRICOBEZOAR,** Daniel K Robie MD, Hideko Yamauchi MD, Kapilali Medical Center for Women and Children, Honolulu, HI

A 5 year old girl known to eat her own hair was referred for removal of a 9cm gastric trichobezoar. Despite reporting no hair consumption for a year the bezoar filled over 50% of the stomach. There was no radiographic evidence of gastric outlet obstruction.

The parents voiced concern for the size of the cutaneous incision necessary to remove the mass. The goals of surgery were to place the incision in the least visible location and to avoid any contamination of the peritoneal cavity.

Three 5mm ports were placed. One port was placed at the umbilicus, one just to the right of the midline supraumbilical and one to the left of midline at the level of the umbilicus. A 15mm port was placed in the suprapubic area to the left of midline. The antrum was opened transversely and a 15mm endopouch placed directly into the stomach. The bezoar was very firm and not amenable to removing in pieces. The bezoar was dropped into the open bag. The pouch string was tightened securing the bezoar within the bag. The bag was then pulled out of the stomach and down to the suprapubic port site. The site was widened along the lines of a Pfannenstiel like incision and removed. The gastrotomy was closed in two layers. Her postoperative course was uneventful and she was discharged on POD#3. The specimen measured 8.5 X 8.2 X 4.5cm.

The minimally invasive technique offered the advantage of placing the incision in a more cosmetically advantageous location. Furthermore, we feel this approach reduced the risk of contamination that would be expected with a standard open approach.

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**Genito-Urinary – p036**

**THE INTRA-ABDOMINAL TESTICLE: A RATIONAL APPROACH TO MANAGEMENT,** Jorge DeMaria MD, Haralambos Liaconis MD, McMaster Children’s Hospital. McMaster University, Hamilton, Ontario, Canada

**BACKGROUND:** The intra-abdominal testes in boys are generally managed by the Fowler-Stephens orchiopexy with division of the spermatic vessels under local anesthesia as a single stage procedure. The division of the spermatic vessels was first advocated by Bevan in 1903. The technique was popularized by Fowler-Stephens in 1959 emphasizing preserving the vasal vascular associated with a looping vas deferens, however, other authors have also identified cases in which the intra-abdominal testis is also supplied by collaterals arising from the epigastric vessels and a myriad of branches emanating from the posterior wall of the processus vaginalis from the area of the gubernaculum. This vascular network creates a rich collateral circulation which in addition to the vasal vasculature provides an excellent blood supply to the testis. We reviewed our patients who underwent a single stage Fowler-Stephens orchiopexy with special interest to preserve the cremasteric vessels.

**METHODS:** A retrospective review of 123 patients (131 testis), who underwent diagnostic laparoscopy for non-palpable testicles from 1993 to 2001 was undertaken. 26 (19.8%) of the presenting testis were atrophic or absent. 72 (55.1%) were near or at the internal ring and were managed with routine inguinal orchiopexies. The remaining 33 testes were managed with the Fowler-Stephens orchiopexy, 29 with a single stage procedure with preservation of the cremasteric vessels and 4 testicles in a two stage method.

**RESULTS:** Of the 29 testes managed with a single stage Fowler-Stephens orchiopexy, only 2 became atrophic and the rest remained of normal size compared with the opposite testicle with follow up ranging from 6 months to 8 years. Only 1 testicle required a repeat orchiopexy to place it in the scrotum. The overall survival rate for a single stage Fowler-Stephens with the cremasteric vessels preserved in our series is 27 of 29 (93.1%). In 14 cases the testicles were passed into the scrotum through the internal ring and in 10 with a modified Prentiss maneuver, preserving the epigastric vessels. In 5 cases no information was available.

**CONCLUSIONS:** Our data suggests that preservation of the cremasteric vessels may improve the survival rate of intra-abdominal testis managed with a single stage Fowler-Stephens orchiopexy. In cases where the cremasteric vessels are poorly developed a two stage method is recommended. A modified Prentiss maneuver may help place the testicle in the scrotum with no tension.

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**Genito-Urinary – p037**

**LAPAROSCOPIC PERCUTANEOUS HERNIORRAPHY WITH NEEDLE (LAPHEN),** Edward Esteves PhD, Ruy E Pereira,Miguel Ottaiano,Bernardina B Modesto, Division of Pediatric Surgery, Goias Federal University, Goiania (GO), Brazil

**Introduction:** The operations for pediatric inguinal hernia or hydrocele are usually performed using a small inguinotomy, quick and esthetically nice in most cases, to achieve high ligation of the hernial sac (HS). These inguinitomies are not free of complications, there is always the controversy regarding contralateral exploration and many surgeons perform large incisions, mainly in obese children. Using a fine laparoscope, the herniorraphies can be accomplished fast and safely with the least invasive technique, percutaneously with a needle. The purpose of this paper is to present our experience with many techniques for laparoscopic percutaneous herniorrhaphy with needle (LAPHEN).

**Patients and Methods:** 85 children (58 girls, 27 boys), aging 2 months – 9 years old, were submitted to 142 LAPHEN using a fine laparoscope (1.5-3.5 mm). Inhalatory anesthesia with spontaneously or controlled ventilation. The ligation of the HS was performed with poliglactin or nylon sutures passed through a modified peridural needle, which was introduced laterally at the groin. Seeing with the scope, the needle was passed around the internal inguinal ring extraperitoneally the suface was driven into and off the cavity through the same needle in the same entrance with the help of a 1-mm forceps, with many options for using it. The stitch was cut under the skin level. Thirty children were operated on for other concomitant diseases. Special indications for LAPHEN were children with both umbilical and inguinal hernias/hydroceles. All patients are being followed prospectively to evaluate eventual recurrences.

**Results:** Operative time: 9-20 minutes (only LAPHEN). Asymptomatic contralateral peritoneal-vaginal conduits were present in 20/39 unilateral cases (51.2%). The operations were outpatient procedures, except for infants who were kept in-hospital for 24h. Complications of LAPHEN: inferior epigastric vein perforation (1), subcutaneous empyema (2), umbilical infection (1). Recurrences: one girl bilateral (0.7%). Almost no use of analgesics.

**Conclusions:** Inguinal hernias or hydroceles can be treated by LAPHEN with adequate orientation of the stitches, presenting special advantages for girls, unilateral cases, children with higher amount of pubic or inguinal fat, association of umbilical or epigastric hernias. LAPHEN allows functional outcome similar to classic inguinotomies, facilitating the eventual diagnosis of contralateral hernias with excellent esthetics and low cost.
RETPERITONEAL ASSISTED LAPAROSCOPIC PYELOPLASTY (RALP) IN CHILDREN: MID-TERM FOLLOW-UP

Wald A Farhat MD, Kourosh Afshar MD, F Papanikolau MD, R Austin RN, A Khoury MD, D Bagli MD, The Hospital for Sick Children, Toronto

**[PURPOSE]**
We previously demonstrated a novel application of laparoscopy to assist (RALP) in the correction of UPJO in children (AUA 2003). Herein, we provide mid-term follow-up on the patients operated with this technique.

**[MATERIAL AND METHODS]**
Between July 2002 and March 2003, 11 patients (M: F, 9:2) with UPJO underwent pyeloplasty using RALP. After the retroperitoneal space is created, the UPJ is dissected from the surrounding tissue with 10mm 0-degree telescope, and 2 X 5-mm instruments. Using 5-0 Prolene stay suture, the UPJ is brought through the 10-mm trocar site to the skin level and the pyeloplasty is performed with loop magnification over a JJ stent. Operative time, hospital stay, pain management and follow up radiological studies were reviewed.

**[RESULTS]**
In 9 patients, RALP (bilateral in 1 patient) (Lt.: 9, and Rt.: 1) was performed, in the remaining 2 mobilization of the UPJ was inadequate and open conversion was performed. Average pyeloplasty (RALP) operative time was 160 minutes (121-193). Postoperative pain management was optimal using PO codeine in 10 patients. One patient received parenteral analgesic postoperatively. Average length of stay in the hospital was 2 days (1-3d).

Follow up (5-14 months) radiological studies after JJ stent removal showed improvement in the hydronephrosis in all except 1. The lasix renal scan at 3-6 months postoperatively was done on all patients and showed no obstruction.

**[CONCLUSIONS]**
RALP may be the technique of choice for surgeons who want to evolve their reconstructive laparoscopic skills, or as an additional surgical option when skilled laparoscopists are faced with technically difficult pyeloplasties.

THE DEVELOPMENT OF LAPAROSCOPIC SURGICAL SKILLS IN CHILDREN: 2-YEAR OUTCOME OF A MENTORSHIP-TRAINING MODEL

Anthony Cook MD, Wald A Farhat MD, Alia’a El-Ghoneimi MD, Antoine E Khoury MD, The Hospital for Sick Children

**[PURPOSE]**
We previously reported the successful attainment of laparoscopic skills in a group of pediatric urologists without previous laparoscopic training. During the mentorship period, a number of renal retroperitoneal laparoscopic procedures (RRLP) were performed under the tutelage of an expert mentor (AE). Trainee A performed or assisted in 8 RRLP while trainees B, C, and D performed/assisted in 10, 7, or 18 RRLP, respectively. We therefore assessed the outcome of this training program.

**[MATERIAL AND METHODS]**
Following the mentorship period, we reviewed the outcomes of all consecutive RRLP from September 2001 to September 2003 with respect to operative time, conversion rate, perioperative complications and length of hospital stay (LOS).

**[RESULTS]**
Thirty-two ablative RRLP were performed on 32 patients with a mean age of 5.4 years (4 months-14 years). Trainees A, B, C, and D performed 14/32, 1/32, 1/32, and 16/32 procedures, respectively. Mean operative time was 2.5 hours (1.5-6.3 hours). Five patients required open conversion due to inability to obtain retroperitoneal access (n=3) or failure to progress (n=2). Two patients developed retroperitoneal urinomas requiring temporary urinary diversion. There were no other perioperative complications and mean LOS was 1.1 days (1-4 days).

**[CONCLUSIONS]**
This series demonstrates the effectiveness of the mentorship-training model to introduce RRLP to a pediatric urology training program. The development of laparoscopic skills is dependent not only on initial training experience, but continued education through ongoing case exposure.

RETROPERITONEOSCOPICALLY ASSISTED REPAIR OF A GIANT ABDOMINOSCROTAL HYDROCELE

Maya Horst MD, Rita Gobet MD, Ulrich Will MD, University Children’s Hospital

This case report shows our experience with the first retroperitoneoscopic approach in the therapy of a giant abdominoscrotal hydrocele and the difficulties encountered with this diagnosis in a patient with concomitant urinoma tract malfunction.
A 2 month old boy with a prenatally diagnosed hydrenephrosis on the left hand side was examined at our clinic. Physical examination showed a left sided scrotal hydrocele and was otherwise normal. Renal ultrasound confirmed moderate hydroureteronephrosis on the left and revealed a significant retroperitoneal fluid collection at the lower pole of the left kidney. MAG-3 scintigraphy and MRI were consistent with a primary obstructive megaureter (POM) with good renal function and suggested a fornix rupture with urinoma. The boy underwent operative correction of the POM and percutaneous drainage of the urinoma. 3 months postoperatively recurrence of the retroperitoneal fluid collection occurred despite good drainage of the ureter. The scrotal hydrocele also recurred. By contrast medium injection into the scrotal hydrocele the diagnosis of a abdominoscrotal hydrocele was confirmed radiographically.

Hydrocelectomy was performed by a combined approach: Retroperitoneoscopic mobilization of the hydrocele sac and completion of the excision by an inguinal incision. 3, 6 and 12 months US follow-up showed a normal retroperitoneum and a normal testis on the left hand side.

Urinoma after obstruction in the urinary tract was wrongly diagnosed in a boy with a giant abdominoscrotal hydrocele. Retroperitoneoscopically assisted resection was performed safely and successfully.

MINIMALLY INVASIVE APPROACH TO THE NONPALPABLE TESTIS IN THE CHILD

Harsh Grewal MD, Leo Dourmanian MD, Andrew Huang MD, Gregory Dean MD, Section of Pediatric Surgery and Pediatric Urology, Temple University Children’s Medical Center, Philadelphia and Department of Surgery, KY School of Medicine-Wichita

**[INTRODUCTION]**
The evaluation and management of the nonpalpable testis has not been standardized, nor has the optimal approach been defined. We have utilized a minimally invasive approach for the evaluation and management of this problem, and report our experience over the last five years.

**[METHODS]**
We reviewed the records of children undergoing laparoscopy for nonpalpable testis during a 5 1/2-year period (1998 to 2003). Children with nonpalpable testes (after induction of general anesthesia) underwent diagnostic laparoscopy. Intra-abdominal testes (that were not atrophic) underwent laparoscopic orchidectomy; testis distal to the internal ring underwent an inguinal orchidectomy. Atrophic testes were removed either laparoscopically or with a groin or scrotal incision. Size and position of the testicle was noted at follow-up.

**[RESULTS]**
Laparoscopy was performed as an ambulatory surgical procedure in 59 children, 2 children were excluded (mixed gonadal dysgenesis-1, androgen insensitivity-1). In the remaining 57 children, 64 testes were evaluated by laparoscopy (L-35, R-29, B/L-7). At laparoscopy, 39 testes were noted to be intra-abdominal (2 atrophic), and 25 testes were found distal to the internal ring (21 of these testes were atrophic). 41 testes (35-normal size, 6-hypotrophic?) underwent orchidectomy (37-intra-abdominal testes, 4-distal to the internal ring). Mean age was 38.8 months (range: 7-144). Laparoscopic orchidectomy was performed in 34 of 41 testes (2 of whom underwent a single stage Fowler-Stephens orchidectomy). In 7 testes, inguinal orchidectomy was performed. For the 23 atrophic testes- laparoscopic orchidectomy was performed in 2 intra-abdominal testes, and open orchidectomy in the remaining 21 testes. The internal ring was closed laparoscopically in selected patients. One patient (with intra-abdominal testes) had conversion to an open procedure because of poor visualization. Follow-up was available in all patients; mean follow-up was 48 months (1 to 32 months). At follow-up, the testicle was hypotrophic in 8 and the testis was in the scrotum in 39 (95%) - (excellent position-30, good position-9) Re-operation for poor testicular position was successful in two.

**[CONCLUSION]**
Our experience suggests that minimally invasive management of the nonpalpable testis is safe and effective. In our experience laparoscopic orchidectomy for intra-abdominal testes appears to have good results and has become our preferred procedure.
**Genito-Urinary – p042**

**LAPAROSCOPIC INVERSION HERNIOTOMY**, Andrew R Hong MD, Marc A Levitt MD,Auraham Belizon MD,Robert L Gates MD, Schneider Children’s Hospital, North Shore - Long Island Jewish Health System

**Introduction:** The purpose of this study is to report our initial experience with a new technique of laparoscopic inguinal hernia repair that utilizes inversion of the hernia sac into the abdominal cavity, and subsequent intracorporeal ligation and resection of the sac.

**Methods and procedures:** A single trans-umbilical trocar was placed and 2 additional incisions were made in the lateral aspects of the abdomen for direct placement of 2.5 mm laparoscopic instruments. Atraumatic bowel graspers were used to grasp the distal extent of the hernia sac and invert it into the abdominal cavity. The sac was then doubly ligated with 0 PDSII endoloops-E (Ethicon Inc, Somerville, New Jersey) and resected. Contralateral repair was performed if indicated. Only the umbilicus was sutured closed.

**Results:** The procedure has been performed in thirteen females, (7 bilateral and 6 unilateral) and one male who had an intraabdominal testicle and ipsilateral hernia. Three patients had concomitant umbilical hernias that were repaired as well. The procedure is easily learned, and allows evaluation of the asymptomatic contralateral side. Follow up ranged from one to seven months. There has been one recurrence, in the first patient, in whom the sac was not resected. Excellent cosmetic results were achieved in all patients.

**Conclusion:** Laparoscopic inversion herniotomy is a feasible alternative for repair of female pediatric indirect inguinal hernias. It may also be applicable in selected male patients, such as those with hernias associated with intra-abdominal testes. Resection of the sac appears to be important in preventing early recurrence.

**Genito-Urinary – p043**

**INITIAL EXPERIENCE WITH RETROPERITONEOSCOPIC DISMEMBERED PYELOPLASTY**, Venkata R Jayanthi MD, Marjorie J Arca MD, Columbus Children’s Hospital

**INTRODUCTION:** We wish to present our initial experience with dismembered retroperitoneoscopic pyeloplasty.

**MATERIALS AND PROCEDURES:** We retrospectively reviewed all patients who underwent pyeloplasty at our institution via a retroperitoneoscopic approach. The series consists of 19 patients (13 boys and 6 girls) with a mean age of 9.2 years (range 2 ? 20). A one cm incision above the iliac crest permitted retroperitoneal access. Working space was then created by distension of a balloon dilator. A 10 mm port was then placed through this incision, pneumoretropertoneum was established and 2 ? 3 five mm ports were placed under direct vision. Analogous to an open procedure, the ureteropelvic junction was mobilized, the stenotic segment excised and the ureter spatulated. Accessory vessels, when present, were transposed posterior to the renal pelvis. Anastamoses were performed in either a running or interrupted fashion using 5-0 absorbable sutures. All patients had double-J stents placed either preoperatively or percutaneously. A pediatric urologist with little experience in laparoscopic surgery performed the dissection and preparation for the anastomosis. Initially, a very experienced laparoscopic pediatric surgeon performed the anastomosis. Towards the end of the series, however, the pediatric urologist performed the entire procedure.

**RESULTS:** There were no conversions to open repair and the mean operative time was 316 minutes (240 ? 385 range). Five patients (26%) had accessory vessels identified. Four patients (21%), all of whom had running anastomoses, had symptoms of recurrent obstruction and were managed by balloon dilatation. After changing to interrupted suturing, no further cases of recurrent obstruction have occurred. No patient has required reoperative pyeloplasty.

**CONCLUSIONS:** Pyeloplasty is a technically challenging procedure to perform endoscopically. However, with appropriate mentoring, retroperitoneoscopic dismembered pyeloplasty can be successfully performed even by those with little prior laparoscopic experience.

**Genito-Urinary – p044**

**EXTRAVERSCIAL (LICH-GREGOIR) REIMPLANT EARLY EXPERIENCE WITH NO ROBOTIC ASSISTANCE.** Edgar Morales-Juvera PhD, Jose A Ramirez PhD,Ricardo Villalpando PhD, Urology Department, Hospital Of Pediatrics National Medical Center, IMSS

**INTRODUCTION:** The minimal invasive approach have been described previously for the refluxing ureter, the procedure becomes easier with the use of robotic surgery but, not all the hospital can afford the cost of any of the know models, That’s why we want to show our experience with a ?hand made? reimplant.

**Methods:** We review the first 3 patients that were reimplanted with this technique.

**Results:** The age of the patients was 4, 6 and 7 y.o., 2 girls and 1 boy, one right, one left, and a bilateral case (boy), the surgical time was 120 minutes in the first case, 100 in the seconds and 90 minutes per side in the boy, all the cases were operated with one 10mm port for a 30 degrees optic, and 2 working ports, all cases by transperitoneal approach. The lich-gregoir was performed as in the open technique, leaving the mucosa intact, and suturing the muscle with a 3/0 vicryl. The patients stay overnight and discharged the next morning with a Foley catheter for 6 days, with antibiotic prophylaxis. The patients are infection free since the operation, no voiding problems or other symptoms.

**Conclusion:** The procedure it is challenging with out a robotic assistance, because of the forced angle for the suturing, and the patience for not making a hole in the mucosa, the results appear to be equal to the open technique, in some cases could be of help a 3rd working port.

**Genito-Urinary – p045**

**LAPAROSCOPIC GONADECTOMY/GONADAL BIOPSY FOR DISORDERS OF SEXUAL DIFFERENTIATION,** Joseph Ortenberg MD, LSUHSC / Children’s Hospital, New Orleans, Louisiana

**Background:** Improvements in technology have broadened the applications of laparoscopy for children and adolescents with intersex states, allowing gonadal biopsy or gonadectomy as warranted. The optimal timing of gonadectomy in such cases remains controversial, but it is generally accepted that laparoscopy offers significant advantages over standard, open surgical techniques.

**Methods:** Five patients, ranging in age from 3-18 years with a female sex of rearing were evaluated for disorders of sexual differentiation - Androgen Insensitivity Syndrome or Turner’s Syndrome with 45X/46XY mosaicism, or Isolated Clitoromegaly, with elevated serum androgen levels, as suggested by preoperative hormonal and karyotype testing. Two patients with sex chromosomal mosaicism were candidates for preопер для транспортной услуги, and laparoscopic gonadectomy was associated with the potential risk of gonadoblastoma.

**Results:** Laparoscopic gonadectomy was accomplished in four patients using clips, ligatures or harmonic scalpel. Previous bilateral inguinal surgery and peritoneal adhesions were factors increasing the difficulty of the procedure, but no surgical complications occurred. Laparoscopic gonadal biopsy in one girl provided ample tissue for pathologic analysis which confirmed the presence of normal ovaries, allowing clitoroplasty under the same anaesthesia. The postoperative recovery from laparoscopic gonadal surgery was rapid, with minimal analgesic intake and early ambulation. Pathologic analysis of the extirpated gonads confirmed complete removal, with absence of malignancy. Laparoscopic gonadectomy did not affect subsequent laparoscopic assisted vaginoplasty.

**Conclusions:** Laparoscopy is a useful diagnostic adjunct for disorders of sexual differentiation, and laparoscopic gonadectomy is associated with reduced morbidity, compared to open surgery, during early childhood as well as during adolescence. The harmonic scalpel is preferred for gonadectomy, which can be performed with other procedures such as clitoroplasty. The cosmetically pleasing incisions for laparoscopic gonadectomy may also be gratifying to these teenage girls who must deal with difficult issues related to their self image and the presence of a disorder of sexual differentiation.
Genito-Urinary – p046

LAPAROSCOPIC EXCISION OF THE PROSTATIC UTRICLE, Joseph Ortenberg MD, Richard Vanlangendonck MD, LSUSHC / Children’s Hospital, New Orleans, Louisiana

Background: Prostatic utricles may be identified in 50% of proximal hypospadias. When surgical intervention is necessary, open excision is technically challenging. Significant morbidity is associated with the transvesical, perineal, or posterior sagittal approach. A previous report of laparoscopic resection of prostatic utricles involved intracorporeal suturing of the stump, which is more technically challenging.

Methods: A five-year-old boy with penoscrotal hypospadias and a grade three prostatic utricle experienced recurrent epididymitis. Four laparoscopic ports and the harmonic scalpel were utilized to dissect the utricle from the posterior bladder wall, aided by a transurethral catheter with the balloon inflated in the utricle to facilitate dissection. After complete laparoscopic mobilization of the utricle to its junction with the urethra, the utricle was passed through a small perineal incision and resected. Primary closure of the urethra was performed with a two layer watertight repair.

Results: There were no intraoperative complications and minimal pain medication was required, with discharge within 24 hours. A postoperative voiding cystourethrogram revealed no evidence of stricture or significant residual utricle.

Conclusions: Open excision of prostatic utricles had been the operative standard for symptomatic cases. Laparoscopic resection offers optimal visualization for dissection and simplifies the treatment of this uncommon anomaly. Extracorporeal repair of the defect at the urethrocutaneous junction minimizes the risk of inadvertent injury and facilitates repair of the urethrotomy.

Genito-Urinary – p047

LAPAROSCOPIC BLADDER NECK SLING SURGERY IN CHILDREN WITH NEUROPATHIC SPHINCTERIC INCOMPETENCE, D Y Sihoe MD, C K Yeung MD, Division of Paediatric Surgery and Paediatric Urology, Department of Surgery, Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong, China

Aim: We herein describe a technique of laparoscopic bladder neck sling procedure in children with neuropathic bladder dysfunction and sphincteric incompetence causing urinary incontinence.

Patients and methods: Two girls, seven and eleven years of age, suffering from neuropathic bladder dysfunction and sphincteric incompetence resulting in significant urinary incontinence underwent a laparoscopic bladder neck sling operation. The patient was placed in a supine position with legs separated. A 5mm camera port was inserted in the infraumbilical position and two further 5mm working ports were sited at the left and right lower quadrants. Pneumoperitoneum was achieved with carbon dioxide insufflation. The bladder was mobilized laparoscopically off the abdominal wall and the vagina down to the bladder neck. A synthetic (SIS) sling was passed around the bladder neck for 360 degrees, tightened and secured in place with Vicryl sutures. The ends of the sling were then stapled to both sides of the pubic bone with endoscopic staples. One patient also received a laparoscopic-assisted Mitrofanoff appendicovesicostomy and MACE appendicostomy procedure at the same setting using the same working ports. The other patient also underwent a laparoscopically assisted augmentation enterocystoplasty.

Results: Laparoscopic bladder neck sling procedures was successfully performed in both patients. Both patients recovered uneventfully from the procedure. At a mean follow-up of 10 months both patients are well and dry on clean intermittent catheterization via their Mitrofanoff appendicovesicostomy.

Conclusions: Bladder neck sling operation using a synthetic SIS sling can be performed effectively and with ease using a laparoscopic, extravesical approach. This approach has the advantage of excellent exposure deep down in the pelvis with a clear and magnified view of the bladder neck, enabling careful and meticulous dissection around the bladder base. This eliminates the risk of complications associated with transvaginal and suprapubic approaches where dissection around the bladder neck is performed without proper exposure and clear surgical vision. Further experience and follow-up will be needed to evaluate the long-term results.
IPEG 2004 POSTER ABSTRACTS

Genito-Urinary – p050

LAPAROSCOPIC RESECTION OF BILATERAL GONADOBLASTOMA IN A 6-YEAR OLD WITH FRASIER SYNDROME, Cornelia van Tuil MD, Amulya K Saxena MD, Anne Schulze-Everding MD, Gunter H Willital MD, Department of Pediatric & Neonatal Surgery, Westfalische Wilhelms Universität, Munster, Germany

We report the first case of a 6-year old diagnosed with Frasier Syndrome who underwent laparoscopic resection of bilateral gonadoblastoma at our University Hospital. The child was first presented at the age of 5-years with a global unselective proteinuria, detected accidentally during a routine examination. Although the serum protein levels were low and the child presented with hypertension, there was no manifestation of edema and the renal function tests were normal. A renal biopsy leads to the diagnosis of segmental glomerulosclerosis. The proteinuria was refractive to steroid, cyclophosphamide, cyclosporine A and enapril treatment. Finally at the age of 7-years, continuing diagnostics, through chromosomal analysis confirmed the diagnosis of Frasier Syndrome. Frasier Syndrome is associated with gonadal dysgenesis which has a high risk of gonadaloblastic transformation generally at the age of 20-30 years. Ultrasound examinations in our patient were inconclusive to the size as well as the presence of dysgenetic gonads. A diagnostic laparoscopy was performed to reveal the dysgenetic gonads using O_ StorzÆ optic along with two 5-mm working ports. After identification of the dysgenetic gonads, a laparoscopic bilateral total resection was performed simultaneously. The procedure was completed without any complications and the child was discharged the next day. Histo-pathological analysis confirmed the presence of a malignant gonadoblastic transformation even at the early age of 6-years.

Genito-Urinary – p051

EXTRAPERITONEAL LAPAROSCOPIC RENAL BIOPSY IN CHILDREN; Aydin Yagmurlu MD, Rahsan Vargun MD, Metem Bingol-Kologlu MD, Tanju Aktug MD, Mesiha Ekim MD, Huseyin Dindar MD, Ankara University School of Medicine, Department of Pediatric Surgery

To present our experience of extraperitoneal laparoscopic renal biopsy as an alternative to open technique when percutaneous biopsy is contraindicated.
A total of eight children underwent extraperitoneal laparoscopic renal biopsy. Three had biopsies under laparoscopic vision with a true-cut needle, whereas other five was performed using dissectors and scissors as advanced laparoscopic skills. Mean age was 3.5 years-old. The indications of biopsies were to investigate the etiology of steroid refractory proteinuria in 3 children and hematuria and renal failure for the others. Mean operating time was one hour. Conversion to open surgery was performed in one child due to uncontrolled bleeding. There was no post-operative complication. Adequate renal tissue was obtained in all cases. Mean hospital stay was one day for all children.

Extraperitoneal laparoscopic renal biopsy is a safe and efficient alternative to open technique when percutaneous biopsy is contraindicated. Main advantages are: good hemostasis after cortical biopsies, obtaining adequate renal tissue, early recovery and shorter hospital stay.

Genito-Urinary – p052

ONE-STAGE LAPAROSCOPIC EXCISION OF URETEROCELE, URETERIC REIMPLANTATION AND BLADDER NECK RECONSTRUCTION VIA PNEUMOVESICUM, C K Yeung MD, J Y Siino MD, Division of Paediatric Surgery and Paediatric Urology, Department of Surgery, Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong, China

Aims: We report our initial experience of one-stage pneumovesicoscopic approach for ureteroceles excision with simultaneous ureteric reimplantation and bladder base and bladder neck reconstruction in the management of complicating ureteroceles.

Patients and methods: Four patients aged 1.9 to 9 years (mean: 5.8 years) with large caecoureteroceles complicated with urinary infections and/or incontinence were included. A one-stage laparoscopic excision of the ureterocele with simultaneous ureteric reimplantation and bladder base and bladder neck reconstruction was performed in all patients under carbon dioxide pneumovesicium. This was preceded by cystoscopic resection of any urethral remnants of the ureteroceles. A 5mm camera port was inserted at the bladder dome. Pneumovesicium was achieved with carbon dioxide bladder insufflation and two 5mm and 3mm working ports were inserted into the lateral bladder walls. Complete excision of the ureteroceles was performed, followed by a Cohen’s type of transtigional ureteric reimplant of the upper and lower moiety. The bladder base was then sutured with Vicryl 0. The bladder neck defect was then reconstructed over a Fr 8 transurethral catheter. A urethral catheter was left in-situ post-operatively for bladder drainage.

Results: One stage laparoscopic surgery for excision of ureteroceles followed by formal bladder neck reconstruction with or without ureteric reimplantation was successfully performed by the pneumovesicoscopic technique in all patients. There was no procedure-related complication. The mean operative time was 178 minutes (range: 135 - 225 minutes). A urethral catheter was left in-situ for a mean of 5.8 days (range: 4 - 7 days). All patients remained asymptomatic and well and free from urinary infections at a mean follow-up of 16 months (range: 8 months ? 2.9 years).

Conclusions: One-stage laparoscopic excision of complicated ureteroceles with bladder base and bladder neck reconstruction and ureteric reimplant can be performed safely and effectively using the pneumovesicoscopic technique. This has the advantages of being wholly intravesical and allows clear visualization and hence meticulous dissection and reconstruction to be performed down at the bladder base and bladder neck even in cases of large prolapsing caecoureteroceles.

Instrumentation – p053

THE VEROSCOPE, A NEW TOOL FOR SAFER LAPAROSCOPY, M. Bahr MD, T. Doede MD, M. Bondartschuk MD, Dept. of Ped. Surg, FSU Jena Universitat, Munster, Germany

Materials and Methods: A veresneedle system with an optical device was developed and tested on pigs. After that several improvements were made and the veroscope underwent the licensing procedure for medical equipment. The device consists in a viewing veresneedle with a 0_ Hopkins scope of two millimetres and an laparoscopic port of 2.2mm. The needle and the spring mechanism could be replaced by a sleeve for the scope so that it is possible to make the hole laparoscopy with the 0_2mm scope. The apex of the spring mechanism is made of a transparent plastic which covers the frontlens of the scope. The system is fitted with a dilatation trokar, which allows to switch to a bigger optical system.

Results: All layers of the abdominal wall could be well displayed in pig experiments. After the licensing procedure for medical equipment we tried the Veroscope in ten children during laparoscopic treatment. As well we could display all layers of the abdominal wall, till we reached into the abdominal cavity. After having replaced the needle and the spring mechanism by the sleeve for the scope, we saw a good visualisation of the abdominal cavity. So it is possible to complete small laparoscopic treatments with the 2mm scope. Totally, we completed the treatment with the 2mm scope at 5 children. At 5 children we used the dilatation system to change the scope into a 5mm scope. The dilatation system is easy in handling and works fine. We saw no complication with both devices.

Conclusion: The Veroscope with dilatation system is a device, which is capable to make the veresneedle manoeuvre moresecure. We saw a good visualisation of the layers of the abdominal wall, and placement of the optical device was easier particularly at very small children.
**Instrumentation – p054**

**SIMPLE SIMULATORS FOR COMPLEX OPERATIONS**, Gerald Gollin MD, Edward Taylor MD, Loma Linda University Children’s Hospital and School of Medicine

Introduction: We hypothesized that simple, inexpensive simulators could provide realistic training for pediatric laparoscopic and thoracoscopic procedures. Standard “box” trainers are usually not scaled to the anatomy of infants and even the most sophisticated, computerized devices do not yet provide an accurate simulation of the technical components of operations. Therefore, we developed two procedure-specific simulators of pediatric, minimal access operations and assessed their performance.

Methods: One device simulated the crural closure during laparoscopic Nissen fundoplication and the other the esphago-esophagostomy during thoracoscopic esophageal atresia repair. The instrument angles and space constraints in the simulators were similar to those encountered in infants. A laparoscopic tower, 3.5 mm instruments, and a 30-degree laparoscope were utilized. Twenty surgical residents tested the crural closure simulator. The ten residents with clinical experience with intracorporeal suturing also tested the esophago-esophagostomy simulator. Results: All ten residents who had clinical experience with laparoscopic fundoplications in infants found the crural closure simulator to be an accurate approximation of this component of the operation. The residents who had not performed pediatric, laparoscopic fundoplications all demonstrated improvement in the time required to complete the simulated crural closure over five trials. Each of the ten residents with clinical experience with intracorporeal suturing improved their time for simulated esophago-esophagostomy over three trials.

Conclusions: Simple, inexpensive simulators can facilitate skill acquisition in laparoscopic/thoracoscopic tissue handling, needle handling, suturing, and knot-tying in small spaces. As these skills are essential for the efficient completion of pediatric, minimal access procedures simple, modular simulators may become an invaluable and affordable tool for practicing pediatric surgeons aiming to maintain their competence and for surgical trainees learning to perform new procedures.

**Instrumentation – p055**

**USEFULNESS OF A LOOP RETRACTOR IN PEDIATRIC ENDOSCOPIC SURGERY**, Makoto Suzuki MD, Takayuki Asao MD, Minoru Kuroiwa MD, Norio Suzuki MD, Yoshiki Tsuchida MD, Hiroyuki Kuwano MD, Department of Surgery, Gunma Children’s Medical Center and Department of General Surgical Science (Surgery I), Gunma University, Graduate School of Medicine, Gunma, Japan

[INTRODUCTION] Endoscopic procedures are extensively used at present. In the field of pediatric surgery, however, we have not reached the level already gained by general surgeons. Technical problems related to size as well as variations in surgical indications and techniques are the reasons for delayed application in pediatric patients. Therefore several improvements and modifications of the device, and various applied techniques are needed to obtain safety in applying endoscopic surgery to pediatrics. We herein report a useful grasping device - Mini loop retractor II, which gives a fine view without additional trocars.

[INSTRUMENT] At present in Japan, Tyco Healthcare Japan Co., Tokyo, Japan, produces this loop retractor. This instrument was originally developed for grasping several organs in endoscopic cholecystectomy and colorectal resection. It consists of a stainless-steel catheter (2.2 mm in diameter), an inner needle, and a wire loop. When visceral retraction is required, an inner needle is set to the catheter and the abdominal wall is punctured at an appropriate site under laparoscopic guidance. After removing inner needle, a loop wire is inserted in the steel catheter. The wall of bowel or gallbladder is snared with the loop, which is fixed by a clamp.

[RESULT] We adjust this instrument for the pediatric endosurgery - pull-through technique for Hirschsprung disease, cholecystectomy, appendectomy, pneumothorax, etc. Performing these operations with this instrument, we could obtain fine views and working space.

[DISCUSSION AND CONCLUSION] We have found several advantages of using Mini loop retractor. First, the instrument is thin and fine needle, so we only need one trocar and need no additional trocars. Second, we don’t have to suture the wound and we can get excellence in an aesthetic point of view. Finally, grasping power does not focus on one particular point, as conventional grasping forceps do, but it is equally disperses. Thus it is easier to keep out of organizational damages. In addition, this instrument reduces the number of trocars required during endoscopic surgery, and improves the cost performance and brings minimal invasiveness of pediatric endoscopic surgery.

**Instrumentation – p056**

**UNIQUE HOOKED ROD DELIVERY SYSTEM FOR U-CLIPS IN MINIMAL-LY INVASIVE PEDIATRIC SURGERY**, Michael V Tirabassi MD, Gregory Banever MD, Kevin P Moriarty MD, Division of Pediatric Surgery, Baystate Medical Center

**OBJECTIVE**: Coalescent surgical does not offer a system for thoracoscopic or laparoscopic delivery of U-Clips (Coalescent Surgical, Sunnyvale, CA), through 3 mm ports. The goal of this study is to develop and test an instrument that facilitates transport of 5mm U-Clips through 3mm laparoscopic ports.

**METHODS**: The instrument constructed conceptually had two components: an introduction sleeve and a hooked deployment rod. Materials were obtained from a local hobby shop. A 3/32 inch diameter brass rod and a 1/8 inch diameter brass round tube were purchased for $1.31 (K&S Eng, Chicago, IL stock #127 + 163). A hook was created at the tip of the 3/32 brass rod. This hooked deployment rod was then passed through the introduction sleeve. The needle on the U-Clip system was straightened to a ski shape to fit into the delivery system. The U-Clip is grasped by the hooked deployment rod and pulled into the introduction sleeve. Then entire assembly can then be passed into any body cavity through a 3mm trocar.

**RESULTS**: After IACUC approval was obtained, the instrument was used to deliver S50 and S60 U-Clips for thoracoscopic esophageal resection in four, 4kg piglets. S50 and S60 U-clips were passed into and out of the introduction sleeve without any misfires even after remaining in the sleeve for >10 minutes. There was one non-survival training piglet, and three piglets that were survived >2 months. After being transported through the 3mm ports all of the clips functioned as expected in the esophageal Anastomoses.

**CONCLUSIONS**: This easily constructed, inexpensive delivery system can be used safely and effectively to deliver 5mm U-Clips through 3mm ports.

**Neonatal – p057**

**THORACOSCOPIC REPAIR OF SHORT AND LONG GAP ESOPHAGEAL ATRESIA**, Hossein ALLAL, Nicolas KALFA, Dominique FORQUES MD, Manuel LOPEZ MD, René-Benoît GALIFER PhD, Department of Pediatric Surgery

**Objective**: To evaluate feasibility and results of thoracoscopic in various types of esophageal atresia (EA).

**Material**: From April to August 2002, 6 patients with EA were cured by thoracoscopic surgery. Mean gestational age was 37 weeks and mean birth weight was 2700g. Three were short gap atresia with tracheo-esophageal fistula. Three were long gap atresia: 2 with low fistula to the carina and 1 without fistula.

**Method**: Patients were placed in a prone position with the right side elevated at 80°. Four intrapleural ports were necessary. The fistula when present was dissected and sutured with intrathoracic knots and esophageal Anastomosis was performed in the same manner.

**Results**: Positive airway pressure related to mechanical ventilation increased in all patients after insufflation of pneumothorax, but was kept in a safe range with respect to the risk of lung pressure injury. The esophageal anastomosis was performed in 4 cases (3 short gaps and 1 long gap). Oral feeding started on day 6. Mean length of hospital stay was 14 days. In 2 cases with long gap, the anastomosis were impossible and the gaps were only approximated. Thanks a “spontaneous” repermeabilisation normal feeding was possible 2 months later.

**Conclusion**: The thoracoscopic repair of an esophageal atresia is a reasonable choice for experienced surgeons including for long gaps.
Neonatal – p058
LAPAROSCOPIC TREATMENT OF DUODENAL OBSTRUCTION IN NEONATES, Hossein ALLAL MD, Dominique Forgues MD, Manuel Lopez MD, Manh Nguyen MD, RB Galifer PhD, Department of Pediatric Surgery
Aim: We report our experience in the laparoscopic treatment of duodenal atresia in neonates.

Patients / Methods: 4 patients were operated on this 2 last years, 3 of them in the first day of life (duodenal atresia) and 1 at 7 day-old (perforated web). The child were placed in a supine position, with no rotation. The surgeon stood at the bottom with the cameraperson to his right and the second assistant to his left. The screen was at the right upper end. A 30 degrees 5-mm telescope through the superior umbilical was inserted (open). Pneumoperitoneum with a pressure of 8 mmHg was performed. Three 3 mm instruments were inserted.

Duodenoduodenostomy was performed in the 3 patients with duodenal atresia, duodenoplasty was performed for the patient with web. For 1 patient, an esophageal atresia was operated at the same time by thoracoscopy. Others had no associated malformation.

Results: Mean operation time was 90mn (85-95 mn). There were no complications. Mean hospital stay was 14 days. The mean follow up is 12 months and the patients had no complications related to this operation.

Conclusion: We consider this operation as safe and feasible by laparoscopy in neonates.

Neonatal – p059
LAPAROSCOPIC ASSISTED SIGMOID RESECTION FOR COLONIC ECTASIA IN A NEONATE, Ayyed R Al-Qahtani MD, College of medicine and King Khalid University Hospital, Riyadh, SA

Colonic ectasia is a rare entity in neonates. A case of neonatal intestinal obstruction due to colonic ectasia was diagnosed and treated by laparoscopic resection in a 2 day old boy. The clinical features, management and surgical technique will be described, in addition to literature review.

Neonatal – p060
SAFETY & EFFICACY OF ENDOSURGERY IN NEWBORNS, Tarun Kumar MD, Thom E Lobe MD, Section of Pediatric Surgery, University of Tennessee Health Science Center, Memphis, TN

SAFETY & EFFICACY OF ENDOSURGERY IN NEWBORNS

Tarun Kumar, Thom E Lobe, Section of Pediatric Surgery, University of Tennessee Health Science Center, Memphis, TN

OBJECTIVES: To determine the safety and efficacy of endosurgery in newborns.

METHODS & PROCEDURES: Between April 1996 to Dec 2003, we performed 105 laparoscopic & thoracoscopic procedures in newborns. These included pyloromyotomy(66), Nissen fundoplication(19), inguinal exploration(6), gastrostomy tube(5), tarcheo-esophageal fistula repair(2), Patent Ductus Arteriosus(PDA) ligation(2), lap-assisted pull-through for Hirschprung’s disease(1), congenital diaphragmatic hernia repair(1), pancreatomeotomy(1), Ladd’s procedure(1), and excision of duodenal web(1). The smallest child weighed 1.8 kg.

RESULTS: All procedures were completed endoscopically except one patient with a duodenal web and one with a PDA. One pyloromyotomy patient developed omenal herniation through the umbilical port site and one newborn had a splenic capsular tear during fundoplication.

CONCLUSIONS: Minimal invasive surgery appear to be as safe and effective in the newborn as in any other population of patients.

Neonatal – p061
ONE SURGERY, DOUBLE APPROACH, FOR TRANSDIAPHRAGMATIC THORACOABDOMINAL ENTERIC Duplications, Marcelo Martinez Ferro MD, Lisandro Piaggio MD, Pablo Laie MD, National Pediatric Hospital “Juan P. Garrahan”, Buenos Aires, Argentina

Introduction: During the last five years, thoracic and abdominal enteric duplications were resected in our institution by means of minimally invasive approaches. Our last patient, nevertheless, had a giant thoracoabdominal duodenal duplication, extending from the upper thoracic cavity to the pelvis, in a dumbbell fashion.

Objective: To describe the MIS strategy applied to approach the thorax and the abdomen in a single-stage procedure.

Method: A full-term baby girl with prenatal diagnosis of a giant thoracoabdominal cyst was referred to our NICU for surgical consultation. Forty days after birth, a combined “thoraco-laparoscopy” was performed, achieving a complete resection of the cyst. The diaphragmatic defect was repaired as well. Recovery was uneventful.

Conclusion: We think that MIS is a safe and effective surgical strategy even for patients with complex malformations like this transdiaphragmatic thoracoabdominal cyst.

Neonatal – p062
LAPAROSCOPY AND THE NEWBORN, Dana Stenly, Christine Finck MD, St. Christopher’s Hospital for Children

Introduction: Minimally invasive surgery is rapidly becoming the gold standard of treatment in adults for a variety of disorders. The role of laparoscopy in the newborn is still being defined. The benefits include diagnostic as well as therapeutic ability. We present two cases in which laparoscopy aided in diagnosing as well as treating challenging congenital disorders.

Case One: A 2 day old term female presented with a prenatal ultrasound which showed bilateral hydronephrosis and a hypoechoic lesion measuring 6.8cmx2cm between the uterus and bladder. A postnatal MRI confirmed these findings. Her physical and laboratory exams were normal. From these studies, the origin of the mass was indeterminate and the patient was taken to the OR for a diagnostic laparoscopy. A cystic mass arising from the posterior wall of the bladder was noted. The mass was able to be completely excised laparoscopically. The pathology was consistent with a bladder diverticulum.

Case Two: The patient is a 35 week female with a history of an intra-abdominal cyst diagnosed prenatally. A postnatal ultrasound demonstrated resolution of the cyst. The patient was then admitted to the hospital at 1 month of age for increased work of breathing with feeds. She had an abdominal ultrasound and a CT scan which demonstrated the presence of a cyst adjacent to the liver. The patient was taken to the operating room for diagnostic laparoscopy and was found to have a cyst on the inferior aspect to the left lobe of the liver. The cyst was able to be removed and marsupialized laparoscopically.

Discussion: Laparoscopy is a useful diagnostic tool in neonates. In both cases, the origin of the masses was unable to be determined by routine imaging studies. Laparoscopy provided a minimally invasive method to diagnose and treat these patients. Both infants experienced minimal postoperative pain, had excellent cosmesis, and were discharged to home within days of their surgery.
Thoracoscopic repair of congenital diaphragmatic hernia in the neonate: selection criteria for successful outcome, Edmund Y Yang BA, Nikki Allmendinger BA, Sidney Johnson BA, Catherine Chen MD, Jay Wilson MD, Steven Fishman MD, Vanderbilt Children’s Hospital and Children’s Hospital, Boston.

Introduction: Complications of open conversion, intestinal injury, and hernia recurrence have plagued minimally invasive approaches to congenital diaphragmatic hernia (CDH) repair in neonates. We describe selection criteria and techniques for neonates with CDH that enhance chances for successful outcome.

Methods: Four neonates were selected for thoracoscopic CDH repair using anatomic and physiologic criteria. Anatomically, all patients had a normal anatomic cardiac location with the pericardium and posterior parietal peritoneum clearly demarcated from the diaphragm. Physiologically, all patients had at least one of the following: mean arterial blood pressure less than 50 mmHg, need for vasoactive drugs, or evidence of intrathoracic fluid accumulation. Pre-operative and post-operative ventilator support was required in all patients.

Results: Primary diaphragmatic repair was successfully accomplished thoracoscopically in all four neonates without complication. Pre-operative anatomic criteria correlated accurately with intact esophageal hiatus and primary diaphragm repair. Physiologically, each patient tolerated thoracic insufflation and CDH repair without clinical pulmonary hypertension or blood pressure lability. One patient had reversible respiratory acidosis at the end of the operation. Operative times decreased from 212 to 119 minutes with surgeon experience. Post-operative mechanical ventilation ranged from 0 to 7 days and the length of hospitalization ranged from 5 to 32 days. Longest follow-up has been 10 months without recurrence of CDH.

Conclusions: Thoracoscopic repair of congenital CDH repair is safe in selected patients with good pre-operative pulmonary function and anatomy amenable to primary diaphragmatic repair. A wider range of patients may be acceptable for thoracoscopic CDH repair with increasing surgical experience.

Pediatric surgery for the treatment of congenital muscular torticollis, Fu Jingbo PhD, Li Long MD, Department of Pediatric Surgery, the First Affiliated Hospital, Peking University.

Introduction: Surgical dividing the sternocleidomastoid muscle is recommended for the children with muscular torticollis, if they fail to respond to physical therapy. However, the conventional open surgical techniques leave noticeable scars. Herein we present our experience with endoscopic approach for the treatment of congenital muscular torticollis.

Methods: From July 2001 to June 2003, 5 patients with congenital muscular torticollis were treated at our department. There were 4 females and one male. The mean age at surgery was 3.4 years (range, 2-4 years). Through three ports (one 5mm port at the axilla for endoscope and two 3 mm ports for the instruments which were inserted along the lateral border of the sternocleidomastoid muscle on the involved side), the inferior portion of the muscle was dissected and divided with electrocautery. To prevent recurrence, the external investing fascia within which the sternocleidomastoid muscle resides was also adequately divided.

Results: Complete muscular release was successfully performed in all 5 patients without obvious complication. Duration of the operation ranged from 45 to 135 minutes. We observed good results in 6 to 30 months follow-up in the 5 patients. Cosmetic result was excellent in all patients. Conclusion: Endoscopic approach allows precise division of the muscle fibers and surrounding fascia for the treatment of congenital muscular fascia, leaving an unnoticeable scar.


Purpose: Iliopsoas tendon release for the treatment of spastic hip flexion contracture in cerebral palsy patients and in the treatment of the clicking hip? can be achieved using laparoscopic techniques.

Methods: Cerebral palsy affects an estimated 500,000 people in the United States. Thirty to fifty percent of these patients suffer significant adductor and hip flexor contractures which prevent appropriate seating, brace fitting, and increase bony complications. The armamentarium for treatment of flexion contractures includes iliopsoas tendon release performed through a medial or anterior approach. ‘Clicking hip?’ is an additional condition that has been successfully treated with iliopsoas tendon release. We utilized a laparoscopic technique to perform four tendon release procedures.

Results: Four operations were performed between April 2000 and December 2003. Indications for the laparoscopic approach for iliopsoas tendon release included spastic hip flexion contracture, contracture related scoliosis and painful ‘clicking hip.’ Our patients ranged in age from 6 to 13 years of age. Each operation was performed utilizing three incisions. A 5mm cannula was used to obtain access to the peritoneal cavity. Two midline stab incisions were used for placement of additional instruments. The colon was mobilized medially and careful identification of the ureters and vascular structures overlying the iliopsoas muscle was achieved. Visual identification and tactile confirmation of a tense iliopsoas tendon were achieved using the hook cautery. The tendon was then divided at the level of the pelvic brim. Tactile feedback confirmed the absence of further tight bands. On average the operation took 45 minutes.

Immediate intraoperative improvement was documented in one case where the measured angle of passive flexion improved from 40 to 20 degrees on the right side and 30 to 10 degrees on the left side. Follow up of these patients revealed universal functional improvement with increased ease of brace fitting and wheel chair seating. The patient treated for ‘clicking hip?’ remains symptom free after a short follow-up period.

Conclusion: The laparoscopic technique for division of the iliopsoas tendon is an effective approach, and our limited experience allowed for excellent visualization while deferring the morbidity associated with the open technique. We recommend it for non-complicated patients requiring surgical management of the iliopsoas tendon.

Laparoscopic resection of type I choledochal cysts in infants, Craig T Albanese MD, Karl G Sylvester MD, Thomas M Krummel MD, Lucile Packard Children’s Hospital, Stanford Medical Center.

Purpose: To examine the technical aspects and clinical outcomes of laparoscopic choledochal cyst excision in infants.

Methods: Six infants underwent choledochal cyst excision and biliary reconstruction using 4 to 5 ports and 3 mm instruments. The port placement that best facilitated the portal dissection and enterobiliary anastomosis was not optimal for creation of the Roux limb and the enteroenterostomy in these small abdominal cavities. After struggling with creation of the enterenterostomy intracorporeally in two patients, the next four were completed extracorporeally, using a minilaparotomy within the umbilicus. The enterobiliary anastomosis was facilitated by superior and lateral placement of the needle driver port so that the common hepatic duct was approached nearly from a right angle.

Results: All were asymptomatic at diagnosis. Four were diagnosed pre-natally; the two diagnosed postnatally presented with hyperbilirubinemia. There were no other anomalies. The mean age at operation was 9 months. All had cysts of the Type I variant. The median operating time was 170 minutes. There were no intraoperative complications and there were no conversions to an open procedure. Blood loss was insignificant. The mean hospital stay was 3 days. There were no infectious complications. The median time of follow-up was 19 months. All patients had normal serum bilirubin levels at follow-up. There was one hernia at the umbilical port/minilaparotomy site that was noted 2 months after the procedure.

Conclusion: Laparoscopic resection of Type I choledochal cysts in small babies is technically demanding but safe. The Roux limb and enterenterostomy are most easily and quickly created extracorporeally. The short hospital stay is enhanced by the excellent functional and cosmetic results.
Other – p067
THE ENDOSCOPIC DILATATIONS IN THE PEDIATRIC ESOPHAGEAL STENOSIS, DAN CATANA PhD, LOICA HENIQUE RN,ANNEILIES GEARERTS RN, MSCURIE CHILDREN’S HOSPITAL DED.BUCHAREST ROMANIA
Between January 2001-July 2003, we studied 21 cases of esophageal stenosis, age between 7 months to 16 years. We performed 119 dilatations sessions. Postoperative stenosis developed in 9 cases (double instillation of 8mm Esophageal dilatation 3 cases boys 2; girl 1. Esophagoplasty-3 cases boys 0; girls 3; Operated achalasia:2 cases: boy 1; girl 1: Congenital esophageal stenosis girl 1. Postradiotherapy stenosis: girl 1; Postpiorax stenosis: boy 1; Peptich stenosis in GERD: boy 1; boy 1-5 years: 2 cases 1; 5-10 years: 7 cases, 10-15 years: cases, >15 years: 6 cases. PostCAUSTIC STENOSIS 9): All cases had ENT treatment for 3 months-3 years before; 2 cases had gastrostomy. All the cases had stenosis, long and filling, proximal, one 10-12cm distal one 22-33cm. We started the treatment with Wilson-Cook 8-10-12 balloon and nasogastric tube, the distal stenosis had dilatation with Savary-Gilliard wire-guided dilatator. 150ml-700ml. Number of needed sessions of between 1-17. A good result appeared usually after five sessions. Good results in 7 cases; 1 case had esophagoplasty; 1 case gastrostomy. GOOD RESULTS CRITERIA: the passage of 5mm gastroscope CH 22 is possible to the duodenum good natural feeding for liquids and solids. The most used: Wilson-Cook balloon 12mm, Savary-Gilliard 5mm. Usually we used antral dilatation retrograd dilatations were possible in 3 cases having STAMM Gastrostomies. COMPLICATIONS: 1 case of perforation in case number 7; POSTOPERATIVE STRICURES (6); Short and Tortuous. 3 cases after operated esophageal atresias stenosis developed in 6-11 months we used Cook balloons 8-10-12mm. 1 success after 3 sessions; 3 cases of esophageal stenosis and balloon rupture; 2 cases 6-24 months. 2 success after 3-4 sessions. We used balloons and Savary-Gilliard dilators. OPERATED ACHALASIA (2); 2 cases; stenosis developed in 6-8 months after classical Heller operation. 2 success after 3 sessions of dilatation of balloon Wilson-Cook balloons, 12-14-16mm. PEPTIC STRUC TURE in GERD (1); 1 success after 4 sessions of dilatation, frequent recurrence: 1 session needed totally. retrograd dilatation. POSTRADIOTHERAPY, POST PIOTHERAX STENOsis (1); 1 success after 5-7 sessions. Wilson-Cook balloon, Savary-Gilliard 9 11mm. CONCLUSIONS: 1. We used after ORL and surgical treatment failure. 2. Were present in 77% of cases. 3. Balloon dilatation is the most efficient for starting in treatment. 4. In severe cases is necessary to combine with Savary-Gillardi dilators. 5. Risk of complications perforation X-rays facilities are not always necessary.

Other – p068
PSEUDOTUMORAL FORM OF BLEEDING IN H.PYLORI INFECTION, DAN CATANA PhD, NIH BRATU PhD,OLGA NEAMTU MD, MSCURIE HOSPITAL DED BUCHAREST ROMANIA
INTRODUCTION: The role of nodular gastritis in infection with Helicobacter Pylori is frequent in children, between 2-14 years and represents an important cause in the chronic abdominal pain syndrome. The superior digestive hemorrhage with secondary severe anemia is more frequently seen in our medical practice. CASE REPORT: 6th August 2001. The patient: Madalina N., girl 11 years. She was admitted to the ICU for massive digestive hemorrhage and severe anemia (Hemoglobin 7 grams%). 2 years history of chronic abdominal pain, abdominal echography normal. 8th August 2001 Videogastroscopy under general anesthesia: normal esophagus, stomach: protrusive vegetant 3x4cm, hemorrhagic tumor in fornix, old clots and fresh blood. Biopsy: diffuse 150ml; covering all mucosa, biopsy samples were taken from the tumor and sent to the microbiology Department. Treatment: Zantac, Ceftriaxone and transfusion: 12th August 2001: barium esofagast examination reveals the same tumoral formation in the fornix: 22nd August 2001: after 14 days of treatment a new Videogastroscopy is made and the result is negative. The tumor disappeared the final result: Nodular diffuse Panagastris, and the HP: rapid urease test positive: 23rd August 2001: the result of Morphopathology Department: pseudo tumor containing only blood clots, the patient had a good evolution after eradication treatment of Helicobacter pylori infection: 14 days. Zantac 150mg, KIcalid 500mg, Amoxicillin 1g, October 2001-January 2002: the patients evolution was good, normal gastroscopey, and HP antibodies positive. February 2002: Madalina Videogastroscopy: residual nodular gastritis in antrum and fornix, normal duodenum, rapid urease test negative: Hemoglobin 13 grams%. Cristian 5 years (brother): Asymptomatic, HP antibodies positive. Videogastroscopy: diffuse nodular gastritis, bad developing rapid urease positive. He started the treatment for eradication of H pylori infection-Mother and father: both asymptomatic, HP antibodies present, no treatment. CONCLUSIONS: 1. Helicobacter pylori infection digestive hemorrhage can appear as a gastric pseudotumor. 2. The extemporaneous biopsy has a limited value because of the possible confusion between the blood clot and a tumoral necrosis area. 3. The histopathological final exam decides the surgical treatment. 4. In the chronic abdominal pain the videogastroscopy and the biopsy with rapid urease test HP must be a routine investigation. 5. In gastric bleeding the videogastroscopy have to be the first diagnosis examinati

Other – p069
INCIDENCE OF COMPLICATIONS OF MINIMALLY INVASIVE SURGERY IN A PAEDIATRIC HOSPITAL, M Clarke Clark MD, Boma Adikibi MD, Kimberley Leadbetter MD, Prabhu Sekaran BS, Gordon A MacKinnlay MD, Fraser D Munro MD, The Royal Hospital for Sick Children, Edinburgh
Introduction We present the first 618 laparoscopic and thoracoscopic cases done by our institution to determine the incidence and type of complications encountered.
Methods Data was retrieved from surgical audit and case note review of laparoscopic and thoracoscopic operations in one children’s hospital between 1996-2003. The complications reviewed were port site problems, infection, visceral injury, conversion and re-operation within 28 days. Results 618 cases were identified in 611 patients (255 female and 363 male). The age range was 1day to 20 years and 11months. 596 were laparoscopic and 22 thoracoscopic. There were 126 fundoplications, 143 appendicectomies, 94 diagnostic laparoscopy, 21 pyloromyotomies, 14 splenectomies, 29 nephrectomies, 18 assisted PEGS and 144 others.
The median in-patient stay was 3 days (range 1-280 days). 44 patients with 57 complications (7.1%) were found. Of these 39 were laparoscopic and 5 thoracoscopic. The complications were: 5 superficial wound infections, 5 deep infections, 5 visceral perforations, 12 required re-operation within 28 days.

Other – p070
LAPAROSCOPIC APPROACH FOR INCARCERATED INGUINAL HERNA IN INFANTS AND CHILDREN: PROPOSAL FOR A NEW MANAGEMENT ALGORITHM, S Clarke MD, K H Lee MD, Y H TAM MD, D Y Sihoe MD, C K Yeung MD, Division of Paediatric Surgery and Paediatric Urology, Department of Surgery, Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong, China
Background: An open inguinal approach for incarcerated inguinal hernia can be a difficult operation. Dissection of an oedematous cord risks damage to cord structures and subsequent hernia recurrence. Objectives: We present our early experience of laparoscopic approach for incarcerated inguinal hernia in infants and children within 24 hours of incarceration.
Methods and Patients: A retrospective and prospective data collection was carried out on five patients with incarcerated inguinal hernia. Pre-operative manual reduction for the incarcerated inguinal hernia was attempted under sedation. If reduction was unsuccessful under simple reduction, the patient would proceed for laparoscopic-guided reduction and herniotomy under general anaesthesia as an emergency. Results: The median age was 1.8 yrs (range 0.6 - 4yrs). All five patients required pre-operative manual reduction of an incarcerated inguinal hernia under sedation. A pre-peritoneal laparoscopic hernia ligation was performed within 24 hours of incarceration. If reduction was unsuccessful under simple reduction, the patient would proceed for laparoscopic-guided reduction and herniotomy under general anaesthesia as an emergency. Conclusion: The complication rate of endoscopic surgery in children in our institution is 7.1%. Our conversion rate is 4.2%, but only 1% enforced. Most conversions were either patients who required emergency surgery or had previous abdominal surgery. Many of the complications noted are associated with the surgery for the condition rather than the laparoscopic surgery.
Other – p071

LAPAROSCOPIC REPAIR OF CONGENITAL DIAPHRAGMATIC HERNIA USING SIS PROSTHESIS, George W Holcomb, III MD, Daniel J Ostlie MD, Kelly A Miller MD, Children’s Mercy Hospital, Kansas City, MO

Background: There are scattered reports of laparoscopic primary closure of foramen of Morgagni and Bochdalek hernias in children, but laparoscopic repair using prosthetic material has not been described.

Methods: The outcome of 3 patients since November 2000 undergoing laparoscopic repair of congenital diaphragmatic hernias using SIS (Small Intestine Submucosa, Cook, Inc.) patch was reviewed to determine if this approach is appropriate.

Results: Two patients, ages 9 months and 14 years, underwent laparoscopic foramen of Morgagni repair and one newborn underwent laparoscopic foramen of Bochdalek repair using SIS patch to close diaphragmatic defects. In each case, the prosthesis was secured to the rim of the defect using interrupted silk sutures tied intracorporeally. The mean operative time for repair of the Morgagni defects was 230 minutes with postoperative discharges of 1 and 2 days. For the foramen of Bochdalek repair, the operative time was 204 minutes, and the patient was discharged at 3 weeks. These patients have been followed for a mean of 3 years. There has been no evidence of recurrence or other complications.

Conclusion: Laparoscopic repair of congenital diaphragmatic defects using prosthetic material is possible. Due to the brief postoperative course, the laparoscopic approach appears justified in the non-neonatal patients. Whether this approach is appropriate for repair of neonatal Bochdalek hernias remains unclear.

Other – p072

ENDOSCOPIC EXCISION OF CAVERNOUS LYMPANGIOMA IN THE THORACIC AND ABDOMINAL WALL, HIROKI ISHIBASHI MD, HIROO TAKEHARA MD, Division of Pediatric Surgery, Tokushima University Hospital

Background Lymphangiomas are benign tumors of the lymphatic system. Because they characteristically infiltrate surrounding structures by local extension and mostly involve the skin and subcutaneous tissues, removal of large lesions may require a larger incision. We present our three pediatric patients with cavernous lymphangioma in the thoracic and abdominal wall, which were performed by endoscopic excision using three ports technique.

Methods The each age of three cases was sixteen, eleven and six months. The subcutaneous tumors (after sclerotherapy in two cases) were the size of over 5cm. Two of them revealed tumors in the right thoracic wall and another showed in the right lateral abdominal wall. Size of ports wound were set on 10mm, 5mm and 3mm, respectively. A working space around the tumor was made by balloon or subcutaneous dissection. Insufflation by carbon dioxide gas was maintained at 4 ~6mmHg. The tumors were endoscopically dissected from the adjacent fascia and skin using a LCS and were extirpated.

Results The mean operation time was 5 hours. Lymph fluid collection, which disappeared within one month, and low grade burn of the skin were recognized in three cases as postoperative complications. In all patients, the resulting scars were acceptable and the recurrence was none.

Conclusions Endoscopic excision of cavernous lymphangioma in the thoracic and abdominal wall is one of desirable option for its ability to provide a magnified, clear view of the surgical site and its aesthetic benefits.

Other – p073

ENDOSCOPIC RESECTION OF CONGENITAL VASCULAR MALFORMATIONS, Stephen G Kimmel MD, Claudia Hriesik MD, Michael J Lienwand MD, Douglas A Katz MD, St. Christopher’s Hospital for Children

Introduction: Endoscopic techniques may be safely applied to the treatment of congenital vascular malformations, such as lymphangiomas, and arteriovenous malformations. The main advantage of this approach is improved diagnosis and safe resection. We present two cases where vascular malformations were diagnosed and treated using minimally invasive techniques.

Methods and Procedures: Case 1: A 2 year old girl presented with a left-sided mediastinal abnormality seen on routine CXR. Imaging studies revealed a complex, fluid-filled structure adjacent to and partially surrounding the distal aortic arch. Over time it increased in size; therefore, resection was indicated. The right lateral decubitus position was used; a bronchial blocker was placed for single lung ventilation. One 5mm and two 3.5mm ports were placed. The lung was retracted anteriorly to expose the left posterior mediastinum. A spongiform mass was noted to cover the aorta. It was carefully resected using both blunt dissection and the harmonic scalpel. The operative area was covered with fibrin sealant. Pathological examination revealed a lymphangioma.

Case 2: A four year old boy presented with a one year history of iron deficiency anemia, and three separate episodes of lower GI bleeding. Previous upper and lower endoscopy was non-diagnostic, but a small bowel series suggested a mucosal abnormality at the terminal ileum. Laparoscopic exploration showed a large U-shaped portion of small bowel completely covered in large vascular varices. Using four ports, 15 cm of the distal small bowel was resected using the endoscopic GIA stapler and the harmonic scalpel. An intracorporeal anastomosis was formed with the GIA. The end of the anastomosis and the mesenteric defect were handsewn intracorporeally. The patient was discharged on POD 3 tolerating a regular diet. Pathologic examination revealed a lymphangiomatous and venous vascular malformation affecting the entire thickness of the bowel wall.

Results: The diagnosis of both congenital vascular anomalies was assisted with the use of minimally invasive techniques. Both lesions were safely resected. Injury to important neurovascular structures was avoided by improved visualization. Both patients had short hospital stays and minimal postoperative pain.

Conclusions: An endosurgical approach to intraabdominal and intrathoracic lesions can improve diagnostic accuracy and allow safe resection of congenital vascular malformations.

Other – p074

THE USE OF HYPNOTHERAPY IN THE INDUCTION TO SURGERY AND PAIN CONTROL, Jorge Mogilner MD, Amnon Rofe MD, Bnai Zion Medical Center, Rappaport Medical School, Technion, Israel

Aim: To assess whether hypnotherapy with or without formal trans induc- tion, can be an effective modality for induction anesthesia, to reduce fear and stress in children and their families during surgery. At the same time, pain control suggestions were explained to the patients to improve their post operative course.

Methods: twenty three children between the ages 5 to 17 years underwent hypnotherapy at surgery. All the patients were evaluated before surgery, and receive an explanation about hypnosis and pain control. Different standard hypnothe- rapeutic techniques including storytelling, eye fixation, safe place and others were used according to age and patient behavior. Children also learned anchoring and the switch technique for pain control.

Results: All patients were successfully hypnotized, with good post operative pain control.

Conclusions: Hypnotherapy, with or without formal trans induction, was a very effective modality to reduce fears and stress before surgery, and even more successful for post operative pain control in pediatric patients.
LAPAROSCOPIC PEDIATRIC INGUINAL HERNIORRHAPHY: EXPERIENCE, EFFICACY, AND UTILITY, Robert J Obermeyer MD, Michael Scheidler MD,Evan Kokoska MD,Richard J Jackson MD,Samual D Smith MD, Arkansas Children’s Hospital

Purpose: To evaluate the results of laparoscopic inguinal hernia repair in pediatric patients.

Methods: After an IRB approved protocol was acquired, the charts of 37 patients that had laparoscopic inguinal hernia repair(s) was retrospectively reviewed for data pertaining to demographics, preoperative diagnosis, intraoperative diagnosis, side(s) of hernia repaired, operative times, perioperative and postoperative pain control methods, admissions, length of stay, and recurrence.

Results: A total of 37 patient charts were evaluated for the time period between 4/21/03 to 12/10/03. The average age was 13.7 months (range: 0.7 ? 68 months) and the average weight was 8.3 kg (range: 1.8 ? 30.5 kg). A planned Unilateral (i.e., Right or Left) hernia repair was converted to a Bilateral hernia repair in 33.3% of cases. A planned Bilateral hernia repair was converted to a Unilateral (i.e., Right or Left) hernia repair in 20% of cases. Average operative times for Unilateral, Bilateral, and Overall was 19.9 min, 28.6 min, and 23.6 min, respectively. The most frequent method of perioperative pain control was caudal block (54%) and the most frequent method of postoperative pain control was Tylenol (92%). A total of 15 patients were admitted (40.5%) and their average length of stay was 1.27 days (range: 1 ? 5 days). A total of 52 hernias were repaired laparoscopically with 2 recurrences for a rate of 3.8%.

Conclusion: Laparoscopic repair of pediatric inguinal hernias is an efficacious alternative to open repair with several advantages including less surgical trauma, less incisional scars which may progress to keloids.

LAPAROSCOPIC CORRECTION OF CHOLEDODHAL CYST 7 INITIAL EXPERIENCE, K.R. Sirimurthy, S Ramesh, Narendra Babu, The Bangalore Hospital & Indira Gandhi Institute of Child Health, Bangalore, India

Aim: We present our initial experience of Laparoscopic repair of Choledochal Cyst (CDC) to highlight the technical aspects & challenges of the procedure.

Material & Methods
In the last 2 years, we have utilized Laparoscopy to manage 7 children with CDC. 5 were girls and the age ranged between 2 years and 8 years (Mean age : 5.5 years). We laparoscopically dissected the cyst using electro diathermy and transected, leaving a proximal stump for suturing. In the first three cases, the remaining procedure was completed by open technique. The latter 4 cases were completed laparoscopically.

Results
There were no problems related to the electro dissection in any of the cases. The results were satisfactory. One child had a bile collection in the lesser sac requiring USG guided aspiration and one had a leak requiring an open re-suturing. In all others, there was no other problem. The average duration of the surgery was about 180 minutes and the average hospitalisation was about 8 days.

Conclusions
CDC is eminently suitable for laparoscopic repair. It definitely requires skillful techniques for precise & patient dissection and suturing in restricted spaces. Being common in females, it avoids growing abdominal scars which may progress to keloids.

Can Supplementary Device Improve the Precision of Laparoscopic Evaluation via Ipsilateral Hernia SAC for a Contralateral Patent Processus Vaginalis in the Patients with Unilateral Inguinal Hernia?, Minoru Yagi MD, Masayuki Kubota MD,Yoshiaki Kinoshita MD,Satoshi Kanada MD,Naoki Okuyama MD,Satoru Yamazaki MD,Shinji Tanaka MD, Dept. of Pediatric Surgery, Niigata University Graduate School of Medical and Dental Sciences, Niigata 951-8510, JAPAN

Introduction: Early bilateral exploration by laparoscopic evaluation for a contralateral patent processus vaginalis (CPPV) eliminates the need for a second operation and anesthetic with associated risks, costs for the patients with unilateral inguinal hernia. In an effort to improve the precision of this examination, we offer reliable diagnostic laparoscopy via ipsilateral hernia sac using supplemental device.

Patients and Methods: Between March 2002 and December 2003, 79 consecutive children younger than 13 years of age (mean age:3.2 years of age) with only unilateral inguinal hernia were evaluated. All the patients’ contralateral inguinal region was carefully examined using laparoscopy under general anaestheia to confirm the presence or absence of CPPV via the ipsilateral hernia sac. For further observation of the internal inguinal ring, we used surgical Sonde or thin laparoscopic forceps 2.5mm in diameter for developing inguinal fold via ipsilateral hernia sac.

Results: The overall incidence for the series was 54 patients (68%) with unilateral hernia only, and 25 patients (32%) with unilateral hernia and CPPV. Of all the patients suspected of having a CPPV (37 patients) by positive silk sign, 18 patients (49%) were confirmed by laparoscopy. Oppositely, of those patients with non-suspecting of CPPV (42 patients) by negative silk sign, 7 patients (17%) were in fact patent at laparoscopy. The laparoscopic features and their numbers of the contralateral deep internal inguinal rings were classified 3 categories as following: flat type 40 patients (51%), covered type 31 patients (39%), and hole type 8 patients (10%). The distribution of the categories with unilateral inguinal hernia and CPPV were as following: flat type 0/40 (0%), covered type 17/31 (55%), and hole type 8/8 (100%). In the judgement of the existence of CPPV, using rates of the supplementary device were as following: flat type 0/40 (0%), covered type 30/31 (97%), and hole type 5/8 (63%). There were no false negative patients in this series.

Conclusions: Laparoscopic contralateral evaluation by developing inguinal fold with supplemental device via ipsilateral hernia sac may contribute to the improvement of its precision especially in most of covered type.
Over a 24 month period 352 children were operated with the diagnosis of inguinal hernia. Of them 40 was bilateral. From the rest 312, sixty-three underwent diagnostic laparoscopic evaluation of the contralateral processus vaginalis. Forty-six of them were boys and 17 were girls. The age of the children ranged from 1 month to 8 years (median 30 months). The follow-up period was between 6 months and 2.5 years. After the dissection of ipsilateral hernia sac, a 4mm trocar was introduced to the abdomen. After CO2 insufflation up to 10 cm H2O, contralateral patent processus vaginalis was evaluated in Trandelenburg position with a 30 degree scope. The presence of a peritoneal opening, the absence of an identifiable termination of a peritoneal sac and expression of bubbles by palpation of the inguinal canal is considered as the evidence of a patent processus vaginalis.

The mean time for the diagnostic laparoscopic evaluation was 5 minutes. In addition to the 63 patients, it was not possible to perform the procedure because of the fragility of the hernia sac in 4 children. Nine children (14.3%) who underwent diagnostic laparoscopic evaluation revealed a patent processus vaginalis. None of the children who had a negative diagnostic laparoscopic evaluation developed a contralateral hernia during the follow-up period. Two children (0.08%) from 249 patients who did not have a diagnostic laparoscopy later developed a contralateral inguinal hernia.

Diagnostic laparoscopic evaluation of the contralateral patent processus vaginalis during the ipsilateral hernia operation is a simple, fast and effective in a select of pediatric adrenal / renal pathologies.
LAPAROSCOPIC ANTI REFLUX SURGERY IN PEDIATRIC GASTRO ESOPHAGEAL REFLUX INDUCED OTOLARYNGOLOGICAL DISEASE, Martin L, van Niekerk MD, J W Callaghan MD, University of Pretoria, South Africa

Introduction. Otolaryngologic manifestations secondary to GER in children are increasingly recognised and defined in literature. The exposure of the aerodigestive tract to gastric secretion results in numerous pathological conditions such as sinusitis, recurrent otitis media, airway abnormalities and reflex apnea.

Methods and procedures.

Although medical management remains the cornerstone of GER therapy, laparoscopic anti reflux surgery provides definitive and successful treatment for GER otolaryngologic disease in patients with failed medical treatment. We present twelve children with GER otolaryngologic disease who underwent laparoscopic anti reflux surgery. There were eight female and four male patients. Ages ranged from two months to eight years. Preoperative evaluation included a double channel pH study in all patients.

Results. After surgery all twelve patients had complete resolution of clinical symptoms. One patient presented with recurring symptoms three years later, which necessitated laparoscopic reoperation. Conclusion. Gastro esophageal reflux is one of the important factors in causing certain otolaryngologic diseases. Laparoscopic anti reflux surgery provides a safe and effective treatment modality for some of these patients.

EXPERIENCE WITH ROBOTIC LAPAROSCOPIC NISSEN FUNDOPLICATING IN CHILDREN AT A SINGLE INSTITUTION, Felicija A Ivascu MD, James G Geiger MD,Robert Dongrowski MS,Ronald B Hirschl MD, University of Michigan

Purpose: We have evaluated our surgical experience with laparoscopic Nissen fundoplication in children utilizing the daVinci robotic system and compared the results to standard laparoscopic techniques.

Methods: We retrospectively reviewed all patients undergoing a laparoscopic Nissen fundoplication in children utilizing the da Vinci robotic system and compared the results to standard laparoscopic techniques. Patients were matched 1-to-2 by age with controls undergoing standard laparoscopic Nissen fundoplication. Student’s t-test and Chi square analysis using 1 transverse and 3 extra-transverse trocars. The extrapleural dissection was performed using a 5mm telescope to the Intuitive SurgicalÆ da Vinci? system. METHODS:Extrapleural esophagoscopy was performed in five piglets (5-8 kg) using the Zeus Robotic Surgical System. The piglets were anesthetized, a left chest tube inserted, and positioned semi-prone. The procedure was carried out in 2 phases (extrapleural dissection, extrapleural repair) using 1 transpleural and 3 extrapleural trocars. The extrapleural dissection was performed under direct vision by inserting a transpleural camera port along the anterior axillary line in the fourth intercostal space. The 3 extrapleural port sites corresponded to the placement previously described in infants. The extrapleural dissection was performed using a needle, spatula, 3 and 5mm trocars and 8F (3cc balloon) and 12F (5cc balloon) catheters. The technique was repeated at each extrapleural site until one confluent space was created that did not communicate with the transpleural site. The robotic arms were placed on the OR table prior to anesthetizing the piglet but now underwent final positioning. The extrapleural repair phase was begun by dissecting and transecting the esophagus. A single layer interrupted anastomosis was completed (3-0 ethibond,TF needle). The piglets were then euthanized and the esophagus was excised. Robotic set-up (final positioning of arms and instruments), extrapleural dissection (start of extrapleural dissection to transection of esophagus), and anastomotic times were measured. Post-mortem examination of the esophageal anastomosis was performed looking at: anastomotic narrowing, anastomotic leak, and mucosal approximation. RESULTS: All five cases were completed without complications related to the esophageal anastomosis. All had no narrowing, no leaks, and excellent mucosal approximation. The mean times for extrapleural dissection, anastomosis, and robotic setup were: 62, 91, and 6 minutes respectively. IACUC approval was obtained for this study. Conclusion: Robotic-assisted extrapleural esophageal repair is technically feasible. Further studies are necessary to determine if this would be a preferred approach.
**Robotics – p087**

**COMPUTER-ASSISTED, ROBOT-ENHANCED OPEN MICROSURGERY IN AN ANIMAL MODEL**, Colin G. Knight MD, Attila Lorincz MD, Alex Cao MS, Kelly Gidell RN, Michael D Klein MD, Scott E Langenburg MD, The Maxine and Stuart Frankel Foundation Computer-Assisted Robotic-Enhanced Surgery Program at Children’s Hospital of Michigan, Detroit, Michigan, MI

**Background:** Computer-assisted, robot-enhanced surgery improves laparoscopic and thoracoscopic surgery through tremor-filtration, motion scaling, articulation, and improved ergonomics. Surgeons perform many open cases under magnification magnifying the tremor present in all surgeons’ hands. The tremor filtration and motion scaling of robotic surgery may improve microsurgery. Our goal was to compare microvascular anastomoses performed with a robot-enhanced technique with a standard technique.

**Methods:** We performed end-to-end anastomoses in 1 mm rat femoral arteries with interrupted 10-0 suture. We compared the anastomotic time, patency, and leak rates between traditional microsurgery techniques (by hand) and a robot-enhanced technique using the Zeus Robotic Surgery system. The surgeon used an operative microscope for visualization in both techniques.

**Results:** We performed 30 anastomoses by hand and 31 with Zeus. We observed a remarkable degree of tremor filtration in the robot-enhanced cases. Anastomotic times for both techniques demonstrated a learning curve. Anastomoses done by hand (mean 17.2 minutes) were significantly faster than those done with Zeus (mean 27.6 minutes) (p=0.0006). All anastomoses, from both groups, were patent and none leaked after three minutes.

**Conclusion:** The Zeus system is effective at performing complex, open, laparoscopic anastomoses in the rat model. Anastomoses done by hand (mean 17.2 minutes) were significantly faster than those done with Zeus (mean 27.6 minutes) (p=0.0006). All anastomoses, from both groups, were patent and none leaked after three minutes.

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**Robotics – p088**

**ROBOT-ENHANCED LAPAROSCOPIC MORGAGNI HERNIA REPAIR IN CHILDREN**, Colin G. Knight MD, Kelly Gidell RN, Attila Lorincz MD, Michael D Klein MD, Scott E Langenburg MD, The Maxine and Stuart Frankel Foundation Computer-Assisted Robotic-Enhanced Surgery Program at Children’s Hospital of Michigan, Detroit, Michigan, MI

**Case Report:** Two children (3 year-old, 10.2 kg and 6 year-old, 21.6 kg) diagnosed with Morgagni hernia after chest roentgenogram underwent robot-enhanced laparoscopic repair of their hernias. After placing four, 5 mm trocars into the peritoneum, standard laparoscopic graspers were used to reduce the hernia contents. In one case a standard laparoscopic grasper and hook cautery were used to dissect the edge of the hernia free from the liver. In the other case, robot enhanced instruments (Zeus Microwrist System grasper and hook cautery) were used for the dissection. Robot-enhanced instruments were used to place and tie suture in order to close the hernia defects. Both cases were successfully completed laparoscopically. The robotic system took 9 minutes to set up and drape. The average operative time was 217 minutes. The robotic system performed without malfunction and the surgeon noted the relative ease of placing and tying sutures under tension in an enclosed space. Both hernias were closed without a patch. The surgeon felt that he had better control when dissecting the liver when using the robot-enhanced system. The older child tolerated oral intake the day of surgery and was discharged to home on the second post-operative day. The younger child tolerated oral intake on the second post-operative day and was discharged to home on the second post-operative day.

**Discussion:** Robot-enhanced surgery improves laparoscopic surgery through motion scaling, tremor filtration, improved ergonomics, and the addition of a wrist at the distal end of the instruments. The enhancements of robotic surgery can make complex laparoscopic procedures, such as those described here, easier to perform. The surgeon found it relatively easy to place and tie suture under tension in these cases, allowing the defects to be closed without any patch. He also found he has greater precision in dissecting the hernia when using the robotic instruments. We are the first group to report using robotic technology for laparoscopic repair of Morgagni hernias in children.

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**Spleen/Solid Organ – p090**

**CONTROL OF VARICEAL HEMORRHAGE DUE TO EXTR AHEPATIC PORTAL VEIN THROMBOSIS: PROPHYLAXIS OR DEFINITIVE TREATMENT**, Oguz Ates MD, Gice Haik der MD, Mustafa ogluner MD, Mustafa Secil MD, Feza M Akgür MD, Department of Pediatric Surgery and Radiology, Dokuz Eylul University, Medical School, İzmir, Turkey

**Introduction:** Variceal hemorrhage and portal vein thrombosis (EHPVT) are seen in 5% of patients. The treatment of variceal hemorrhage depends on the cause of the varices. The use of endoscopy for prophylaxis and treatment of EHPVT is controversial. The aim of this study was to evaluate the use of endoscopic therapy in the treatment of EHPVT.

**Results:** Eight patients were treated for EHPVT (4 boys, 4 girls). While seven patients presented with variceal hemorrhage, one had only splenomegaly. All patients underwent Doppler US examination, needle liver biopsy and upper GI endoscopy.

**Discussion:** Endoscopic variceal ligation was performed in all patients. The mean number of sessions was 3 (range 1-5). All patients were treated with endoscopic variceal ligation. The mean period of follow-up was 12 months (range 6-24 months). During follow-up, there were no cases of recurrent variceal hemorrhage.

**Conclusion:** Endoscopic variceal ligation is a safe and effective treatment for variceal hemorrhage due to EHPVT. Long-term follow-up is necessary to determine the long-term efficacy of this treatment.
**Spleen/Solid Organ – p091**

**LAPAROSCOPIC SPLENECTOMY IN CHILDREN, FROM 5 TO 3 PORTS,** Taha KHATRAWI MD, M.Y. Awan MD, Zakria Habib MD, L. Rossi MD, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia

Background: The technical aspects of laparoscopic splenectomy (LS) have evolved over the past decade. New techniques and smaller instruments have facilitated recent advances in the technical aspects of laparoscopic splenectomy in children. The trend towards the minimal invasive approach is progressing rapidly.

Materials and Methods: From January 2001 to August 2003, 12 children underwent laparoscopic splenectomy, 1 of them also underwent a concomitant cholecystectomy. There were 9 boys and 3 girls with age ranging between 4 and 13 years (median, 8 years).

Results: Mean body weight was 27.4 kg (range, 8-50 Kg). Mean operating time was 183 minutes (range, 120-240). In the first 2 cases we used 5 ports, followed by 4 cases with 4 ports and in the last 6 LS we used 3 ports. There were 2 cases converted to open surgery. There were no postoperative complications. Hospital stay ranged from 3 to 5 days, (mean 3.8 days). Followup ranged from 4 to 34 months.

Conclusions: With the development of special instruments for use in children and more surgical experience in laparoscopy, the number and size of the ports has reduced. The use of smaller instruments and reduced numbers of ports in laparoscopic splenectomy is technically challenging. When technically feasible, the movement towards smaller instruments and less number of ports are associated with better cosmetic outcome.

**Spleen/Solid Organ – p092**

**THE ENDOSCOPICALLY PLACED CYSTO-ENTERAL (ECE) STENT AS AN INNOVATIVE TECHNIQUE FOR DRAINAGE OF CYSTIC LESIONS OF THE SPLEEN IN THREE CHILDREN,** Stefan Beyerlein MD, Georg Kaehler MD, Felix Schier MD, Pediatric surgical department, University medical center, Jena

Purpose: Drainage of pancreatic cysts by gastroscopy is an established technique. Splenic cysts, however, have not been drained with this technique so far in children. The purpose of this paper is to present the application of this novel approach in three children.

Methods: In three children, aged 15, 13 and 9 years, cystic lesions of the spleen were diagnosed. One patient had a lymphangioma, the other patient had an abscess, and the third patient had a postruminal splenic cyst. The cysts were large enough to protrude into the stomach. Gastroscopy was performed and a stent was placed in all patients. Ultrasound studies were performed to control the result of the procedure.

Results: In all children the cysts collapsed within a few hours. In the child with the abscess the microbiological result showed an infection with salmonella typhi. The cyst remained collapsed and the stent was removed after 6 weeks gastroscopically. Further ultrasound studies showed that it is still collapsed. The postruminal cyst remained collapsed and the stent was removed after 8 weeks. Ultrasound studies showed that it is still collapsed. The lymphangioma recurred after 2 weeks and needed 2 further operations since, an unroofing laparoscopically. Five children presented cholangitis previously. One girl had a giant 15x13 cm cyst. Using 3 or 4 ports, 2 to 5-mm instruments and transparietal traction stitches, the extrahaepatic bile tree was dissected down to the intrapancreatic segment, up to the common hepatic duct bifurcation. Both ends were cut, the distal one ligated close to the Wirsung duct entrance. The Roux-en-Y jejunostomy with a 40-cm long hepatic loop, was performed extracorporeally through a umbilical 10-mm incision with a stapler (n=3) or hand-sutured (n=3). The hepatoduodenal anastomosis required manual extracorporeal or intracorporeal suture. All children are being prospectively followed-up.

Conclusions: The laparoscopic treatment for HCCD proved to be possible, safe although delicate in experienced hands, using few ports, facilitated by the ETUARY, allowing quick recovery, good esthetics and minimal morbidity even in small children.

**Spleen/Solid Organ – p093**

**COMPARISON OF TWO METHODS OF CHOLECYSTECTOMY IN CHILDREN WITH SICKLE CELL DISEASE,** Jean-François Colombani MD, Corentin Babakissa MD, CéCilia Tolg MD, Marc Janoyer MD, Jacques Sommer MD, pediatric surgery, CHU de Fort de France, Martinique (FWI).

Background and aim: Sickle cell disease (SCD) is a common hereditary disorder in the french west indies. Before 1992, cholecystitis occurring in this disease were treated by open cholecystectomy (LMY) in our unit. Since 1992, our pediatric surgeon has introduced laparoscopic cholecystectomy (LPY). However carbon dioxide insufflation used in LPY may cause organ dysfunction in cases of SCD. This study evaluated complications of both methods. Patients and methods: We retrospectively reviewed records of 55 children (25F/30M;11 ± 0.4 y) treated by the same surgeon for cholelithiasis in SCD between april 1992 and may 2003. Data collected included: patient characteristics, perioperative management parameters, and postoperative complications. Results: LPY failed in 4 cases during the 2 first years of the study period, and LMY had to be performed for the following reasons: 1- inability to identify anatomical details; 2- accidental laceration involving : a) common bile duct, b) gall bladder, c) cystic artery. The following parameters were different between LMY (n = 26) and LPY (n = 29) : mean surgery time (71 ± 4 vs 100 ± 4 min; p = 0.003), onset of postoperative oral feeding (3.0 ± 0.1 vs 2.8 ± 0.2 days; p = 0.09) and hospital stay (7 ± 0.4 vs 6 ± 0.5 days; p = 0.02). Postoperative complications resulting from surgery included pneumonia (n = 4), sepsis (n = 5), hemorrhagic shock (n = 1) and peripancreatic hematoma (n = 1). The rate of postoperative complications was independant of presenting symptomatology (83% of cases) and surgical methods (19 vs 27%; p = 0.4), but was inversely related to the following parameters : 1- preoperative hemoglobin level (10 ± 0.2 vs 9 ± 0.2 g, p<0.005) ; 2- trans-fusional management (41 vs 16%, p = 0.04) in the form of packed cells or exchange transfusion. Patients suffered from keloid (n = 6) or hypertrophic scars (n = 2) after LMY. Conclusions: These results suggest a good outcome following LPY in children with SCD, and highlight the importance of proper transfusion-management before cholecystectomy. In addition, it seems that LMY could be particularly adapted in case of contraindication or complication of LPY.

**Spleen/Solid Organ – p094**

**LAPAROSCOPIC TREATMENT FOR CHOLEDOCHAL CYSTS,** Edward Esteves PhD, Ruy E Pereira MD, Miguel Ottaiano MD, Bernardina B Modesto MD, Division of Pediatric Surgery, Goias Federal University, Goiania (GO), Brazil

Introduction: Some authors have described the laparoscopic treatment for Todany type-1 congenital biliary dilatations, also called hepatocole-docus cystic dilatations (HCCD), in adults and children over 6 years of age, showing many advantages of the minimally invasive access. The operative time is usually large due to bleeding and the intracorporeal anastomosis, since noncaras reported the extracorporeal transamnibilical approach for the Roux-en-Y anastomosis (ETUARY), like the one we described for biliary atresia. The purpose of this paper is to present the first cases of HCCD treated laparoscopically in Latin America, for the first time under 4 years old and using the ETUARY.

Patients and Methods: From November/2001 to October/2003, 6 girls with HCCD, aging 1, 3, 4, 4, 6.5 and 8 years old, were operated on laparoscopically. Five children presented cholangitis previously. One girl had a giant 15x13 cm cyst. Using 3 or 4 ports, 2 to 5-mm instruments and transparietal traction stitches, the extrahaepatic bile tree was dissected down to the intrapancreatic segment, up to the common hepatic duct bifurcation. Both ends were cut, the distal one ligated close to the Wirsung duct entrance. The Roux-en-Y jejunostomy with a 40-cm long hepatic loop, was performed extracorporeally through a umbilical 10-mm incision with a stapler (n=3) or hand-sutured (n=3). The hepatoduodenal anastomosis required manual extracorporeal or intracorporeal suture. All children are being prospectively followed-up.

Results: Mean operative time: 180 minutes. No conversion. No patient required postoperative intensive care. One required transfusion of 120 mL. One presented light pancreatitis. Mean feeding time: 2.8 days. Hospitalization 4-8 days. There was no perioperative or anesthetic complication. After a follow-up of 6 months to 2 years, all girls are asymptomatic, anicteric with no report of cholangitis, presenting excellent abdominal esthetics.

Conclusions: The laparoscopic treatment for HCCD proved to be possible, safe although delicate in experienced hands, using few ports, facilitated by the ETUARY, allowing quick recovery, good esthetics and minimal morbidity even in small children.
One cyst recurred and the recurrence was later successfully treated with invasive techniques. Cyst size ranged from 14 to 21 cm in diameter.

METHODS: Data were collected reviewing the minimally invasive management of splenic cysts from 2000 to 2003. All splenic cysts were managed by traditional or complete splenectomy via laparotomy. Laparoscopic cystectomy has been performed, but, because of the often unclear etiology of these cysts, this management has been controversial. This report reviews the authors’ experience with the minimally invasive management of benign splenic cysts.

RESULTS: During the three-year time period, six children were treated for benign splenic cysts. All six underwent successful management via minimally invasive techniques. Cyst size ranged from 14 to 21 cm in diameter. One cyst recurred and the recurrence was later successfully treated with the laparoscope.

CONCLUSION: Splenic cysts can be safely treated with minimally invasive surgical techniques. Surgical technique should focus on excision of as much of the cyst as possible with cautery of the remnant cavity to minimize recurrence.

LAPAROSCOPIC CORRECTION OF CONGENITAL PORTOSYSTEMIC SHUNT IN CHILDREN: REPORT OF TWO CASES, Takuwa Kimura PhD, Hideki Soh MD, Toshimichi Hasegawa PhD, Takashi Sasaki PhD, Yurk et al PhD, Kanae Tomoda PhD, Masahiro Fukuzawa PhD, Department of Pediatric Surgery, Pediatrics, and Radiology, Osaka University Graduate School of Medicine

INTRODUCTION: Congenital portosystemic shunt (CPS) is a rare clinical entity that may develop jaundice, severe encephalopathy, and pulmonary hypertension and required invasive laparotomy. Presented is a novel approach to the management of children with CPS by means of minimal invasive surgical technique.

CASE: Case1 was an 8 year-old boy who was treated conservatively on the diagnosis of congenital absence of the portal vein. An abdominal computed tomography (CT) was incidentally identified CPS arising from superior mesenteric vein into inferior vena cava (IVC). On the angiography, hypoplastic intrahepatic portal vein was revealed; however, portal vein pressure was encountered as normal. Case2 was a 3 year-old girl who was treated conservatively on the diagnosis of hypergalactosemia, hypoplastic intrahepatic portal vein was revealed; however, portal vein pressure was encountered as normal. Case2 was a 3 year-old girl who was treated conservatively on the diagnosis of hypergalactosemia, however, portal vein pressure was encountered as normal. Case2 was a 3 year-old girl who was treated conservatively on the diagnosis of hypergalactosemia.

PROCEDURE: Before the laparoscopy, catheters were placed retrogradely in the distal end of CPSs to monitor portal vein pressure. One port for the shunt showed no significant rise in portal vein pressure (15 to 18mmHg in case1 and 13 to 13mmHg in case2). CPSs were then ligated twice beyond the splenic vein in case1 and the renal vein in case2.

RESULTS: No major intraoperative complications were encountered, and the postoperative course was rapid and uneventful. Blood concentration of total bile acid and ammonia were normalized within 5 postoperative days. This approach significantly reduced postoperative pain and resulted in better cosmetic. Both of them were returned to normal life without further medical treatment.

CONCLUSIONS: Laparoscopic correction of CPS is a safe and effective alternative. We recommend this novel approach to the management of children with CPS to prevent late onset life-threatening complications.
IS LAPAROSCOPIC SPLENECTOMY IN CHILDREN ADVANTAGEOUS?, Faisal G Qurashi MD, Orkan Ergun MD, Vlad C Sandulache BS, Evan P Nadler MD, Henri R Ford MD, David J Hackam MD, Timothy D Kane MD, Division of Pediatric Surgery, Children’s Hospital of Pittsburgh

Introduction: Laparoscopic splenectomies are being performed more frequently in children, yet its advantages are not clear. We sought to determine whether laparoscopic splenectomy (LS) was superior to open splenectomy (OS) in children. Methods: After IRB approval, consecutive pediatric patients without significant comorbidities such as trauma or transplantation undergoing splenectomy (1991-2002) were divided into OS and LS groups. Demographics, operative time, estimated blood loss, spleen size, length of stay and hospital costs (corrected for 2002) were compared by student t/chi-square tests. Data are in MEAN±SEM. Results: 54 (44%) children underwent OS, and 69 (56%) children underwent LS during the study period, with 12 (17%) conversions primarily due to size. There was no difference in age or gender between the groups, but hereditary spherocytosis was more common in the LS group (p<0.01). Important differences and similarities between groups are seen in the table.

<table>
<thead>
<tr>
<th></th>
<th>Open (n=54)</th>
<th>Laparoscopic (n=69)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR time (min)</td>
<td>126±8</td>
<td>233±10</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Weight (gms)</td>
<td>517±116</td>
<td>292±40</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Cholecystectomy</td>
<td>21%</td>
<td>38%</td>
<td>NS</td>
</tr>
<tr>
<td>Length of Stay</td>
<td>4.2±0.3</td>
<td>2.4±0.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Cost ($)</td>
<td>15769±1684</td>
<td>20925±712</td>
<td>&lt;0.01</td>
</tr>
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</table>

Blood loss and complication rate (p<0.05) were similar in both groups. LS had higher operative time and costs even after patients undergoing concurrent cholecystectomy were excluded (OS 122±8 vs. LS 201±11 mins, p<0.001, OS 15708±2346 vs. LS 20944±980 US$, p<0.05). Conclusion: Laparoscopic splenectomies are as safe and have a shorter length of stay than open splenectomies in children. This may translate into earlier return to activity and a smaller burden on the child’s caregivers.

LAPAROSCOPIC SPLENIC CYSTECTOMY: A RATIONAL APPROACH, Frank M Robertson MD, John J Doski MD, Barry R Cofer MD, Joseph N Kidd MD, San Antonio Pediatric Surgery Associates and Methodist Children’s Hospital

Purpose: Non-parasitic splenic cysts are uncommon and may be congenital or post-traumatic in origin. Complications may include enlargement with pain, rupture and infection. Traditional management includes total or partial splenectomy, partial cystectomy with marsupialization, percutaneous drainage and sclerotherapy. These techniques are associated with the undesirable consequences of splenic loss and cyst recurrence, especially in patients with congenital epithelial lined cysts. A technique designed to minimize the risk of splenic loss and cyst recurrence is presented. Methods: A 4 and 13-year-old presented with large splenic cysts measuring 5.4 and 5.7 cm, respectively. Symptoms included left upper quadrant pain and there was no history of trauma. Both patients were managed with laparoscopic partial cystectomy using the Harmonic scalpel to divide the cyst wall at its junction with the spleen proper, followed by complete obliteration of the remaining intrasplenic cyst wall using the argon-beam coagulator.

Results: Both patients had an uneventful postoperative course and were discharged home within 24 hours of surgery. Operative time was under one hour and blood loss was minimal. Pathology showed a congenital epithelial (mesothelial) cyst and a post-traumatic cyst, respectively. Conclusions: Laparoscopic partial splenic cystectomy with obliteration of remaining intra-splenic cyst wall can be performed safely. This technique preserves the spleen and minimizes the risk of recurrence, regardless of the origin of the cyst.
LAPAROSCOPIC ULTRASOUND AND ENucleATION OF AN INSULINOMA IN A CHILD, Rene Wijnen PhD, Cees Noordam PhD, Carla Boetes PhD, Paul Rieu PhD, Department of Pediatric Surgery, UMC St Radboud, Nijmegen, The Netherlands

Insulinoma is a rare neuroendocrine tumor with an incidence of 4 per 5 million. Operation is the only curative treatment and because of the low sensitivity of preoperative studies to localize an insulinoma, surgical exploration with intraoperative ultrasonography and manual palpation is recommended. There are no reports on laparoscopic ultrasonography and enucleation in children. We present a case report of a 12 year old boy with a 12 month history suspected for insulinoma. Preoperative ultrasound, CT, MRI and a Somatostatin receptor scintigraphy did not visualize any lesion. We performed a laparoscopy with a 30 degree scope and a laparoscopic 7.5 Mhz probe for ultrasound. After creating a window in the gastrocolic ligament with ulceration, the pancreas head was dissected from the mesocolic and dorsal gastric attachments and a kocher maneuver was performed. The body and tail were freed from the dorsal attachments of the stomach up to the splenic hilum. A lesion was seen at the ventral side of the corpus. Systematic ultrasonographic inspection was performed to visualize important adjacent structures and to look for a second lesion. Laparoscopic enucleation was performed with the electrocautery hook, diagnosis was intraoperative confirmed by pathology. Hospital stay was 5 days. However on outpatient control after 1 month the serum glucose level was 2.8 mmol/l. A second operation (open) was performed and a lesion was seen on the same spot on the corpus. And after palpation a second lesion directly next to the original lesion was palpated and confirmed by ultrasonography. Both lesions were enucleated and the patient was now asymptomatic, tolerating a regular diet.

Because of the inability of preoperative studies, surgical exploration with intraoperative ultrasonography, manual palpation and resection are advocated. Laparoscopic procedures in children are rare and this is one of the first reports. The advantage of laparoscopy is the magnifying factor, which gives better visual inspection of the pancreas. On the other side, the lack of tactile senses makes the laparoscopic procedure less accurately as seen in our case. To compensate this, experience is needed with the laparoscopic procedure and laparoscopic ultrasonography. In future one can start laparoscopic and only convert when a lesion is not visualized and manual palpation is needed.

LAPAROSCOPIC SPLENIC CYSTECTOMY USING LIGA SURE, Makoto Yagi PhD, Keisuke Nose PhD, Haruhiko Imamoto PhD, Hideki Yoshida MD, Hitoshi Shiozaki PhD, Harumasa Ohyanagi PhD, Division of Pediatric Surgery, Department of Surgery, Kinki University School of Medicine

Congenital epidermoid splenic cysts are a very rare finding. They are known to become symptomatic as a consequence of enlargement, abdominal pain, hemorrhage, infection, or rupture. Surgical options in the treatment of splenic cysts have included percutaneous drainage, partial or total splenectomy, total or partial cystectomy, laparoscopically or by open laparotomy. We present the report of a pediatric patient with a large epidermoid cyst treated laparoscopic partial cystectomy using LigaSure. The patient was a 9 year old boy, who had been followed up by a pediatrician due to hydronephrosis. He was incidentally found splenic cyst by CT examination. The cyst was located superior medial aspect of the spleen, and showed rapid enlargement in a few years. An elective laparoscopic procedure was performed. Three trocars were used. The cyst was aspirated of straw-colored fluid to facilitate dissection. LigaSure dissection as vessel sealing system achieved complete deroofing of the cyst and partial cystectomy. LigaSure showed excellent hemostasis on the dissection of splenic parenchyma. The postoperative course was uneventful, and the patient was discharged on the third day. Follow-up at 1 year confirms no recurrence.

Laparoscopy with LigaSure provides a minimal access method of obtaining pathological conformation of the diagnosis, reduction of cyst complications, and a short hospital stay, while preserving splenic function.
Thoracoscopy – p108

THE SCOPE OF THORACOSCOPY IN PEDIATRICS, NORDINE BOUHADJIA
BA MD, GORDON MACKINLAY MD,FRASER MUNRO MD, WILLIAM MAN,
son MD, Royal Hospital for Sick Children, 9 Scienne road, Edinburgh.
EH9 1LF, UK

Background: Thoracoscopic surgery (TS) was used for the first time in chi
ldren in 1970. The recent advances in minimally invasive surgery have al
lowed even the most complex thoracic pathologies to be approached by TS.
We reviewed all patients in our centre who had TS during the last 8 years.
The results of the TS evaluation are presented.

Methods: From 1995 to 2003, 32TS were performed in a single institution.
There were 15 boys and 17 girls, aged 1day-15 years (7 years). 9 patients
(28%) were only 1 day old, presenting with oesophageal atresia; their gesta-
tional age was 37-41 weeks, weight 1.6 -3.9 kg. (Associated in this group were
lung defects 2, right aorta 1, 3VSD, small kidney, 2PFO).
The weight range between 1.64 -64.4 (26.6 kg). The intrathoracic pressure
used was between 4-6mmHg (3.7). A chest drain was inserted in all patients
and remained in place between 2-19 days (3).

Results: The distribution of the patients was: Empyema 9 (28%), (4 right,
5 left); TOF 8 (25%); recurrent pneumothorax 4 (13%); lung metastasis 3
(9%); bronchietasis 2 (6%); yolk sac tumour arising from diaphragm 1 (3%), con-
genital cystic adenomatoid malformation of the lung 1 (3%); fungal infection
of the lung 1(3%); patent ductus arteriosus 1 (3%); oesophageal duplication
cyst 1 (3%); central bronchogenic cyst 1(3%).
The operating time was 1h-3h30 (2h15); 18 patients (56%) returned to the
ward, 13 returned to ITU/HDU (41%). The complications encountered were
2(6%) anastomotic leak following TOF repair; one of them needed drainage.
There were 4(13%) conversions, 1(3%) with TOF, because of unexpected right
sided aorta; 1(3%) with a central bronchogenic cyst and 2(6%) with bronchiec-
tasis. The reason for the last 3 conversions was inadequate visualisation of
the vascular structures.

Patients were discharged between day 1 and 23 (7 days).

Conclusion: Advances in minimally invasive surgery have extended its use to a
wide range of pathology, allowing even the most complex procedures to be
performed safely in paediatric patients. The main complications were limited to two anastomotic leaks. The relatively
low conversion rate was related to anatomical abnormalities and visualisation
difficulties. Thoracoscopy has a significant reduction in post-operative pain and hospital stay, in addition to the obvious excellent cosmetic results.

Thoracoscopy – p109

PULMONARY SEQUESTERATION IN CHILDREN: DOES THE THORACOS-
COscopic APPROACH IS A GOOD OPTION?, Arnaud Bonnard MD, Serge
Mailhebrec MD, LAtifa Ferkdadji MD, Dominique Lufton MD, Yves Agir
MD, Alia El Ghoimeim PhD, Pascal de Lagausie PhD, HU Pital Robert DeBr,
Universit de Paris VII, AP-HP, France

Background: The thoracoscopic approach for pulmonary sequestration in
children seems to be feasible and reproducible. There is no study which
compare the thoracoscopic approach and conventional surgery in this indi-
cation. The aim of this study is to compare these two approaches.

Patients and method: it’s a retrospective study on patients operated for
Three to five ports were used and a single lung ventilation was required.
The clinical, operative and post-operative data were compared with the
patients operated during the same period by thoracotomy. The children
who required a conversion to open surgery were grouped with those oper-
ated by thoracotomy for statistical analysis. We have compared age and
weight at surgery, the operating time, the post-operative time with chest
tube, the post-operative narcotic use, the pain score the first and the sec-
ond day after surgery and the length of hospital stay. The Mann-Whitney
test was used for statistical analysis.

Results: Five infants were operated with a thoracoscopic approach. Two
have required a conversion to open surgery. There were 4 intralobar
sequestrations (ILS), one extralobar sequestration (ELS). The mean age at
surgery was 6,2 months (range 4-9). The mean operating time, excluded
patients who needed a conversion, was 155 min (range 120-190). In the
group thoracotomy, there was 2 ELS and one ILS. Two group was defined:
the group exclusive thoracopic (ET, n=3) and the group thoracotomy and
conversion (TC, n=4).
The lenght of post-operative drainage, post-operative narcotic use and stay seemed to be shorter in the group ET, it was respec-
tively: 3,4 days vs 2,75 days/ 4,1 days vs 3,3 days and 7,5 days vs 4,3
days, p<0.05.
There were 2 complications in the group TC (one wound abscess, one pleu-
ral leak which required a chest tube).
Conclusion: The thoracoscopic approach for pulmonary sequestration is feasible. It seems to reduce the lenght of post-operative drainage, post-
operative narcotic use and stay. These results have to be confirm by a
prospective and more important study.

Thoracoscopy – p110

AGGRESSIVE APPROACH TO THORACOSCOPIC SAMPLING FOR ME-
DIASTINAL LYMPHOMA, Wojciech J Gorecki MD, Miroslaw Krysta
MD,Piotr K Wojciechowski MD,Adam Bysiek MD, Chair and Department
of Pediatric Surgery, Jagiellonian University Children’s Hospital, Krak,Pol
and

Background: There were 4(13%) conversions, 1(3%) with TOF, because of unexpected right
sided aorta; 1(3%) with a central bronchogenic cyst and 2(6%) with bronchiec-
tasis. The reason for the last 3 conversions was inadequate visualisation of
the vascular structures.

Patients were discharged between day 1 and 23 (7 days).

Conclusion: Advances in minimally invasive surgery have extended its use to a
wide range of pathology, allowing even the most complex procedures to be
performed safely in paediatric patients. The main complications were limited to two anastomotic leaks. The relatively
low conversion rate was related to anatomical abnormalities and visualisation
difficulties. Thoracoscopy has a significant reduction in post-operative pain and hospital stay, in addition to the obvious excellent cosmetic results.

Thoracoscopy – p111

VIDEO-ASSISTED TREATMENT OF DIAPHRAGMATIC DEFECTS IN CHIL-
DREN, Mevlit Korkmaz MD, Haluk B Guven MD, Levent Avtan
MD,Gulsen Ekingen MD, Department of Pediatric Surgery, Kocaeli
University School of Medicine, Kocaeli, TURKEY

Anterior diaphragmatic defect (Morgagni), hiatal hernia and diaphragmatic
entration are known as rare pediatric surgical conditions. Most chil-
dren may be asymptomatic, and they may incidentally be seen when gen-
eral examination is performed. We present five cases where treatment
is attempted using video-assisted techniques.

Methods and material: The patient profile is briefly described in the
m Table. The thoracoscopic repair is the choice of approach in three
patients, presenting with a diaphragmatic entration on the right side.
One had been previously operated for a posterolateral diaphragmatic hernia. Hiatal hernia and anterior mediastinal defect were repaired using
laparoscopic approach.

<table>
<thead>
<tr>
<th>Age / Sex</th>
<th>Presentation</th>
<th>Surgery</th>
<th>Discharge</th>
</tr>
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<tbody>
<tr>
<td>18 month / M</td>
<td>Diaph. event.</td>
<td>Thoraoscopy pl</td>
<td>2nd day</td>
</tr>
<tr>
<td>6 month / F</td>
<td>Diaph. event.</td>
<td>Thoraoscopy pl</td>
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<td>8 month / F</td>
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<td>7 year / M</td>
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<td>6 days / F</td>
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Diaph-diaphragm, event-entration, p3-plication

Results: The presence of a mobile intrathoracic kidney necessitated con-
version to open thoracotomy in one case with entration. Hiatal hernia
was also converted to open surgery because of technical difficulties.
All patients had uneventful recovery and were discharged without signifi-
cant morbidity. Postoperative recovery and cosmetic results were obvi-
cously favorable following complete video-assisted surgery.

Conclusion: Although MIS is an effective and feasible procedure, the
morbidity. Postoperative recovery and cosmetic results were obvi-
cously favorable following complete video-assisted surgery.

Thoracoscopy – p111

VIDEO-ASSISTED TREATMENT OF DIAPHRAGMATIC DEFECTS IN CHIL-
DREN, Mevlit Korkmaz MD, Haluk B Guven MD, Levent Avtan
MD,Gulsen Ekingen MD, Department of Pediatric Surgery, Kocaeli
University School of Medicine, Kocaeli, TURKEY

Anterior diaphragmatic defect (Morgagni), hiatal hernia and diaphragmatic
entration are known as rare pediatric surgical conditions. Most chil-
dren may be asymptomatic, and they may incidentally be seen when gen-
eral examination is performed. We present five cases where treatment
is attempted using video-assisted techniques.

Methods and material: The patient profile is briefly described in the
m Table. The thoracoscopic repair is the choice of approach in three
patients, presenting with a diaphragmatic entration on the right side.
One had been previously operated for a posterolateral diaphragmatic hernia. Hiatal hernia and anterior mediastinal defect were repaired using
laparoscopic approach.
**Thoracoscopy – p112**

**ADVANCED THORACOSCOPY FOR MEDIASTINAL DISEASE IN CHILDREN, Felicia A Ivascu MD, James D Geiger MD,Daniel H Teitelbaum MD,Steven Bruch MD,Golladay Eustace MD,Robert Drognowski MS,Ronald B Hirschl MD, University of Michigan**

Purpose: To evaluate our experience with advanced thoracoscopy in the evaluation and treatment of pediatric mediastinal disease.

Methods: We retrospectively reviewed all patients undergoing thoracoscopy for a mediastinal mass, at our institution, from November 1999 to December 2003. Patients undergoing pulmonary parenchymal operations were excluded. Cases were reviewed and analyzed for pathology, length of stay, operative time, demographics, and complications.

Results: Fifteen patients, ranging in age from 4 months to 18 years (median 3.4 years) underwent fourteen successful thoracoscopic mediastinal resections. One patient with ganglioneuroblastoma was unable to tolerate insufflation and was successfully managed with thoracotomy. Of the remaining videooscopic procedures, three were completed utilizing the daVinci robotic system and 11 with standard thoracoscopic techniques. Median operative time was 80 +/- 20 minutes and median length of stay was 2.0 days +/- 0.8 days. Surgical morbidity was minimal (13%) and included one chylous leak requiring thoracoscopic correction and a recurrent pneumothorax requiring treatment with tube thoracostomy. Mortality was 0%. Complete surgical resection was obtained in all patients, including three patients with spinal extension of neurogenic tumors. Final pathology of resected specimens was: ganglioneuroblastoma (6), bronchogenic cyst (5), lobar sequestration (3), and schwannoma (1). There has been no clinical or radiographic evidence of tumor recurrence to date with a median follow-up of 9 months (range 1.2 to 39 months).

Conclusion: Thoracoscopic resection of benign and malignant mediastinal masses is safe and effective in the pediatric population. The use of robotics may facilitate resection in some cases.

**Thoracoscopy – p113**

**UTILIZATION OF A TRANSSTERNAL SPINAL NEEDLE FOR RETROGRADE SUTURE PASSAGE DURING THORACOSCOPIC AORTOPEXY, Aaron R Wassen MD, Le Minh Duc MD, Division of Pediatric Surgery, Lucile Packard Children’s Hospital, Department of Surgery, Stanford University, Stanford, California**

Introduction: Tracheomalacia is known to be associated with esophageal atresia (EA) and requires treatment if life-threatening, Herein described is a novel technique of thoracoscopic aortopexy.

Case Presentation: A 55 day-old male with a history of EA and fistula repair and severe GER presented after a life-threatening apneic event associated with feeding. Workup revealed severe tracheomalacia. The patient underwent thoracoscopic aortopexy with a four-segment fixation of the ascending aorta and the base of the innominate artery. One 3.5mm and two 5mm trocars were placed. After partial thymectomy and exposure of the ascending aorta and innominate artery, four 2-0 prolene sutures on RB-1 needles were passed through the vessels? adventitia. The needles were then cut off and a 20-gauge spinal needle was inserted at an angle through the sternum via a 2mm stab wound. A single suture tail was passed retrograde through the spinal needle. The spinal needle was then removed and re-inserted at a different angle through the same stab wound, and the second suture tail was passed retrograde. This was repeated for the other three sutures. The sutures were tied with direct thoracoscopic visualization as well as bronchoscopic visualization of the trachea. After completion of the aortopexy, a laparoscopic Nissen fundoplication was performed.

Results: The patient was discharged home 9 days later. Follow-up revealed appropriate growth and no feeding or respiratory difficulties.

Conclusion: A transternal spinal needle allows easy retrograde passage of sutures through the sternum and the use of a conventional curved needle for the great vessels. Coupled with precise suture placement through a bridge of sternal bone, this technique provides excellent anterior fixation.

**Thoracoscopy – p114**

**THORACOSCOPIC Plication for Diaphragmatic Eventration, Steven L Lee MD, John H Waldhausen MD, Children’s Hospital and Regional Medical Center, Seattle, Washington**

INTRODUCTION: Eventration of the diaphragm may lead to frequent respiratory infections and distress. The congenital form may also be indistinguishable from diaphragmatic hernia. Traditionally, eventration is repaired via thoracotomy, but division of intercostal muscle may further impair postoperative pulmonary function. We present use of video-assisted thoracoscopy as an alternative technique for plication of diaphragmatic eventration.

METHODS: A 3 year-old boy with neurodegenerative disorder and restrictive lung disease presented with right arm weakness. Shortly thereafter, he required increased outpatient respiratory support, both supplemental oxygen and BiPAP. Chest x-ray demonstrated an elevated right diaphragm and paradoxical movement of the diaphragm was confirmed by fluoroscopy. Video-assisted thoracoscopy and plication was performed through two 5-mm and one 10-mm port without complications.

RESULTS: The chest tube was removed on postoperative day 1 and the patient was discharged on postoperative day 3. Two-weeks following the operation, the patient was clinically improved, but chest x-ray demonstrated a large pleural effusion requiring drainage. The pleural fluid was consistent with a reactive effusion. At his 2 month follow-up, he continued to show slow improvement although still requires outpatient respiratory support.

CONCLUSIONS: Thoracoscopic plication is a safe and effective alternative to open thoracotomy for the treatment of diaphragmatic eventration. Potential benefits include decreased post-operative pulmonary impairment and confirmation of diagnosis with visualization of the entire diaphragm.

**Thoracoscopy – p115**

**INFRARED ILLUMINATION DURING THORACOSCOPIC EXCISION OF MEDIASTINAL BRONCHOGENIC CYSTS, Robert L Gates MD, Lisa Dobruskin MD, Marc A Levitt MD, Peter S Midulla MD,Andrew R Hong MD, Schneider Children’s Hospital, North Shore-Long Island Jewish Health System**

Objective: Bronchogenic cysts are congenital abnormalities that occur secondary to abnormal development of the ventral foregut. Most share a common wall with the esophagus. Excision is indicated to prevent complications of mass effect or infection. Thoracoscopic resection has been previously described, but injury to the adjacent esophagus is a potential complication due to the close proximity of the esophagus. Traditionally, placement of an esophageal bougie has been helpful in identifying the esophagus.

Methods and Procedures: We describe a technique utilizing the InfraVision Esophageal Kit (Stryker Endoscopy, San Jose, CA) to assist in the illumination of the esophagus during the dissection of mediastinal bronchogenic cysts in three children. The system consisted of an infrared light emitting probe and an infrared sensing endoscopic camera. The probe was easily placed by the anesthesiologist. Activation of the probe allowed easy identification of the esophagus and helped clarify the dissection plane between the cyst and the esophagus. All children did well and were discharged without incident.

Conclusion: This technique facilitates dissection of mediastinal cysts and helps avoid injury to the esophagus. The system may be applicable to other esophageal operations such as Nissen fundoplication, Heller myotomy or esophageal atresia repair.
Thoracoscopy – p116
PURPOSE: Evaluate the relationship between our results and our experi- ence when using the Nuss procedure for the treatment of pectus excava- tum.
METHODS: From December 1999 to December 2003, 75 patients with pectus excavatum were treated at the National Pediatric Hospital J.P.Garrahan using the Nuss minimally invasive procedure. 45 patients were males. The age at surgery ranged between 6 and 18 years (mean: 11.4 years). All patients were evaluated preoperatively using the Haller index that was of 4.1 (range 2.75 to 8.2) in our series. Many surgical technical aspects were changed along the years mostly regarding the site of insertion, bar bending and bar fixation.
RESULTS: Two patients needed 2 bars in order to achieve a good correc- tion of the defect. Lateral stabilizers were implanted in all patients, and 28% of them required them bilaterally.
Mean surgical time was of 70 minutes (range 40-120 minutes) An epidural catheter for postoperative pain management, was placed in 87% of the patients, the mean permanence of this catheter was of 3 days.
Immediate postoperative pneumothorax was the most frequent complica- tion, observed in 24% of the cases. Mean hospital stay was of 5.7 days. Excellent, very good, and good results were achieved in 92% of the cases. Regular results were observed in 6 % and bad results obtained in 2% mostly conditioned by thoracic asymmetry with sternal rotation and technical issues such as incorrect bar bending or placing.
Most of the complications were observed at the beginning of our experi- ence, many of them were due to technical aspects, other related to postoperative care.
CONCLUSION: The Nuss procedure for the correction of pectus excava- tum is a very effective and valuable technique that provides excellent results. Because the results can only be evaluated on a long-term basis, correction of technical aspects and advance over the learning curve takes a considerably longer time than most of minimally invasive proced- ures performed in children. Authors suggest that high volume institu- tions should offer periodic workshops in order to shorten the length of the learning curve.

Thoracoscopy – p117
THORACOSCOPIC DRAINAGE OF A MEDIASTINAL ABSCESSES IN A FOUR YEAR OLD CHILD., Meera Menon MD,Charlotte Barbey-Morel MD,A. Alfred Chahine MD,Georgetown University Medical Center and Children?ts National Medical Center, Washington, D.C.
INTRODUCTION
Isolated mediastinal abscess is a rare entity in children. We here pres- ent a case of a mediastinal abscess presenting in a 4 year old boy as an anterior and middle mediastinal mass. Thoracoscopy was used for both diagnosis and drainage of the abscess.
CASE REPORT
A previously healthy 4-year-old boy presented with a one-week history of fever and cough. A chest radiograph revealed a widened mediastinum. A chest CT scan revealed a heterogeneous anterior and middle mediasti- nal mass. He was taken for thoracoscopy for presumed lymphoma. The right upper lobe was adherent to the mass which upon manipulation turned out to be a pus filled cavity. Drainage at two different spots was accomplished with blunt thorascoscopic dissection. The child made an uneventful recovery. Serologies were positive for Group B Streptococcus. Follow up CT scan after a course of antibiotics revealed minimal postop- erative scarring.
CONCLUSION
To our knowledge, this is the first report of thorascoscopic drainage of a mediastinal abscess in a child. Even though it is rare, an abscess should be included in the differential diagnosis of mediastinal masses in children.

Thoracoscopy – p118
THORACOSCOPIC REPAIR OF ESOPHAGEAL ATRESIA AND TRACHEOESOPHAGEAL FISTULA: A REPORT OF INITIAL EXPERIENCE, Thang Nguyen MD,Trung Bui MD,Sherif Emil MD, Nam X Nguyen MD, UCI Medical Center
Introduction
Tracheoesophageal fistula (TEF) is a rare congenital anomaly of the foregut. Repair of TEF has been traditionally done via a formal thoracoto- my. Recently, the surgical correction of this condition has been accom- plished thorascopically. In this paper, we report our initial experience with thorascopic repair of TEF.
Method
The patients were placed in a 45° prone position. We approach the opera- tion through the right chest using a three-trochar technique. The thorax was insufflated at 5 mmHg , flow rate 2L/min. The azygos vein was lig- ated and divided with the LigatureÆ. The fistula was mobilized and ligat- ed with an interrupted 3.0 Ethibon. The proximal pouch was mobilized until adequate length is achieved. An end-to-end anastomosis was estab- lished with interrupted 4.0 and 5.0 silk sutures.
Result
We performed three infants with type C TEF thorascopically. The mean GA was 38 weeks (36-39). The average birth weight was 2.7 kg (1.7- 3.4). One patient has major cardiac associated anomaly. The patients were operated on date fourth of life (2-7). All three were successfully performed thorascopically. Mean operative time was 126 min (75- 150). Duration of narcotic usage was 52 hours (24-72). All three patients were started continuous feeding via the transanastomotic tubes on POD 3 with full feeds were achieved on POD 5. Esophagrams were obtained on POD 6 (5-7). All initial contrast studies demonstrated good anastomotic patency and no leaks. The transanastomotic tubes were removed and the patients were started on oral feeds. One patient pres- ent with an anastomotic stricture three weeks later which was successful- ly dilated with pneumatic dilatation.
Conclusion
Thorascopic repair of TEF is technically feasible; it offers excellent exposure and better cosmesis. The patients appear to have less pain. Feeding can be established sooner. Early results are acceptable com- pared to thoracotomy. However, the procedure requires a steep learning curve. More data is needed to better evaluate this technique.

Thoracoscopy – p119
EFFICACY OF LEFT THORACOSCOPY AND BLUNT MEDIASTINAL DIS- SECTION DURING THE NUSS PROCEDURE FOR PECTUS EXCAVATUM, Richard J Hendrickson MD, John K Petty MD, David A Partick MD, Jennifer L Bruny MD,Denis D Bensard MD, Department of Pediatric Surgery, The Children’s Hospital/University of Colorado, Denver, CO
INTRODUCTION: The minimally invasive Nuss procedure is an effective method for the repair of pectus excavatum. Original methods of pectus bar placement have been modified in order to improve safety and avoid cardiothoracic complications. Currently, the reported modifications to facilitate retrosternal pectus bar placement include routine use of right thorascopy or subxiphoid incisions. The purpose of this paper is to delineate further modifications of the Nuss procedure to improve safety and efficacy.
METHODS: A prospective analysis was performed on 75 patients who have had a thorascopic-assisted Nuss procedure at a single pediatric hospital between 1999-2003. Technical modifications include lateral patient positioning with left arm suspension, routine use of left thora- coscopy, and blunt mediastinal dissection with an Endo-Kittner instru- ment.
RESULTS: Seventy-five patients have successfully undergone the Nuss procedure utilizing these modifications. There have been no open conver- sions. Operative time ranged from 45-120 minutes. There have been no intraoperative bleeding complications. One patient presented in a delayed fashion with bleeding from the internal mammary artery due to a rotated pectus bar. There have been two pneumothoraces requiring needle thoracostesis in the operating room prior to extubation. One patient had a simultaneous thorascopic bleb resection requiring a postoperative chest tube. All patients had good to excellent results. Average length of hospital stay was 4-6 days.
CONCLUSIONS: Modifications to the Nuss procedure utilizing left thora- coscopy and blunt mediastinal dissection minimize the risk of cardiotho- racic injury while maintaining its clinical efficacy. Moreover, other meth- ods to ensure safe substernal dissection are not necessary.
**Thoracoscopy – p120**

**PRIMARY THORACOSCOPIC REPAIR OF DIAPHRAGMATIC HERNIA WITH PERI-COSTAL SUTURES: A NOVEL APPROACH.**

Andrew Rozmirek MD, Robert Weinheimer MD, Georges Azzie MD, David Lemon MD, Children’s Hospital of New Mexico, University of New Mexico

The surgical management of congenital diaphragmatic hernias has traditionally been via laparotomy or thoracotomy. Although laparoscopic and thoracoscopic repair have been described, most reports are in older infants. We describe a method for primary thoracoscopic repair applied in the immediate neonatal period when no posterior-lateral rim of diaphragm exists. This simple technique for placing the peri-costal sutures is a useful adjunct in the thoracoscopic management of diaphragmatic hernias.

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**Thoracoscopy – p121**

**THORACOSCOPIC LIGATION OF AORT-PULMONARY FISTULA.**

K.R. Srinurthy, S. Ramesh, Narendra Babu, The Bangalore Hospital & Indira Gandhi Institute of Child Health, Bangalore, India

Aim: We present a rare case of Aorto-pulmonary fistula which was ligated thoracoscopically.

Material & Methods

We had a 6 year old boy with a large fistula between the Aorta & the pulmonary vessels. He had chest pain, a machinery murmur and features of cardiac overload. We did a thoracoscopic triple ligation of the wide bore communication. Division was not feasible as the vessel was very short.

Results

The child had an uneventful recovery and discharged within 2 days after the surgery. All the morbidity of a long thoracotomy was avoided and the three 5 mm ports were scarcely visible. The grafting results have enthused us to try this novel method for other vascular anomalies like Double aortic Arch etc..

Conclusions

Thoracoscopy is an attrative and effective option in dealing with the anomalous vessels & Vascular rings in the chest.

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**Thoracoscopy – p122**

**THORACOSCOPIC SURGERY IN CHILDREN: A RIGHT MIDDLE LOBECTOMY AND THE REPAIR OF A RIGHT-SIDED CDH.**

Philipp O Szavay MD, Karin Schellinger MD, Steven W Warmann MD, Tobias Luftkle MD, Joerg Fuchs MD, Dept. of Pediatric Surgery, Children’s Hospital, University of Tuebingen, Germany

PURPOSE: The aim of this presentation is to assess the safety and efficacy of thoracoscopic surgery in infants and children at a single institution. Video sequences of a right middle lobectomy as well as of the repair of a right-sided big diaphragmatic hernia will be implemented in the presentation for detailed illustration of thoracoscopic surgery.

METHODS: From May 2002 to January 2004, 27 patients, ages 1 day to 26 years, underwent thoracoscopic surgery at our institution. This included esophageal atresia (1), diagnostic thoracoscopic (1), pleurodesis (2), atypical lung resections (7), lobectomies (3), tumor biopsies (3), a complete tumor resection (1), video assisted repair for pectus excavatum (NUSS-repair) (6) and repair of CDH (3).

RESULTS: 25 of 27 procedures were completed thoracoscopically. Follow up ranged from 1 month to 20 months. The video sequences show detailed anatomical preparation in the right middle lobectomy. Instead of using stapling devices, pulmonary vessels were ligated or sutured. In case of the right-sided CDH, a complete repair could be achieved thoracoscopically using non-resorbable sutures after reposition of the liver into the abdomen. There were no intraoperative or postoperative complications.

CONCLUSIONS: Thoracoscopic lobectomy is a safe procedure as long as not challenging standards in open surgery. The cosmetic result is excellent while time on the intensive care unit is decreased compared with thoracotomy data.

Thoracoscopic repair of CDH is a safe and efficacious technique. It helps avoid the morbidity of a major thoracotomy or laparotomy. As seen in minimally invasive surgery in general, both techniques are associated with the same decrease in postoperative pain, recovery, and hospital stay.

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**Thoracoscopy – p123**

**LUNG BIOPSY WITH ULTRASONIC SCALPEL IN PEDIATRIC PATIENTS.**

Edgar Morales Juvea PhD, Ricardo Villalpando C PhD, Jose A Ramirez V PhD, Surgery Department, Hospital Of Pediatrics National Medical Center, IMSS, Mexico

INTRODUCTION: The lung biopsy (LB) is the gold standard for the interstitial diseases, and the thoracoscopic approach for the procedure is, by far better than the open technique. We would like to show our experience with LB using the ultrasonic scalpel as the only method of aerostasis.

Methods: The procedure is done under general anesthesia, using three 5 mm ports, with a 30 degrees optic, the side is selected with help of a CT scan, and area of about 0,5 to 1cm2 is obtained using only the ultrasonic scalpel, as the cutting method, the need for a pleural drainage depends on each patient.

Results: We have done this procedure in 18 patients so far, with diagnosis that includes, leukemia, lymphangiectasis, AIDS, tuberculosi, among others. There have been only one complication, a patient developed neumothorax, some of the hematology patient required of pleural drainage, with no air leakage. The age of the patients range from 4 to 17 years. Pathology reported as useful all the specimens.

Conclusion: The use of ultrasonic scalpel as the only method for cutting and aerostasis, in LB it is a safe procedure, as long as the biopsed lung is kept as collapsed as possible during the biopsy, so the scalpel could achieve the work, and it is of special use in small patients in whom the stapler could not be use because of the small intercostals space.

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**Thoracoscopy – p124**

**THORACOSCOPIC REMOVAL OF AN ANTERIOR MEDIASTINAL TERATOMA.**

Daniel K Robie MD, Hideko Yamauchi MD, Kapiolani Medical Center for Women and Children, Honolulu, HI

A 19 year old woman presented with an incidentally found anterior mediastinal mass. It measured 8 by 7 cms and had both solid and cystic components. There was no clinical evidence of tracheobronchial or cardiac compression. Serum tumor marker levels were normal. A minimally invasive surgical approach was planned with the primary goals of better cosmesis and more rapid return to full activity.

At surgery a double lumen endotracheal tube was placed and single lung ventilation achieved. She was placed in partial lateral decubitus position. Four 5mm ports were placed in a diamond shape fashion centered along the lateral chest wall. The mass was found anterior to the left hilum emanating from the anterior mediastinum. The phrenic nerve was seen coursing along the posterior aspect of the mass. Using the harmonic scalpel and blunt dissection, the mass was mobilized and freed. The operative table was maneuvered as needed to facilitate exposure. A 5mm port site was widened and a 15mm port and endopouch inserted. The mass was placed in the bag and brought up to the port site. It was then removed in pieces while avoiding any tumor spillage. Frozen section analysis showed a dermoid cyst. An angled chest tube was placed.

Her postoperative course was uneventful and she was discharged home on the 2nd postoperative day. Postoperative chest radiograph showed normal position of the diaphragm and no effusion. She returned to college within a week.

In conclusion, besides achieving our goals of improved cosmesis and more rapid recovery, we believe this approach should be considered for the complete resection of malignant mediastinal masses.
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