CANADIAN ASSOCIATION of
PAEDIATRIC SURGEONS

37th

Annual Meeting

Québec City
September 22 - September 25, 2005
Thirty-seventh Annual Meeting

CANADIAN ASSOCIATION of
PAEDIATRIC SURGEONS

September 22 - September 25, 2005

Loews Concorde Hotel
Québec City (Québec)

CANADA
This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of The Royal College of Physicians and Surgeons of Canada, approved by Canadian Association of General Surgeons.

Educational Objectives

The Annual meeting of the Canadian Association of Paediatric Surgeons is intended to provide 3 days of comprehensive continuing education in the field of pediatric general and thoracic surgery. Specifically, the objectives are to:

- Present current updates on advances in clinical pediatric surgery
- Present current updates on advances in the pathophysiology of pediatric surgical disorders
- Provide for group discussion on controversial issues in pediatric general and thoracic surgery through:
  - Discussion of presented scientific papers
  - Interactive panel discussion on the management of prenatally diagnosed but postnatal asymptomatic lung lesions.

Over the 2 and a half days of the meeting, the breadth of pediatric general and thoracic surgery topics will be covered through presentation of original works by trainees, professional colleagues and allied health care workers involved in the field. The works will acquaint participants with the latest clinical and basic science research findings and trends influencing the clinical practice of pediatric surgery, as well as reacquaint participants with interesting pediatric surgical entities. Controversial topics will invite participatory discussion by the delegates.

A panel of 4 members of the CAPS Program Committee has chosen the abstracts presented, based on what is commonly relevant to the practice of pediatric surgery. Input for subsequent meetings and how to improve this one will be solicited from the delegates at the conclusion of the meeting.
SCIENTIFIC AND SOCIAL PROGRAM

Thursday, September 22, 2005

10:00 - 17:00  Meeting of CAPS Council (Executive) Room 410
14:00          Registration
19:00          Welcoming Reception – Loews Concorde Hotel, Restaurant
               La Galerie

Friday, September 23, 2005

06:00 - 07:30  Specialty Committee Pediatric General Surgery Meeting
07:00 - 12:00  Registration/Exhibits - Foyer
07:00 - 07:30  Continental Breakfast
07:30 - 07:40  President’s Welcome – suzor Coté
07:40 - 09:26  Scientific Session ONE
09:26 - 09:40  Refreshment Break
09:40 - 11:28  Scientific Session TWO
11:28 - 11:44  Refreshment Break
11:44 - 12:30  Fred MacLeod / JPS Lecture, Dr. Abdullah Al Rabeeah
12:30 - 13:30  Box Lunch (All)– suzor Coté
12:30 - 13:30  CAPSNET meeting - suzor Coté

Saturday, September 24, 2005

06:00 - 07:30  Publications Committee Meeting
07:00 - 12:00  Registration/Exhibits
07:00 - 07:30  Continental Breakfast
07:30 - 08:40  Scientific Session THREE – Poster Presentations
08:40 - 08:55  Refreshment Break
08:55 - 10:23  Scientific Session FOUR
10:23 - 10:35  Break
10:35 - 11:30  Scientific Session FIVE
11:30 - 12:15  Panel Discussion – Controversial issues in pediatric surgery
12:15 - 14:15  CAPS Members Business Meeting (Luncheon) – Jean-Paul
               Lemieux
18:00 (pick-up at hotel) Presidential Reception / Banquet – Chapelle du petit Séminair

**Resident prizes for excellence in clinical and basic research presentations

Sunday, September 25, 2005

07:00 - 09:00  Registration/Exhibits
07:00 - 07:30  Continental Breakfast
07:30 - 09:01  Scientific Session SIX
09:01 - 09:40  Refreshment Break
09:40 - 10:34  Scientific Session SEVEN
10:34          President’s Closing Remarks
Bienvenue à Québec,

This year's CAPS meeting is held in an especially nice city and is located on a very important historical site. The "Plaines d'Abraham" were the theater of very significant historical events in the history of our country.

Quebec City is also important in medical history. L'Hôtel Dieu de Quebec, located a few hundred yards from our meeting, is the oldest hospital in North America. It is still one of the components of the Quebec University Health Center.

The program committee, headed by Dr Natalie Yanchar, for the first year, has done an excellent job in putting together a first class scientific program.

The local arrangements chair, Dr Pascale Prasil, has made sure that this year's meeting attendees will remember the very special social program for a long time.

The choice of the McLeod-JPS Lecturer is also somewhat historical. It is the first time that a CAPS associate member is invited to give this lecture. Dr. Abdullah Al Rabeeah will share with us his unique and large experience in the surgical treatment of an exceptional malformation. The title of his talk is: "Conjoined Twins; Past, Present and Future".

Our faithful Secretary-Treasurer, Dr. Peter Fitzgerald, is keeping CAPS house in order with great competence and enthusiasm.

Sincere thank you to everyone.

Salam Yazbeck MD
President
Canadian Association of Paediatric Surgeons
ABOUT THE CANADIAN ASSOCIATION OF PEDIATRIC SURGEONS

The Canadian Association of Pediatric Surgeons was granted its charter in 1967. Its goal is to improve the surgical care of infants and children in Canada. Its areas of interest include all aspects of general and thoracic pediatric surgery with recognition of its unique responsibility to infants born with congenital anomalies and children with malignancies. While its responsibility to pediatric trauma is not unique, it assumes a pivotal role in issues related to pediatric trauma.

The Canadian Association of Pediatric Surgeons presents an opportunity, particularly through its annual meetings, to share information concerning diagnosis, treatment, and research with regards to its areas of interest. In addition, it assumes responsibility to participate in the education of not only its members, but other members of the community interested in and involved in related aspects of pediatric care.

EDUCATION FUND: To help achieve its responsibility to education for issues related to pediatric surgery, the Association has an education fund. This fund was established and continues to exist through the generosity of donations from individuals and groups, both medical and non-medical, interested in the surgical care of children. The Association solicits annual donations to the fund to maintain an adequate working capital to support the annual education programming endorsed by the CAPS membership. This fund is registered with the federal government and all contributions are fully tax-deductible. It is audited annually.

Donations may be sent to:

Peter Fitzgerald, M.D.
CAPS Secretary-Treasurer
McMaster Children’s Hospital
1200 Main St. W., Room 4E2
Hamilton, ON L8N 3Z5
Telephone: (905) 521-2100, ext. 75231
Fax: (905) 521-9992
E-mail: fitzger@mcmaster.ca
PRESIDENTS

1967-1973  Harvey Beardmore  Montreal
1973-1975  Colin Ferguson*  Winnipeg
1975-1977  Jim Simpson*  Toronto
1977-1979  Sam Kling  Edmonton
1979-1981  Pierre-Paul Collin  Montreal
1981-1983  Barry Shandling  Toronto
1983-1985  Gordon Cameron  Hamilton
1985-1987  Stanley Mercer  Ottawa
1987-1989  Alex Gillis  Halifax
1991-1993  Sigmund H. Ein  Toronto
1993-1995  Angus Juckes  Regina
1995-1997  Jean G. Desjardins  Montreal
1997-1999  David P. Girvan  London
1999-2001  Ray Postuma  Winnipeg
2001-2003  Mike Giacomantonio  Halifax
2003-  Salam Yazbeck  Montreal

* indicates deceased

SECRETARY-TREASURERS

1967-1974  Barry Shandling  Toronto
1974-1978  Gordon Cameron  Hamilton
1978-1983  Frank M. Guttman  Montreal
1989-1995  Ray Postuma  Winnipeg
1995-2002  Salam Yazbeck  Montreal
2002-  Peter G. Fitzgerald  Hamilton
FOUNDING MEMBERS

ALLEN  Michael
ASHMORE  Phillip
BEARDMORE  Harvey
CAMERON  Gordon
COLLIN  Pierre-Paul
DESJARDINS  Jean G.
DUCHARME  Jacques C.
DUVAL*  Frederick
FALLIS  James
FERGUSON*  Colin
GILLIS  Alex
GUTTMAN  Frank M.
JUCKES  Angus
KARN*  Gordon
KENNEDY  Richard
KLIMAN  Murray
KLING  Samuel
MARSHALL  Donald
MARSHALL*  Russell
MERCER  Stanley
MURPHY  David
OWEN*  Herbert
SHANDLING  Barry
SHRAGOVITCH*  Israël
SIMPSON*  James
STEPHENS*  Clinton
TURCOT*  Jacques

* indicates deceased

1st ANNUAL MEETING was held January 22, 1969 in VANCOUVER
THE COATS OF ARMS

OF THE

CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS

Heraldic Blazon

Per pale gules and purpure, dexter a scalpel erect entwined by a serpent, sinister a child standing, all argent.

Crest: On the three maple leaves slipped gules and blacked purpure, the date 1967.

Motto: “Je le pensay, Dieu le guarit”.

Description

The red and purple of the arms are also the colours of the Royal College of Physicians and Surgeons of Canada and represent the blood met in surgery - arterial and venous. The scalpel with the healing serpent of Aesculapius, and the figure of a well child combine to symbolize the practice of Paediatric Surgery.

The crest is the Canadian maple leaf and the founding date of the Association (1967).

The Motto is a quotation from Ambroise Pare, a father of modern surgery. The sixteenth-century French translates, “I treated him, God cured him”.

CAPS 2006
ANNUAL MEETING

Calgary, Alberta
September 7 - 10, 2006

PLAN TO JOIN US!
GUEST LECTURER

DR. ABDULLAH AL RABEEAH

Chief Executive Officer
National Guard Health Affairs
King Abdulaziz Medical City-Riyadh
Saudi Arabia

Director
King Saud bin Abdulaziz University for Health Sciences
King Abdulaziz Medical City- Riyadh
Saudi Arabia
GUEST LECTURER

DR. ABDULLAH AL RABEEAH

This year's McLeod-JPS lecturer is very special in many aspects.

After receiving his MD from King Saud University in Riyadh in 1979, Dr. Al Rabeeah started his training in surgery in Riyadh. He moved to Edmonton in 1981 where he undertook a residency in general surgery and received his FRCS in 1986. He started his pediatric surgery in Edmonton and completed it with a year spent at Dalhousie in 1987.

Dr. Al Rabeeah, has always been interested in teaching, research, and high quality clinical care. He was chosen the best teaching chief resident in surgery at the University of Alberta in 1986 and he received the award for the best research paper in 1985 at the University of Alberta. Upon his return home, he established four pediatric surgical units with international standards in Riyadh and Jeddah, and organized a large number of scientific meetings on pediatric surgery.

His country recognized rapidly the numerous talents of Dr. Al Rabeeah and got him involved in administrative matters. He is presently member of many Saudi national committees; he sits on the Board of Directors’ Council of King Faisal Specialist Hospital and Research Center. He is also Director of King Saud Bin Abdulaziz University for Health sciences as well as being the President of the Faculty of Nursing and Allied Health Sciences. Dr. Al Rabeeah is the CEO of a huge health care organization, the National Guard Health Affairs.

Dr. Al Rabeeah’s involvement in administration did not prevent him from continuing his work as a consultant pediatric surgeon in the main hospitals in Riyadh and Jeddah. He managed to publish more than 75 papers and abstracts and is still involved in ongoing research projects. His tertiary care practice allowed him to develop an exceptionally large experience in evaluation and separation of conjoined twins.

In spite of his high profile management duties and his internationally recognized reputation, Dr. Al Rabeeah kept his humility and kindness as they have always been for those who have known him for many years.

CAPS is happy to learn from this experience with the McLeod-JPS lecture of this meeting.

The Canadian Association of Pediatric Surgeons is pleased to invite

DR. ABDULLAH AL RABEEAH

to give the Fred MacLeod / JPS Annual Lecture.

The visit by Dr. Abdullah Al Rabeeah is made possible with the financial support of the Elsevier.
RESIDENTS’ PAPERS

The papers presented by Surgical Residents are adjudicated by a panel of members from the Publication Committee. There are two award categories: the best Clinical paper and the best Experimental paper. Selection will be made only from the Original Papers Category. Each award is $500.

WINNERS OF THE 2004 RESIDENT BEST PAPER AWARDS

BEST CLINICAL RESEARCH PAPER

Dr. S. Phillips

10 YEAR EXPERIENCE WITH PEDIATRIC LAPAROSCOPIC APPENDECTOMY – ARE WE GETTING BETTER?

Stephanie Phillips, J. Mark Walton, Ian Chin, Peter Fitzgerald, Brian Cameron, Forough Farrokhvar McMaster Children’s Hospital, McMaster University Hamilton, ON

Dr. MARIA DELORENZO

BEST BASIC SCIENCE RESEARCH PAPER

Dr. Osama Bawazir

GLUCAGON-LIKE PEPTIDE-2 INDUCES INTESTINAL ADAPTATION IN PARENTERALLY FED RATS WITH MASSIVE DISTAL SMALL BOWEL RESECTION

Osama Bawazir, Laurie E. Wallace, Gary R. Martin, Greg Zaharko, Andrea Miller, Ahmad Zubaidi, David L. Sigalet University of Calgary, Gastrointestinal Research Group Calgary, AB

CONTRATULATIONS DR. PHILLIPS AND BAWAZIR!
WINNERS OF THE 2004
RESIDENT BEST PAPER AWARDS

Seminars in Pediatric Surgery Prize

M. Pacilli

REPAIR OF GIANT EXOMPHALOS CAN BE SAFELY
PERFORMED IN THE NEONATAL PERIOD

Pacilli M., Spitz L., Kiely E.M., Curry J., and Pierro A.
Institute of Child Health and Great Ormond Street Hospital for Children
London, UK

Journal of Pediatric Surgery Subscription Prize

G. Stefanutti

PEROXYNITRITE DECOMPOSITION CATALYST FeTMPyP
DOWN-REGULATES THE EXPRESSION OF P-SELECTIN
INDUCED BY NEONATAL INTESTINAL ISCHAEMIA
AND REPERFUSION

Department of Paediatric Surgery,
Institute of Child Health
London, UK

Book Prize

Dr. S. Widder

PSEUDOANEURYSM IN THE MANAGEMENT OF
PEDIATRIC SPLENIC TRAUMA: A 10 YEAR EXPERIENCE

Drs. S. Widder, R. Eccles, D. Sigalet, and A. Wong
Presenter: Dr. S. Widder
Alberta Children’s Hospital, University of Calgary, Alberta
THE CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS WOULD LIKE TO ACKNOWLEDGE THE FINANCIAL SUPPORT OF THE FOLLOWING SPONSORS

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PROGRAM SCHEDULE
PROGRAMME DÉTAILLÉ

ABBREVIATIONS

O  original 7-minute paper
R  resident's paper
C/T 4-minute case/technique report
P  poster presentation

O, R, P  Adjudicated
C/T  Not adjudicated
THURSDAY, SEPTEMBER 22, 2005

Loews Concorde Hotel

10:00 - 17:00  Meeting of CAPS Council (Executive)
               Room 410

14:00  Registration
       Foyer

19:00  Welcoming Reception
       Loews Concorde Hotel
       (Restaurant La Galerie)
FRIDAY, SEPTEMBER 23, 2005
Loews Concorde Hotel

06:00 - 07:30  Specialty Committee Pediatric Surgery Meeting
07:00 - 12:00  Registration/Exhibits
07:00 - 07:30  Continental Breakfast
07:30 - 07:40  Welcome and Opening Ceremony - suzor Coté
               President, Dr. Salam Yazbeck
07:40 - 09:20  Scientific Session I
09:20 - 09:40  Refreshment Break
09:40 - 11:28  Scientific Session II
11:28 - 11:45  Refreshment Break
11:45 - 12:30  Fred MacLeod / JPS Lecture
               Dr. Abdullah Al Rahbeeah
12:30 - 13:30  Box Lunch
12:30 - 13:30  CAPSNET Meeting
President’s Welcome - Dr. Salam Yazbek

SCIENTIFIC SESSION I

7:40-7:47 1 OR Is Ultrasound a Good Screening Test for Intestinal Malrotation?
N. Orzech, O. Navarro, J.C. Langer
Hospital for Sick Children, Toronto (Ontario), CANADA
4 minute discussion

7:51-7:58 2 OR Malrotation: Same Treatment, Different Results?
I. Sau, D. Milanovich
University Hospital of Wales, Cardiff, WALES
4 minute discussion

8:02-8:09 3 OR Factors Determining the Need for Operative Reduction in Children with Intussusception: A Population Based Study
S. Somme, T. To, J.C. Langer
Hospital for Sick Children, Toronto (Ontario), CANADA
4 minute discussion

8:13-8:20 4 OR Utility of Hospital Admission After Successful Enema Reduction of Ileo-colic Intussusception
A. Al-Jazaeri, S. Yazbeck, D. Filiatrault, M. Beaudin, M. Emran, A. Bütter
Saint-Justine Hospital, Université de Montréal, Montreal (Quebec), Canada
4 minute discussion

8:24-8:31 5 OR Distribution of Interstitial Cells of Cajal (ICC) in Localized Inflammation of the Large Intestine
M. Bettolli, S.Z. Rubin, W. Staines, A. Krantis
Children’s’ Hospital of Eastern Ontario, University of Ottawa, Ottawa (Ontario), CANADA
4 minute discussion
8:35-8:42  6 OR  A Simple and More Cost Effective Antibiotic Regimen for Perforated Appendicitis  
S.D. St. Peter, D. Little, J.P. Murphy, W.S. Andrews, G.W. Holcomb III, R.J. Sharp, C.L. Snyder, D.J. Ostlie  
Children's Mercy Hospital  
Kansas City, Missouri, USA  
4 minute discussion

8:46-8:50  7 OR  Bladder Prolapse Through a Patent Urachus: Fetal and Neonatal Features  
B. Lugo, J. McNulty, S. Emil  
University of California, Irvine School of Medicine  
Irvine, California, USA  
Long Beach Memorial Medical Center  
Long Beach, California, USA  
3 minute discussion

8:53-9:00  8 OR  Vascular Anomalies of the Female External Genitalia  
Children's Hospital Boston, Harvard Medical School  
Boston, Massachusetts, USA  
4 minute discussion

9:04-9:11  9 OR  Pediatric Necrotizing Soft Tissue Infection: Differences Between Immunocompromised and Healthy Children  
S.A. Butterworth, J.J. Murphy  
British Columbia Children's Hospital  
Vancouver (British Columbia), CANADA  
4 minute discussion

9:15-9:22  10 OR  Ethibloc Sclerotherapy for Treatment of Lymphangiomas in Children  
M. Emran, J. Dubois, S. Yazbeck, A. Al-Jazeeri, A. Bütter  
Sainte Justine Hospital  
Montreal (Quebec), CANADA  
4 minute discussion

9:26-9:40  BREAK
<table>
<thead>
<tr>
<th>Time</th>
<th>OR/CR</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
<th>Discussion Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:40-9:47</td>
<td>11 OR</td>
<td>Macrophage Infiltration, ICAM-1 and E-selectin Expression in Neonates with Necrotizing Enterocolitis</td>
<td>G. Stefanutti, P. Lister, V.V. Smith, M.J. Peters, N.J. Klein, A. Pierro and S. Eaton</td>
<td>Institute of Child Health and Great Ormond Street Hospital, London, UNITED KINGDOM</td>
<td>4 minute discussion</td>
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<tr>
<td>9:51-9:58</td>
<td>12 OR</td>
<td>Acetylcysteine Increases Glutathione Stores and Improves Systemic Hemodynamics in a Neonatal Model of Hypoxia-Reoxygenation</td>
<td>S.T. Johnson, P-Y. Cheung, M. Emara, L. Obaid, G. Lees, D. Bigam</td>
<td>University Hospital, Edmonton (Alberta), CANADA</td>
<td>4 minute discussion</td>
</tr>
<tr>
<td>10:13-10:20</td>
<td>14 OR</td>
<td>Extraction of Esophageal Foreign Bodies in the Pediatric Population: Our First 500 Cases</td>
<td>D.C. Little, S.D. St Peter, C.M. Calkins, S.R. Shah, S.E. Morrow, G.W. Holcomb III, Ostlie DJ, Snyder CL</td>
<td>Children’s Mercy Hospital, Kansas City, Missouri USA</td>
<td>4 minute discussion</td>
</tr>
<tr>
<td>10:24-10:28</td>
<td>15 CR</td>
<td>Unique Case of Intramural Colonic Splenosis</td>
<td>D. Kravarusic, E. Freud, D.L. Sigalet</td>
<td>Alberta Children’s Hospital, Calgary (Alberta), CANADA</td>
<td>3 minute discussion</td>
</tr>
</tbody>
</table>
S.V. Bartholomew, A. Zigman, B. Sheppard
Oregon Health & Science University
Portland, Oregon, USA
3 minute discussion

10:38-10:42  17 TR  Laparoscopic ACE Procedure in Children: A Simplified Technique
Institute of Child Health and Great Ormond Street Hospital, London, UNITED KINGDOM
3 minute discussion

10:45-10:52  18 OR  Port Insertion and Removal Techniques to Minimize Premature Rupture of the Membranes in Endoscopic Fetal Surgery
J. Chang, S. R. Carr, T.F. Tracy, Jr., F.I. Luks
Brown Medical School
Providence, Rhode Island, USA
4 minute discussion

10:56-11:03  19 OR  The Impact of Prenatal Bowel Dilation on Clinical Outcome in Neonates with Gastrochisis
H.G Piper, T. Jaksic
Children’s Hospital Boston
Boston, Massachusetts, USA
4 minute discussion

11:10-11:17  20 OR  Splanchnic Perfusion Pressure: A Better Predictor for Primary Closure than Intra-abdominal Pressure in Neonatal Gastrochisis
R.M. McGuigan, P.S. Mullenix, R. Vegunta, R.H. Pearl, R. Sawin, K.S. Azarow
Madigan Army Medical Center
Tacoma, Washington, USA
Children’s Hospital of Illinios & University of Illinois College of Medicine
Peoria, Illinois, USA
Children’s Hospital Medical Center
Seattle, Washington, USA
4 minute discussion
11:21-11:25  21  TR  Silo Pouch Stoma: Rescue Procedure for Intestinal Catastrophe in Gastrochisis
A. Lall, R. Khan, M.V.A. Singh, A. Morabito
Saint Mary’s Hospital
Manchester, UNITED KINGDOM
3 minute discussion

11:28-11:43  Break

11:45-12:30  FRED MACLEOD / JPS LECTURE:
Conjoined Twins - Past, Present and Future
Dr. Abdulla Al Rabeeah

12:30-1:30  BOX LUNCH BREAK (All)

12:30-1:30  CAPSNET MEETING
SATURDAY, SEPTEMBER 24, 2005
Loews Concorde Hotel

06:00 - 07:30   Publications Committee Meeting
07:00 - 12:00   Registration/Exhibits
07:00 - 07:30   Continental Breakfast
07:30 - 08:40   Scientific Session III
                - Poster Presentations
08:40 - 08:55   Refreshment Break
08:55 - 10:23   Scientific Session IV
10:23 - 10:35   Refreshment Break
10:35 - 11:30   Scientific Session V
11:30 - 12:15   Panel Discussion - Controversial issues in Pediatric Surgery
12:30 - 14:30   CAPS Members Business Meeting
                Jean-Paul Lemieux RM
18:00           Presidential Reception/Banquet
                (Chapelle du petit Séminaire)
                *Resident prizes for excellence in clinical and research presentations

(Pick-up at hotel)
SCIENTIFIC SESSION III
Poster Presentations

7:30-7:34  22 PR  Longitudinal Pancreaticojejunostomy for Chronic Pancreatitis in Children
B. Chiu, J. Lopoo, R.A. Superina
Children's Memorial Hospital
Chicago, Illinois, USA
3 minute discussion

7:37-7:41  23 PR  Increased CXCR3 Expression Associated with CD3-positive Lymphocytes in the Liver and Biliary Remnant in Biliary Atresia
M. Shinkai, T. Shinkai, P. Puri, M. Stringer
Our Lady’s Hospital for Sick Children, University College of Dublin
Dublin, IRELAND
St James’s University Hospital
Leeds, UNITED KINGDOM
3 minute discussion

7:44-7:48  24 PR  Roles of Nutrition and Corticosteroids in Early Post-operative Complications in Children with Inflammatory Bowel Disease
L.A. McDonald, N.L. Yanchar
IWK Health Centre, Dalhousie University
Halifax (Nova Scotia), CANADA
3 minute discussion

J.C. Lam, J. Claydon, C.R. Mitton, E.D. Skarsgard
British Columbia Children’s Hospital, University of British Columbia,
Vancouver (British Columbia), CANADA
3 minute discussion
Management and Outcome of Patients with Combined Vaginal Septum, Bifid Uterus and Ipsilateral Renal Agenesis (Hurlyn-Wunderlich-Werner’s Syndrome)
S. Gholoum, T. Hui, E. Quiros, W. Su, J-M. Laberge, P.S. Puligandla
The Montreal Children’s Hospital
Montreal (Quebec), CANADA
3 minute discussion

Endograft Stenting in the Adolescent Population for Traumatic Aortic Injuries
Z. Milas, R. Milner, E. Chaikoff, M. Wulkan, R. Ricketts
Emory University Hospital
Children’s Hospitals of Atlanta at Egleston
Atlanta, Georgia, USA
3 minute discussion

Pneumoperitoneum Prevents Intraperitoneal Adhesions after Laparotomy in Rats
G. Miyano, A. Yamataka, T. Doi, M. Okawada, Y. Takano, H. Kobayashi, G. J. Lane, T. Miyano
Juntendo University School of Medicine
Tokyo, JAPAN
3 minute discussion

Laparoscopic Nissen Fundoplication after Previous Gastrostomy
L. Perger, G. Azzie, L. Watch, R. Weinsheimer
Children’s Hospital of New Mexico
Albuquerque, New Mexico, USA
3 minute discussion

Minimal Access Surgery in Neonates and Infants
H. Almarmhi, A. Al Qahtani
King Khalid University Hospital and College of Medicine, Riyadh, SAUDIARABIA
3 minute discussion

Vacuum-Assisted Closure for Wound Management in the Pediatric Population
Andrea Bütter, Mohammad Emran, Ayman Al-Jazaeri, Alain Ouimet
Santé Justine Hospital, Montreal (Quebec), CANADA
3 minute discussion

BREAK
SCIENTIFIC SESSION IV

8:55-9:02  32 OR Characterization of the drug positive adolescent trauma population: Should we, do we and does it make a difference if we test?
L.K. Brown, R. Drongowski, P.F. Ehrlich
University of Michigan
Ann Arbor, Michigan, USA
4 minute discussion

9:06-9:13  33 OR Pediatric ATV-related Injuries: Are Current Regulations effective?
W. Su, T. Hui, K. Shaw
Montreal Children's Hospital
Montreal (Quebec), CANADA
4 minute discussion

9:17-9:24  34 OR Traumatic Pediatric bile duct injury conservative management or surgical intervention
H. Almarmhi, A. Al Qahtani
King Khalid University Hospital and College of Medicine
Riyadh, SAUDI ARABIA
4 minute discussion

M. Cantos, J.T. Gerstle, S. Farley, M. Irwin, A. Pappo, and P.C.W. Kim
Hospital for Sick Children
Toronto (Ontario), CANADA
4 minute discussion
9:39-9:46  36 OR Assessment of Residual Post-treatment Masses in Hodgkin’s Disease (HD) and the Need for Surgical Biopsy in Children
A. Nasr, J. Stulberg, S. Weitzman, J.T. Gerstle
Hospital for Sick Children
Toronto (Ontario), CANADA
4 minute discussion

9:50-9:57  37 OR Predictors of Tumor Spillage in Wilms’ Tumor (WT)
G. Hall, S. Weitzman, R. Maze, M. Greenberg, R. Grant, J.T. Gerstle
Hospital for Sick Children
Toronto (Ontario), CANADA
4 minute discussion

10:01-10:08  38 OR Isolated Liver Transplantation in Paediatric Short Bowel Syndrome: Is There a Role?
I.R. Diamond, P.W. Wales, D.R. Grant, A. Fecteau
Hospital for Sick Children
Toronto (Ontario), CANADA
4 minute discussion

10:12-10:19  39 OR The Calgary Protocol for Bracing of Pectus Carinatum – A Preliminary Report
D. Kravarusic, R. Dewar, B.J. Dicken, J. Harder, M. Schneider, D.L. Sigalet
Alberta Children’s Hospital
Calgary (Alberta), CANADA, University of Alberta
Edmonton (Alberta), CANADA
4 minute discussion

10:23-10:35   BREAK
10:35-10:42  40  OR  Defining the Extent of Anomalies is the Adriamycin Mouse Model
M.J. Dawrant, S. Giles, J. Bannigan, P. Puri
Conway Institute, University College Dublin,
Our Ladies Hospital for Sick Children
Dublin, IRELAND
4 minute discussion

10:46-10:53  41  OR  Does Liver-to Lung Signal Intensity Ratio (LLSIR) Measured by Fetal Magnetic Resonance Imaging (MRI) Predict the Severity of Pulmonary Hypoplasia in Congenital Diaphragmatic Hernia?
B. Hsi, E.D. Skarsgard, R.S. Chari, D. Pugash, R. Bhargava
Children’s and Women’s Hospital of BC
University of British Columbia
Vancouver (British Columbia), CANADA,
University of Alberta
Edmonton (Alberta), CANADA
4 minute discussion

10:57-11:04  42  OR  The Price of Success in the Management of Congenital Diaphragmatic Hernia (CDH): Is Improved Survival Accompanied by an Increase in Long-term Morbidity?
P. Chiu, C. Sauer, A. Mihailovic, I. Adatia, D. Bohn,
A. Coates, J.C. Langer
Hospital for Sick Children
University of Toronto
Toronto (Ontario) CANADA,
Stanford University
Stanford, California, USA
4 minute discussion
11:08-11:12 43 OR Pulmonary Arteriovenous Malformation Mimicking Congenital Cystic Adenomatoid Malformation In A Newborn
A. Bütter, M. Emran, A. Al-Jazaeri, S. Bouchard
Sainte-Justine Hospital
Montreal, Quebec, CANADA
3 minute discussion

11:15-11:22 44 OR Perinatal Management of Congenital Cystic Lung Lesions in the Age of Minimally Invasive Surgery
A.K. Truitt, D.L. Sorrells, Jr., S.R. Carr,
A.G. Kurkchubasche, T.F. Tracy, Jr., F.I. Luks
Brown Medical School
Providence, Rhode Island, USA
4 minute discussion

11:30-12:15 Panel Discussion: Controversial Issues in Pediatric Surgery
Management of the Prenatally Diagnosed Asymptomatic Lung Lesions, Not Visible on Chest X-Ray

12:15 - 2:15 CAPS BUSINESS MEETING
SUNDAY, SEPTEMBER 25, 2005
Loews Concorde Hotel

07:00 - 09:00    Registration/Exhibits
07:00 - 07:30    Continental Breakfast
07:30 - 09:01    Scientific Session VI
09:01 - 09:40    Refreshment Break
09:40 - 10:34    Scientific Session VII
10:34            President’s Closing Remarks
Sunday, September 25, 2005

SCIENTIFIC SESSION VI

7:30-7:37  45  O  Developmental Changes in Submucosal Nitrergic Neurones in the Porcine Colon
S. Montedonico, T. Paran, M. Pirker, U. Rolle, P. Puri
Our Lady's Hospital for Sick Children
Dublin, IRELAND
4 minute discussion

7:41-7:48  46  O  The Ontogeny of the Glucagon-Like Peptide-2 Axis in Premature Neonates
Alberta Children’s Hospital
Calgary (Alberta), CANADA,
The Panum Institute, University of Copenhagen
Copenhagen, DENMARK
4 minute discussion

7:52-7:59  47  O  Impact of Gestational Age (GA) on the Clinical Spectrum and Surgical Outcome of Necrotizing Enterocolitis (NEC)
R. Sharma, J.J. Tepas, M.L. Hudak, P. Wludyka,
J.A. Bradshaw, W. Marvin, P. Pieper
Univ. of Florida at Jacksonville and University of North Florida
Jacksonville, Florida, USA
4 minute discussion

8:03-8:07  48  T  A Modified Hepatic Portocenterostomy for Treating Biliary Atresia
H. Kobayashi, M. Urao, T. Okazaki, A. Yamataka,
T. Yanai, T. Miyano
Juntendo University School of Medicine
Tokyo, JAPAN
3 minute discussion
8:10-8:17  49  O  Recurrence of Congenital Posterolateral Diaphragmatic Hernia in Neonates
A. Pierro, A. Khakar, E. La Hei, A. Rozmiarek, H.R. Ford, D.J. Hackam
Institute of Child Health and Great Ormond Street Hospital
London, England, UNITED KINGDOM,
Children’s Hospital of Pittsburgh
Pittsburgh, Philadelphia, USA
4 minute discussion

8:21-8:25  50  C  Mitomycin-C In The Management Of Pediatric Caustic Esophageal Strictures – A Case Report
O. Olutoye, R. Shulman, R. Cotton, D. Wesson.
Baylor College of Medicine, Houston, Texas, USA
3 minute discussion

8:28-8:35  51  O  Total Oesophagogastric dissociation (TODG): 10 Years Review
A. Morabito, A. Lall. A. Shiban, H. McCarthy,
R. Lo Piccolo, A. Bianchi
Central Manchester and Manchester Children’s
University Hospitals
Manchester, England, UNITED KINGDOM
4 minute discussion

8:39-8:46  52  O  Up to Which Level is Esophageal Replacement Possible?: Experience of 14 Children with Pharyngeal Anastomosis of Esophageal Replacements
O. Reinberg, J.M. Joseph, Ph. Pasche, W. Lang,
Ph. Monnier
University Hospital of Lausanne (CHUV)
Lausanne, SWITZERLAND
4 minute discussion

8:50-8:57  53  O  Psycho-Social Functioning of Adolescents with Pectus Excavatum: Depression Symptoms and Self-Perception
J.M. Martin, A.Hayashi, E. Skarsgard, D. Sigalet
University of Victoria, Vancouver Island Health Authority
Victoria (British Columbia), CANADA,
University of British Columbia
Vancouver (British Columbia), CANADA,
University of Calgary
Calgary (Alberta), CANADA
4 minute discussion

9:01-9:40  BREAK
SCIENTIFIC SESSION VII

9:40-9:47  54  O  6361 Pediatric Inguinal Hernias: A 35 Year Review  
S.H. Ein, I.Njere, A. Ein  
Hospital for Sick Children  
Toronto, (Ontario), CANADA  
4 minute discussion

9:51-9:55  55  T  The “Scarless” Appendectomy  
F.I. Luks, D.L. Sorrells, Jr, A.G. Kurkchubasche,  
T.F. Tracy, Jr  
Brown Medical School  
Providence, Rhode Island, USA  
3 minute discussion

9:58-10:02  56  T  One Trocar Transumbilical Laparoscopic-assisted Management of Meckel’s Diverticulum in Children  
G. Cobellis, A. Cruccetti, L. Mastroianni, G. Amici,  
A. Martino  
Salesi Children’s Hospital  
Ancona, ITALY  
3 minute discussion

10:05-10:09  57  T  Thymectomy Through Mini Sternotomy: An Alternative with Adequate Exposure and Excellent Cosmesis  
S. Bouchard, I. Bratu, F.Ma  
Sainte-Justine Hospital, Jewish General Hospital  
Montreal (Quebec), CANADA.  
3 minute discussion

10:12-10:19  58  O  Experience with Bladder Exstrophy in Kenya  
S.S. Andrawes  
Gertrude’s Garden Children’s Hospital  
Nairobi, KENYA  
4 minute discussion
From Kingston, Canada to Kijabe, Kenya: a Pediatric Surgical Paradigm Shift

D. Poenaru
AIC Kijabe Hospital
Kijabe, KENYA
4 minute discussion

President’s Closing Remarks
ABSTRACTS

ABBREVIATIONS

O  original 7-minute paper
R  resident’s paper
C/T 4 minute case/technique report
P  poster presentation

O, R, P  Adjudicated
C/T  Not adjudicated
IS ULTRASOUND A GOOD SCREENING TEST FOR INTESTINAL MALROTATION?

Neil Orzech, Oscar Navarro, Jacob C. Langer
Departments of Surgery and Diagnostic Imaging
Hospital for Sick Children, Toronto, Ontario

Background: Early diagnosis of malrotation can prevent fatal midgut volvulus. Abnormal orientation of the superior mesenteric artery (SMA) and vein (SMV) on ultrasound has been described in malrotation, and has the advantages of portability, ease, and no radiation. We aimed to determine the accuracy of this technique.

Methods: All children undergoing both UGI and ultrasound for possible malrotation over three years were reviewed. Patients were excluded if the ultrasound did not include SMV/SMA orientation or if the ligament of Treitz was not visualized on UGI.

Results: Of 211 eligible patients, UGI and ultrasound were both normal in 62%, and both abnormal in 15%. 44 had abnormal ultrasound and normal UGI (false positive = 21%), and 5 patients had normal ultrasound and abnormal UGI (false negative = 2%). Of these 5, none were found to have a short mesenteric base which put them at risk for volvulus. Among abnormal ultrasounds, inversion of SMA/SMA and a “whirlpool” sign were more predictive for malrotation and volvulus than anterior/posterior orientation.

Conclusions: Ultrasound is a good screening tool that effectively rules out malrotation at risk for volvulus. Children with abnormal ultrasound should have an UGI or go to the operating room, depending on clinical findings.

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MALROTATION: SAME TREATMENT, DIFFERENT RESULTS?

I. Sau, D. Milanovich

Department of Pediatric General Surgery, University Hospital of Wales
Cardiff, Wales, UK

Background: To determine whether outcome of operation for chronic malrotation, diagnosed incidentally is different from those of acute presentation. 

Methods: Retrospective analysis of 32 patients with primary malrotation, operated at our Institution was reviewed during the period 1993-2003. Data are reported as median and range and Fisher’s exact or unpaired t test were used for statistical analysis.

Results: 13 out of 17 presented with bilious vomiting in the acute group as compared to 12 out of 15 in the chronic group with non-bilious vomiting or reflux like symptoms (p=0.0005). Age at presentation was 4.7 days in the acute group (1day-12 yrs) and 5.8 yrs (6 wks-17 yrs) in the chronic group (p=0.002). Duration of symptoms in the acute group was 24 hrs (8 hr-7 days) and 7 months (6 wks-9 yrs) in the chronic group (p=0.0001). Time from diagnosis to theatre was 3 hrs (1-2months) in acute group and 6.5 days (6hrs-7 months) in the chronic group (0.0001). All the patients had Ladd’s procedure. There were 6 (35%) and 1(7%) volvulus in the acute and chronic group (p=0.0881) respectively. 2(12%) died in the acute group from midgut gangrene (p=0.4859). Follow up data available on 13 in acute group and 12 in the chronic group. 1 in the acute group is symptomatic on median 14 months follow up as compared to 7(58%) in the chronic group (p=0.0085). In the chronic group 3(25%) patients required hospital admission due to adhesion, 1 required laparotomy, 3(25%) are suffering from malabsorption.

Conclusions: Patients with chronic presentation have a higher risk of complication and persistent symptoms after surgery.

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FACTORS DETERMINING THE NEED FOR OPERATIVE REDUCTION IN CHILDREN WITH INTUSSUSSION: A POPULATION BASED STUDY

Stig Somme, Teresa To, Jacob C. Langer
Hospital for Sick Children
Toronto, Ontario, Canada

Background: We wished to determine if children presenting to a non-children's hospital were at greater risk for operative reduction (OPR) of intussusception than those presenting to a children's hospital.

Methods: This Canadian population-based 8-year study included all children < 6 years with intussusception. Multiple logistic regression was used to model markers for OPR, (age, gender, coexisting conditions, hospital type and interhospital transfers).

Results: Of 961 children, 25.4% had OPR. Risk factors for OPR were a diagnosis of Meckel diverticulum and transfer from one institution to another after the initial diagnosis. 148 (15.4%) were transferred (87.2% from a non-children's to a children's hospital). Risk of OPR was higher in children transferred > 1 day post admission (52.0% versus 39.0%). Odds ratios after adjusting for age, gender and hospital type were 1.95 (95% CI: 1.28, 2.98; p<0. 001) for those transferred on the same day and 3.31 (95% CI: 1.34, 7.28; p<0.01) for those transferred after 24 hours.

Discussion: Children presenting to a non-children's hospital and later transferred to a children's hospital were at greater risk for OPR of intussusception, in particular if transferred > 1 day after admission. These data underline the importance of early diagnosis and timely management of intussusception.

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UTILITY OF HOSPITAL ADMISSION AFTER SUCCESSFUL ENEMA REDUCTION OF ILEO-COLIC INTUSSUSCEPTION

A. Al-Jazaeri, S. Yazbeck, D. Filiatrault, M. Beaudin, M. Emran, A. Büttner.
Saint-Justine Hospital, Université de Montréal
Montreal, Quebec, Canada

Background: 24-48 hours in-hospital observation has been the standard practice after successful enema reduction of Ileo-colic intussusceptions, but this practice has not been validated. We evaluated retrospectively the safety of short-term emergency department observation.

Methods: Between April 2000 and October 2004, 121 patients presented to the emergency department with Ileo-colic intussusception and all had enema reduction attempt.

Results: 96 patients had successful reduction, 25 were excluded for failed reduction or unconfirmed diagnosis and another 16 needed observation anyway for high WBC or persistent post-reduction pain. Of the remaining 80 patient the mean time from symptoms to reduction was 45.9 hours (4 hours to 10 days). All patients, except one, were admitted for observation for a mean period of 1.6 days (8 hours to 6.5 days). No complications were associated with air enema reduction, however 6(7.5%) patients had reintussusception during the observation period and 5(6.3%) recurred after discharge, the mean intervals for recurrence post-reduction were 17.8 hours and 14.5 months respectively, with no mortality or morbidity in either.

Conclusions: Short-term emergency department observation could be a safe practice in more than 90% of the selected cases, recurrence of intussusception outside the hospital is not associated with unfavorable outcome, and routine admission is not warranted.

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DISTRIBUTION OF INTERSTITIAL CELLS OF CAJAL (ICC) IN LOCALIZED INFLAMMATION OF THE LARGE INTESTINE

M. Bettolli¹, S.Z. Rubin¹, W. Staines², A. Krantis²
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Ottawa, Ontario, Canada

Background: Interstitial cells of Cajal (ICC) govern the intestinal slow wave contractions. ICC interact with the enteric neural system (ENS) and are prominent in the neural plexuses and smooth muscle. This study reports intestinal ICC distribution and density in local colonic inflammation.

Methods: Segments of the resected bowel were taken for quantitative immunohistochemical evaluation in patients with Crohn’s disease, appendicitis and necrotizing enterocolitis (NEC) strictures. Tissues were fixed, sectioned and stained using antibodies for ICC identification (anti-cKIT) and for neuronal characterization (anti-nNOS, anti-Tuj, anti-synapsin).

Results: In appendicitis, ICC muscular distribution is normal. In colonic Crohn’s disease, the ICC were “crowded” into the myenteric plexus with extensive intramuscular extensions. Patients with post NEC strictures, showed a range of ICC distribution. Proximal to the stenosis there was a normal peri-myenteric ganglion ICC distribution. At the stenosis, ICC were significantly decreased. Distal to the stenosis ICC distribution was normal.

Conclusions: ICC were not affected by appendicitis. ICC distribution and density were abnormal in colonic Crohn’s. In contrast to colonic Crohn’s, the ICC changes in NEC were restricted to the site of the stricture, which suggests that the ICC changes in NEC strictures are due to ischemia and not inflammation.

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A SIMPLE AND MORE COST EFFECTIVE ANTIBIOTIC REGIMEN FOR PERFORATED APPENDICITIS

S.D. St. Peter, D.C. Little, J.P. Murphy, W. S. Andrews, G.W. Holcomb III, R.J. Sharp, C.L. Snyder, D.J. Ostlie
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Purpose: The post-operative management of perforated appendicitis (PA) is grounded upon the use of intravenous antibiotics. A three-drug regimen of ampicillin, gentamicin and clindamycin is the accepted standard by most pediatric surgeons. Although effective and seemingly inexpensive, it has cumbersome dosing schedules, inspiring a search for a simpler regimen without compromising efficacy or expense. We have introduced the 2-drug regimen of ceftriaxone and flagyl using single day dosing and report our results here.

Methods: A retrospective review was conducted of the most recent 250 patients treated at our institution with PA. Patients treated with the 2-drug regimen were compared to the most recent historical cohort treated with triple antibiotic coverage. Data collected included temperature curves, abscess rate, length of hospitalization, length of intravenous antibiotic treatment and medication charges.

Results: The two-drug regimen (Group 1) was used in 57 patients while 193 patients received triple antibiotic coverage (Group 2). The maximum recorded temperature between the two groups was similar upon admission; however, the mean maximum temperature in Group 1 became significantly lower than Group 2 on post-operative day 1 and persisted through completion of therapy (p<0.001). Postoperative abscess development was less common in Group 1 (8.8%) than Group 2 (14.2%), but did reach statistical significance (p=0.37). Mean length of stay was shorter in Group 1 than Group 2 (6.8 v 7.8 days) (p=0.03). Medication charges were $81.32 per day in Group 1 compared to $318.53 per day in Group 2, translating to $1186.05 savings over 5 days.

Conclusions: Single day dosing of ceftriaxone and flagyl provides adequate antibiotic coverage for the post-operative management of perforated appendicitis in children. This regimen provides substantial advantages over the triple antibiotic therapy including administration and dosing simplicity, more rapid defervesence, and a significant cost reduction.

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BLADDER PROLAPSE THROUGH A PATENT URACHUS:
FETAL AND NEONATAL FEATURES

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Background: Umbilical anomalies in the neonate include abdominal wall
defects, omphalomesenteric duct remnants, and urachal remnants. We report
the fetal and neonatal characteristics of a rare and unique anomaly.

Case Report: A term male neonate was born with a large, red, tubular,
mucosa-lined umbilical mass containing a patent lumen. The mass measured
4 by 2 cm and was asymptomatic. Prenatal ultrasonographic screening at
20-28 weeks of gestation revealed a large cyst at the umbilicus communicating
with the urinary bladder. The cyst resolved at 32 weeks, and a small solid
mass was newly seen on the fetal abdominal wall, inferior to and adjacent to
the umbilical cord insertion. Postnatal ultrasound showed a normal urinary
collecting system, and did not reveal the origin of the mass. At operation, the
mass was discovered to be the prolapsed, open, everted dome of the urinary
bladder. The dome was resected and the bladder repaired in two layers after
identification of the ureteral orifices. Postoperative ultrasound and voiding
cystourethrogram showed complete bladder healing with good capacity and
without vesicoureteral reflux. The baby had no other congenital anomalies
and was asymptomatic at six month follow-up.

Conclusion: Bladder prolapse through a patent urachus mimics
omphalomesenteric duct remnants. Fetal ultrasound can differentiate the
two congenital anomalies.

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VASCULAR ANOMALIES OF THE FEMALE EXTERNAL GENITALIA

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Departments of Surgery¹, Radiology², and the Vascular Anomalies Center³,
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Massachusetts

Background/Purpose: Vascular tumors and malformations are rare. This large series describes vascular anomalies of the female genitalia and their management.

Methods: An IRB approved retrospective database and record review from 1994 through 2004 was conducted.

Results: Of 3,186 female patients with a vascular anomaly, 82 (2.6%) had a lesion in the external genitalia. There were 60 malformations and 22 tumors. The most common malformations were combined capillary-lymphatico-venous, venous, and lymphatic. Tumors included 20 infantile hemangiomas, one kaposiform hemangioendothelioma, and one kaposiform lymphangioendothelioma. The referring diagnosis was incorrect in 56% of patients. Cutaneous stains, swelling, deformity, bleeding, fluid leakage, or infection were the prominent symptoms. MRI, ultrasonography, angiography, and CT were used for diagnostic clarification. Malformation treatment consisted of sclerotherapy, embolization, and operative resection. Tumor management included observation, surgical excision, and anti-angiogenic pharmacotherapy.

Conclusions: Vascular anomalies of the female external genitalia are uncommon and the initial diagnosis is often inaccurate. Correct diagnosis using clinical and radiographic data is feasible and leads to meaningful intervention for these frequently devastating lesions. While tumors may respond to excision or anti-angiogenic drugs, malformations require ablation or resection. Evaluation and management of these lesions is complex and benefits from interdisciplinary care.

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PEDIATRIC NECROTIZING SOFT TISSUE INFECTION:
DIFFERENCES BETWEEN IMMUNOCOMPROMISED
AND HEALTHY CHILDREN

S.A. Butterworth, J.J. Murphy
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Vancouver, BC

Purpose: Necrotizing soft tissue infection (NSTI) is a rare and often devastating condition. We sought to define our experience and determine if differences existed in healthy vs. immunocompromised (IC) children.

Methods: With institutional review board approval, a retrospective review (1993-2004) was undertaken of patients with NSTI. Presentation, site, associated illness, laboratory results, treatment, and outcome were assessed.

Results: There were 19 cases; median age of 5.9 years (range 6 days-14 y). Eight were IC. At presentation, 95% had pain and swelling. Fever and tachycardia, were seen in 84% and 74%. Severe tenderness was found in 100% of healthy vs. 25% of IC cases; 63% of IC and 73% of healthy had rapid progression. In the IC, more infections were perineal/buttock (75% vs. 32%), polymicrobial (75% vs. 58%) and fungal (38% vs. 0%). Median ICU and LOS (days) in IC vs. healthy were: 4 vs. 2 and 27 vs. 16.5 respectively. Mortality rate was 16%.

Conclusions: Most children with NSTI present with fever, tachycardia, pain and swelling. Compared with healthy children, immunocompromised patients are less likely to present with severe tenderness and more likely to have involvement of the perineum/buttock. Most NSTI’s progress rapidly, but polymicrobial and fungal infections were more frequent in immunocompromised children.

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ETHIBLOC SCLEROTHERAPY FOR TREATMENT OF LYMPHANGIOMAS IN CHILDREN

M. Emran, J. Dubois, S. Yazbeck, A. Al-Jazeeri, A. Büttner
Division of Pediatric Surgery, Sainte Justine Hospital, Montreal, QC

Purpose: To report the experience and efficacy of Ethibloc sclerotherapy as treatment for lymphangiomas.

Methods: Sixty-five patients had Ethibloc sclerotherapy from 1992 to 2004. CT scan or MRI and clinical evaluation determined efficacy of treatment. Results were classified as excellent (≥95% decrease in lesion volume), satisfactory (≥50% decrease and asymptomatic) or poor (<50% decrease or symptomatic).

Results: Sixty-five patients with 67 lesions underwent sclerotherapy (21M:44F) with an average of 4.3 treatments. Thirty-five involved the neck, 10 the head and face, 22 the thorax or limb. Thirteen were microcystic, 28 macrocystic and 26 mixed. Nine of the 65 patients underwent sclerotherapy for post-surgical residual lesions. Results were calculated by type: macrocystic/mixed- 27(49%) had excellent results, 19(35%) had good results and 9(16%) had poor results; microcystic- 3(23%) excellent, 7(54%) good, 3(23%) poor. Five patients (7.7%) required surgery for complications; 2 for scar revision, 2 for persistent drainage, and 1 for a salivary fistula. Infection occurred in eight patients (12.3%), two weeks following sclerotherapy. Follow-up averaged 3.5 years (6 months-12 years).

Conclusion: Ethibloc sclerotherapy is a safe and effective alternative to surgical excision of lymphangiomas and can be used for post-surgical recurrences.

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MACROPHAGE INFILTRATION, ICAM-1 AND E-SELECTIN EXPRESSION IN NEONATES WITH NECROTIZING ENTEROCOLITIS

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Background/Purpose Pathogenesis of inflammation in necrotizing enterocolitis (NEC) remains unknown. We investigated the expression of endothelial adhesion molecules and their role in inflammation in NEC.

Methods ICAM-1, E-selectin and macrophages were detected by immunohistochemistry in 29 intestinal specimens from 13 NEC and 7 control neonates. ICAM-1 expression and macrophage infiltration were graded blindly (1=low, 5=high). Data (median [interquartile range]) were compared by Mann-Whitney and Spearman rank-test.

Results ICAM-1 expression was increased in NEC, being greater in areas with active inflammation and weaker in necrotic areas. E-selectin was up-regulated in only 5 patients with NEC, all requiring early surgery. Leukocytes were seen adhering to ICAM-1 and E-selectin positive vessels, and macrophage infiltration correlated with ICAM-1 expression in submucosa (p=0.001, r=0.57) and mucosa (p=0.009, r=0.48). Histological injury correlated with ICAM-1 expression in submucosa (p=0.006, r=0.50) and mucosa (p=0.007, r=0.50).

<table>
<thead>
<tr>
<th></th>
<th>NEC</th>
<th>Control</th>
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<tbody>
<tr>
<td>Macrophages</td>
<td></td>
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<tr>
<td>(cells/field)</td>
<td>Serosa 15.6 [6.5-27.1]*</td>
<td>1.2 [0.4-12.2]</td>
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<tr>
<td></td>
<td>Submucosa 15.9 [11.0-27.8]*</td>
<td>1.4 [1.3-2.2]</td>
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<tr>
<td></td>
<td>Mucosa 18.9 [10.6-33.4]*</td>
<td>2.3 [1.0-4.7]</td>
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<tr>
<td>ICAM-1</td>
<td></td>
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<tr>
<td>(grading)</td>
<td>Serosa 3 [2-4]*</td>
<td>1 [1-1]</td>
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<tr>
<td></td>
<td>Submucosa 4 [2.5-5]*</td>
<td>2 [1-2]</td>
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<tr>
<td></td>
<td>Mucosa 3 [1-4]*</td>
<td>1 [1-2]</td>
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*p<0.05 vs Control

Conclusions ICAM-1 up-regulation appears to contribute to macrophage recruitment and correlates with intestinal injury in NEC. E-selectin may contribute to early inflammation in NEC.

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N-ACETYLCYSTEINE INCREASES GLUTATHIONE STORES AND IMPROVES SYSTEMIC HEMODYNAMICS IN A NEONATAL MODEL OF HYPOXIA-REOXYGENATION

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\textbf{Background:} Neonatal asphyxia may lead to several complications perhaps mediated by oxygen free radicals. We used a model of neonatal hypoxia reoxygenation to test the hypothesis that N-acetylcysteine (NAC) improves intracellular antioxidant capacity and reduces organ damage.

\textbf{Methods:} Piglets (n=24) were anesthetized and instrumented for hemodynamic monitoring by intravascular catheters; pulmonary artery flow (cardiac output (CO)) and regional blood flow. Animals were block randomized to: sham, hypoxic control, early and late treatment with NAC. Hypoxia was induced by decreasing FiO\textsubscript{2} for 2h. Piglets were resuscitated with 100\% O\textsubscript{2} for 1h followed by room air for 3h. NAC (150mg/kg IV) was given at 0 (early) or 10 (late) min of reoxygenation followed by an IV infusion (100mg/kg/h).

\textbf{Results:} After 2h of hypoxia pigs were acidic (pH 6.96±0.04), hypotensive (MAP 27±2mmHg) and in cardiogenic shock (CO 84±5mL/kg/min). Upon reoxygenation hemodynamics recovered (4h CO: 59-86\% of sham). After 4 hr late NAC treatment resulted in higher CO and renal blood flow (9.4±0.4 vs. 5.5±1.1mL/kg/min of controls p<0.05), improved SMA flows and reduced histologic bowel injury. Higher renal and small bowel tissue glutathione levels were also present in the late treatment group.

\textbf{Conclusion:} N-Acetylcysteine improves systemic and regional hemodynamics while increasing renal and small bowel glutathione content.

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MODERATE HYPOTHERMIA: A RESCUE THERAPY IN NEONATAL INTESTINAL ISCHAEMIA AND REPERFUSION INJURY

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Background/Purpose We evaluated moderate hypothermia, applied as rescue at reperfusion, in an infant model of intestinal ischaemia-reperfusion (I-R).

Methods Suckling rats (18-25g) underwent superior mesenteric artery occlusion-reperfusion (I-R: 45+90min) or sham operation (controls). Groups (n=10 each) were: control normothermia; I-R normothermia; control hypothermia; I-R hypothermia. Rats in hypothermia groups were cooled to 30-32°C at the onset of reperfusion. Myeloperoxidase activity (MPO; reflecting neutrophil infiltration); malondialdehyde (MDA; lipid peroxidation marker), and glutathione (major antioxidant) redox state were measured in ileum and lungs. Data (mean±SEM) were compared by ANOVA.

Results Hypothermia prevented neutrophil infiltration in ileum and lungs; reduced lipid peroxidation in plasma and lungs; and preserved intestinal glutathione redox state.

<table>
<thead>
<tr>
<th></th>
<th>Normothermia</th>
<th>Hypothermia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>I-R</td>
</tr>
<tr>
<td>MPO (U/g protein)</td>
<td>Ileum 6.2±0.0</td>
<td>29.6±4.4*</td>
</tr>
<tr>
<td></td>
<td>Lungs 20±5</td>
<td>140±22*</td>
</tr>
<tr>
<td>MDA (μmol/g protein)</td>
<td>Lungs 0.5±0.1</td>
<td>1.6±0.2*</td>
</tr>
<tr>
<td></td>
<td>Plasma 1.0±0.1</td>
<td>2.5±0.3*</td>
</tr>
<tr>
<td>Glutathione Redox State</td>
<td>Ileum 0.41±0.05</td>
<td>0.17±0.05*</td>
</tr>
</tbody>
</table>

*p<0.05 vs Control Normothermia  †p<0.05 vs I/R Normothermia

Conclusions Hypothermia applied at reperfusion reduced intestinal and lung injury in our infant model of intestinal I-R. Moderate hypothermia may be beneficial as a rescue therapy in clinical conditions associated with neonatal I-R such as NEC and midgut volvulus.

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EXTRACTION OF ESOPHAGEAL FOREIGN BODIES IN THE PEDIATRIC POPULATION: OUR FIRST 500 CASES

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Background: Esophageal foreign bodies remain a frequent problem for pediatric surgeons. While choking and dysphagia are common presentations, esophageal perforations have been reported. Historically, rigid esophagoscopy has been recommended, yet balloon extraction offers a safe, effective alternative.

Methods: Over a 16 year period, 555 children presented with an esophageal foreign body. Retrospective analysis of the medical record was performed. Statistics were by descriptive and univariate analysis.

Results: 298 boys and 257 girls presented with a mean age of 3.24 years (2 months-19 years). Dysphagia (37%) and drooling (31%) were the most common symptoms. 73% of foreign bodies were lodged in the superior esophagus. 88% of objects were coins. 468 children underwent balloon extraction with fluoroscopy. 80% of objects were successfully removed with mean fluoroscopy time of 2.2 min. 8% were advanced into the stomach. Overall success rate was 88% with failures subsequently undergoing rigid esophagoscopy. Children < 1 year were the most likely to fail (25% failure rate). Airway aspiration never occurred. Average cost savings for balloon extraction was $1445.

Conclusions: Balloon extraction of pediatric esophageal foreign bodies is a safe, cost-conscious procedure. This technique is applicable for infants thru adolescents. Experienced practitioners should be able to achieve a > 80% success rate.

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UNIQUE CASE OF INTRAMURAL COLONIC SPLENOSIS

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Background: Splenositis is usually a sequel of splenic rupture from abdominal trauma, but can be associated with elective splenectomy. Recurrence of the haematological disorder for which the patient underwent splenectomy may occur and splenic nodules can be found anywhere in the thoracic or abdominal cavity, as well as subcutaneously.

Case report: 12 year old-boy was admitted for elective surgery for symptomatic splenosis. Since early childhood, he had been treated for spherocytosis. Anemia and thrombocytopenia recurred shortly after splenectomy was performed. Workup included abdominal US examination that revealed a 4 cm solid mass in left upper abdomen and scintigraphy with 99 Tc-labelled heat denatured erythrocytes showed functioning splenic tissue in left upper abdomen. Diagnostic laparoscopy was carried out but when no identification of splenic tissue was possible a laparotomy was done. The abdominal cavity was searched thoroughly following which an intra-luminal palpable mass at the splenic flexure of the colon was found. Colotomy following resection of the colonic segment harboring the mass was done. Pathology reported - intramural splenic implants in colon.

Conclusions: Splenosis should be included in the list of differential possibilities of intramural lesions when previous splenectomy has been performed.

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LYMPHOPLASMACYTIC SCLEROSING PANCREATITIS PRESENTING AS A PANCREAS HEAD MASS IN A CHILD: CASE REPORT, LITERATURE REVIEW, AND MANAGEMENT RECOMMENDATIONS

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Background: Lymphoplasmacytic sclerosing pancreatitis (LPSP) is an autoimmune form of chronic pancreatitis found most commonly in elderly men, and only rarely in children. LPSP is a diffuse, fibrosing process of the pancreas. It often presents as an obstructive pancreatic head mass and may be treated nonoperatively.

Methods: A 10-year-old boy presented with a three-week history obstructive jaundice. Abdominal computed tomography (CT) and magnetic resonance cholangiopancreatography (MRCP) showed a pancreatic head mass, hepatic ductal dilatation, and involvement of the portal vein. Endoscopic Ultrasound (EUS) showed a pancreatic head mass. A preliminary diagnosis of acinar cell carcinoma was based on EUS fine needle aspiration (FNA).

Results: The patient underwent a pancreaticoduodenectomy. There was splenoportal junction venous encasement without mural invasion. The patient recovered uneventfully and was discharged home on postoperative day six. The final pathologic diagnosis was LPSP.

Conclusions: LPSP is a rare form of chronic pancreatitis in children that is difficult to distinguish from malignancy preoperatively. We discuss the epidemiology, differential diagnosis, work-up and treatment of pancreatic masses in children with special emphasis on LPSP. CT, MRCP, and EUS with FNA are important tools in the diagnosis of pancreatic head masses, including LPSP. Determination of elevated IgG₄ levels in children with pancreas head masses may allow for the medical treatment of LPSP.

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LAPAROSCOPIC ACE PROCEDURE IN CHILDREN:
A SIMPLIFIED TECHNIQUE

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Purpose: To report our experience with a simplified laparoscopic ACE stoma formation.

Methods: The notes of children undergoing laparoscopic ACE over a 5-year period were reviewed. The procedure required 2-3 ports, minimal mobilization of the appendix and ACE stoma formation through one port site with no skin flaps. A tube was left in situ and replaced by a “stopper”. An outcome score was used (0= always soiling / severe constipation; 3= always clean / no constipation). Data are median (range).

Results: Twenty children underwent laparoscopic ACE at 10 years of age (5-17). Duration of follow up was 11 months (1-51). Indications for ACE were soiling (n=17) and constipation (n=3) secondary to neuropathic bowel (n=9), anorectal anomalies (n=8) or idiopathic constipation (n=3). The ACE stoma was in the right iliac port site in all but two children. Complications included stomal stenosis (n=3), retraction (n=1) and port site hernia (n=1). After the ACE there was improvement in clean score from 0 to 2.5 (0-3; p<0.0001). Two children did not improve and are currently managed with a stoma.

Conclusions: This minimally invasive technique is simple, quick to perform, associated with fewer complications than the open approach and effective in controlling soiling and constipation.

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PORT INSERTION AND REMOVAL TECHNIQUES TO MINIMIZE PREMATURE RUPTURE OF THE MEMBRANES IN ENDOSCOPIC FETAL SURGERY

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Background: Premature rupture of membranes (PROM) remains a significant complication of fetal surgery. Rates of 40-100% have been reported after both open and endoscopic fetal surgery. We describe a technique of endoscopic port insertion and removal that minimizes trauma to the membranes.

Methods: Twenty-three consecutive patients undergoing endoscopic laser ablation for twin-to-twin transfusion syndrome (TTTS) were reviewed. In each case, a mini-laparotomy was performed, and the amniotic cavity was entered under direct vision of the uterus using a Seldinger technique. The entry site was carefully dilated to accommodate a 4.0 mm diameter cannula. A gelatin sponge plug was placed at port removal. Postoperative management and outcome were evaluated.

Results: Median gestational age at operation was 21.3 weeks. Median operating time was 62.5 minutes. One patient delivered intraoperatively because of fetal distress. Fourteen patients (64%) required postoperative tocolysis (median duration 12 hours). Median postoperative gestation was 5 weeks (range 1-20 weeks). Only one of 21 patients with successful gelatin sponge placement developed PROM (4.8%).

Conclusions: Meticulous technique and atraumatic insertion and removal of ports help minimize the risk of postoperative amniotic leak after endoscopic fetal surgery. Our PROM rate of 4.8% contrasts sharply with previously reported rates following similar operations.

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THE IMPACT OF PRENATAL BOWEL DILATION ON CLINICAL OUTCOME IN NEONATES WITH GASTROCHISIS

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Purpose: In fetuses with gastroschisis the importance of ultrasonographic bowel dilation remains controversial. The outcome of gastroschisis patients with and without prenatal bowel dilation is reported.

Methods: From 2000-2004 twenty-seven neonates with gastroschisis were followed at a single center. Thirteen patients had prenatal ultrasonographic bowel dilation (diameter > 6mm, range 6-35mm). Outcomes of those with and without dilation were compared using two sample t-tests and logistic regression.

Results: Time to initiation of enteral nutrition varied significantly between groups (20.4 ± 11.7 days vs. 12.5 ± 4.3 days, p<0.05). A trend toward a reduced rate of primary closure was seen in those with dilation (23% vs. 50%, p=0.06). No significant difference was found when considering: mortality, gestational age, time in the ICU, time on parenteral nutrition (PN) or length of stay. Prenatal bowel dilation, a longer ICU stay, and later gestational age independently predicted readmission for bowel obstruction (p<0.001).

Conclusion: Infants with gastroschisis and prenatal bowel dilation were significantly slower to initiate enteral feeding and tended to have a reduced incidence of primary closure. This did not translate into increased: mortality, time on PN, time in the ICU, or length of stay. However, dilation was associated with readmission for bowel obstruction.

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SPLANCHNIC PERFUSION PRESSURE: A BETTER PREDICTOR FOR PRIMARY CLOSURE THAN INTRA-ABDOMINAL PRESSURE IN NEONATAL GASTROSCHISIS

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Background: Both measured intra-abdominal pressure (IAP) and calculated splanchnic perfusion pressure (SPP) have been advocated for use in operative management of gastrochisis. We directly compared these two clinical indices.

Methods: IRB-approved multi-institutional retrospective review from three centers with 112 subjects. SPP was recorded as MAP - IAP. We compared the clinical utility of IAP and SPP using univariate and multivariate regression analyses.

Results: Calculated mean SPP was higher among neonates requiring silo placement compared to those without (39.0 ± 1.9 vs. 33.7 mm Hg, p<0.01). Measured IAP levels were similar between groups (11.5 ± 1.1 vs. 10.0 ± 0.5, mg/dL, p=0.4). On an ROC curve the inflection point for >90% specificity for silo placement was at an SPP of 44. In multivariate regression analysis adjusting for all factors below, SPP was independently associated with silo placement (OR 1.2, 95% CI 1.1 to 1.3, p=0.01), and IAP was not (OR 1.2, 95% CI <1.0 to 1.5, p=0.1).

<table>
<thead>
<tr>
<th>Study Variable (N=112)</th>
<th>Odds Ratio for Silo (95% CI)</th>
<th>Sig. (p&lt;0.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.9 (0.1 to 5.8)</td>
<td>0.88</td>
</tr>
<tr>
<td>Gestational age (weeks)</td>
<td>0.7 (0.4 to 3.5)</td>
<td>0.68</td>
</tr>
<tr>
<td>Means of delivery</td>
<td>1.0 (0.1 to 7.9)</td>
<td>0.98</td>
</tr>
<tr>
<td>Birth weight (gm)</td>
<td>1.0 (&gt;0.9 to &lt;1.1)</td>
<td>0.30</td>
</tr>
<tr>
<td>Final mesh closure</td>
<td>0.4 (0.01 to 11.6)</td>
<td>0.57</td>
</tr>
<tr>
<td>Associated abnormalities</td>
<td>4.4 (0.3 to 66.0)</td>
<td>0.03</td>
</tr>
<tr>
<td>Major complications</td>
<td>0.5 (&lt;0.1 to 2.8)</td>
<td>0.40</td>
</tr>
<tr>
<td>Ventilator days</td>
<td>1.8 (0.9 to 3.6)</td>
<td>0.07</td>
</tr>
<tr>
<td>Intragastric pressure</td>
<td>1.2 (&lt;1.0 to 1.5)</td>
<td>0.10</td>
</tr>
<tr>
<td>Splanchnic perfusion pressure</td>
<td>1.2 (1.1 to 1.3)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Conclusions: These data suggest that SPP is a stronger predictor than IAP for the ability to achieve primary closure in the management of neonatal gastrochisis. We infer from these data that intra-operative splanchnic perfusion pressure >43 mmHg may obviate the need for silo placement.

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SILO POUCH STOMA: RESCUE PROCEDURE FOR INTESTINAL CATASTROPHE IN GASTROSCHISIS

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Background: Silo pouch formation is a standard procedure for delayed closure in Gastrostomosis. Intestinal complications can occur and their management can be perplexing. We present the outcome of three cases of intra-silo intestinal complications managed with a silo pouch stoma (SPS).

Methods: A retrospective review of 3 neonates with SPS was conducted. The proximal intestine was brought out as a stoma via the silo sheath.

Results: Three patients had a silo formed for delayed reduction of Gastrostomosis. The indications for SPS were: volvulus of jejunal artesia (1) and intestinal perforation (2). In all cases the bowel was subsequently reduced and the stoma closed following resolution of the inflammatory process.

Conclusions: Creation of stoma through the silo is a technique used to allow bowel decompression, and resolution of bowel oedema, whilst delayed reduction continues with monitoring of intestine’s condition. It is convenient as it would be difficult to fashion an abdominal wall stoma. The silo sheath supports the weight of the stoma and subsequent reversal is also not jeopardised.

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LONGITUDINAL PANCREATICOJEJUNOSTOMY FOR CHRONIC PANCREATITIS IN CHILDREN

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Purpose: Chronic pancreatitis requiring surgery in children is uncommon. We review our results in treating pediatric chronic pancreatitis with longitudinal pancreaticejejunostomy (LPJ).

Methods: Children with chronic pancreatitis and treated with LPJ 1997-2003 were identified. Demographics, associated conditions, endoscopic interventions, and post-operative outcome were recorded. Length and costs of hospitalizations before and after LPJ were calculated.

Results: Four patients (three boys), 3-16 year-old (median 8) underwent LPJ. Associated conditions included bile duct obstruction(2), pancreatic duct strictures(2), recurrent familial pancreatitis(1), pseudocyst(1), Down’s syndrome(1), and duodenal web(1). Two patients had pre-operative endoscopic stenting. Prior to LPJ, each child had 3-6 admissions for pancreatitis. Mean cost was US$13,000/admission, and total cost of $39,000/patient. At surgery, two patients required biliary diversion for persistent biliary obstruction in addition to the LPJ. Post-operatively, no patient developed fistulas, anastomotic leaks or died. The median length of hospitalization after LPJ was 8 days with a mean cost of US$37,000. All four patients resumed a normal diet after LPJ. There were no recurrences of pancreatitis with 1-5 years follow-up.

Conclusion: LPJ is a safe and cost-effective treatment for chronic pancreatitis in children. The procedure is associated with minimal complications, and patients are free of pancreatitis-related admissions after undergoing LPJ.

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INCREASED CXCR3 EXPRESSION ASSOCIATED WITH CD3-POSITIVE LYMPHOCYTES IN THE LIVER AND BILIARY REMNANT IN BILIARY ATRESIA

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Background: Lymphocyte-mediated inflammatory environment within the liver and bile duct has been proposed as a potential mechanism in the pathogenesis of biliary atresia (BA). Chemokines regulate leukocyte migration and act as critical organizers of cell distribution in the inflammatory responses. The aim of this study was to analyze the infiltration of T lymphocytes and the expression of a chemokine receptor CXCR3, which recruit lymphocytes under Th1-type cytokine predominance, in the liver and biliary remnants in BA.

Methods: Immunohistochemistry for CD3, CD8 and CXCR3 was performed using liver biopsy tissues collected from the following three age-matched groups of patients; group I, BA (perinatal form) at the time of Kasai portoenterostomy (n=10); group II, choledochal dilatation (n=2); group III, other cholestatic diseases including paucity of intrahepatic bile ducts and total parenteral nutrition (TPN)-related cholestasis (n=3). Cellular staining on each section was graded from 0 to 4 and compared by non-parametric analysis.

Results: Infiltrating CD3- and CD8-positive lymphocytes in the portal tracts were significantly increased in group I (3.1±0.4, 2.8±0.4) compared to group II (1.0, 1.0) and III (1.7±0.3, 1.5±0.5) (p<0.01, p<0.05). CXCR3-positive mononuclear cells were significantly increased in group I (2.6±0.3) compared to group II (0.5±0.5) and III (0.7±0.3) (p<0.05). They were mainly found in the portal tracts with a similar distribution of CD3-positive cells. Moreover, CXCR3-positive cells and CD3-positive cells in the biliary remnants also showed a similar distribution.

Conclusion: Elevated expression of CXCR3 associated with increased CD3 and CD8 T cell infiltration suggests that CXCR3-positive cells under Th1-type cytokine milieu may play a potential role in the pathogenesis of biliary atresia.

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ROLES OF NUTRITION AND CORTICOSTEROIDS IN EARLY POST-OPERATIVE COMPLICATIONS IN CHILDREN WITH INFLAMMATORY BOWEL DISEASE

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Background: The influence of pre-operative nutritional status and other variables influencing tissue healing have not been well elucidated among children undergoing surgery for inflammatory bowel disease (IBD). This study investigated the associations of nutritional status and corticosteroid administration on early postoperative complications in pediatric patients with IBD.

Methods: Charts of all patients ≤16 years old undergoing surgery for IBD between 1994 and 2004 were reviewed. Factors indicating nutritional status and pre-operative steroid doses were collected. Outcomes included all post-operative complications.

Results: Seventy-eight patients undergoing 121 surgeries (69 for Crohn’s disease; 52 for ulcerative colitis) were studied. There were 35 post-operative complications of which 30 were major (anastomotic leaks, stump blow-outs, wound dehiscence or sepsis for another reason). Measures of nutritional status were not associated with increased post-operative complications. Pre-operative variables associated with increased complications were hemoglobin less than 123 g/L (p=0.03, OR 2.57, 95%CI 1.07-6.17), exclusive dependence on parenteral nutrition (p=0.0009, OR 4.49, 95%CI 1.78-11.27), and corticosteroid doses > 0.5 mg/kg/day (p=0.03, OR 2.40, 95%CI 1.06-5.44). Validated measures of disease-activity were not routinely recorded.

Conclusion: Associations with anemia, parenteral nutrition and pre-operative steroids were significant however these may just be proxy measures of disease severity. Future work, including prospective data collection regarding nutritional variables and documentation of disease activity needs to be considered.

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A RISK-ADJUSTED STUDY OF OUTCOME AND RESOURCE UTILIZATION FOR CONGENITAL DIAPHRAGMATIC HERNIA

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Purpose: Perinatal care of infants with CDH is non-standardized and costly. We examined a risk-adjusted cohort of CDH patients and hypothesized that: i) amongst CDH survivors, the cost of the birth admission would be proportional to illness-severity, and ii) this cost would be significantly higher compared to a matched non-CDH cohort.

Methods: A retrospective review of costs and outcomes for all patients with CDH admitted to British Columbia Children’s Hospital between 1999 and 2003 was performed. Risk grouping of CDH patients using a validated, admission severity score (SNAP-II) was conducted, enabling comparison amongst infants surviving to discharge. Hospital costs were also compared to a non-CDH cohort matched for birth weight and SNAP-II.

Results (Table 1): 32 infants with CDH were included, of whom 5 required ECMO. 23 infants (72%) survived to discharge, with an average LOS of 46 days. Average cost per survivor to discharge was $54,102, (vs $13,722 for the non-CDH cohort; p<0.05). Total costs for survivors were significantly correlated with SNAP-II at admission across lower risk groups (low number of survivors in the highest risk groups prevented further analysis).

<table>
<thead>
<tr>
<th>Survival</th>
<th>Avg LOS per survivor</th>
<th>Cost by Service Area (Cdn$)</th>
<th>Pharmacy</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDH (n=32)</td>
<td>23 (72%)</td>
<td>46d</td>
<td>810,891</td>
<td>195,043</td>
</tr>
<tr>
<td>Controls (n=32)</td>
<td>28 (88%)</td>
<td>13d</td>
<td>280,380</td>
<td>69,658</td>
</tr>
</tbody>
</table>

*Txs: Treatment Services includes Physiotherapy, Occupational Therapy, Child Life, Social Work, Psychology, Clinical Nutrition

Conclusions: Infants born with CDH require costly care, and can be expected to consume disproportionate resources. Admission SNAP-II score correlates with total cost to discharge among lower risk groups. Risk stratification and cost comparison of larger CDH populations may allow identification of cost-efficient treatment strategies.

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MANAGEMENT AND OUTCOME OF PATIENTS WITH COMBINED VAGINAL SEPTUM, BIFID UTERUS AND IPSILATERAL RENAL AGENESIS (HURLYN-WUNDERLICH-WERNER’S SYNDROME).

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Objective: Hurlyn-Wunderlich-Werner’s syndrome (HWWS) is a rare Müllerian anomaly consisting of uterine didelphy, hemi-vaginal septum and ipsilateral renal agenesis. The purpose of this study was to evaluate the natural history and outcome of patients with HWWS.

Methods: With IRB approval, all patients with uterine/vaginal anomalies were reviewed between 1982-2004. Patients with cloacal and/or anorectal anomalies were excluded. Presenting symptoms, preoperative investigations, operative management and long-term follow-up were assessed.

Results: Eighty patients with uterine/vaginal anomalies were identified. Twelve had HWWS. Median age at presentation was 13 years. Most patients (11/12) presented with abdominal pain and/or pelvic masses. Two patients had intra-abdominal abscesses. Nine patients were menstruating at presentation while four had irregular menses. Symptom duration ranged from 0.5-12 months. Diagnosis was confirmed by ultrasound (n=11), CT scan (n=3) and/or MRI (n=2). Operative management included vaginal septectomy and drainage of the hematocolpos/hematometrocolpos. One patient required salpingectomy for pyosalpinx. Follow-up ultrasounds revealed no recurrent collections. Median follow-up was 3 years (2months-16years). Eleven patients were asymptomatic after treatment. One patient complained of irregular menses.

Conclusion: This is the largest review of HWWS patients to date. Good long-term outcome occurs after vaginal septectomy. This diagnosis should be suspected in females with a pelvic mass and ipsilateral renal agenesis.

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ENDOGRAFT STENTING IN THE ADOLESCENT POPULATION FOR TRAUMATIC AORTIC INJURIES

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Background: Traumatic transections of the thoracic aorta are uncommon in the pediatric and adolescent population. Currently, the vast majority of these injuries are treated by standard open operative repairs via thoracotomies. We present two adolescent patients with traumatic thoracic aortic transections who were repaired by endovascular techniques.

Methods: A retrospective chart review at one institution of two adolescent patients who underwent endovascular repair of their traumatic aortic injuries.

Results: Both adolescents, aged 16 and 17 years, were in high speed motor vehicle collisions and presented with multi-system trauma. Both had their blood pressure controlled with beta blockers pre and post-operatively as necessary. Patient 1 also had a liver laceration, multiple pelvic bone fractures, hemothorax, and a renal laceration. His thoracic aortic transection was just below the aortic arch. He was repaired within 12 hours of injury with a 24 mm AneuRx endograft. He was hospitalized for only 8 days, primarily because of his pelvic fractures. He is now 21 months post-op without any complications. Patient 2 had more significant injuries including bilateral pulmonary contusions, pneumothoracis, left mainstem bronchus transection, liver laceration, multiple pelvic bone fractures, clavicular fracture, and multiple facial fractures including the mandible. Her descending aorta was the site of the transection. She was repaired at 48 hours after injury because of her multiple organ injuries, with a 23 mm (diameter) 3 cm long endograft. She was hospitalized for 40 days (29 days in the ICU) primarily as a result of her concomitant injuries, especially her left mainstem transection which necessitated a left pneumonectomy after unsuccessful attempt at stenting the injury. At 13 months follow-up, she is doing well.

Conclusions: Aortic injuries are usually accompanied by multi-system injuries due to the high velocity mechanism. Endovascular stenting, especially in critically ill patients, allows for definitive treatment of the vascular injury and reduces the recovery time that is associated with thoracotomies so that the period of hospitalization is determined by the other injuries. Short term recovery and follow-up is encouraging for endovascular stenting in the adolescent population, however, further long term follow-up is required.

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PNEUMOPERITONEUM PREVENTS INTRAPERITONEAL ADHESIONS AFTER LAPAROTOMY IN RATS

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Background: To assess whether pneumoperitoneum using carbon dioxide insufflation (CDI) prevents intra-peritoneal adhesions (IPA).

Methods: A laparotomy was performed in 40 8-week-old Lewis rats. To accelerate IPA, bowels were heated and Lewis rat blood was spilled over the bowels. The 40 rats were divided into 4 groups: laparotomy (Lp) without CDI (Lp-group: n=15), Lp with CDI (Lp-CDI-group: n=15), bowel anastomosis (BA) without CDI (BA-group: n=5), and BA with CDI (BA-CDI-group: n=5).

In both CDI groups, carbon dioxide was injected into the peritoneal cavity at abdominal closure to create pneumoperitoneum (5mmHg). In both BA groups, a 1cm of ileum was excised and BA was performed. Ten days later, IPA was blindly assessed using an IPA severity score (IPASS) during adhesiolysis at re-laparotomy (where 0=no adhesions, 1=no serosal tears, 2=serosal tears, 3=bowel perforation). The peritoneum and bowels were excised for histopathology.

Results: Pneumoperitoneum disappeared after approximately 4.6 days. There were no associated side effects. IPASS in the Lp-CDI-group was significantly lower than the Lp-group (p=0.002). IPASS in the BA-CDI-group was also significantly lower than the BA-group (p=0.046). Histopathology showed pneumoperitoneum had no effect on the peritoneum or bowels.

Conclusions: Our results suggest that CDI pneumoperitoneum is likely to prevent post-laparotomy IPA.

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LAPAROSCOPIC NISSEN FUNDOPICATION AFTER PREVIOUS GASTROSTOMY

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Background/Purpose: When children develop gastro-esophageal reflux disease after insertion of a gastrostomy tube, the challenge is how best to complete the laparoscopic anti-reflux procedure. Taking down the gastrostomy may be necessary if access is impaired. We demonstrate a simple method of port selection and placement that has allowed us to complete the laparoscopic procedure without the need for gastrostomy takedown.

Methods: A five port technique for laparoscopic Nissen fundoplications in 14 patients with pre-existing gastrostomy tubes has been carried out at the Children’s Hospital of New Mexico since 2002. A method for port placement allowing completion of the laparoscopic procedure in all cases without takedown of the gastrostomy has been developed over time.

Results: All cases were completed laparoscopically when the only previous operation was gastrostomy tube insertion (open or percutaneous endoscopic).

Conclusions: Laparoscopic Nissen fundoplication is feasible and safe even in the face of previous gastrostomy. The configuration of port placement, and the choice of appropriate port sizing permit the necessary movement of camera and instruments for successful completion of the operation. The basic principles are easily learned and the technique simple to master.

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MINIMAL ACCESS SURGERY IN NEONATES AND INFANTS

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Background: Minimal access surgery (MAS) in small infants carries an important consideration. The tolerance of these small babies and the assumed physiological effect of MAS, in addition to the required anesthetic and surgical skills have made it difficult to perform these types of procedures in many international centers. The present article will review our experience with MAS in neonates and infants in the first year of life.

Methods: The medical records of all infants who underwent minimal access surgery over a period of three years were retrospectively reviewed for demographic information, procedures, operative time, complications, outcomes and follow-up. Most of the operations were performed with 3-mm instruments and scopes and mean insufflation pressure of 10 mm Hg (range, 4-15 mm Hg).

Results: 70 infants were included in this study. 19 girls and 51 boys. The weight ranged from 1.3 to 7.8 kg (mean 4.3 kg). The mean age was 93 days (range 1 day to 11 months). 30 of these infants were neonates (42%). Procedures performed included, repair of tracheo-esophageal fistula (TEF), lobectomy, repair of diaphragmatic or hiatus hernias, pull-through for imperforated anus and Hirschsprung’s disease plication of the diaphragm, Kasai’s procedure, excision of choledochal cyst, pyloromyotomy, Ladd’s procedure and reduction of intussusceptions. There were two conversions, both in neonates with TEF. All patients tolerated the procedure very well with lesser degrees in neonates undergoing thoracoscopic procedures. Two neonates had Postoperative hypothermia (<35 C) and one neonate had high Pco2 postoperatively. There was one mortality and no morbidities. The follow-up ranged from 1 month to 3 years (mean 19 months).

Conclusion: Minimally invasive procedures in neonates and infants are safe and well tolerated. Intraoperative monitoring of end-tidal Co2 and core temperature are essential in avoiding unwanted effects of performing these procedures especially in neonates.

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VACUUM-ASSISTED CLOSURE FOR WOUND MANAGEMENT IN THE PEDIATRIC POPULATION

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Background/Purpose: Wound management in children has traditionally consisted of daily dressings. Although vacuum-assisted closure (VAC) is well described in the adult literature, there are few reports in children. We reviewed our experience with VAC therapy.

Methods: A retrospective review from 2003-2005 revealed that 16 children underwent VAC therapy. Variables analyzed included demographics, diagnosis, duration and characteristics of VAC therapy, wound closure, recurrence, complications and cost analysis.

Results: Sixteen children received VAC therapy at an average age of 12.9 years (range: 1mo-18yrs). Indications included tissue loss after pilonidal sinus excision (n=8, primary=5, recurrent=3) and after wound dehiscence of the abdomen (3), the sternum (2), the perineum (1), the back (1) and the leg (1). Average length of VAC use was 24 days with an average pressure of 110mmHg. Wound closure occurred on average 10.4 days after cessation of VAC therapy with good cosmetic results. Recurrent sinuses developed in 2 of the 3 patients with recurrent pilonidal disease. Pain in 2 patients required cessation of VAC therapy after 4 and 7 days respectively. The cost of VAC therapy was estimated to be 50% of traditional treatment.

Conclusions: Vacuum-assisted closure is well tolerated in our pediatric population and offers many advantages including fewer dressing changes, earlier return to daily activities and significantly decreased cost.

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CHARACTERIZATION OF THE DRUG POSITIVE
adolescent trauma population: should we, do
we and does it make a difference if we test?

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Purpose: Substance abuse (SA) is a significant co-factor for adolescent injury. Characterization of this population will help define a list of variables that are critical for designing interventions. The purpose of this study is to determine the frequency of SA testing and describe the injury characteristics of the adolescent trauma SA population.

Method: A urine drug screening (alcohol, cannabis and opiates) protocol for all injured adolescents (14-17 yrs old) was utilized. Four years of data was analyzed. Three groups were defined: not tested (NT), negative (NEG) and positive (POS). Transfers from an outside hospital were excluded. A patient may have had more than one positive test. Test were analyzed to compare gender, injury severity score (ISS), survival, mechanism, and length of stay (LOS).

Results: Four hundred and forty-three patients met criteria (308=males and 135=female). Mean ISS was 13.5±0.5SEM with a 2.9% mortality rate. One hundred and ninety-three of 443 (44%) were screened, (m=120, f=73) with 39% testing positive in each group. Twenty-nine percent of positive tests were opiates, 11.2% alcohol and 20% cannabis. Incidence of cannabis use in females was significantly higher (p<0.05) but there were no gender differences for alcohol or opiate use. There were no differences between the NT and the NEG/POS groups with respect to gender, LOS or mechanism of injury. Fourteen year olds were less likely to be drug screened. Mean ISS score was lower in the NT group (11.4±0.6 vs. 15.7±1.0 p<0.005). For the NEG and POS group analysis, a positive drug screen was not predicted by gender, ISS score, outcome, or LOS. Age at 17 (p<0.05) was predictive for a positive drug test. Bicycle crashes were predictive of a positive drug screen (p<0.005). Survival rates were not different between any of the groups.

Conclusions: Forty percent of patients screened positive, thus supporting screening in adolescent trauma patients. Selective criteria based on injury characteristics are not justified.

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PEDiatric ATV-related injuries: Are current regulations effective?

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Purpose: ATV-related injuries continued to increase in recent years. We aimed to analyze the ATV injury patterns at our institution, in order to help structure public awareness campaign and encourage governmental regulation, with the ultimate goal of injury prevention.

Methods: Retrospective review of all ATV related admissions at a pediatric trauma center.

Results: From 2001 to 2004, fifty ATV-related injuries requiring hospital admission were identified. The annual incidence had increased 2.5 fold from 2001 (8 admissions) to 2004 (20 admissions). The ages ranged from 3 to 17 years (median 13Y), with equal gender distribution. Fifty-four percent of admissions were traumatic brain injuries, 28% had orthopedic injuries, 14% with facial fractures, and 4% with abdominal injuries. Average length of stay was 6 days (range 1-47 days), five of the seven ICU admissions occurred in 2004. Eighty-four percent of patients did not wear helmet (97% among those from northern communities).

Conclusions: Both the incidence and severity of ATV-related injuries are increasing in a regional pediatric trauma center. There is a lack of regulation enforcement and public awareness of the danger of ATV use in children. Efforts to ensure helmet use and limit operator age are urgently needed to reduce childhood ATV-related injuries.

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TRAUMATIC PEDIATRIC BILE DUCT INJURY
CONSERVATIVE MANAGEMENT OR SURGICAL
INTERVENTION

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Background: Nonoperative management of blunt liver injuries has become standard care for children, in the absence of hemodynamic instability. However, associated bile ducts injuries remain difficult challenges. Few case reports have demonstrated the benefits of conservative approaches, but others have found better outcomes with surgical intervention. In this study we will report our experience with 5 cases of bile ducts injuries, four of them underwent unsuccessful surgical interventions.

Methods: Retrospective review of medical records of all pediatric patients who were admitted with major blunt liver trauma and bile ducts injuries over a period of 5 years.

Results: There were 5 patients, 4 male and one female, with age range from 3-11 year. All patients had major liver laceration and bilomas. Two had intrahepatic and three had extrahepatic bile duct injuries (2 right hepatic ducts and 1 gall bladder neck). Four of them underwent previous laparotomies, once in two, twice in one and three times in one patient. All 5 patients were eventually treated successfully with conservative management. Three underwent ERCP stenting with or without percutaneous drainage. Two patients were managed with percutaneous drainage alone. The follow up is up to 2.5 years with normal liver function test and bile ducts ultrasound.

Conclusion: With the current advancement in ERCP & intervention radiology techniques, we believe that non operative management of bile ducts injuries due to blunt trauma in children is successful and efficacious even after multiple laparotomies.

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SURGICAL CHALLENGES ASSOCIATED WITH THE CURRENT HIGH-RISK NEUROBLASTOMA (NB) PROTOCOL: IS THE PRICE TOO HIGH?

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Background: High-risk NB (age > 1 yr, INSS stage 4) are associated with dismal survival rate. The current dose-intensive high-risk COG protocol for advanced NB appears to have higher surgical complication rate than previous protocols.

Methods: All patients (n = 51) entered in high-risk protocols between 1995 and 2005 were analyzed. Patients in the current high risk protocol (A3973) (n = 22) were compared to those (n = 29) in previous 2 protocols.

Results: Patients were comparable in their mean age, surgical time, and tumor markers including Shimada, N-myc, 1p deletion, tumor origin and extent of metastasis. However, transfusion requirement (17/22 vs. 12/29, p=0.0019), post-op infection rate (7/22 vs. 1/29, p=0.02), other post-op issues including nutritional support (10/22 vs. 1/28, p=0.0001) were significantly higher with the current protocol. No peri-operative mortality was noted in both groups, and extent of respectability and margins were similar. Interestingly, recurrence rate was significantly lower with the current protocol (p=0.0003).

Conclusions: Despite higher surgical morbidity associated with the current high-risk protocol (1.77 vs. 0.45 complication/ person, p< 0.01), the recurrence rate was lower and interim survival rate is improved for patients with high-risk NB. Therefore, higher surgical complication rates associated with the current high-risk protocol are acceptable.

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ASSESSMENT OF RESIDUAL POST-TREATMENT MASSES IN HODGKIN’S DISEASE (HD) AND THE NEED FOR SURGICAL BIOPSY IN CHILDREN

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Background: In children with HD a significant residual mass may remain after definitive treatment. It may be composed of necrotic/fibrous tissue or resistant HD. Various imaging modalities are available to assess this mass including: CXR, CT scan, and gallium scan. The purpose of this study was to determine the sensitivity and specificity of each modality for residual HD.

Methods: 256 children with HD during 1985-2003 were retrospectively reviewed.

Results: 26 patients with HD had residual masses. These children had 16 abnormal CXR’s, 18 abnormal CT scans, and 9 abnormal gallium scans; each had a biopsy: 10 (38%) showed resistant HD and 16 (62%) had fibrotic and necrotic tissue. The sensitivity and specificity of each imaging modality for residual HD was:

<table>
<thead>
<tr>
<th>Modality</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>CXR</td>
<td>60%</td>
<td>38%</td>
</tr>
<tr>
<td>CT Scan</td>
<td>67%</td>
<td>8%</td>
</tr>
<tr>
<td>Gallium scan</td>
<td>71%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Conclusions: These imaging modalities were not sufficiently sensitive or specific to predict which residual masses may be harboring resistant HD. Hence the need for surgical biopsy will remain important in the assessment of these masses. FDG-PET scan, which was not available to these children, is a modality which has the promise of improving this assessment and should be made available to all children with HD.

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PREDICTORS OF TUMOR SPILLAGE IN
WILMS' TUMOR (WT)

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Background: The merits of primary nephrectomy (PN) and preoperative chemotherapy (PC) for WT patients are much debated. Early SIOP data suggested decreased intra-operative spillage but an increased risk of local recurrence after PC. WT patients at our institution were managed with PC until 1996; subsequently they were treated with PN. This study compares these approaches as they affect the incidence of tumor spillage.

Methods: WT patients from 1985-2003 were retrospectively reviewed.

Results:

<table>
<thead>
<tr>
<th></th>
<th>PC</th>
<th>PN</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>114</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Local recurrence</td>
<td>12 (10.5%)</td>
<td>5 (10.8%)</td>
<td>ns</td>
</tr>
<tr>
<td>EFS</td>
<td>80%</td>
<td>85%</td>
<td>ns</td>
</tr>
<tr>
<td>OS</td>
<td>92%</td>
<td>96%</td>
<td>ns</td>
</tr>
<tr>
<td>Tumor spillage</td>
<td>5.5%</td>
<td>4.5%</td>
<td>ns</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>+ spillage</th>
<th>- spillage</th>
<th>+ spillage</th>
<th>- spillage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>6</td>
<td>108</td>
<td>2</td>
<td>44</td>
</tr>
<tr>
<td>Initial tumor size, mean (cm)</td>
<td>13.4</td>
<td>9.9</td>
<td>12.2</td>
<td>10.1</td>
</tr>
</tbody>
</table>

| Tumor shrinkage with pre-operative chemotherapy | 1/6 (17%) | 87/108 (81%) | Not applicable | <0.001 |

Other parameters as IVC compression, IVC thrombus and tumor inhomogeneity demonstrated no significant differences.

Conclusions: PC and PN are equally effective in the treatment of WT with no difference in tumor spillage. Failure of the tumor to shrink in size with PC was significantly associated with an increase in tumor spillage and would suggest that a more cautious surgical approach be undertaken in these cases.

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ISOLATED LIVER TRANSPLANTATION IN PAEDIATRIC SHORT BOWEL SYNDROME: IS THERE A ROLE?

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Background: The role of isolated liver transplantation in children with parenteral nutrition associated cholestasis (PNAC) associated with short bowel syndrome (SBS) is unclear.

Methods: We performed a retrospective descriptive study of children with PNAC and SBS who received an isolated liver transplant at our institution. Review of the literature was also performed.

Results: 3 children (age 7, 8, and 13 months) with SBS and PNAC received an isolated liver transplant. Etiology of SBS was necrotizing enterocolitis, gastrochisis, and volvulus. Two patients with pre-transplant small bowel length of 30cm and 80cm who were receiving 65% and 79% of intake enterally, demonstrated good graft function (bilirubin 2 and 6) at 3.4 and 4.7 years post-transplant. Despite full tolerance of enteral feeds, both remain on PN (4 and 7 nights/week) for poor weight gain. One child with 23cm of small-bowel, who received 65% of calories enterally pre-transplant, died 7 months post-transplant from PNAC. A literature review revealed 22 cases of isolated liver transplant for PNAC associated with SBS. Overall survival was 77%, with 76% of survivors demonstrating independence from PN.

Conclusions: Isolated liver transplantation is an acceptable option for select children with PNAC associated with SBS, particularly when further intestinal adaptation is anticipated.

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THE CALGARY PROTOCOL FOR BRACING OF PECTUS CARINATUM
-A PRELIMINARY REPORT-

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**Background:** Optimal treatment of pectus carinatum (PC) deformities is unclear. We propose a non-operative approach utilizing a light weight, patient controlled dynamic chest bracing device.

**Methods:** Twenty-four adolescents have been enrolled. Initial bracing is 23 hours/day until correction, then 8 hours/day, until axial skeletal growth ceases. Monitoring is done by measurement of the external protrusion index (PCI), subjective patient appraisal of appearance (1-5 scale) and exercise tolerance.

**Results:** Nineteen patients have completed the initial treatment (mean treatment time 4.3±2.1 months). Three patients were non-compliant, and two patients are in the initial treatment phase, 14 patients are being braced at night, and 2 patients have completed bracing. In patients completing initial treatment (n=19), PCI (pre22±6 vs post 6.0±6.2), subjective appearance (change +1.8±0.4, p <0.001 for both), with no change in exercise tolerance.

**Conclusions:** The results suggest compressive bracing results in a significant improvement in PC appearance, in a surprisingly short period of time, in skeletally immature patients. Patient compliance and diligent follow up appears to be critical for successful treatment. Further studies are required to show the durability of this method of treatment.

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DEFINING THE EXTENT OF ANOMALIES IN THE ADRIAMYCIN MOUSE MODEL

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Background: The Adriamycin Rat Model is an established model for VACTERL anomalies and gastrointestinal atresias. Mice are the foremost mammal studied by developmental biologists, providing greater availability of molecular probes, antibodies and transferable knowledge with transgenic studies. Only tracheooesophageal malformations have been previously described in the Adriamycin mouse model. This study aimed to define the extent of anomalies in the mouse model.

Methods: CBA/Ca mice were accurately time-mated (n=27). Four different doses of Adriamycin (0-saline, 4, 5 and 6mg/kg) at three different timings of injections were compared. Dams received two intraperitoneal injections, 24 hours apart, commencing day 7, 7.5 or 8. Fetuses were harvested day 18. Anomalies were examined using a dissecting microscope and serial transverse sections.

Results: Administering Adriamycin at 6mg/kg on day 7 and 8 had the most teratogenic effect, with 80% of fetuses having 3, or more, VACTERL anomalies (anorectal malformation -100%, tracheo-oesophageal malformation -60%, right-sided aortic arch -58%, bladder agenesis/bilateral hydronephrosis -100%). These fetuses also had 100% incidence of multiple gastrointestinal atresias.

Conclusion: This study establishes a mouse model that should provide insights into the cellular and molecular mechanisms underlying VACTERL anomalies and gastrointestinal atresias.

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DOES LIVER-TO LUNG SIGNAL INTENSITY RATIO (LLSIR) MEASURED BY FETAL MAGNETIC RESONANCE IMAGING (MRI) PREDICT THE SEVERITY OF PULMONARY HYPOPLASIA IN CONGENITAL DIAPHRAGMATIC HERNIA?

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Purpose: A validated prenatal predictor of pulmonary hypoplasia in CDH is needed. Recently, a novel, calculated index (LLSIR) from diagnostic fetal MRI has been shown to predict the severity of non-CDH pulmonary hypoplasia. The purpose of our study was to measure LLSIR in a cohort of CDH fetuses with known outcome, and compare to gestationally normalized controls.

Materials and Methods: A total of 141 lungs from 74 normal fetuses, and 36 lungs from 18 CDH fetuses undergoing fetal MRI were analyzed and LLSIRs were calculated from images on a Leonardo MR workstation. A mixed effect statistical model was applied, and a scatter-plot generated for normal fetal lung LLSIR (with 95% prediction intervals) across a gestational range of 21-37 weeks. LLSIRs of fetal CDH lungs were considered “positive” for hypoplasia when the average of both lungs scored below the 2.5% ile for that gestational age.

Results: (Figure 1): All 18 fetuses had isolated CDH. Sixteen were liveborn; only 4 (25%) survived. Calculated LLSIR values for CDH fetuses were significantly lower than gestationally adjusted controls (p<0.05). Using this model, LLSIR<2.5% ile predicted mortality with a positive predictive value (PPV) of 83%.

Conclusion: LLSIR may be a useful predictor of outcome of fetal CDH, and warrants further clinical study.

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THE PRICE OF SUCCESS IN THE MANAGEMENT OF CONGENITAL DIAPHRAGMATIC HERNIA (CDH): IS IMPROVED SURVIVAL ACCOMPANYED BY AN INCREASE IN LONG-TERM MORBIDITY?

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Background: Since the early 1990’s, “gentle ventilation” (GV) strategies (i.e. high frequency oscillation [HFOV], nitric oxide, permissive hypercapnea) have significantly improved the survival of infants with CDH in our institution. This study aimed to determine if there has been a change in morbidity among survivors in our institution.

Method: Retrospective chart review of respiratory, neurological, nutritional and musculoskeletal morbidities in CDH patients treated at a single institution between 1985 and 1989 with conventional ventilation (CV) compared to patients treated between 1996 and 2000 with GV. Groups were compared using Chi-square test.

Results:

<table>
<thead>
<tr>
<th>Patient Management and Morbidity Results</th>
<th>CV (n=77)</th>
<th>GV (n=66)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFOV-treated</td>
<td>15%</td>
<td>36%</td>
</tr>
<tr>
<td>ECMO-treated</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Survival*</td>
<td>51%</td>
<td>80%</td>
</tr>
<tr>
<td>% of survivors with &gt;3 year follow-up post repair</td>
<td>61%</td>
<td>69%</td>
</tr>
<tr>
<td>Respiratory disease requiring bronchodilator use at age 3 years</td>
<td>38%</td>
<td>50%</td>
</tr>
<tr>
<td>Gastrostomy tube for nutritional support at age 3 years</td>
<td>8%</td>
<td>34%</td>
</tr>
<tr>
<td>Weight ≤ 25th percentile at age 3 years</td>
<td>54%</td>
<td>58%</td>
</tr>
<tr>
<td>Neurologic impairment requiring special education</td>
<td>29%</td>
<td>34%</td>
</tr>
<tr>
<td>Musculoskeletal changes (e.g. scoliosis, pectus excavatum/carinatum)</td>
<td>46%</td>
<td>29%</td>
</tr>
</tbody>
</table>

*p<0.05

Conclusion: The implementation of GV techniques have significantly decreased mortality in infants with CDH but may have increased the long-term morbidity among survivors.

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PULMONARY ARTERIOVENOUS MALFORMATION MIMICKING CONGENITAL CYSTIC ADENOMATOID MALFORMATION IN A NEWBORN

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Congenital pulmonary arteriovenous malformations (PAVM) are rare lesions, usually asymptomatic. We report on the case of a baby which was thought to have a congenital cystic adenomatoid malformation (CCAM) of the left upper lobe (LUL) at 20 weeks gestation on prenatal imaging. There was no vascularisation within this mass on Doppler. At birth, the baby was asymptomatic. A CT scan at 5 days of life revealed a lesion in the posterior segment of the LUL. The differential diagnosis included type III CCAM versus bronchial atresia. The lesion remained stable on CT at 3 and 6 months. She had bronchiolitis at 4 months of age requiring hospitalisation. Given the unclear diagnosis and persistence of the lesion, the patient underwent surgery at 15 months of age. Thoracoscopy identified a cystic lesion limited to the posterior segment of the LUL. Given the unusual appearance and behaviour during ventilation of the lesion, we elected to perform a segmentectomy via a thoracotomy. Final pathology revealed a congenital pulmonary arteriovenous malformation. Neither the child nor her family have any evidence of hereditary telangectasia. To our knowledge, this is the first reported case of PAVM mimicking a CCAM.

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PERINATAL MANAGEMENT OF CONGENITAL CYSTIC LUNG LESIONS IN THE AGE OF MINIMALLY INVASIVE SURGERY

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Background: Most congenital cystic lung lesions (CCLL) do not require in utero - or perinatal intervention. The management of asymptomatic lesions is controversial: the theoretical risk of infection and malignancy is offset by whether thoracotomy in asymptomatic children is justified. We examined our recent experience and the role of minimally invasive surgery.

Methods: We analyzed the pre-, peri- and postnatal findings of all consecutive CCLL diagnosed between 1997 and 2004. We reviewed records for pre- and postnatal imaging, management and outcome.

Results: Thirty CCLL were diagnosed prenatally. Since 2000, all asymptomatic lesions were removed endoscopically at 6-18 months (thoracoscopy for 4 extralobar sequestrations, 2 intralobar sequestrations/CCAM, 2 bronchogenic cysts and retroperitoneal laparoscopy for one intraabdominal sequestration). CCAM elements were present in >50%. Two abdominal lesions have regressed and 4 patients are awaiting intervention. Two symptomatic newborns underwent thoracotomy: one congenital lobar emphysema and one large foregut duplication.

Conclusions: It is debatable whether the risks associated with congenital lung lesions (infection and malignancy) justify surgical intervention in the asymptomatic patient. In our experience, all these lesions could safely be removed using endosurgical techniques. Counseling of (future) parents should be updated to include minimally invasive surgery in the management algorithm.

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DEVELOPMENTAL CHANGES IN SUBMUCOSAL NITRERGIC NEURONES IN THE PORCINE COLON

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Background: As our understanding of the enteric nervous system improves, it becomes clear that it is no longer sufficient to simply determine whether enteric ganglion cells are present but also to determine whether correct number and types of ganglion cells are present. The aim of this study was to determine the normal nitrergic neuronal density and morphology in the submucous plexus of the porcine distal bowel from fetal life to adulthood.

Methods: Distal large bowel specimens were obtained from porcine fetuses of gestational age E60 (n=5), E90 (n=5), newborn piglets (n=5), four weeks old piglets (n=5), twelve weeks old piglets (n=5) and adult pigs (n=5). Whole mount preparations of the submucous plexus were made and stained with NADPH-diaphorase histochemistry. The ganglia density, the number of ganglion cells per ganglia and nucleus and cytoplasmic area were measured.

Results: There was an inverse relationship between ganglia density and ganglion cell size with age (Table). The ganglia density decreased progressively with gestation and postnatal age whereas ganglion cell size increased with age predominantly due to increase in cytoplasm (p<0.001). However, the number of ganglion cells per ganglia increased significantly from E60 to newborn period, followed by significant decrease at 4 weeks and remaining constant thereafter (p<0.001).

<table>
<thead>
<tr>
<th></th>
<th>E60</th>
<th>E90</th>
<th>Newborn</th>
<th>4 weeks</th>
<th>12 wks</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ganglia density</td>
<td>1,912.5</td>
<td>775 ± 279.69</td>
<td>412.5 ± 85.79</td>
<td>264.28 ± 50.51</td>
<td>71.33 ± 28.78</td>
<td>29.8 ± 5.61</td>
</tr>
<tr>
<td>(ganglia/cm²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ganglion cells per ganglia</td>
<td>16.33 ± 7.79</td>
<td>23.41 ± 9.96</td>
<td>30.29 ± 13.37</td>
<td>18.89 ± 10.61</td>
<td>17.51 ± 10.55</td>
<td>17.62 ± 8.67</td>
</tr>
<tr>
<td>(n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ganglion cell size</td>
<td>71.91 ± 14.67</td>
<td>102.51 ± 28.52</td>
<td>157.21 ± 48.02</td>
<td>239.94 ± 88.81</td>
<td>257.19 ± 102.45</td>
<td>392.51 ± 194.71</td>
</tr>
<tr>
<td>(µ²)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: The quantitative and qualitative morphometric analysis of the colonic submucous plexus show that significant developmental changes occur during fetal and postnatal life. These findings indicate that the age of the patient is of utmost importance during histopathologic evaluation of enteric nervous system disorders.

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THE ONTOGENY OF THE GLUCAGON-LIKE PEPTIDE-2 AXI S IN PREMATURE NEONATES

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Background: Glucagon-like-peptide2 (GLP-2) coordinates nutrient absorption;
however its role in neonates is unclear. This study describes the ontogeny of
the GLP-2 axis in the premature infant.

Methods: With consent, otherwise normal infants were followed with weekly
determinations of serum GLP-2 levels, feeds and weight. Feeds were
advanced based on standardized clinical parameters.

Results: A total of 26 infants, gestational age 24-32 weeks, were studied with
this protocol. Fasting levels of GLP-2 showed no variation with gestational
age (20–75 pmoL/L). However, fed levels (>50% calories enterally) showed
a significant increase in GLP-2 production at 32 weeks, and a decline after 40
weeks. (<32 weeks: 113±65, 32-40 weeks 213±107, and >44 weeks 72±24
pMol/L (p<0.05). Further, fed levels far exceeded the normal values seen in
adults (Infants 121±13 vs. adults 39±7 pmoL/L, p<0.0001). 2 infants with
low levels developed NEC.

Conclusions: Premature human infants display an age related increase in
GLP-2 response to feeds at age 32 weeks. Fasting levels of GLP-2 do not
change over this time period, suggesting that GLP-2 levels are not elevated as
part of normal, non-fed development. However, with feeding, GLP-2
production is very active, and may play a role in regulating gut activity.

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IMPACT OF GESTATIONAL AGE (GA) ON THE CLINICAL SPECTRUM AND SURGICAL OUTCOME OF NECROTIZING ENTEROCOLITIS (NEC)

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Aim: To test the hypotheses that the clinical spectrum and the outcome of NEC vary with GA at birth.

Methods: Prospectively collected data on all infants with confirmed NEC over 12 years were studied, excluding those with anomalies, or with <23 wk GA. Based on GA (determined by maternal dates, ultrasound and physical findings), NEC-infants were divided into: Extremely preemie (EP), very premie (VP), premie (P), and near-term/term (NTT) groups.

Results: Of 202 NEC-infants (BW, 512 - 4102, g), 82 (40%) required urgent surgery and 39 (19%) died. Surgical mortality was 34%. NTT-infants were more likely by 14 fold (OR 13.7, CI 1.8-102.7, p .01), while EP infants were less likely by 17 fold (Coef = -2.8, OR 17.2, CI 7.9-38.5, p < .0001) to present with pneumatosis. Despite a higher mortality rate in EP than in NTT infants (33% vs. 9%, p < .03), other surgical outcomes were not significantly different.

<table>
<thead>
<tr>
<th>NEC Spectrum</th>
<th>23 – 26 wk</th>
<th>&gt;26 – 29 wk</th>
<th>&gt;29 – 34 wk</th>
<th>&gt;34 – 41 wk</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abd. dist</td>
<td>34 (71)</td>
<td>23 (69)</td>
<td>6 (23)</td>
<td>&lt; .0001</td>
<td></td>
</tr>
<tr>
<td>Ileus</td>
<td>30 (62)</td>
<td>19 (34)</td>
<td>6 (19)</td>
<td>.0007</td>
<td></td>
</tr>
<tr>
<td>Enteritis</td>
<td>28 (58)</td>
<td>32 (57)</td>
<td>25 (78)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Bloody-stool</td>
<td>17 (26)</td>
<td>30 (54)</td>
<td>18 (56)</td>
<td>&lt; .0001</td>
<td></td>
</tr>
<tr>
<td>Pneumatosis</td>
<td>14 (29)</td>
<td>50 (89)</td>
<td>31 (97)</td>
<td>&lt; .0001</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome</th>
<th>23 – 26 wk</th>
<th>&gt;26 – 29 wk</th>
<th>&gt;29 – 34 wk</th>
<th>&gt;34 – 41 wk</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>16 (33)</td>
<td>8 (14)</td>
<td>3 (9)</td>
<td>&lt; .03</td>
<td></td>
</tr>
<tr>
<td>Stricture</td>
<td>11 (23)</td>
<td>7 (12)</td>
<td>5 (16)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Fistula</td>
<td>11 (23)</td>
<td>7 (12)</td>
<td>5 (16)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Abscess</td>
<td>13 (27)</td>
<td>6 (11)</td>
<td>5 (16)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Urg. surgery</td>
<td>26 (54)</td>
<td>20 (36)</td>
<td>12 (37)</td>
<td>NS</td>
<td></td>
</tr>
</tbody>
</table>

P = ≤ .05.

Conclusion: The clinical spectrum of NEC varies markedly with degree of prematurity. Outcome, however, is similar among survivors of NEC. Relying solely on "pneumatosis" as the sign of NEC in extremely premature infants, may miss diagnosing NEC.

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A MODIFIED HEPATIC PORTOENTEROSTOMY FOR TREATING BILIARY ATRESIA

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Background: We present a modified hepatic portoenterostomy (HP) for treating biliary atresia (BA).

Methods: We used our modified HP to treat 14 cases of BA. Mean age at surgery was 65.3±12.3 days). The modifications are:
1) Five or 6 absorbable 5-0 double needle sutures are placed horizontally in the liver surface on the posterior side of the remnant fibrous mass before excision. The sutures are placed in the posterior wall the remnant is pulled caudally.
2) Each suture was held with a mosquito clamp and numbered.
3) The posterior and anterior margins of the HP are brought together to resemble a flattened isosceles triangle.

Results: Technical advantages of this new technique are:
1) All posterior sutures can be placed accurately and safely away from the remnant fibrous mass.
2) Because all sutures are numbered, they can be easily identified and the jejunum can be attached easily.
3) The cut surface of the remnant fibrous mass never becomes overgrown by jejunal mucosa.
All cases are currently jaundice-free. There were no surgical complications such as bleeding or leakage.

Conclusions: This technique is easy to use and recommended for less experienced surgeons.

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RECURRENCE OF CONGENITAL POSTERO-LATERAL DIAPHRAGMATIC HERNIA IN NEONATES

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Purpose: To determine: 1) the recurrence rate of congenital diaphragmatic hernia (CDH) in neonates; 2) whether recurrences are related to the synthetic patch repair.

Methods: All consecutive neonates with CDH repaired between 1991 and 2002 in two children’s hospitals (one in Europe and one in North America) were reviewed. Hospital A used Dacron and Hospital B used Gore-Tex® patches. This allowed a comparison of the effect of patches with different characteristics of tissue incorporation. Data are expressed as mean ± SD. Comparisons were made by t-test or Fishers exact test.

Results: There were 216 neonates (105 in Hospital A and 111 in Hospital B). Thirteen neonates (6%) had recurrence of CDH and 3 had multiple recurrences. The recurrence rate was similar after primary repair (7/126 = 6%) compared to patch repair (6/90 = 7%). The two centres had similar recurrence rate of CDH (5% in Hospital A and 7% in Hospital B).

Conclusions: The recurrence rate of CDH in this large, international analysis is low (6%). Surprisingly, the recurrence rate after primary closure is similar to that after patch repair. The type of synthetic patch used (Dacron versus Gore-Tex®) does not influence the recurrence rate of the hernia.

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MITOMYCIN-C IN THE MANAGEMENT OF PEDIATRIC CAUSTIC ESOPHAGEAL STRICTURES - A CASE REPORT

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Background: Although the incidence of caustic esophageal strictures has declined in developed countries accidents still happen. The management of caustic ingestion and its complications remains a challenge. Mitomycin-C inhibits fibroblast proliferation and is effective in reducing scar in animal experiments. It is increasingly used for the management of laryngotracheal stenosis with encouraging results. There are no reports of its use in distal esophageal strictures in children. We report the case of a child with a distal esophageal stricture from lye ingestion managed with Mitomycin C.

Methods: Retrospective chart review.

Results: Stricture of the distal esophagus was managed with gastrostomy tube feedings and 9 dilatations over a one-year period. Dilatation was required every 6-8 weeks to a maximum size of 50 French. At one year post-injury, the stricture was 20% of esophageal diameter. Endoscopically, Mitomycin-C (4 μg/mL) was applied topically and circumferentially and repeated 4 months later. This resulted in decreased stenosis (stricture was 50% of esophageal diameter) and no further dilatation at 20 months follow up on a regular diet. No complications were observed.

Conclusion: Although controlled trials are required to confirm its efficacy, Mitomycin-C should be considered as an adjunct in the management of caustic strictures in children.

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TOTAL OESOPHAGOGASTRIC DISSOCIATION (TOGD):
10 YEARS REVIEW

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Purpose: Recurrent GER after fundoplication is high (7.5-50%) in
neurologically impaired (NI) children. Success with “Rescue TOGD”
suggested its use as the ‘primary’ form of antireflux surgery for this group.

Methods: 26 patients (14 male, 12 female) who underwent TOGD between
1994-2004 were reviewed. 16 were “Primary”, 10 “Rescue”.

Results: There was no operative mortality. Postoperative complications
were limited to 1 subphrenic collection and 1 oesphagojejunal dehiscence.
Gastrostomy feeding established by 5 days and mean hospital stay was 10.3
days (7-15). Follow up of 7 months to 11 years revealed 4 late deaths unrelated
to the surgery. There was no recurrence of GER. Nutritional status improved
and the mean weight standard deviation score (2.5 preoperatively) was
statistically significant at 0.8 postoperatively (Wilcoxon Signed Rank p value
0.008). 75% had preoperative retching that was still present at 6 months but
settled spontaneously by 12 months.

Conclusions: TOGD is a safe and definitive solution for GER. Since it
eliminates the risk of reflux recurrence, we suggest TOGD as the primary
treatment of choice for most NI with GER. TOGD has proven useful in
other difficult circumstances.

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UP TO WHICH LEVEL IS ESOPHAGEAL REPLACEMENT POSSIBLE? EXPERIENCE OF 14 CHILDREN WITH PHARYNGEAL ANASTOMOSIS OF ESOPHAGEAL REPLACEMENTS.

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University Hospital of Lausanne (CHUV), Switzerland

Patients: Among 281 children treated for esophageal caustic burns, 14 had severe proximal esophageal lesions associated with pharyngeal stenosis (age 1.7 to 14.5 y). All had intact vocal cords.

Technique: One stage esophagoplasties were performed using colonic interposition (12) or gastric tubes (2), associated with pharyngoplasties, the proximal anastomosis being done at the arytenoid level on the larynx at a few mm lateral from the vocal cords.

Results: Postoperative care required a long stay in the PICU for respiratory complications, despite tracheostomies. During the postoperative period pulmonary aspirations were frequently associated with pneumonias (1 to 5 / child), this until the children learn how to swallow, which took from 2 to 6 months. Total treatment varied from 92 to 436 days requiring up to 10 additional local procedures in the same child. With a follow-up ranging from 1 to 10.6 years (mean 4.9 years) all children are healthy eat and breath normally.

Conclusions: We believe that very proximal pharyngeal anastomosis can be attempted in esophagoplasties, as long as children have no impairment of vocal cord mobility by glottic scars or recurrent nerve lesion. Rehabilitation is prolonged, during which aspirations and subsequent pneumonias can occur.

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PSYCHO-SOCIAL FUNCTIONING OF ADOLESCENTS WITH PECTUS EXCAVATUM; DEPRESSION SYMPTOMS AND SELF-PERCEPTION

J.M. Martin¹, J. Roberts¹, A. Hayashi², E. Skarsgard³, D. Sigalet⁴
University of Victoria¹, Department of Surgery, Vancouver Island Health Authority², University of British Columbia³, University of Calgary⁴

Background: Visible deformities clearly place individuals at greater psychosocial risk; however, there is little research on the psychological impact of concealable deformities such as pectus excavatum (PE; Anderson, J., Martin, J. & Maxwell, L., 2003). Although corrective surgery for PE is frequently performed for psychosocial reasons, there is little prospective research on pre-surgery psychological functioning. The current study begins to address this gap by assessing the depressive symptoms and self-perceptions of youth with uncorrected PE.

Method: The Child Depression Inventory (CDI, Kovacs, 1980), the Self-Perception Profile (SPP-C; Harter, 1982) and perceived PE severity scales were completed by 19 adolescents (mean age = 14.58) waiting for surgical repair of PE.

Results: Twenty-eight % of this sample of patients with PE had CDI scores above the 90th percentile for non-psychiatric populations. Patients’ SPP-C appearance competence scores were significantly lower than their academic, social, athletic, or conduct competence scores. SPP-C appearance competence was significantly correlated (r =.70, p < .001) with CDI depression scores.

Conclusions: Youth with PE are at a significantly greater risk for depressive disorders as predicted by the CDI. Strong correlations between high depressive affect, low perceived appearance, and high perceived PE severity are consistent with the hypothesis that youth with uncorrected PE deformities experience poorer social-emotional functioning.

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6361 PEDIATRIC INGUINAL HERNIAS: A 35 YEAR REVIEW

S.H. Ein, I. Njere, A. Ein
Division of General Surgery, The Hospital for Sick Children, Toronto, Canada

Background: This study aims, by it’s size and uniformity (1 Pediatric Surgeon), to corroborate or refute the teachings and myths of the pediatric inguinal hernia.

Methods: From July 1969 to January 2004, 6361 infants and children with inguinal hernias were seen, operated and followed by the senior author. A retrospective survey of their charts was carried out to evaluate the demographics and clinical aspects of these patients. The Hospital’s Research Ethics Board approved this study.

Results: The ages ranged from premature (<36 weeks) (3%) to 18 years (2%) (mean age 3.3 years) with males (5:1). There were 59% right, 29% left and 12% bilateral hernias (almost all indirect). Hydroceles (mostly right side and scrotal) were found in 19%. Incarceration occurred in 15%, mostly in boys (mean age 1.5 years) A modified Ferguson repair was used. An opposite side hernia developed in 5%, 95% within the first 5 years. There were 1.2% recurrences (mean age 5.5 years, mostly in boys on the right side, 96% within 5 years, 13% had VP shunts), 1.2% wound infections and 0.3 testicular atrophy. Four percent of all patients had another medical problem. There were no postoperative deaths. One percent had a documented hernia disappear.

Conclusions: The 5% opposite side hernia occurred mostly in boys (mean age 1.4 years) and on the right side. Eight percent of left-sided repairs and 4% of right-sided repairs developed an opposite side hernia, however, boys (5%) and girls (4%) were virtually equal in having an opposite side hernia. Although a girl with a hernia on the left side had the same 2 to 1 chance (65%-35%) of developing an opposite side hernia at any age, there still isn’t any rationale for contra lateral exploration.

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THE "SCARLESS" APPENDECTOMY

Division of Pediatric Surgery, Brown Medical School

Background: Laparoscopic appendectomy is typically performed with a telescope in the umbilical port and additional ports in the right (or left) upper quadrant and suprapubic region. We have modified the port placement to improve visualization and cosmesis.

Methods: We currently utilize a 10 mm umbilical port and two 3-5 mm ports, placed low in each inguinal crease. A 3 or 5 mm 30° telescope is introduced in the left inguinal port, using the other two ports for surgical manipulation.

Results: This approach allows visualization of the base of the appendix at the cecum, even in cases of an aberrantly located appendiceal body and/or boggy cecum. This "scarless" technique of laparoscopic appendectomy was successful in all 100 patients over the last 24 months, without inguinal hematoma or other technical complication.

Conclusions: A slight modification of laparoscopic appendectomy allows predictable visualization of the base of appendix and the tinea confluence on the cecum, and leaves no visible incisional scars above the inguinal region.

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ONE TROCAR TRANSUMBILICAL LAPAROSCOPIC-ASSISTED MANAGEMENT OF MECKEL'S DIVERTICULUM IN CHILDREN

G. Cobellis, A. Cruccetti, L. Mastroianni, G. Amici, A. Martino
Pediatric Surgery Unit, Salesi Children’s Hospital, Ancona, Italy

Background: Transumbilical laparoscopic assisted (TULA) intestinal surgery using only “one trocar” is a very minimal invasive procedure. The authors present their experience for the management of Meckel’s diverticulum.

Methods: Between January 2001 and December 2004 nine TULA procedures were performed for Meckel’s diverticulum. The median age was 6.1 years (range, 6 months – 13.6 years). Six patients were admitted for intestinal bleeding: technetium 99m pertechnetate scan was positive in 3. Three patients had recurrent abdominal pain and the abdominal ultrasound scan showed a cystlike structure. An intraumbilical 10 mm Hasson trocar was inserted in an open fashion. Using a 10 mm operative laparoscope terminal ileum was grasped with an atraumatic instrument and exteriorized through the umbilicus. Ileal exploration and treatment was performed outside the abdominal cavity.

Results: Meckel’s diverticulum was identified in 8 patients and ileal duplication in 1: intestinal resection/anastomosis (n = 7) or excision of diverticulum (n = 2) were performed. There were no operative complications. Median hospital stay was 4 days (range 3 - 7). At the median follow-up of 24 months (range 3 - 51) all patients are asymptomatic.

Conclusions: Our results indicate that one trocar TULA procedures are safe and effective for the diagnosis and treatment of Meckel’s diverticulum, with excellent cosmetic results.

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THYMECTOMY THROUGH MINI STERNOTOMY: AN ALTERNATIVE WITH ADEQUATE EXPOSURE AND EXCELLENT COSMESIS

S. Bouchard¹, I. Bratu¹, F. Ma²
¹Department of Pediatric Surgery, Sainte-Justine Hospital, Montreal, Quebec, Canada.
²Department of Cardiac Surgery, Jewish General Hospital, Montreal, Quebec, Canada.

Case: A 16 year old girl with sclerosing nodular Hodgkin’s lymphoma stage IIA was treated with the ABVD chemotherapy protocol followed by radiotherapy to the mediastinum. On follow-up imaging, she was found to have a recurrence in the thymus and the right iliac crest. As the thymus resides immediately under the sternum and as prior mediastinal radiation is often associated with dense fibrous reaction, we believed that this would preclude a safe thorascopic approach for thymectomy. We elected to remove the thymus through a mini-sternotomy akin the minimally invasive cardiac surgery for valvular operations. The skin incision totalled 6 cm, but the sternotomy extended from the sternal notch to the 3rd intercostal space. The surgical exposure was adequate and allowed for a safe thymectomy. The patient was discharged on day 2 with minimal post-operative pain, with an excellent cosmetic result. When a thorascoscopic approach to the thymus seems unsafe or impossible, one should consider to approach the thymus through a mini-sternotomy with excellent access and cosmetic result. The operative technique will be presented at the meeting.

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EXPERIENCE WITH BLADDER EXSTROPHY IN KENYA

S.S. Andrawes
Gertrude’s Garden Children’s Hospital, Nairobi, Kenya

**Background:** Bladder exstrophy is an uncommon pediatric surgical condition. In developing countries its features and management present unique challenges.

**Methods:** Medical records of all children operated for bladder exstrophy by the author between 1990 and 2005 were retrospectively reviewed.

**Results:** There were 25 patients, only 50% of whom presented in the first year of life. Several children had multiple previous unsuccessful repairs. The standard approach involved 3 stages: I: bladder closure at presentation, without iliac osteotomy; II: epispadias repair, 2 years after stage I; and III: continence procedure. Standard bladder neck reconstructions had limited success and were therefore replaced by a continent Mainz pouch II procedure (a modified ureterosigmoidoscopy). Follow-up was impaired by wide geographic distribution and accessibility, but short-term results were favourable.

**Conclusions:** Despite specific challenges in developing countries, bladder exstrophy can be successfully treated in such settings. More surgeons must be trained in the management of this condition in order to address the significant need. Continence issues remain for most of the affected children.

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FROM KINGSTON, CANADA TO KIJABE, KENYA: A PEDIATRIC SURGICAL PARADIGM SHIFT

D. Poenaru
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Background: Practicing pediatric surgery in a developing country is radically different on several levels from a practice in a developed country.

Methods: The present study is both an objective and a reflective overview of these changes in one pediatric surgeon’s practice. Objectively, the study will focus on the over 300 major procedures performed over 18 months.

Results: These include 58% neurosurgical cases (73 spina bifida closures, 93 ventriculoperitoneal shunts, 9 encephalocele closures), 6% ENT (incl. 20 cleft lip and/or palate closures), 6% genito-urinary (incl. 9 hypospadias repairs). “Standard” pediatric general surgical procedures amounted only to 26% of the volume, but included 22 PSARP, 8 colo-anal pullthroughs, and 38 colostomy procedures. Minor operations (hernias, anal procedures, appendectomies) represented only 11% of the total surgical load. The median age of the patients was 9 months.

Conclusions: Observations on the qualitative differences of pediatric surgery in a developing country, as well as reflections on the ethos of practice overseas will (hopefully) complete the overview.

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ASSOCIATION CANADIENNE de
CHIRURGIE PÉDIATRIQUE

37ième

Réunion Annuelle

Ville de Québec

22 septembre - 25 septembre, 2005
Trente-septième Congrès Annuel

ASSOCIATION CANADIENNE de
CHIRURGIE PÉDIATRIQUE

22 septembre - 25 septembre, 2005

Hôtel Loews Concorde
Ville de Québec (Québec)
CANADA
Cette réunion est accréditée aux fins du maintien de la compétence tel que défini par le Collège Royal des Médecins et Chirurgiens du Canada.
PROGRAMME SCIENTIFIQUE ET SOCIAL

Jeudi, le 22 septembre 2005
10:00 - 17:00 Réunion du Conseil de l’ACCP, 410
14:00 Inscription
19:00 Réception de Bienvenue – Hôtel Loews Concorde,
        Restaurant La Galerie

Vendredi, le 23 septembre 2005
06:00 - 07:30 Réunion du Comité de Spécialité en chirurgie générale pédiatrique
07:00 - 12:00 Inscription
07:00 - 07:30 Petit Déjeuner
07:30 - 07:40 Mot de Bienvenue et Ouverture du Congrès - suzor Coté
07:40 - 09:26 PREMIÈRE Session Scientifique
09:26 - 09:40 Pause-Santé
09:40 - 11:28 DEUXIÈME Session Scientifique
11:28 - 11:44 Pause-Santé
11:44 - 12:30 Conférence Fred MacLeod / JPS, Dr. Abdullah Al Rabeeah
12:30 - 13:30 Déjeuner - suzor Coté
12:30 - 13:30 CAPSNET – suzor Coté

Samedi, le 24 septembre 2005
06:00 - 07:30 Réunion du Comité de Publications
07:00 - 12:00 Inscription
07:00 - 07:30 Petit Déjeuner
07:30 - 08:40 TROISIÈME Session Scientifique
08:40 - 08:55 Pause-Santé
08:55 - 10:23 QUATRIÈME Session Scientifique
10:23 - 10:35 Pause-Santé
10:35 - 11:30 CINQUIÈME Session Scientifique
11:30 - 12:15 Discussion par des experts
12:15 - 14:15 Déjeuner d’affaire des Membres – Jean-Paul Lemieux
18:00 Banquet du Président – Chapelle du petit Séminaire
    **Remise du Prix du résident pour les meilleures présentations
    clinique et de recherche

Dimanche, le 25 septembre 2005
07:00 - 09:00 Inscription
07:00 - 07:30 Petit Déjeuner
07:30 - 09:01 SIXIÈME Session Scientifique
09:01 - 09:40 Pause-Santé
09:40 - 10:34 SEPTIÈME Session Scientifique
10:34 Mot de clôture du président
MOT DE BIENVENUE DU PRÉSIDENT

Bienvenue à Québec,

Cette année, le congrès de l’Association Canadienne de Chirurgie Pédiatrique a lieu dans une ville particulièrement charmante et sur un site historique de première importance. La bataille des Plaines d’Abraham constitue un tournant majeur dans l’histoire de notre pays.

C’est aussi un quartier historique sur le plan médical puisque c’est ici que fut construit le premier hôpital de l’Amérique du Nord : L’Hôtel Dieu de Québec. Cet hôpital est encore aujourd’hui une composante importante du Centre Hospitalier Universitaire de Québec.

Le comité du programme présidé pour la première année par la Dre Natalie Yanchar a fait un excellent travail pour composer un programme scientifique de première classe.

Le comité d’organisation locale présidé par la Dre Pascale Prasil s’est assuré que tous les participants se souviendront longtemps du 37e congrès de l’ACCP. Le programme social est tout à fait spécial.

Le choix de notre conférencier McLeod-JPS est aussi historique puisque c’est la première fois qu’un membre associé de l’ACCP est invité à donner cette conférence. Le Dr Abdullah Al Rabeeah nous parlera d’une expérience exceptionnelle dans la chirurgie d’une pathologie exceptionnelle. Sa conférence s’intitulera : “Passé, présent et futur de la chirurgie de Jumeaux Siamois”.

Enfin je dois souligner le travail du Dr Peter Fitzgerald, notre Secrétaire trésorier qui continue de veiller sur tous les aspects de l’ACCP avec beaucoup d’enthousiasme et de compétence.

Merci à tous et bon congrès.

Salam Yazbeck M.D.
Président
Association Canadienne de Chirurgie Pédiatrique.
AU SUJET DE L’ASSOCIATION CANADIENNE
DE LA CHIRURGIE PÉDIATRIQUE

L’Association canadienne de chirurgie pédiatique a reçu sa charte en 1967. Son objectif est d’améliorer les soins chirurgicaux aux nouveau-nés et aux enfants du Canada. Elle s’intéresse à tous les aspects de la chirurgie pédiatique générale et thoracique tout en reconnaissant sa responsabilité unique à l’égard des bébés nés avec des anomalies congénitales et des enfants atteints de tumeurs malignes. Bien que sa responsabilité en matière de traumatismes pédiatriques ne soit pas unique, elle exerce un rôle crucial dans les questions relatives à ces traumatismes.

L’Association canadienne de chirurgie pédiatique offre la possibilité, particulièrement dans le cadre de son assemblée générale annuelle, d’échanger des informations concernant le diagnostic, le traitement et la recherche liés à ses domaines de travail. De plus, elle assume la responsabilité de participer à l’éducation non seulement de ses propres membres, mais aussi des autres membres de la communauté qui s’intéressent à des aspects apparentés des soins pédiatriques et qui travaillent dans ces domaines.

LE FONDS D’ÉDUCATION : Pour l’aider à remplir ses engagements en matière d’éducation sur les sujets relatifs à la chirurgie pédiatrique, l’association a créé un fonds pour l’éducation. Ce fonds a été établi et continue d’exister grâce à la générosité des individus et des associations, de nature médicale ou autre, intéressées par les soins chirurgicaux aux enfants. L’association sollicite annuellement des dons en faveur de son fonds afin de maintenir un fonds de roulement suffisant pour soutenir les programmes d’éducation approuvés par les membres de l’ACCP. Ce fonds est enregistré auprès du gouvernement fédéral et toutes les contributions sont pleinement déductibles d’impôts. Le fonds fait l’objet d’une vérification comptable annuelle.

Vous pouvez envoyer vos dons à :

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1967-1973  Harvey Beardmore  Montréal
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1989-1991  Jacques C. Ducharme  Montréal
1991-1993  Sigmund H. Ein  Toronto
1993-1995  Angus Juckes  Regina
1995-1997  Jean G. Desjardins  Montréal
1997-1999  David P. Girvan  London
1999-2001  Ray Postuma  Winnipeg
2001-2003  Mike Giacomantonio  Halifax
2003-  Salam Yazbeck  Montreal

* décédé

SECRÉTAIRES-TRÉSORIERS

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1978-1983  Frank M. Guttman  Montréal
1989-1995  Ray Postuma  Winnipeg
1995-2002  Salam Yazbeck  Montréal
2002-  Peter G. Fitzgerald  Hamilton
MEMBRES FONDATEURS

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* décédé

Le premier CONGRÈS ANNUEL eut lieu le 22 janvier, 1969 à VANCOUVER
LES ARMOIRIES
DE
L'ASSOCIATION CANADIENNE DE CHIRURGIE PÉDIATRIQUE

Le Blason

Au gauche, un bistouri droit entouré d'un serpent alors qu'à droite se tient un enfant, tout argent.

Au sommet se trouvent trois feuilles d'érable ainsi que la date 1967.

Devise: “Je le pensay, Dieu le guarit”.

Description

Le rouge et le violet des armoiries sont les couleurs du Collège Royal des Médecins et Chirugiens du Canada et représentent le sang artériel et veineux vu au cours de la chirurgie. L'association du bistouri avec le serpent guérisseur d'Esculape ainsi qu'avec l'image d'un enfant en bonne santé symbolise la pratique de la chirurgie pédiatrique.

La couronne du blason est la feuille d'érable du Canada et la date de fondation de notre association (1967).

La devise est une citation d'Ambroise Paré, père de la chirurgie moderne.
ACCP 2006
Réunion Annuelle

Calgary, Alberta

7 - 10 septembre, 2006

Joignez-vous à nous!
CONFERENCIER INVITE

DR. ABDULLAH AL RABEEAH

Biographie Dr Abdullah Al Rabeeah:

Notre conférencier McLeod-JPS de cette année est exceptionnel à plusieurs égards.

Après avoir reçu son doctorat en médecine de l'Université King Saud de Riyadh en 1979, le Dr Al-Rabeeah a commencé sa spécialisation en chirurgie dans la même ville puis il a déménagé à Edmonton où il a suivi le programme de résidence en chirurgie générale de l'Université de l'Alberta entre 1981 et 1986. Après avoir été reçu comme fellow du Collège Royal en chirurgie générale, il a commencé sa chirurgie pédiatrique à Edmonton puis il l'a complétée à l'Université Dalhousie en 1987.

Le Dr Al Rabeaeh a toujours été intéressé par l'enseignement, la recherche et les soins de première qualité. Il avait été désigné comme le meilleur chef résident enseignant en chirurgie à l'Université de l'Alberta en 1986 et reçu le prix du meilleur travail de recherche de l'Université de l'Alberta en 1985. Dès son retour en Arabie Séoudite il a réussi à établir à Riyadh et Jeddah, quatre services de chirurgie pédiatrique avec des standards internationaux. Il a aussi organisé de nombreuses réunions scientifiques de chirurgie pédiatrique.

Les autorités de son pays ont vite fait de reconnaître les talents du Dr Al Rabeeah et lui ont confié plusieurs tâches administratives très importantes. Il siège actuellement sur plusieurs comités nationaux concernant la santé en Arabie Séoudite; il est membre du conseil
d'administration du King Faysal Specialist Hospital ainsi que de son centre de recherché. Il est aussi directeur de la faculté de médecine du King Saud Bin Abdulaziz et président de la faculté des sciences infirmières de la même université. Comme principale tâche administrative le Dr Al Rabeeah occupe actuellement le poste président du conseil d'administration d'une énorme organisation de soins, Les centres de santé de la Garde Nationale d'Arabie Séoudite.

Malgré son implication en administration, le Dr Al Rabeeah continue une pratique de chirurgie pédiatrique active comme consultant dans les principaux hôpitaux de Riyadh et de Jeddah. Il a réussi à publier plus de 75 articles ou résumés, il continue son implication dans plusieurs projets de recherche en cours. Sa pratique dédiée exclusivement aux soins tertiaires lui a permis d'acquérir une expérience unique dans l'évaluation et la chirurgie des jumeaux siamois.

Bien qu'il occupe des postes administratifs prestigieux et qu'il ait reçu plusieurs honneurs internationaux, le Dr Al Rabeeah est toujours aussi humble et affable qu'il a toujours été comme en témoignent tous ceux qui le connaissent depuis de nombreuses années.

L'ACCP est honorée du fait que le Dr Al Rabeeah ait accepté de partager son expérience avec nous en donnant la conférence Mc Leod-JPS 2005.

L'association Canadienne de Chirurgie Pédiatrique est fière d'inviter

**DR. ABDULLAH AL RABEEAH**

à donner la conférence annuelle Fred MacLeod / JPS.

*La visite du Dr Al Rabeeah est rendue possible grâce à la générosité de Elsevier.*
PRÉSENTATIONS DES RÉSIDENTS

Les présentations faites par les résidents en chirurgie sont jugées par un jury constitué des membres du Comité de Publication. Il y a deux catégories: celui du meilleur travail clinique et celui du meilleur travail expérimental (Prix Maria DiLorenzo). Chaque prix est de 500$.

PRIX POUR LES MEILLEURES COMMUNICATIONS DES RÉSIDENTS 2004

MEILLEUR TRAVAIL CLINIQUE

Dr. S. Phillips

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Stephanie Phillips, J. Mark Walton, Ian Chin, Peter Fitzgerald, Brian Cameron, Forough Farrokhyar
McMaster Children’s Hospital,
McMaster University
Hamilton, ON

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PRIX MARIA DI LORENZO

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Osama Bawazir, Laurie E. Wallace, Gary R. Martin, Greg Zaharko, Andrea Miller, Ahmad Zubaidi, David L. Sigalet
University of Calgary, Gastrointestinal Research Group
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Drs. S. Widder, R. Eccles, D. Sigalet, and A. Wong Presenter: Dr. S. Widder Alberta Children’s Hospital, University of Calgary, Alberta
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