23rd

Annual Meeting
Réunion Annuelle

Québec

September 19-22, 1991

Canadian Association of Paediatric Surgeons
l’Association Canadienne de Chirurgie Infantile

in conjunction with the
Royal College of Physicians and Surgeons of Canada
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Twenty-third Annual Meeting
CANADIAN ASSOCIATION of PAEDIATRIC SURGEONS
L'ASSOCIATION CANADIENNE de CHIRURGIE INFANTILE

Le CHATEAU FRONTENAC
Place d'Armes
QUÉBEC
CANADA

in conjunction with the
Royal College of Physicians and Surgeons of Canada

please bring this program to the meeting
ABOUT THE
CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS

The Canadian Association of Paediatric Surgeons was granted its charter in 1967. Its main aim is to improve the surgical care of infants and children in Canada.

There are three main areas in diagnosis, treatment and research which are of special concern to the members.

Infants Born With Congenital Abnormalities

Even though the majority of newborn infants who have severe congenital abnormalities can be treated successfully by a surgical operation, often the condition is either not recognized, or if it is diagnosed, the local physician may be unaware of the possibilities for surgical cure. In this situation most of these babies die, or some survive to live a life crippled by their deformity.

Malignancy in Childhood

Cancer is the second most common cause of death in childhood. Now surgical removal of the tumor, combined with x-radiation and chemotherapy provided by an aggressive team utilizing new techniques can achieve a cure in over 50% of these patients.

Trauma

Finally, the number one killer of children in North America is accidents. Here again, with modern methods of first aid, transportation, resuscitation, intensive care, and specialized surgical team effort, many of these seriously injured children can be saved.

Education Program

To accomplish an improvement in surgical care for babies and children, the Canadian Association of Paediatric Surgeons has launched an educational program for doctors, nurses and others working in the paediatric health field. To support this program, an educational fund has been established.
The Education Fund underwrites the visit of selected distinguished paediatric surgeons each year to visit and to teach at medical centres in Canada, provides a speaker on Paediatric Surgery at the Meeting of the Canadian Paediatric Society, enables the Association to sponsor a session of scientific papers at the Meeting of the Royal College of Physicians and Surgeons of Canada and supports the Annual Scientific Meeting of the Association. Financing for the Education Fund has been attained from individuals and groups, both medical and non-medical, interested in the surgical care of children, and from foundations. It is the intent of the Association to increase the capital funding to a level where the annual interest will support the Education Program. The Education Fund of the Canadian Association of Paediatric Surgeons is registered with the Federal Government and all contributions are fully tax deductible. The Fund is audited annually.

Donations may be sent to:
Ray Postuma, M.D.
C.A.P.S. Secretary/Treasurer
AE 201-840 Sherbrook St
Winnipeg, MB, R3A 1S1
Canada
Telephone: 1-204-787-4203
Fax 1-204-787-4618
BIENVENU À QUÉBEC

Il me fait plaisir de vous convier tous à Québec pour notre prochain congrès.

Les différents comités et les responsables de notre société l'ont préparé avec beaucoup de soins, en collaboration avec le Collège Royal, et je suis certain qu'il sera un succès.

La haute qualité du programme scientifique, le raffinement et l'exotisme du programme social et le site unique et enchanter de la vieille capitale se conjugeront pour vous faire passer des moments des plus intéressants.

A bientôt à Québec!

Jacques C. Ducharme, M.D.

Le Président

WELCOME TO QUEBEC

It is with great pleasure that I invite each and every one of you to attend our coming meeting in beautiful and historic Quebec.

The various committees and representatives of our society have been working hard, in collaboration with the Royal College, to organize this meeting and I am sure that it will be a success.

The high caliber of the scientific program, the unique features of the socials functions and the charms of the only walled city in North America and birth place of French Canada will all contribute to make this meeting a memorable event.

Bienvenue à Québec et à bientôt!

Jacques C. Ducharme, M.D.

President
CAPS COUNCIL 1990-91:

DIRECTORS

President: J-C Ducharme
Past-President: A. Gillis
President-elect: S. Ein
Director (third year): S. Rubin
Director (second year): S. Yazbeck
Director (first year): A. Juckes
Secretary/Treasurer: R. Postuma

COMMITTEES

Program: N.Wiseman
A. Bensoussan
G. Blair
R. Filler
M. Giacomantonio
R. Kennedy
Local arrangements: R. Cloutier
P. Soucy
Nominating: A. Gillis
M. DiLorenzo
P. Soucy
Publication: B. Shandling
R. Cloutier
S. Ein
A. Juckes
S. Rubin
S. Yazbeck
Membership and Credentials: D. Girvan
G. Fraser
R. Superina
B. Rodgers
Liaison with Royal College: A. Gillis

Constitution and Bylaws: A. Juckes
D. Girvan
S. Youssef
Health and Manpower: G. Fraser
A. Bensoussan
J. Donald
J. Langer
P. Soucy
Education: M. Giacomantonio
J. Bass
M. DiLorenzo
G. Lau
G. Lees
G. Seagram
Ethics and Moral Issues: S. Rubin
C. Bagwell
S. Chou
L. Nguyen
B. Shandling
Liaison with Liaison with American College: B. Shandling
B. Shandling
Liaison with World Federation: Secretary

Residency Program: A. Gillis
J. Desjardin
R. Filler
G. Fraser
F. Guttman
P. Soucy
Trauma: D. Wesson
G. Blair
M. Giacomantonio
J.M. Laberge
A. Winthrop
A. Wong
Congenital Anomalies: N. Wiseman
M. DiLorenzo
P. Soucy
Archivist: B. Shandling
Liaison with Trauma Association of Canada: D.Wesson
Interest Groups: Research: J.Langer
Quality Assurance: R. Postuma
P. Soucy

underline indicates chairman of committee
PRESIDENTS

1967-1972 Harvey Beardmore Montreal
1973-1974 Colin Ferguson* Winnipeg
1975-1976 Jim Simpson* Toronto
1977-1978 Sam Kling Edmonton
1979-1980 Pierre Paul Collin Montreal
1981-1982 Barry Shandling Toronto
1983-1984 Gordon Cameron Hamilton
1985-1986 Stanley Mercer Ottawa
1987-1989 Alex Gillis Halifax
1991- Sigmund Ein Toronto

SECRETARY-TREASURERS

1967-1973 Barry Shandling Toronto
1974-1978 Gordon Cameron Hamilton
1978-1983 Frank Guttman Montreal
1989- Ray Postuma Winnipeg

* deceased
FOUNDING MEMBERS

CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS
L'ASSOCIATION CANADIENNE DE CHIRURGIE INFANTILE

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

*DECEASED

1st ANNUAL MEETING - January 22, 1969 - VANCOUVER
THE COAT OF ARMS
OF THE
CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS
L'ASSOCIATION CANADIENNE DE CHIRURGIE INFANTILE

Heraldic Blazon

Per pale gules and purpure, dexter a scalpel erect entwined
by a serpent, sinister a child standing, all argent.
Crest: On three maple leaves slipped gules and backed 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.
The Motto is a quotation from Ambroise Pare, a father of
modern surgery. The sixteenth-century French translates, "I treat him,
God cures him."
programme détaillé

programme schedule

QUÉBEC
September 19-22, 1991
OVERVIEW of SCIENTIFIC, BUSINESS, SOCIAL PROGRAM
CANADIAN ASSOCIATION OF PEDIATRIC SURGEONS MEETING
Thursday, September 19-Sunday, September 22, 1991
LE CHATEAU FRONTENAC, QUEBEC
LOCAL HOST: DR RAYMOND CLOUTIER

REGISTRATION: daily, starting 10:00 hrs Thursday,
Sept 19 at the Québec Convention Center

SCIENTIFIC SESSIONS: ALL sessions are in the Place d’Armes of
LE CHATEAU FRONTENAC

Friday, September 20:
07:30-08:00 CONTINENTAL BREAKFAST-Place d’Armes
08:00-11:15 PAPER SESSIONS 1 & 2
11:15-12:15 Fred McLeod Lecture:
Dr. J. GROSFELD, Indianapolis
13:45-16:45 PAPER SESSIONS 3 & 4

Saturday, September 21
07:30-08:00 CONTINENTAL BREAKFAST-Place d’Armes
08:00-12:30 PAPER SESSIONS 5 & 6

Sunday, September 22:
07:30-08:00 CONTINENTAL BREAKFAST-Place d’Armes
08:00-11:40 PAPER SESSIONS 7 & 8
11:40-12:30 SESSION 9: Informal “problem cases”
12:30 CLOSING COMMENTS and ANNOUNCEMENTS

BUSINESS MEETINGS:
Thursday, September 19:
10:30-15:00 COUNCIL (EXECUTIVE) MEETING;
Salon Rouge (Board Room) Château
Frontenac

Saturday, September 21
12:30-14:00 ASSOCIATION MEMBERS LUNCHEON
BUSINESS MEETING, Salon Champlain

SOCIAL PROGRAM:
Thursday, September 19
19:00-22:00 WELCOMING RECEPTION: Officer’s Mess,
Citadel of Quebec

Friday, September 20
14:00-17:00 guided tour of the “Hôpital General de
Quebec” . Cost $15.00 per person,
limited to 25 persons
18:30-21:30 ROYAL COLLEGE WELCOMING RECEPTION,
le Château Frontenac Ballroom,

Saturday, September 21
19:00- Presidential Banquet
Room Place d’Armes of le Château Frontenac.
ENJOY!!

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Dr. Jay L. Grosfeld was born on May 30, 1935 in New York City. He attended undergraduate school at George Washington University and New York University where he graduated cum laude in 1957. He attended medical school at New York University 1957-1961. Dr. Grosfeld trained in General Surgery at Bellevue and New York University Hospitals from 1961-66, completing his training under the direction of Dr. Frank C. Spencer. He served in the U.S. Army Medical Corps during the Vietnam War (1966-68) and was awarded an Army Commendation Medal. He trained in Pediatric Surgery at Columbus Children’s Hospital, Ohio State University from 1968-70 under Dr. H. William Clatworthy, Jr.
Dr. Grosfeld returned to NYU as a member of the surgical faculty from 1970-72. In 1972, he was appointed Professor and Director of Pediatric Surgery at Indiana University and Surgeon-in-Chief at the J.W. Riley Hospital for Children. He was the first Pediatric Surgeon at Indiana University and has remained in Indianapolis, for the past 18 years. He was awarded a named chair--The Lafayette F. Page Professorship and was appointed Chairman of the Department of Surgery at Indiana University in 1985. Dr. Grosfeld is a member of Phi Beta Kappa and Alpha Omega Alpha and has won seven teaching awards from Indiana University Medical School, the Presidents' University Award for Distinguished Teaching and is the Program Training Director in Pediatric Surgery. He has been elected to Membership in the Society of University Surgeons, American Surgical Association, Central Surgical Association, Western Surgical Association, Association for Academic Surgery, Society for Surgery of the Alimentary Tract, Society of Surgical Chairmen, Society Internationale de Chirurgie, Halsted Society, APSA, Surgical Section (AAP), and BAPS. He was Secretary and President of the Central Surgical Association and is currently a Director of the American Board of Surgery, on the Board of Governors of the American College of Surgeons and a member of the Executive Committee of the Surgical Section (AAP). He has previously served on the Cancer, Ethics, Education, Membership and Credentialing, and Program Committees for APSA and was also a Governor for three years. Dr. Grosfeld is considered an outstanding clinician, teacher and investigator and is best known for his work in Pediatric Surgical Oncology and Neonatal Surgery. He has published 331 journal articles and 59 book chapters. He has served on the Editorial Boards of Pediatrics, Journal of Pediatric Surgery, Surgical Rounds and is an Editorial Consultant for Pediatric Surgical International. He has also been the Editor of a number of monographs and a new textbook. Dr. Grosfeld has been happily married for 28 years and he and his wife (Margie) have five children.
0800-0945: SESSION 1: original papers and case reports

Co-Chairmen / Les Co-Présidents:
Dr. N. Wiseman and Dr. Girvan
(O=original 10 minute paper; R=resident paper; C=5 minute case report)

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<tr>
<td>1.</td>
<td>O</td>
<td>0800</td>
<td>PSEUDOMEMBRANOUS COLITIS FOLLOWING RESECTION FOR HIRSCHSPRUNG'S DISEASE</td>
<td>Charles E. Bagwell, MFR Langham, Jr., SM Mahaffey, J.L. Talbert, and B Shandling University of Florida, Gainesville and Hospital for Sick Children, Toronto</td>
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<td>2.</td>
<td>Q</td>
<td>0815</td>
<td>PRIMARY PULLTHROUGH FOR HIRSCHSPRUNG'S DISEASE IN THE FIRST YEAR OF LIFE: A REPORT OF 13 CASES</td>
<td>Andrew Hong, D. Croitoru, L. Nguyen, J-M. Laberge and F. Guttmann Montreal Children's Hospital, McGill University</td>
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<td>4.</td>
<td>C</td>
<td>0845</td>
<td>SIRENOMELIA: CASE OF THE SURVIVING MERMAID</td>
<td>G.C. Fraser, J.J. Murphy, G.K. Blair British Columbia Children's Hospital</td>
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<tr>
<td>5.</td>
<td>C</td>
<td>0850</td>
<td>UNDESCENDED TESTIS PRESENTING IN A SPIEGELIAN HERNIA</td>
<td>Nathan E. Wiseman, A. AlBassam Winnipeg Children's Hospital</td>
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<td>6.</td>
<td>O</td>
<td>0900</td>
<td>THE BOWEL MANAGEMENT TUBE: AN EFFECTIVE MEANS FOR CONTROLLING FECAL INCONTINENCE</td>
<td>G. K. Blair, K. Djunic, G.C. Fraser, W. Arnold, J.J. Murphy, B. Irwin British Columbia Children's Hospital</td>
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<td>7.</td>
<td>O</td>
<td>0915</td>
<td>MOTILITY AND SENSATION OF THE RECTOSIGMOID AND THE RECTUM IN PATIENTS WITH ANORECTAL MALFORMATIONS</td>
<td>M. Nagashima, N. Iwai, J. Yanagihara, T. Shimotake Children's Research Hospital, Kyoto</td>
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<td>8.</td>
<td>C</td>
<td>0930</td>
<td>ANAL, RECTAL AND SIGMOID ATRESIAS IN THE SAME NEWBORN</td>
<td>Sigmund H. Ein The Hospital for Sick Children, Toronto</td>
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<td>9.</td>
<td>C</td>
<td>0935</td>
<td>CONGENITAL &quot;N-TYPE&quot; ANO-URETHRAL FISTULA WITHOUT IMPERFORATE ANUS</td>
<td>Andrew Hong, D. Croitoru, L. Nguyen, J. Laberge, F. Guttmann Montreal Children's Hospital, McGill University</td>
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0945 - 1015 Coffee Break
|   |   | 1015 Frd. | EMERGENCY CENTER ARTERIOGRAPHY IN THE EVALUATION OF SUSPECTED PERIPHERAL VASCULAR INJURIES IN CHILDREN
Kamel Itani, Steven S. Rothenberg, William J. Pokorny, Mary L. Brandt, Franklin J. Herberg, Kenneth Mattox
Baylor College of Medicine, Ben Taub General Hospital, Texas Children's Hospital, Houston |
|---|---|---|---|
| 11. | O | 1030 Frd. | CLINICAL AND RADILOGICAL CORRELATION OF PEDIATRIC TRAUMA SCORE AND HEAD CT
Huenschull C, Somers S, Venturelli J, Hollenberg R, Orozco JA.
McMaster University Medical Centre |
| 12. | O | 1045 Frd. | BLOODLESS SPLENIC SURGERY - THE SAFE WARM ISCHEMIC TIME
Sheldon T. Teperman, Brian S. Whitehouse, Robert J. Sammartano, R. Rojas-Corona, and Scott J. Boley
Montefiore Medical Center, Albert Einstein College of Medicine |
| 13. | C,R | 11:00 Frd. | BLUNT TRAUMATIC DISRUPTION OF THE THORACIC AORTA: A RARE INJURY IN CHILDREN
I.S. Ali, D.A. Gillis, H.Y. C. Lau
The Izaak Walton Killam Children's Hospital |
| 14. | C | 11:05 Frd. | ESOPHAGEAL ATRESIA WITH A LONG GAP: SUCCESSFUL ESOPHAGEAL ELONGATION BY STAGED EXTRATHORACIC TRACTION
K.Kimura, R. T. Soper
The University of Iowa College of Medicine |

1115-1215
FRED MCLEOD LECTURE
Dr Jay L. Grosfeld
CHILDHOOD CANCER: SEQUELAE OF SUCCESS

1215-1345 Lunch; please make your own arrangements
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<th>Authors</th>
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<tr>
<td>1345</td>
<td>O,R</td>
<td>15.</td>
<td>ADULT TO NEONATE HUMAN LUNG TRANSPLANTATION: ANATOMIC CONSIDERATIONS</td>
<td>RW Jennings, HP Lorenzo, MR Harrison, NS Adzick</td>
<td>University of California</td>
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<td>1415</td>
<td>C</td>
<td>17.</td>
<td>JEUNE'S ASPHYXIATING THORACIC DYSTROPHY - THE COMBINED USE OF EXTENSIVE BILATERAL COSTAL OSTEOTOMIES AND THE INSERTION OF STERNAL ACRYLIC PROSTHESIS IN ITS MANAGEMENT</td>
<td>S.Z. Rubin, G. Gutierrez, J. Bass and M.G. Evans</td>
<td>Children's Hospital of Eastern Ontario</td>
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<td>1420</td>
<td>C</td>
<td>18.</td>
<td>JUVENILE HEMANGIOMAS INVOLVING THE THORACIC TRACHEA IN CHILDREN: REPORT OF TWO CASES</td>
<td>A. Massineo, C. Wesson, R.M. Filler</td>
<td>The Hospital for Sick Children</td>
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<td>1430</td>
<td>O,R</td>
<td>19.</td>
<td>DIAGNOSTIC BRONCHOSCOPY IN THE PEDIATRIC AGE GROUP</td>
<td>N.E. Wiseman, I. Sanchez, R. Powell</td>
<td>Winnipeg Children’s Hospital</td>
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FRIDAY, 1350-1645: SESSION 4: original papers and case reports
Co-Chairmen / Les Co- Presidents:
Dr C Bagwell and Dr. J. Langer
(O=original 10 minute paper; R = resident paper; C=5 minute case report)

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<tr>
<th>Time</th>
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<tr>
<td>1530</td>
<td>O,R</td>
<td>21.</td>
<td>THE USE OF IODINE SCANS IN CHILDREN WITH INFLAMMATORY BOWEL DISEASE</td>
<td>P.G. Fitzgerald, T. Topp, J.M. Walton, D.A. Gillis</td>
<td>The Izaak Walton Killam Children’s Hospital, Halifax</td>
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<td>1545</td>
<td>O</td>
<td>22.</td>
<td>LAPAROSCOPIC CHOLECYSTECTOMY IN TEENAGERS</td>
<td>Sylvain Kleinhaus, Ronald Kaleya, Robert Canning, Mary Beth Gregor, Scott J. Boley</td>
<td>Montefiore Medical Center, Albert Einstein College of Medicine</td>
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<td>1605</td>
<td>C</td>
<td>24.</td>
<td>AGENESIS OF THE GALLBLADDER AND DUODENAL ATRESIA: TWO CASE REPORTS</td>
<td>John P. Coughlin, Frederick E. Rector, Michael D. Klein</td>
<td>Children’s Hospital of Michigan, Wayne State University School of Medicine</td>
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<tr>
<td>1615</td>
<td>O,R</td>
<td>25.</td>
<td>CHOLELITHIASIS IN NEWBORN AND INFANTS</td>
<td>Dickens St-Vll, François I. Luks, B.J. Hancock, Denis Fillatreault, Salam Yazbeck</td>
<td>Hôpital Sainte-Justine Montreal</td>
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<tr>
<td>1630</td>
<td>O,R</td>
<td>26.</td>
<td>SURGICAL COMPLICATIONS IN CHILDREN AFTER LIVER TRANSPLANTATION</td>
<td>R. Billik, M. Yellen, R.A. Superina</td>
<td>Hospital for Sick Children, Toronto</td>
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<td>No.</td>
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<td>27</td>
<td>O</td>
<td>0800</td>
<td>LASER EXCISION OF SOFT TISSUE LESIONS IN CHILDREN</td>
<td>Charles E. Bagwell, MR Langham, Jr., SM Mahaffey, and JL Talbert</td>
<td>University of Florida, Gainesville</td>
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<td>28</td>
<td>O.R</td>
<td>0815</td>
<td>COAGULOPATHY ASSOCIATED WITH LARGE SACROCOCCYGEAL TERATOMAS</td>
<td>J.J. Murphy, G.K. Blair, G.C. Fraser</td>
<td>British Columbia Children's Hospital</td>
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<td>29</td>
<td>O.R</td>
<td>0830</td>
<td>UNBALANCED TRANSLOCATION OF CHROMOSOME 3P IN WILMS' TUMOR</td>
<td>J.M. Walton, C. Lee, E. Mikhail, J.P. Welch, D.A. Gillis</td>
<td>The Izaak Walton Killam Children's Hospital, Halifax</td>
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<tr>
<td>30</td>
<td>C</td>
<td>0845</td>
<td>SPONTANEOUS REGRESSION OF AGGRESSIVE FIBROMATOSIS OF THE HEAD AND NECK</td>
<td>K Heiss, RM Filler</td>
<td>The Hospital For Sick Children, Toronto</td>
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<td>31</td>
<td>O.R</td>
<td>0850</td>
<td>FIBROMATOSIS IN INFANCY AND CHILDHOOD: THE SPECTRUM</td>
<td>A. Humur, S. Chou, B. Carpenter</td>
<td>Children's Hospital of Eastern Ontario, Ottawa</td>
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<td>32</td>
<td>O</td>
<td>0900</td>
<td>PARAORTIC LYMPHADENECTOMY IS NOT NECESSARY IN THE TREATMENT OF LOCALIZED PARATESTICULAR RMS.</td>
<td>Gamba P.G., Cacchetta G., Carl M.* , Boglino C.* , Guglielmi M.</td>
<td>University of Padua</td>
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<tr>
<td>33</td>
<td>O.R</td>
<td>0915</td>
<td>A 20 YEAR REVIEW OF PEDIATRIC PANCREATIC TUMORS</td>
<td>T. Jaksic, M. Yaman, D.E. Wesson, R.M. Filler, B. Shandling</td>
<td>The Hospital for Sick Children, Toronto</td>
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<td>34</td>
<td>O.R</td>
<td>0930</td>
<td>INTRAOPERATIVE FINE NEEDLE ASPIRATION IN CHILDHOOD TUMORS</td>
<td>Forozan Navid, Phillip S. Feldman, Mark L. Silen</td>
<td>University of Virginia Health Sciences Center</td>
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<td>35</td>
<td>C</td>
<td>0945</td>
<td>THE TREATMENT OF SIMULTANEOUS CHORIOCARCINOMA IN MOTHER AND BABY</td>
<td>G.C. Fraser, G.K. Blair, A. Hemmings, J. Murphy, P. Rogers</td>
<td>British Columbia's Children's Hospital</td>
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<td>36</td>
<td>C</td>
<td>0950</td>
<td>CYSTIC NEUROBLASTOMA</td>
<td>Croitoru DF, Sinsky AB, Laberge J-M</td>
<td>Montreal Children's Hospital, McGill University</td>
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**Co-Chairmen / Les Co-Présidents:**
Dr G. Blair and Dr P. Soucy

**Notes:**
- The Association annual business meeting follows immediately this session (12:30-14:00). Members are asked to attend; lunch will be served. The remainder of the afternoon is free.
- Please remember that the Presidential Banquet is tonight, beginning with cocktails at 7:00 pm in room Place d'Armes of le Château Frontenac. Please bring your banquet ticket, available at registration desk. The scientific sessions resumes tomorrow at 0800 hrs at le Château Frontenac.
<table>
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<tr>
<td>46</td>
<td>O,R</td>
<td>0800</td>
<td>SMALL BOWEL TRANSPLANTATION IN THE RAT: THE EFFECT OF DONOR SPECIFIC TRANSFUSION AND LOW DOSE CYCLOSPORIN</td>
<td>A. Facteau, J. Tchervenkov, F.M. Gutman, Montreal Children's Hospital</td>
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<td>47</td>
<td>O,R</td>
<td>0815</td>
<td>NEONATAL GASTROINTESTINAL PERFORATIONS</td>
<td>Dickens St-VII, Guy LaBouthillier, François I. Luks, Arié L. Bensoussan, Hervé Blanchard and Sami Youssef, Hôpital Sainte-Justine</td>
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<td>48</td>
<td>O</td>
<td>0830</td>
<td>CLINICAL FACTORS AFFECTING MORTALITY IN CHILDREN WITH MALROTATION OF THE INTESTINE</td>
<td>A. Massineo, R.M. Filler, S. Palder, Dept. of Surgery, The Hospital for Sick Children, Toronto</td>
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<td>49</td>
<td>C</td>
<td>0845</td>
<td>GASTROCHISIS WINGER CLAMP: A SAFE, SIMPLIFIED METHOD FOR DELAYED PRIMARY CLOSURE</td>
<td>Robert Sawin, Philip L. Glick, Robert Schaller, Edwin Hatch, Dale Hall, Leon Hicks, Children's Hospital and Medical Center, University of Washington</td>
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<td>50</td>
<td>C</td>
<td>0850</td>
<td>LARGE GASTROCHISIS: PRIMARY REPAIR WITH GORE-TEX PATCH</td>
<td>G. Stringel, Methodist Hospital of Indiana</td>
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<td>51</td>
<td>O</td>
<td>0900</td>
<td>INTESTINAL BLOOD FLOW AND SMOOTH MUSCLE MORPHOMETRY IN EXPERIMENTAL GASTROCHISIS</td>
<td>S Srinathan, JC Langer, CA Rudolph, MG Bliennerhassett, MT Longaker, TM Crombleholme, SM Bradley, MR Hanson, McMaster University and University of California</td>
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<tr>
<td>52</td>
<td>O</td>
<td>0915</td>
<td>NECROTIZING ENTEROCOLITIS: FACTORS AFFECTING MORTALITY</td>
<td>Ian R Neilson, Robert J Touloukian, Funda Meric, and John H Seashore, Yale University</td>
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<td>53</td>
<td>O</td>
<td>0930</td>
<td>IMMUNOSUPPRESSIVE THERAPY WITH MONOCLONAL ANTIBODY TO ICAM-1 RATIONAL AND APPLICATIONS IN SMALL BOWEL TRANSPLANTATION</td>
<td>T. Yamataka, H. Kobayashi, H. Noguchi, T. Miyano, M. Nakata, H. Yagita, K. Okumura, I. Otsu, M. Nozawa, Juntendo University, Meikai University</td>
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<td>0945</td>
<td>UNILATERAL LEG EDEMA CAUSED BY ABDOMINO-SCROTAL HYDROCELE: ELEGANT DIAGNOSIS BY MRI</td>
<td>Irwin H. Krasna, Michael Solomon, Rubin Mezrich, Robert Wood Johnson Medical School</td>
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<td>0950</td>
<td>CLOACAL EXSTROPHY: PRENATAL DIAGNOSIS BEFORE RUPTURE OF THE CLOACAL MEMBRANE</td>
<td>JC Langer, B Brennan, RE Lappalainen, C Caco, McMaster University</td>
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1000 - 1030 Coffee Break
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<th>Session</th>
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<th>Presenters/Institutions</th>
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<tr>
<td>66. O</td>
<td>1030 Sun.</td>
<td>NEONATAL CONGENITAL DIAPHRAGMATIC HERNIA AND ECMO</td>
<td>AH Hayashi, NN Finer, AJ Tiemey, RA Hallgren, A Peliowski, PC Etches, Royal Alexandria Hospital, Department of Surgery and Pediatrics, Edmonton</td>
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<td>58. C</td>
<td>1100 Sun.</td>
<td>&quot;DO IT YOURSELF&quot; VIDEO RECORDING OF PEDIATRIC SURGERY</td>
<td>R. Postuma and H. Taylor, Winnipeg Children's Hospital</td>
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<td>60. C</td>
<td>1125 Sun.</td>
<td>A RARE INTRAPERICARDIAL MASS IN A NEONATE</td>
<td>AH Hayashi, A Peliowski, AJ Tiemey, DR McLean, NN Finer, Royal Alexandra Hospital</td>
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1140-1230: SESSION 9: Informal “problem case” session
Chairman / President:
Dr Jacques C Ducharme

20-30 MINS

1230

CLOSING REMARKS AND ADJOURNMENT
IMPORTANT ANNOUNCEMENT
FROM THE PUBLICATION COMMITTEE

RE: 1992 PAPERS

Papers presented at the annual CAPS meeting will be published in the Journal of Pediatric Surgery. The publication committee REQUIRES two copies of the manuscript to be submitted THREE WEEKS BEFORE presentation to:

Dr Barry Shandling
Chairman, Publication Committee
Canadian Association of Paediatric Surgeons
Hospital for Sick Children
555 University Avenue
Toronto, ON
M5G 1X8
ABSTRACTS

abbreviations:

O= original 10 minute paper and 5 minute discussion
R= resident paper, same time limits
C= 5 minute case/technique report; discussion follows second Case report paper
1. Friday, 08:00-08:15 ; (O)

PESEOMEMBRANOUS COLITIS FOLLOWING RESECTION
FOR HIRSCHSPRUNG'S DISEASE

Charles E. Bagwell, M.R. Langham, Jr.,
S.M. Mahaffey, J.L. Talbert, and B. Shandling
University of Florida and Hospital for Sick Children, Toronto

Enterocolitis is the most common cause of significant morbidity and death in Hirschsprung's disease. Although most cases respond to nasogastric decompression, antibiotics and colonic evacuation, some children have an unusually fulminant or protracted clinical course. Four cases are reported of pseudomembranous colitis (PMC) which developed 1 to 18 months (mean 8 months) after definitive surgery for Hirschsprung's Disease (Soave endorectal pull-through, 2; Duhamel procedure, 2.) While all children presented with fever, abdominal distention and diarrhea, indistinguishable from typical Hirschsprung's enterocolitis, the clinical course was fulminant In two cases, both of whom expired from septic shock. Post-mortem examination in both showed extensive colonic pseudomembranes despite identification of C. difficile toxin and subsequent vancomycin therapy (initiated late in the clinical course). Two children in the series had protracted hospitalizations and eventually required diverting enterostomy despite recognition of C. difficile toxin and treatment with enteral vancomycin, in one child necessitating multiple courses of antibiotic therapy. Awareness of the virulence of PMC associated with Hirschsprung's disease (even after definitive resection) should prompt submission of stool specimens from any child who presents with enterocolitis for both C. difficile culture and toxin levels. A prompt course of vancomycin by rectal lavage or nasogastric tube should be initiated in all children with Hirschsprung's enterocolitis, pending culture results, in view of the significant morbidity and mortality exemplified by cases in this review.

Charles E. Bagwell, MD
J-286, JHMHC
University of Florida
Gainesville, Florida 32610
(904)392-3720

? Rx = splenectomy &/or
myomectomy.
2. Friday, 08:15-08:30 ; (O, R)

PRIMARY PULLTHROUGH FOR HIRSCHSPRUNG'S DISEASE
IN THE FIRST YEAR OF LIFE:
A REPORT OF 13 CASES

Andrew Hong, D. Croitoru, L. Nguyen, J-M. Laberge and F. Guttmann
Montreal Children's Hospital, McGill University

Traditionally, primary pullthrough for Hirschprung's Disease has been reserved for children older than one year. Recently, we have used this technique in a group of infants less than one year of age with satisfactory results. A total of 13 patients were initially treated in this fashion. Pre-operative management consisted of normal saline rectal washouts performed with the aid of a large bared rectal tube passed into the sigmoid colon. Washouts were performed at least daily until the time of definitive operation. Two patients, both newborns, failed initial non-operative management and underwent colostomy. One had enterocolitis, and remained distended despite washouts. The other infant presented early in our experience and received only a brief trial before decision to perform colostomy was made. Five infants underwent pull-through in the newborn period, and four others underwent operation before the age of six months. One patient underwent a Martin-Duhamel procedure for total colonic aganglionosis. The remainder underwent endorectal pull-through with primary anastomosis. Immediate complications included apnea in a four week old who required observation in the intensive care unit postoperatively. Delayed complications have consisted of severe perineal excoriations in three patients, mild anal stenosis in one, and abdominal distension and faecal impaction in one. All of these problems have resolved with time and no patients have required reoperation. We conclude that primary pull-through without colostomy in the first year of life is feasible and gives excellent results.
CHOLINERGIC INDUCED RESPONSES OF THE DEFECTIVE COLON FROM INFANTS WITH HIRSCHSPRUNG'S DISEASE

Steven Z. Rubin and A. Krantis
C.H.E.O. and University of Ottawa

Although absence of intramural ganglia is characteristic of Hirschsprung's Disease, the extent of neural and/or myogenic dysfunction is unknown. The pathophysiology of the defective colon is thought to be a lack of adrenergic inhibition of the muscularis in the presence of cholinergic activity. The presence of intrinsic innervation of the aganglionic colon is unclear. Normally, inhibitory control of the muscularis is by direct neural action, as well as pre-junctional modulation of cholinergic motor nerves. We examined the responsiveness of isolated gut-bath preparations of colon to cholinergic stimulation and determined whether cholinergic nerve-mediated responses could be modulated. Colon from normal infants, and ganglionic colon from Hirschsprung's patients displayed similar concentration-response characteristics for the muscarinic agonist carbachol. Aganglionic colon displayed greater sensitivity to carbachol. Electrical stimulation (10-20 Hz, via ring electrodes) of intrinsic nerves, evoked atropine-sensitive contractions in normal, ganglionated and aganglionic colon. Adenosine (5x10^-5M) reversibly inhibited these responses. The ability of the different tissues to respond to the ganglionic nicotine agonist DMPP (3x10^-5M) was also tested. DMPP induced relaxation of normal colon and ganglionated Hirschsprung's colon. Aganglionic intestine displayed little or no response. Our results show that aganglionic colon has an increased sensitivity to cholinergic muscarinic stimulation. Cholinergic nerve-mediated contractions can be evoked and purinergic modulation of these responses remains intact. This suggests that an intrinsic cholinergic innervation is still present in the diseased colon and that pre-junctional modulation of this innervation is possible.

Steven Z. Rubin, MD
Department of Surgery
Children's Hospital of Eastern Ontario
401 Smyth Road, Ottawa, ON K1H 8L1
(613) 737-2601

234 words
Dr. Raymond J.P. Cloutier  
700 Columbus  
Columbus, Ohio  
43205   
USA

Dr. Pierre Paul Collin  
1575 Cote Ste. Catherine  
Montreal, PQ  
H3T 1C5  
(514) 731-4931  
(514) 932-5817

Dr. Robert W. Cram  
247 Delaronde Lane  
Saskatoon, SK  
S7J 3Z1  
(306) 955-2321

Dr. Bassam M. Dahman  
10639 Sudan Street  
Portage, Michigan  
49081  
USA  
(616) 327-9969

note: second telephone number is the Fax number

* - Associate Member   ** - Life Member  * - Honorary Member

Please notify the secretary of any changes

4. Friday, 08:45-08:50: (C) (five minute paper; discussion follows paper #5)

SIRENOMELIA: CASE OF THE SURVIVING MERMAID

Graham C. Fraser, J.J. Murphy, G.K. Blair  
British Columbia Children's Hospital

This report describes a neonate with sirenomelia who was recently treated at British Columbia's Children's Hospital. Prenatal diagnosis was made at 29 weeks gestation. Survival was not anticipated. C-section at term revealed a live 2375 gram infant with excellent Apgar scores. Anomalies noted were fused lower extremities, imperforate anus, colon atresia, pelvic kidney with renal dysplasia, pelvic and sacral dysplasia and genital abnormalities. Laparotomy and ileostomy were performed. All other anomalies are compatible with life and she is neurologically normal. Eventual separation of the lower extremities is planned. This is the second reported case of survival in a patient born with sirenomelia.

Graham C. Fraser, M.B.  
B.C. Children's Hospital  
4450 Oak Street  
Vancouver, BC V6H 3V4  
(604) 251-2324
5. Friday, 08:50-09:00; (C) (five minute paper, followed by five minute discussion of papers #4 and #5)

UNDESCENDED TESTIS PRESENTING IN A SPIGELIAN HERNIA

Nathan E. Wiseman, A. AlBassam
Winnipeg Children’s Hospital

This is a case report of a 10 month old, presenting with a left lower quadrant abdominal wall hernia associated with an undescended testis. At the time of surgery, a large spigelian hernia sac was encountered and upon opening the sac, the undescended testis was attached to the wall of the hernia sac. The surgical procedure consisted of repair of the spigelian hernia together with an orchidopexy.

This appears to represent the only reported case of this association and from our understanding of the embryology of testicular descent, it would appear that this represents a rare form of ectopic testis.

Nathan E. Wiseman, MD
Pediatric General Surgery
Children’s Hospital
AE 206-840 Sherbrook Street
Winnipeg, MB R3A 1S1
(204) 787-2682

100 words
6. Friday, 08:00-08:15: (O)

THE BOWEL MANAGEMENT TUBE:
AN EFFECTIVE MEANS FOR CONTROLLING FECAL INCONTINENCE

Geoffrey K. Blair, K. Djonic, G.C. Fraser, W. Arnold, J.J. Murphy, B. Irwin
British Columbia Children's Hospital

Regular bowel washout enemas have been used as a method of management of fecal incontinence. The effective administration of a washout enema to a child with weak anal sphincters is often a problem. Using a new silastic balloon tipped enema catheter (Bowel Management Tube-BMT) of our design, we prospectively studied its effectiveness in a group of children who suffered fecal incontinence. Twenty-nine children were studied over a one-year period. Their diagnoses included meningomyelocele (14), postoperative Hirschsprung's disease or imperforate anus (11), and other (4). Before and after starting the BMT enema system, clinical assessment and a diary which graded the degree of fecal incontinence and satisfaction with the system were completed. Five patients failed to benefit because of noncompliance (3) or balloon extrusion (2). Two patients were not eligible for use of the tube system. Twenty-two patients achieved successful results with the system as evidenced by a significant amelioration in their fecal incontinence and unwillingness to give up the use of the BMT. We conclude that the use of regular washout enemas with the BMT can be an effective method for control of fecal incontinence in children.

Geoffrey K. Blair, MD
B.C. Children's Hospital
4480 Oak Street
Vancouver, BC, V6H 3V4
(604) 261-6424

187 words
MOTILITY AND SENSATION OF THE RECTOSIGMOID AND THE RECTUM IN PATIENTS WITH ANORECTAL MALFORMATIONS

M. Nagashima, N. Iwai, J. Yanagihara, T. Shimotake
Children's Research Hospital, Kyoto

Not only the sphincter function but also the rectosigmoid and the rectal function is an important factor to achieve normal bowel control in patients with anorectal malformations. However, the function of them has not been investigated sufficiently.

Motility and sensation of the rectosigmoid and the rectum after surgery for anorectal malformations were investigated in 32 patients, aged 5 to 16 years. They were classified into three groups: normal bowel control, fecal incontinence, constipation. All of the 32 patients were examined using not only manometrical procedure but also newly devised myo-electrical method. Myoelectrical character of the neorectum has been scarcely performed in pediatrics. Intraluminal pressures and the incidence of contractile activity of the rectosigmoid and the rectum showed no significant difference among these three groups. The maximum tolerable pressure in the incontinence group was significantly higher than those in the normal bowel control group, and the rectal compliance in the incontinence group was significantly lower than those in the normal group. EMG was recorded at 8cm and 5cm from the anal verge. Two types of slow waves were observed; a faster rhythm and a slower rhythm. The frequency of them showed no significant difference among the three groups. However, the number of spike bursts in the incontinence group was significantly higher than those in the normal group.

These results indicate that a loss of optimal rectal sensation or rectal reservoir function is associated with fecal incontinence, and that increased spike bursts might play some role in rectal motility.

Naomi Iwai, MD
Children's Research Hospital
Prefectural University of Medicine
Kawaramachi Hirokoji, Kamigyo-ku
Kyoto, 602, Japan
(075) 251-5835

247 words
LISTING OF
MEMBERS
AND
HONORARY MEMBERS
AS OF
AUGUST 27, 1991

abbreviations:
* - Associate Member
** - Life Member
° - Honorary Member

note: second telephone number is the Fax number

please notify the secretary of any changes or corrections:

Ray Postuma, M.D.
C.A.P.S. Secretary/Treasurer
AE 201-840 Sherbrook St
Winnipeg, MB, R3A 1S1
Canada
Telephone  1-204-787-4203
Fax  1-204-787-4618

8. Thursday, 08:00-08:15 (C) (five minute paper; discussion follows paper #9)

ANAL, RECTAL AND SIGMOID ATRESIAS
IN THE SAME NEWBORN

Sigmund H. Ein
The Hospital for Sick Children, Toronto

As a male born on May 28, 1989 to a 27 year old G2P1 after an uncomplicated 39 week pregnancy. He was delivered vaginally with no complications, good Apgar scores and weighing 2.8 kg. He was found to have syndactyly of the fingers and toes, and eversionation of the right hemidiaphragm, and an imperforate anus. An abdominal ultrasound demonstrated two normal kidneys and the large eversionation. A retrograde urethrogram showed posterior angulation adjacent to the internal sphincter consistent with a recto-urethral fistula and indicative of a high imperforate anus. Chromosomes were normal. He was taken to the operating room on May 29, 1989 for a right transverse loop divided and tunneled colostomy. He did well and went home one week later. On October 27, 1989 (5 mo., 7.4 kg) he had a Pena procedure finding no rectourethral fistula and one cm proximal to the anal atresia, a rectal atresia; this was resected and the usual anorectoplasty completed. Dilatations were initiated two weeks postoperatively and continued until his colostomy was closed five months later. On February 22, 1990 (9 mo., 9.1 kg) he had a distal colon loopagram prior to a planned colostomy closure which demonstrated an obstruction in the sigmoid area. Contrast introduced via the rectum outlined a similar obstruction in the upper rectal area. The next day a low sigmoid atresia was repaired in spite of discrepant bowel sizes. A chest x-ray during this admission showed a normal right hemidiaphragm. He recovered well and a loopagram three weeks later showed a narrow but intact rectosigmoid anastomosis. On April 2, 1990 (11 mo., 10 kg) his colostomy was closed. Since that time his anorectal dilatations were discontinued and he remains well.

Sigmund H. Ein, MD
Division of General Surgery
Hospital for Sick Children
Toronto, ON M5G 1X8
(416) 781-1411

286 words
CONGENITAL "N-TYPE" ANO-URETHRAL FISTULA WITHOUT IMPERFORATE ANUS

Andrew Hong, D. Croitoru, L. Nguyen, J. Laberge, F. Guttman
Montreal Children's Hospital, McGill University

Congenital recto-urethral or ano-urethral fistula without imperforate anus in males is rare, representing less than 1% of ano-rectal malformations. We report our experience with two males with "N-Type" ano-urethral fistulae. One, a 5 year old boy, presented with recurrent urinary tract infections (UTI). Investigations included a voiding cysto-urethrogram (VCUG) which demonstrated a fistula between the anal canal and the posterior urethra. The fistula was repaired via a perineal approach. The second patient is a 5 1/2 year old boy with a long history of recurrent UTI requiring multiple hospitalizations since 4 weeks of life. Chronic renal failure developed as a complication of repeated urinary tract infections. Investigations revealed a single hydronephrotic pelvic kidney and a small bladder. He underwent numerous diagnostic and reconstructive procedures including cystoscopy, cutaneous ureterostomy and augmentation cystoplasty. Recurrent infections continued and an "N-Type" ano-urethral fistula was eventually diagnosed by VCUG. The fistula was located between the anal canal and the membranous urethra. An anterior perineal approach was employed in both patients. Both fistulas were easily located, and reconstructive surgery of the urethra was not required. Postoperative VCUGs in both patients were normal. They have been free of infection with normal urinary continence since resection of the fistula.

Congenital "N-type" ano-urethral fistulae are rare, but should be considered in cases of recurrent urinary tract infections. The diagnosis may be missed by endoscopic procedures, but VCUG should demonstrate the fistulous tract.

Luong Nguyen, MD
Dept. of Pediatric General Surgery C-1130
Montreal Children's Hospital
2300 Tupper Street
Montreal, PQ H3H 1P3
514-934-4438

234 words
EMERGENCY CENTER ARTERIOGRAPHY IN THE EVALUATION OF SUSPECTED PERIPHERAL VASCULAR INJURIES IN CHILDREN

Baylor College of Medicine, Ben Taub General Hospital
Texas Children's Hospital

Eighty-two patients aged 11 to 18 years (mean age of 16 years) with suspected peripheral vascular injuries underwent emergency center arteriography between 1983 and 1989. These were performed by hand injection of contrast and imaging with a single X-ray view. Patients less than 25 kg were excluded from the protocol and underwent formal arteriography in the radiology suite because of the technical difficulty in cannulating these small vessels in the emergency room. Proximity was the indication for the study in 79 patients (95%). Three patients (4%) had clinical findings suggestive of arterial injury. Fourteen arteriograms (17%) were positive for vascular injury. Four (5%) gave equivocal results, and 64 were normal studies. Of the eighteen patients with positive studies, vascular injury was the result of gunshot wound in 10, stab wounds in 5, blunt trauma in 2 and shotgun wound in 1. In these patients, 7 femoral, 6 axillary and 5 brachial arteriograms revealed a cutoff or extravasation from a major vessel in 7 patients, intimal defects in 2 patients, an A-V fistula in 1 patient and a pseudoaneurysm in 1 patient. All patients with positive arteriograms underwent surgical repair of their injury. All patients with equivocal results underwent formal arteriograms which showed no injury. There were no complications from the arteriography. No patient with a negative arteriogram subsequently developed a complication of their injury. We conclude that single injection arteriography in the emergency center is a simple, sensitive, accurate and cost-effective technique for the examination of older children with potential peripheral vascular injuries.

Franklin J. Harberg, MD
8560 Fannin, Suite 938
Houston, Texas 77030
(713) 798-4276

253 words
Ninety nine (99) paediatric patients between the ages of 2 months and 16.4 years (mean 8.12 years) were examined with CT. The Paediatric Trauma Score (PTS) was calculated in all patients. Those who died had a PTS ≤6. Clinical findings were also taken into consideration in predicting outcome. Low PTS values were associated with high incidence of intracranial injury. Furthermore, the combination of a PTS value and the presence or absence of focal neurologic deficit proved to be accurate in predicting the probabilities of not having an intracranial lesion. Diffuse cerebral swelling was found to be the worse lesion with a mortality rate of 66.6%. The PTS was found to be a good predictor of severity of injury. When compared with the Glasgow Coma Scale (GCS), specifically for the presence or absence of intracranial lesion, PTS was far more sensitive than GCS (p<0.001 versus p>0.213). The PTS is a simple and easy to use score that can help both in triaging injured children to tertiary care facilities and facilitating the decision of using CT investigations. It is also of note that we had no deaths if the PTS was >7. In contrast with J. Tapas et al's original paper who had deaths up to a score of 8.
BLOODLESS SPLENIC SURGERY - THE SAFE WARM ISCHEMIC TIME

Sheldon H. Teperman, B.S. Whitehouse, R.J. Sammartano
R. Rojas-Corona, and S.J. Boley
Montefiore Medical Center, Albert Einstein College of Medicine

Splenic preserving procedures are replacing splenectomy for cysts, tumors and trauma. Bloodless splenic surgery facilitates saving spleens with minimal transfusions but safe splenic warm ischemic time (WIT) without function loss has not been defined. To study this, 10 dogs were given 1mCi Tc 99m sulfur colloid IV and scintiscanned. Blood was examined for Howell-Jolly bodies, and peripheral immunoglobulins. Under celiotomy the spleen was devascularized except for the main vascular pedicle. In 5 dogs (Group I), the pedicle was occluded for 3 hrs and in 5 others (Group II) for 2 hrs. Two weeks p.o., after rescanning, blood was drawn and the dogs killed. Spleens were removed for histopathology and immunoig studies. All dogs had splenic visualization of preoperative scans. Postoperatively 3 of 5 Group I dogs and all 5 in Group II showed normal splenic uptake. On histopathology, the 2 animals with poor visualization had extensive splenic necrosis. The others showed only some congestion. Howell-Jolly bodies were present in all Group I animals (mean=15) but in only 2 Group II animals (mean=1.5). Except for 4 of 5 Group I dogs who showed a decrease in peripheral IgG there were no trends seen in peripheral or splenic IgM. Thus, a WIT of 3 hrs resulted in splenic necrosis and loss of function in 40% of the dogs tested but splenic WIT of up to 2 hrs was safe in this study and should be sufficient time for most surgical procedures.

Sheldon Teperman, MD
c/o Sylvain Kleinhaus, MD
Montefiore Medical Center
111 East 210th Street
Bronx, NY 10467
(212) 920-4750/4124
BLUNT TRAUMATIC DISRUPTION OF THE THORACIC AORTA: A RARE INJURY IN CHILDREN

I.S. Ali, D.A. Gillis, H.Y.C. Lau
The Izaak Walton Killam Children's Hospital

Rupture of the thoracic aorta secondary to blunt chest trauma is an exceedingly uncommon injury in pediatric patients, with only a handful of cases having been reported. We present a case of blunt traumatic aortic disruption in a 10 year old child which was successfully managed by primary aortic repair utilizing partial cardiopulmonary bypass. The epidemiology and pathophysiology of this injury with particular reference to children is reviewed. In addition, the ongoing controversies regarding the diagnosis and operative management of this injury are summarized.
A RARE INTRAPERICARDIAL MASS IN A NEONATE

Allen H Hayashi, A Pellowski, AJ Tierney, DR McLean, NN Finer
Royal Alexandra Hospital, Edmonton

We describe a rare case of a neonate born with an intrapericardial mass composed of an extralobar pulmonary sequestration with a cyst of bronchogenic origin. After an uneventful delivery, this full term newborn was noted to be grunting and indrawing. Bilateral pneumothoraces were diagnosed and managed prior to transport to our facility. He arrived intubated, pink and stable on 60% Oxygen. A chest X-ray demonstrated bilateral upper lobe atelectasis. The cardiac shadow was normal in size but unusual in outline. An Echocardiogram revealed a 3 x 4 cm diameter cystic lesion in the anterior mediastinum; the heart itself was structurally normal. CT of the chest demonstrated posterior-lateral displacement of the SVC by this lesion. He continued to have tachypnea and indrawing. Bronchoscopy and esophagoscopy failed to show any structural abnormalities. At 3 weeks of age, sternotomy and resection of the lesion was performed. The mass was clearly intrapericardial and consisted of sequestrated pulmonary tissue with a central unilocular mucous filled bronchogenic cyst. Small systemic tributaries fed the lesion from the posterior-superior aspect. There was no connection with the heart or great vessels. A short narrow stalk of cartilaginous tissue appeared to connect this mass with the distal aspect of the trachea. Postoperative recovery was uneventful.

Allen H Hayashi, MD
10155-120 St
Edmonton, AB
T5K 2A2
403-482-7551

NOTE: The Fred McLeod Lecture follows this paper
1115-1215

FRED MCLEOD LECTURE

Dr Jay L. Grosfeld
Indianapolis

CHILDHOOD CANCER:
SEQUELAE OF SUCCESS

Dr Grosfeld's biography appears on page xiv
of the first section of the booklet
58. Sunday, 11:00-11:10; (C) (five minute paper, followed by five minute discussion)

“DO IT YOURSELF” VIDEO RECORDING OF PEDIATRIC SURGERY

Ray Postuma and H. R. Taylor
Winnipeg Children’s Hospital and University of Manitoba

"Do it yourself" video recording (D.I.Y.V.R.) is used increasingly in the home and industry. Surgical teachers have traditionally relied on audio-visual professionals to record operative procedures for teaching purposes. This arrangement requires a high degree of planning and coordination, is expensive and precludes the recording of most surgical emergencies and unusual cases. This paper describes our experience with D.I.Y.V.R. Informed consent was obtained from the parents of those children whose surgical condition was considered suitable for audio-video recording. The recordings were taken with a tripod mounted Sony EVO-9100 Hi 8mm video camera available on the wards and in the operating rooms. During a six month period (October 1990-April 1991) we obtained 159 video recordings, totalling 75 hours and involving 94 patients, of pre, post and non-operative clinical scenarios, ward procedures, diagnostic images, endoscopy, 73 operative procedures, and pathology materials. Edited versions of the video tapes were used for education purposes at surgical and pediatric rounds, undergraduate and postgraduate seminars and lectures. The tapes have been catalogued into a library of common and unusual pediatric surgical conditions. The quality of the video images is excellent. We conclude that D.I.Y. video recording is a powerful educational tool for all levels of students and colleagues. We will show examples of our work.

Ray Postuma, MD
Winnipeg Children’s Hospital
840 Sherbrook Ave.,
Winnipeg, MB R3A 1S1
(204) 787-4203

219 words

15. Friday, 13:45-14:00; (O,R)

ADULT TO NEONATE HUMAN LUNG TRANSPLANTATION:
ANATOMIC CONSIDERATIONS

RW Jennings, HP Lorenz, M.R. Harrison, NS Adzick
University of California

Babies born with severe pulmonary hypoplasia are unsalvageable despite maximal therapy including ECMO. Use of reduced size adult lung grafts could expand the pool of cadaver donors.

We tested this concept first in the piglet model and developed the technical maneuvers necessary to perform lobar and segmental lung transplants from adult pigs into neonatal piglets.

Next, a series of human adult and neonatal cadaver thoracic dissections were performed to determine the adult pulmonary lobe or segment with the proper size, orientation, and vascular and bronchial anatomy for use as a neonatal lung transplant. The adult right middle lobe (RML) is the best candidate for left lung replacement in the CDH neonate. The adult RML, once removed, can be rotated 180 degrees around its superior-inferior axis and the vessels and bronchus align well in the left chest of the neonate. The RML may require further reduction to fit into the neonatal left chest. Selective perfusion of the RML’s two pulmonary arteries showed the anterior segment to be a near perfect match for fit and anatomy.

We conclude that: 1) the anterior segment of the RML has the necessary size and anatomic features to act as a left lung replacement in neonates with severe pulmonary hypoplasia, 2) reduced size lung transplants may offer a lifesaving option to otherwise doomed neonates with severe pulmonary hypoplasia, 3) reduced size lung grafts may permit living related lung transplantation, and 4) ECMO may provide a "bridge to transplantation."

N Scott Adzick, MD
Fetal Treatment Program
Box 0570, HSE 585
University of California
San Francisco, CA 94143

242 words
CRYOPRESERVATION OF PIG TRACHEA

A. Messineo, R.M. Filler, C. Smith, A. Bahoric
The Hospital for Sick Children, Toronto

Previous studies showed that a free tracheal autograft with omental vascularization maintains viability and rigidity when reimplanted. Ultimately if tracheal allografts are to become an option in reconstructing long, circumferential defects a method of graft preservation would be ideal. In this study we evaluated the effect of cryopreservation on tracheal grafts.

Eight (8) six-ring tracheal segments obtained from sacrificed pigs were cryopreserved at -196 degrees C by standard low freezing technique for 2 months; once thawed, 5 were examined histologically (group A) and 3 wrapped with omentum and placed in the abdomen of 3 other pigs (group B); after 1 month these animals were sacrificed and the grafts examined. In 10 piglets (group C), a four-ring segment of cervical trachea was removed and the defect closed by primary anastomosis. The graft wascryopreserved for 7 days, thawed, then reimplanted by dividing the thoracic trachea and interposing the cryopreserved trachea wrapped with omentum. Seven pigs without respiratory obstruction were sacrificed after 1 month; three who developed respiratory distress were sacrificed between 7 and 20 days.

The grafts were rigid in group A and B. Chondrocytes were present in group A but in group B ghost cells were noted. In group C, grafts had lost their intrinsic mechanical strength; microscopically, cartilage was replaced by fibrous tissue.

Cryopreservation failed to maintain the viability of condrocytes. However this fibrous trachea may prove to be a satisfactory alternative for replacement of longitudinal defects such as those created in tracheoplasty to treat congenital tracheal stenosis.
NEONATAL CONGENITAL DIAPHRAGMATIC HERNIA AND ECMO

Allen H Hayashi, NN Finer, AJ Tierney, RA Hallgren, A Peliowski, PC Etches
Royal Alexandra Hospital, Edmonton

Infants born with congenital diaphragmatic hernia (CDH) and presenting with severe respiratory distress are associated with a high mortality. Recently, extracorporeal membrane oxygenation (ECMO) has been utilized to improve survival. We wish to report our experience in treating neonates born with CDH who were referred to our institution for consideration of ECMO support. From 1989 to the present, 14 infants with CDH of a gestational age greater than 36 weeks were treated. Three infants were stabilized successfully using conventional methods and underwent delayed surgical correction (18-48 hours). Eleven infants failed to stabilize with intensive conventional support and met standard criteria for ECMO. All cannulations and surgical repairs were performed in the NICU. Six neonates were cannulated for ECMO prior to attempted surgical repair. Of these, 4 infants underwent surgical repair during ECMO, 2 infants survived. Five infants were cannulated following surgical repair and all were successfully weaned and decannulated. One of these neonates was later found to have a hypoplastic right heart and later died of congenital heart disease. The average time on ECMO was 110.5 hours. None of the previously described predictors of outcome for CDH were useful in determining outcome in the present series, including prenatal diagnosis before 25 weeks gestation. The selective use of ECMO for neonates with CDH and severe respiratory distress appears to improve outcome.

Neil N Finer
Department of Newborn Medicine
Royal Alexandra Hospital
10240 Kingsway, Edmonton, AB, T5H 3V9
403 477 4644

JEUNE'S ASPHYXIATING THORACIC DYSTROPHY - THE COMBINED USE OF EXTENSIVE BILATERAL COSTAL OSTEOTOMIES AND THE INSERTION OF STEEL ALUMINUM PROSTHESIS IN ITS MANAGEMENT

Steven Z. Rubin, G. Gutierrez, J. Bass and M. G. Evans
Children's Hospital of Eastern Ontario

Jeune's asphyxiating thoracic dystrophy (ATD), described in 1954, is characterized by a narrow constricted rib cage, chondrodystrophy and short limb dystrophy. The clinical expression of this condition is variable. Infants severely affected require prolonged continuous positive airway pressure ventilation (CPAP). We report an infant with severe ATD diagnosed by antenatal ultrasound at 20 weeks gestation and delivered normally at term, weighing 3.34 kgs. Immediate endotracheal intubation with CPAP was needed to achieve a pH of 7.3 and a PCO2 of 63 mm Hg. Head circumference was in the 50th centile whereas length and chest circumstance were at the 3rd centile. Tracheostomy was done at 2 months of age. All other systems functioned normally. Clinical and blood gas deterioration with pO2 at 50 mm Hg and pCO2 above 100 mm Hg, required operative intervention with bilateral wide rib osteotomies at 4 months of age. Despite clinical improvement, chest growth did not occur. At 6 months of age, a similar deterioration necessitated a sternotomy with the insertion of an acrylic implant and repeated wide rib osteotomies. At 1 year, the child is stable, on CPAP, but chest circumference has not increased post-operatively, now lying well below the 3rd centile. Long term survival of ATD requiring surgery has been previously reported in children less severely involved than the infant described. Despite the survival of the infant, the prognosis with severely restricted pulmonary function, must be guarded.

Steven Z. Rubin, MD
Department of Surgery
Children's Hospital of Eastern Ontario
401 Smyth Road, Ottawa ON K1H 8L1
613-737-2601

221 words

234 words
18. Friday, 14:20-14:30; (C) (five minute paper, followed by five minute discussion of papers #17 and #18)

JUVENILE HEMANGIMAS INVOLVING THE THORACIC TRACHEA IN CHILDREN:
REPORT OF TWO CASES

A. Messineo, C. Wesson, R.M. Filler
The Hospital for Sick Children

Juvenile hemangioma (JH) (also known as cellular angiomatosis of infancy or benign hemangioendothelioma), an immature form of capillary hemangioma, is a benign tumor that grows rapidly in infancy. On rare occasions when vital structures are involved JH may become life-threatening.

Two 3 month old girls presented with wheezing and a posterior mediastinal mass; bronchoscopies revealed a compressed trachea but no tumor in the lumen. CT showed JH surrounding the trachea and esophagus in both cases; at thoracotomy incomplete resections were performed. 3 and 4 months later both children developed severe airway obstruction; repeat bronchoscopy revealed that the hemangiomas had involved the tracheal lumina, reducing the airway by 90% in the first and 70% in the second. Thoracotomies were again performed and the masses resected, including five tracheal rings in the first case and four in the second. In the first girl pathology showed that both resection lines were involved with JH; two months later the tumor recurred in the trachea, a tracheotomy was performed and corticosteroids were administered for 6 months. The tumor involuted and the patient was decannulated after 18 months; she is doing well 6 years later. In the second child complete resection was possible and she was discharged home after 4 days and is doing well 14 months later.

JH may invade vital mediastinal structures making total excision difficult. Invasion of the tracheal lumen, reported here for the first time, can be treated by tracheal resection when life-threatening symptoms are present.

Robert M. Filler, MD
Hospital for Sick Children
555 University Avenue
Toronto, ON
M5G 1X8

243 words
UNILATERAL LEG EDEMA CAUSED BY ABDOMINO-SCROTAL HYDROCELE: ELEGANT DIAGNOSIS BY MRI

Irwin H. Krasna, M. Solomon, R. Mezrich
Robert Wood Johnson Medical School

A five month old boy presented with bilateral hydroceles since birth, and right leg edema. An ultrasound of the pelvis revealed a 4 cm cystic mass which was diagnosed as a teratoma or cystic hygroma. A MRI was performed which showed a dumbbell shaped continuous, fluid-filled mass extending intra-abdominally from the level of the pelvic brim through the right inguinal canal into the scrotum. The cystic portion in the right iliac fossa was lying on the right iliac vessels, which were patent. A bilateral hydrocelectomy was performed, and the intraperitoneal sac was excised through the inguinal incision. The edema of the right leg disappeared a few days after surgery.

We present this interesting case to demonstrate two points: 1.) Intraabdominal extension of a hydrocele can cause lower extremity edema by compression of the veins in the pelvis. 2.) MRI is a very accurate way to make this diagnosis.

Irwin H. Krasna, MD
UMDNJ-Robert Wood Johnson Medical School
One Robert Wood Johnson Place, CN 19
New Brunswick, NJ 08903-0019

DIAGNOSTIC BRONCHOSCOPY IN THE PEDIATRIC AGE GROUP

Nathan E. Wiseman, I. Sanchez, R. Powell
Winnipeg Children’s Hospital

Over a 15-year period, 277 diagnostic bronchoscopic procedures were carried out at the Winnipeg Children’s Hospital using rigid bronchoscopic instrumentation. The patient population included 60% male and 40% female patients ranging from the first day of life to 18 years with a mean age of 6 years. Indications for bronchoscopy fell into two large groups, including 60% of patients with evidence of lower airway disease and 30% of patients with evidence of upper airway obstruction. In patients with upper airway obstruction, half were found to have a congenital underlying cause and half were due to an acquired lesion. In 85% of patients, a specific diagnosis was reached and this proved to correlate positively with the preoperative diagnosis in 80% of patients and negatively in 20%. Definitive treatment in patients with upper airway obstruction included surgical intervention in one-third of patients. Patients with lower airway disease were diagnosed as having consolidation in 43%, atelectasis in 39%, and bronchiectasis in 18%. Disease localized most frequently to the left lower and right upper lobes and in only 10 of 168 patients was a congenital cause determined. Among 168 patients, 30 had surgical treatment as the definitive management with the majority of patients treated medically. Bronchoscopy was shown to contribute to diagnosis in 90% of patients examined. Bronchoscopy was carried out with a complication rate of 3% and no mortality.

Nathan E. Wiseman, MD
Pediatric General Surgery
Children’s Hospital
AE 205-840 Sherbrook Street
Winnipeg, MB R3A 1S1
(204) 787-2682
LES ANNEAUX VASCULAIRES
- EXPÉRIENCE DE L'HÔPITAL SAINTE-JUSTINE:
  A PROPOS DE 100 CAS

H. Yangi-Angate, S. Vobecky, L. Trelles, C. Chartrand
Hôpital Sainte-Justine, Montréal

Quoique la cure chirurgicale des anneau vasculaires se pratique depuis plusieurs années, les résultats fonctionnels post-opératoires sont peu documentés. Afin de questionner la valeur thérapeutique d'une telle approche, nous nous proposons d'analyser nos résultats chirurgicaux. De 1961 à 1990, 100 cas d'anneaux vasculaires ont été opérés à l'Hôpital Sainte-Justine. On dénombrait 52 garçons et 48 filles dont l'âge moyen était de 2.8 ans (10 jours - 20 ans). Les quatre types anatomiques suivants ont été rencontrés: l'arc aortique droit et artère sous-clavière gauche aberrante forme la plus fréquente (n = 38), l'arc aortique gauche et artère sous-clavière droite aberrante (n = 31), le double arc aortique (n = 28) et enfin le tronc artériel brachiocephalique gauche aberrant (n = 3). La communication interventriculaire a été notée comme seule anomalie cardiovasculaire associée chez 9 patients. Parmi les anomalies non cardiovasculaires associées, on comptait 0.6 anomalie/patient et une absence complète d'anomalie chez 67% des enfants. Tous les patients présentaient des signes de compression respiratoire et 11% l'association des signes de compression trachéale et digestive. Le diagnostic d'anneau vasculaire a été posé dans 100% des cas par l'oesophagogramme. On n'a déploré aucune mortalité hospitalière. Le chylothorax (1%) a été la seule complication postopératoire. Tous les patients ont été suivis en moyenne 5.78 ans (1-22 ans). Les signes respiratoires et digestifs se sont aménés en postopératoire immédiat dans la majorité des cas (90%). Au follow-up, aucune mortalité à long terme n'a été déplorée, seulement chez 10% des patients on relevait une résolution incomplète des signes respiratoires et/ou digestifs. L'absence de mortalité à court et long terme, l'aménagement initial des symptômes dans 90% des cas démontrent le bien fondé du traitement chirurgical des anneau vasculaires symptomatiques.
NECROTIZING ENTEROCOLITIS: FACTORS AFFECTING MORTALITY

Ian R. Neilson, RJ Touloukian, F. Mercier and JH Seashore
Yale University

Risk factors predisposing to the development of NEC are well known. This study was undertaken to determine the factors which influence outcome.

The records of 70 patients who underwent surgery for NEC between Jan 1980 and Dec. 1989 were reviewed.

<table>
<thead>
<tr>
<th></th>
<th>(n)</th>
<th>gestational age</th>
<th>weight at operation</th>
<th>near total involvement</th>
<th>explorative only</th>
<th>perforation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survivors</td>
<td>44</td>
<td>29.9</td>
<td>1240.2</td>
<td>34%</td>
<td>5%</td>
<td>61%</td>
</tr>
<tr>
<td>Deaths</td>
<td>26</td>
<td>27.0</td>
<td>1061.2</td>
<td>77%</td>
<td>31%</td>
<td>50%</td>
</tr>
</tbody>
</table>

The only factor that correlated with mortality was near total intestinal involvement. Risk factors which did not influence outcome were: gestational age, weight at surgery, time from onset of symptoms to operation, and perforation. The mean duration of postoperative mechanical ventilation (13.2 days), total parental nutrition (28.2 days), antibiotic therapy (7.9 days), and vasopressor therapy (3.4 days) did not differ between survivors and nonsurvivors. Death occurred in 3 periods and reflected the extent of intestinal involvement.

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Total (26)</th>
<th>closed without resection</th>
<th>sepsis despite resection</th>
<th>withdrawal of support</th>
<th>intraoperative DIC</th>
<th>catheter sepsis</th>
<th>multisystem organ failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of death</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 24 hours</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-30 days</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-14 months</td>
<td>9</td>
<td>1</td>
<td></td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extensive intestinal involvement, regardless of gestational age or birth weight, determines whether resection is possible without irreversible short bowel syndrome and is the principal predictor of mortality. Critical care as well as risk factors do not seem to correlate with outcome. Improvement in outcome will await new operative strategies for extensive involvement or new methods of prevention.

Robert J Touloukian, MD
Yale Medical School
Department of Surgery
PO Box 3333
New Haven, CT 06510

21. Friday, 15:30-15:45; (O, F)

THE USE OF INDIUM SCANS IN CHILDREN WITH INFLAMMATORY BOWEL DISEASE

P.G. Fitzgerald, T. Topp, J.M. Walton, D.A. Gillis
The Izaak Walton Killam Children's Hospital, Halifax

Indium 111 leukocyte (WBC) scans have been used in the investigation of inflammatory bowel disease in recent years, but its use in children is not well documented.

We describe our experience with Indium scans over an 8 year period in a total of 109 patients. Seventy patients were diagnosed as having Crohn's disease while 39 had ulcerative colitis. A total of 281 Indium scans were carried out, of which 51 were part of an initial diagnostic work-up for inflammatory bowel disease. The remaining 230 Indium scans were used to follow patients' response to treatment.

The results of the Indium scans were retrospectively compared to the results of contrast studies, endoscopy findings and surgical pathology.

Analysis shows that Indium scans are an accurate, relatively non-invasive, imaging technique which can play a very useful role in the management of children with inflammatory bowel disease.

P.G. Fitzgerald, MD
The I.W.K. Children's Hospital
5850 University Avenue
Halifax, Nova Scotia
B3J 3G9
(902) 428-8113

143 words

248 words
LAPAROSCOPIC CHOLECYSTECTOMY IN TEENAGERS

Sylvain Kleinhaus, R. Kaley, R.Canning, M.B.Gregor, S.J.Boley
Montefiore Medical Center, Albert Einstein College of Medicine

Laparoscopic cholecystectomy (LC) has gained increasing acceptance in the adult surgical community. Within the past six months we have performed LC in seven patients between the ages of fourteen and nineteen. There were six females and one male. All patients had RUQ pain and five had fatty food intolerance. All seven had cholelithiasis and one a common duct stone. The latter was removed by ERCP prior to LC. One patient had acute and chronic cholecystitis and the others chronic cholecystitis; four of the patients were parous and one had sickle cell disease. Operating time ranged from 180 minutes in the patient with acute cholecystitis, to 40 minutes, in a 5'2" 194 lb., 14 year old female. There were no operative complications. Three patients were discharged on PO day #2, 2 on PO day #3, and 2 on PO day #4. The follow-up period though short (one week to six months) has been remarkable. There are no complaints of incisional pain, discomfort, or paraesthesia. Three patients were back in school one week following LC and all are delighted with the cosmetic appearance of the scars. Based on our limited experience we consider LC an attractive alternative to open cholecystectomy in children and adolescents in whom body image and school attendance are especially important. Performance of LC with electrocautery rather than laser keeps the cost within reason. Previous laparoscopic experience, which many pediatric surgeons have, makes this new technique easier to master.

Sylvain Kleinhaus, MD
Montefiore Medical Center
111 East 210th Street
Bronx, New York 10467
(212) 920-4214/4758

240 words
LARGE GASTROCHISIS: PRIMARY REPAIR WITH GORE-TEX PATCH

Gustavo Stringel
Methodist Hospital of Indiana, Indianapolis

Primary repair is the best method of closure in congenital abdominal wall defects. When the defect is very large, the use of prosthetic material such as Silon pouches can be life saving, but it requires staged reduction, prolonged hospitalization and has a higher incidence of complications. In the past three years we have seen three neonates with large Gastrochisis, in whom primary repair could not be accomplished. They were successfully treated with primary closure using a Gore-Tex patch.

All three cases were diagnosed by prenatal ultrasound. Birth weights were 2550g, 2700g and 3180g; they were all male. There were no other associated anomalies except for bilateral undescended testicles in one case. After reducing the viscera into the peritoneal cavity we realized that primary fascial closure could not be accomplished. A Gore-Tex patch of 1 mm thickness was fashioned to fit the size of the defect. The patch was secured circumferentially to the fascia with a continuous monofilament nylon suture; the skin was closed with a purse string subcuticular Vicryl suture for better cosmetic result.

All three infants received prophylactic antibiotics. TPN was started after surgery. Two babies were extubated within 12 hours after operation and the third one remained intubated for 3 days because of prolonged neuromuscular blockade. Two babies still have the Gore-Tex patch in place. In the third one, removal was necessary at 4 weeks of age, an extra peritoneal fascial closure was easily accomplished.

Experimentally with a volume capacity reservoir comparable to the size of the abdomen of a newborn baby, we found that a 2 cm defect reduces the volume capacity by 17%; a 3 cm defect by 27%; a 4 cm defect by 39% and a 5 cm defect by 51%.

Primary Gore-Tex closure is a safe and good alternative in large abdominal wall defects when primary fascial repair is not feasible.

23. Friday, 16:00-16:05; (C, R) (five minute paper; discussion follows paper #24)

DIAPHRAGM OF THE GALLBLADDER: A CASE REPORT

Dickens St-Vil, B.J. Hancock, F.J. Luks, L. Garel, P. Brochu, A.L. Bensoussan
Hôpital Sainte-Justine, Montreal

The gallbladder develops from the hepatic diverticulum of the foregut and is subject to a number of anomalous conditions. We report the case of a three year-old boy with a one year history of intermittent postprandial right upper quadrant pain associated with anorexia, weight loss and growth retardation. Preoperative ultrasonography and transvessicular cholangiography demonstrated the presence of a cystic anomaly of the biliary tree. The gallbladder was divided transversely by a windsock-type diaphragm with a pinpoint orifice separating the fundus from the infundibulum. There was pathologic evidence of chronic cholecystitis in the fundal portion.

Gallbladder anomalies are rare and usually affect the number, shape, size and position of the organ. Bilobed and multiseptated gallbladders have been described but this is the first reported case of an endovesicular diaphragm, isolating a portion of the gallbladder from the rest of the biliary system.

Arié L. Bensoussan, MD
Hôpital Sainte-Justine
3175, Côte Sainte-Catherine
Montréal, PQ H3T 1C5
Tel. (514) 345-4860
fax (514) 345-4822

306 words
141 words
24. Friday, 16:05-16:15; (C) (five minute paper, followed by five minute discussion of papers #23 and #24)

AGENESIS OF THE GALLBLADDER AND DUODENAL ATRESIA: TWO CASE REPORTS

John P. Coughlin, F.E. Rector, M.D. Klein
Children's Hospital of Michigan, Wayne State University School of Medicine

Agenesis of the gallbladder not associated with biliary atresia is quite rare. We wish to report two patients with agenesis of the gallbladder in association with duodenal atresia without biliary atresia. The first infant was a 2100 gm 33 week gestation male diagnosed at birth with an imperforate anus, duodenal atresia, and ventral septum defect. Agenesis of the gallbladder with normal hepatic and common bile ducts was noted prior to duodenoduodenostomy and colostomy. Postoperatively an elevated serum total bilirubin (14.7) rapidly decreased to normal while the serum direct bilirubin remained at normal levels. The second infant was a 1600 gm 31 week gestation male in whom duodenal atresia was diagnosed at birth. After kocherization of the duodenum, gallbladder agenesis with normal bile ducts was again noted. Liver biopsy was notable for an absence of both inflammation and ductal pathology. The unremarkable postoperative course included normal serum total and direct bilirubins and a HIDA scan which demonstrated very good bile excretion into the duodenum.

Michael D. Klein, MD
Department of Surgery
Children's Hospital of Michigan
2901 Beaubien
Detroit, Michigan 48201
(313) 745-5840

166 words
CLINICAL FACTORS AFFECTING MORTALITY IN CHILDREN WITH MALROTATION OF THE INTESTINE

A. Messineo, R.M. Filler, S. Palder
Hospital for Sick Children, Toronto

A retrospective statistical study was undertaken to determine factors associated with an increased risk of mortality in children with intestinal obstruction due to malrotation. Between 1964-1989, 162 underwent surgery for obstruction; 17 died. In 71 the obstruction was in the duodenum; 1 died. Of 111 children with midgut volvulus 79 had no gut necrosis and 1 child died. 32 patients had necrotic intestine; 15 died.

In those 32 the relationship was evaluated between mortality and age at presentation (< 3 months, ≥ 3 months), presence of other serious disease, time from presentation to surgery, need of TPN, and length of necrotic bowel.

Deaths were 7 times (adjusted odds) more likely in children under 3 months (95% confidence interval, 2.1-12.6), 9 times when other diseases were present (4.1-13.8), and 6 times when TPN was not used (1.6-10.4). Time from presentation until surgery was not associated with an increased risk of mortality.

For children older than 3 months without other disease who had TPN, the predicted probability of death was calculated for different lengths of intestinal necrosis expressed as a percentage of total intestinal length. At 10, 25, 50 and 75% necrosis, the predicted probabilities of death were .32, .46, .72, and .88 respectively.

These data indicate that age at presentation, presence of other serious disease and the need of TPN are associated with an increased risk of mortality. Intestinal infarction implies at least a 30% mortality and survival is unlikely if infarction exceeds 75% of intestinal length.

Robert M. Filler, MD
555 University Avenue
Toronto, ON
M5G 1X8
(416) 598-6400

CHOLELITHIASIS IN NEWBORNS AND INFANTS

Dickens St-Vil, F.I. Luks, B.J. Hancock, D. Fillatreault,
S. Yazbeck
Hôpital Sainte-Justine, Montreal

Cholelithiasis in infants is thought to be rare and usually associated with hemolysis, ileal disease, congenital abnormality of the biliary tree, hyperalimentation or prolonged fasting. With the increased use of abdominal ultrasonography, more cases of cholelithiasis are being encountered. We report our experience at Ste-Justine Hospital with 11 infants diagnosed on abdominal ultrasonography to have gallstones between January 1986 to January 1991. There were 8 boys and 3 girls with an average age at diagnosis of 3 months (range: 3 days to 9 months). Three infants had received hyperalimentation for periods ranging from 1 week to 2 months and one infant had intestinal malabsorption; seven infants had no predisposing factors. Two patients presented with obstructive jaundice; the stone passed with resolution of symptoms in one patient while the other patient required cholecystectomy and common bile duct exploration. One infant with pyloric stenosis and cholelithiasis underwent pyloromyotomy and cholecystotomy. The eighth patient, with no evidence of cholestasis, remained asymptomatic with disappearance of stones in 5 patients.

Neonatal cholelithiasis is more common than previously suspected, seems to affect boys more often than girls and is usually not associated with known predisposing factors. It appears to be a temporary self-limiting phenomenon, and an aggressive approach is probably not warranted in the asymptomatic infant. Surgery should be reserved for the child with obstructive jaundice or with underlying biliary disorders.

Salam Yazbeck, MD
Hôpital Sainte-Justine
3175, Côte Ste-Catherine
Montréal, PQ H3T 1C5
Tel. (514) 345-4886
Fax (514) 345-4822
26. Friday, 16:30-16:45 ; (O, R)

SURGICAL COMPLICATION IN CHILDREN AFTER LIVER TRANSPLANTATION

R. Bilik, M. Yeilen, R.A. Superina
Hospital for Sick Children, Toronto

The frequency of surgical complications after liver transplantation remains high. Sixty (60) transplants were done in 48 patients during 4 years. Eleven (11) patients were re-transplanted (re-transplant rate 20%) for primary non function (6), arterial thrombosis (3), warm ischemia (1), and rejection (2). Right pleural effusions were drained in 13 patients and left ones in 2. Forty eight (48) re-explorations excluding re-transplantation were performed in 20 patients. Twelve(12) laparotomies were for control of post-operative intra-abdominal bleeding. The majority of these patients (9/12 - 75%) were transplanted with reduced-size grafts. Early post-op vascular complications were detected in 12 grafts (5 portal vein occlusions, 7 arterial thromboses). All 5 patients with portal vein (PV) occlusions were re-explored, and PV flow was re-established in 4. Biliary leaks were diagnosed in 5 patients and were associated with arterial thromboses in 2 cases. Re-operation was required in 4/5 patients. Bowel perforation occurred in 4 patients: 2 small bowel, 1 duodenum, and 1 colon. There was 1 post-op bowel obstruction requiring laparotomy. Three (3) splenectomies were required in 4 patients with splenic infarction. Resection of part of a transplanted liver was done in 1 patient to exclude septic infarcts. Pancreatitis was diagnosed in 4 patients and one required laparotomy for control of pancreatic hemorrhage. Intra-abdominal abscesses required open drainage in 2 patients and percutaneous drainage in 4. Thoracotomies were done in 4 patients: 3 open lung biopsies and 1 for control of hemorrhage. The current high survival rates following liver transplantation require aggressive surgical management of a myriad of complications and numerous procedures are necessary both as treatment modalities and diagnostic aids.

Riccardo A. Superina, MD
The Hospital For Sick Children
Dept. of Surgery, Room 1526
555 University Ave., Toronto, ON M5G 1X8
(416) 598-6357

268 words
SMALL BOWEL TRANSPLANTATION IN THE RAT: THE EFFECT OF DONOR SPECIFIC TRANSFUSION AND LOW DOSE CYCLOSPORIN

A. Fecteau, J. Tchervenkov, F.M. Guttmann
Montreal Children's Hospital

Definitive therapy for short bowel syndrome is small bowel transplantation (SBT). The combination of pre-transplant donor specific transfusion (DST) and cyclosporin (Cys) has been proven to be an effective mode of immunomodulation in kidneys, heart, and skin allografts. DST has been studied in SBT: Martinek showed an improved survival with one DST on day 1 and Cys for 30 days; DeBruin demonstrated no improvement of survival with a protocol of 3 pre-transplant DST. Our experiment was designed to study the effect of a clinically applicable protocol of one DST 24 hours pre-transplant and low Cys for 14 days.

Adult male BN rats were used as blood and bowel donors and LEW as recipients. Heterotopic SBT was performed. Rats were examined daily for signs of rejection and biopsied at 4 and 8 days. Rats were killed and autopsied at the appearance of an abdominal mass. Group A received no immunosuppression. Group B: Cys 10 mg/kg SC 24 hours pre-transplant, 5 mg/kg for the following 7 days and 2.5 mg/kg for the next 7 days. Group C: one DST the day before transplant with the same Cys protocol. Table 1 shows survival time of grafts. Survival curves (Kaplan-Meier statistical analysis) are shown in diagram 1. The improved survival of Group B and C reached statistical significance compared to controls (p < 0.01 by log-rank test) but not between each other. These results confirm the immunosuppressive effect of Cys even at low dose but may also indicate that the number of suppressor cells induced by a single DST is not sufficient to combat the massive immunological challenge of a SBT.

<table>
<thead>
<tr>
<th>Group</th>
<th>Survival</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>10.1 ± 3.3</td>
</tr>
<tr>
<td>B</td>
<td>15.5 ± 11.1</td>
</tr>
<tr>
<td>C</td>
<td>16.8 ± 13.6</td>
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27. Saturday, 08:00-08:15; (O)

LASER EXCISION OF SOFT TISSUE LESIONS IN CHILDREN

Charles E. Bagwell, MR Langham, Jr., SM Mahaffey, and JL Talbert,
University of Florida

While multiple surgical options exist for treatment of extensive or complicated soft tissue lesions in children, all have significant drawbacks for patient and surgeon alike. From 1987 to 1990, 27 children, aged 7 months to 18 years, underwent CO2 laser resection for the following soft tissue lesions: condyloma acuminata (8), verrucae vulgaris (plantar and common warts) (11), lymphangioma (6) and hemangioma (2). All cases of condylomata were investigated for possible child abuse and required from one to four laser treatments (average 2) to eradicate the extensive involvement. Of the eight children, two were lost to followup with only one child showing recurrence (when the family subsequently moved away from the area) with 83% overall success rate. Eleven children with verrucous lesions included plantar warts in three, (two of whom had failed to respond to attempts at operative resection or cryosurgery) and multiple common warts in eight, ranging from 11 to 48 in number (average 30). Four children with extensive warts had underlying immunologic disorders, including bone marrow or kidney transplantation in three. Lesions were eradicated in all but two of the patients who returned to followup (78% total success rate) with an average of 1.5 treatments per patient. Six patients underwent CO2 laser treatment for lymphangiomas, including sites on the tongue (3), oral cavity, ear canal or flank and back regions. Treatment in these cases was directed to symptomatic relief from obstruction (of the ear canal), local discomfort from hypersensitive cutaneous lymphatic blebs and in one patient, 11 laser treatments were necessary for repeated episodes of bleeding from lesions on the anterior tongue. Two children with localized hemangiomas on the face or cheek responded well to a single laser treatment, with excellent cosmetic results. We believe use of the CO2 laser for a variety of soft tissue lesions in children offers multiple advantages over alternative modalities, including accuracy of lesion ablation with minimal scarring, lessened postoperative pain (even with extensive perineal resection for condylomata), and definitive treatment of extensive verrucae involving sensitive areas (hands, feet, face) or areas resistant to treatment by other methods (periungual or subungual locations).

Charles E. Bagwell, MD
University of Florida
Division of Pediatric Surgery
Box J-286
Gainesville, Florida 32610-0286
(904) 392-3720

(349 words)
COAGULOPATHY ASSOCIATED WITH LARGE SACROCOCCYGEAL TERATOMAS

Geoffrey K. Blair, J.J. Murphy, G.C. Fraser
British Columbia Children’s Hospital, Vancouver

Fourteen cases of sacrococcygeal teratoma (SCT) have been treated at British Columbia’s Children’s Hospital over the past five years. Twelve patients were neonates while two were found to have malignant yolk sac tumors at 18 and 22 months of age.

Four neonates developed significant coagulopathy. Two of these patients died, one before surgical resection could be undertaken. Three patients developed profound hypotension during SCT resection due to bleeding and apparent coagulopathy. One patient had disseminated intravascular coagulation (DIC) and another thrombocytopenia prior to surgery.

Several risk factors for the development of coagulopathy are proposed: 1) prematurity (< 32 weeks gestation), 2) early prenatal diagnosis (< 26 weeks) and 3) large (> 10 cm diameter) Type II AAPSS lesions. Polyhydramnios, placenta-megaly and fetal distress may also be important markers. Presence of hydrops fetales and congestive heart failure are ominous prognostic signs.

Presence of the aforementioned risk factors may allow early identification of patients who are likely to develop consumption coagulopathy and DIC. Early surgical resection in these patients may improve survival.

Geoffrey K. Blair, MD
B.C.’s Children’s Hospital
4480 Oak Street
Vancouver, BC, V6H 3V4
(604) 261-6424

166 words
MANAGEMENT OF PENETRATING NECK INJURIES IN CHILDREN

Steven S. Rothenberg, Wm. J. Pokorny,
M. L. Brandt, F. J. Harberg
Baylor College of Medicine, Ben Taub General Hospital,
Texas Children’s Hospital

The management of penetrating neck injuries in adults has been well-defined, however a similar experience in children has not yet been reviewed. We examined our 10-year experience in order to determine if specific guidelines were warranted in the pediatric age group. There were 24 significant penetrating neck injuries between January 1980 and December of 1989. Ages ranged from 2 to 13 years old. There were 13 gunshot wounds; 2 stab wounds; 3 dog bites; and 6 injuries from metal, glass, and wood shards from various causes. There were 2 zone I, 22 zone II, and no zone III injuries.

Ancillary tests, other than arteriograms in zone I, seem to add little in small children and exploration and/or endoscopy should be performed under general anesthetic.

Older children may be managed selectively if the patient is cooperative and there are no signs or symptoms warranting further investigation.

D. Alex Gillis, MD
The IWK Children’s Hospital
5850 University Avenue
Halifax, Nova Scotia
(902) 426-9113

214 words

UNBALANCED TRANSLOCATION OF CHROMOSOME 3P IN WILMS’ TUMOR

The Izaak Walton Killam Children’s Hospital

Genetic studies of Wilms’ tumors have most commonly revealed deletion involving band 13 on the p arm of chromosome 11 in association with aniridia. Structural re-arrangement of chromosome 3p has been found in renal cell carcinoma, small and non small cell carcinoma of the lung but has not been reported in Wilms’ tumors.

We present two phenotypically normal, unrelated patients with Wilms’ tumors, one of which was bilateral, in which cytogenetic analysis of the tumors revealed unbalanced translocation of the p arm of chromosome 3. Tumor tissue, from the patient with bilateral Wilms’ tumor, showed translocation between chromosome 3 and 13 with partial trisomy of 3p and loss of material from chromosome 13q. The unilateral Wilms’ tumor again showed trisomy of 3p with partial loss of 7p. Neither patient showed a constitutional chromosomal abnormality and neither tumor showed any cytogenetic abnormality associated with chromosome 11q.

Quantitative DNA analysis revealed aneuploidy in the tumors from both patients. The bilateral Wilms’ tumor showed a DNA index of 1.284 (mean ploidy=2.45; SD=0.854), while the unilateral Wilms’ tumor had a DNA index of 1.67 (mean ploidy=3.35; SD=0.976). These results are discussed in relationship to the chromosome abnormality seen on the karyotype analysis.

These cytogenetic findings have not previously been described in nephroblastoma and suggest that genetic oncogenesis in Wilms’ tumor is multifactorial.

228 words
SPONTANEOUS REGRESSION OF AGGRESSIVE FIBROMATOSIS OF THE HEAD AND NECK

Kurt Heiss, RM Filler
The Hospital For Sick Children, Toronto

Aggressive fibromatosis is an infiltrating neoplasm mimicking a low-grade fibrosarcoma. Its growth varies markedly. The best treatment is radical surgery with clear margins but radiation has been used for residual disease. Local recurrences are common with occasional fatal outcome. This report documents spontaneous regression of recurrent fibromatosis after failed aggressive surgery and radiation. Histology from a lateral neck mass from a ten year old boy showed a densely collagenous invasive tumor of mature fibrous tissue, consistent with aggressive fibromatosis. The mass recurred within 18 months. Upon referral here, CT scan showed an invasive soft tissue mass extending from the low cervical incision to the hyoid bone which was excised by a modified radical neck dissection. Fibromatosis was confirmed histologically and 3500 Rads were given for presumed microscopic residual. Two years later the lesion recurred under the left mandible and was excised leaving known microscopic residual by a suprathyroid neck dissection sparing the larynx. Within a year massive recurrence in the region of the larynx and pharynx caused dysphagia and a weak voice. Because complete resection would have required mandibulectomy, laryngectomy, pharyngectomy and a base-of-skull dissection, we decided to wait until symptoms became life-threatening. Unexpectedly, the tumor decreased in size, and now, 4 years later, the child has no evidence of tumor on CT scan and is asymptomatic. We are aware of no other report documenting spontaneous regression. The option of no treatment should be considered when disfiguring or life-threatening surgery is being considered in the treatment of aggressive fibromatosis.
CONGENITAL MUSCULAR TORTICOLLIS: 88 CONSECUTIVE INFANTS WITH NO OPERATION

B.H. Cameron, J.C. Langer, G.S. Cameron
McMaster University

Congenital muscular torticollis (CMT) is a rotational and flexion deformity caused by sternomastoid shortening. This review of one surgeon’s experience with early CMT was designed to assess the efficacy of passive stretching exercises (PSE) in resolving the deficit in neck rotation and the associated secondary facial asymmetry.

Eighty-eight infants presented before 3 months of age, from a total of 126 consecutive patients with CMT managed over a 30 year period. Severity was graded using standardized criteria: 30% were mild, 53% moderate, and 17% severe. Facial asymmetry was present in 48%.

All infants were treated with PSE, consisting of forceful ipsilateral rotation 10 times, twice daily. Close monitoring every 1 to 4 weeks, with parental encouragement and support, were considered essential components of management. Maintenance exercises were continued from the time full neck movement was attained until 9 months of age.

Seven patients (6 mild, 1 moderate) did not return for follow-up. In the remaining group, median follow-up was 9 months (range 1 month to 12 years). Outcome was excellent in 65%, good in 27%, and fair in 8%. Eighty-nine percent of infants with moderate or severe CMT had an excellent or good outcome. Mild facial asymmetry persisted in 22%.

Tenotomy was not required in any of the 88 infants, but it was necessary in 45% of the 88 older children over the same period. The need for surgery in the older group was directly related to age at initiation of therapy.

We conclude that PSE are effective in the treatment of CMT diagnosed before 3 months of age, and that no such infant should require surgery. Success is dependent on early initiation of therapy, and on frequent follow-up and parental encouragement.

FIBROMATOSES IN INFANCY and CHILDHOOD: THE SPECTRUM

A. Humur, S. Chou, B. Carpenter
Children's Hospital of Eastern Ontario

Fibromatoses form an interesting group of tumors occupying a mid-position in the spectrum of fibrous tissue neoplasms. Within the fibromatoses sub-groups there exist a variety of tumors whose clinical behavior spans the range from completely benign to locally aggressive. Four case histories are presented to illustrate this point. All four patients were initially seen with asymptomatic head or neck masses. The first had complete excision with no recurrence to date. The second underwent spontaneous regression after confirmation of diagnosis with biopsy. The third case had a locally aggressive disease, requiring three surgical resections, while the last case had one recurrence after the initial resection. With certain exceptions, initial wide local excision offers the best possible chance for cure.

Shirley Chou, MD
Children's Hospital of Eastern Ontario
401 Smyth Rd.
Ottawa, ON K1H 8L1
(613) 737-2721

Gordon S. Cameron, MD
Department of Surgery
McMaster University
1200 Main Street West
Hamilton, ON, L8N3Z5
(416) 521-2100 ext. 5231

281 words
PARAAORTIC LYMPHADENECTOMY IS NOT NECESSARY IN THE TREATMENT OF LOCALIZED PARATESTICULAR RMS.

Piergiorgio Gamba, G Ceccheto ,M Carli*, C Boglino .**, M Guglielmi .
*University of Padua and **Bambino Gesu Hospital, Rome

This study is based on the experience of the Italian Cooperative Study AIEOP-RMS79 and RMS 88. Between October 1979 and December 1989, 260 children under 15 years of age with a histologically proven rhabdomyosarcome (RMS) were examined. We analyzed the problem of the paratesticular localization paying particular attention to the role of surgery in dealing with paraaortic nodes when tests such as TAC and Echo are not able to reveal whether or not nodes are dilated. Sixteen patients out of 160 (10%) in the first period (1979-1987) and 10 patients (7.4%) out of 139 in the second period presented a primary paratesticular localization. Four (4) patients were not taken into consideration. The patients were classified according to the IRS grouping system as follows: 13 in group I and 1 in Group IIA in the first period and 8 in group I in the second period. In the first study the surgical exploration of regional lymph-nodes was carried out in 11 patients out of 14; this surgical treatment confirmed the negative data observed with the diagnostic procedure. In RMS 88 the exploration of regional lymph nodes is not requested in cases which are clinically silent. This procedure was performed in 2 out of 8 patients with negative results. All children were treated with an adjuvant C.T. after surgery and at present they show no evidence of disease. These data confirm that surgical exploration of regional nodes is not required in those cases where Echo and TAC do not reveal metastases and underline the value of C.T. after surgery.

Piergiorgio Gamba, MD
Department of Pediatric Surgery
Via Giustinianii, 3
35128 Padua, Italy

265 words
40. Saturday, 11:15-11:20; (C) (five minute paper; discussion follows paper # 41)

PANCREATODUODENECTOMY WITH PRESERVATION OF THE STOMACH AND PYLORUS - A SAFE AND EFFECTIVE ALTERNATIVE IN CHILDREN

Children's National Medical Center, Washington

The traditional approach to a malignancy in the distal common bile duct or head of the pancreas has been a Whipple pancreateoduodenectomy including hemi-gastrectomy, vagotomy, pyloric resection, and gastrojejunostomy. Pylorus-preserving pancreateoduodenectomy was introduced for adults to avoid the post gastrectomy symptoms and resultant nutritional complications common to the standard Whipple procedure.

Because these salutary features have special implications in children, we used the pylorus-preserving pancreateoduodenectomy in a 15 year old female who presented with obstructive jaundice due to a carcinoid tumor of the distal common bile duct, a rare malignancy previously unreported in a pediatric patient. This approach permitted complete resection of the tumor. The stomach, pylorus, and vagus nerves were spared and reconstruction was with an antecolic duodenjejunalostomy distal to the common duct and pancreatic anastomoses. She had an uncomplicated hospital course and is well with no evidence of recurrence at 3 years. Gastric emptying, nutrition, and glucose levels are normal.

Pancreateoduodenectomy with preservation of the pylorus is a safe and effective modification of the classic Whipple procedure for children with resectable tumors of the distal common duct or head of the pancreas.

Kurt Newman, MD
Children's National Medical Center
Department of Surgery, Room 4400
111 Michigan Avenue, N.W.
Washington, D.C. 20010

184 words

33. Saturday, 09:15-09:30; (O. R)

A 20 YEAR REVIEW OF PEDIATRIC PANCREATIC TUMORS

T. Jaksic, M. Yaman, D.E. Wesson, R.M. Filler, B. Shandling
Hospital for Sick Children, Toronto

Pancreatic tumors are rare surgical problems in infants and children. A twenty year audit (1971-1991) in our institution revealed six patients ranging in age from six weeks to sixteen years who were operated upon for pancreatic neoplasms. Five of these tumours were malignant bringing the total reported world experience to 73 cases. Our series included three non-functioning islet cell tumours, two insulin secreting tumours, one juvenile adenocarcinoma of the pancreas (pancreatoblastoma) and one papillary cystic tumour. The initial clinical presentations varied: 3 had abdominal pain, 2 developed hypoglycaemia and seizures, and one had persistent jaundice and an abdominal mass. In 5/6 of the patients pancreatic pathology was suspected pre-operatively. All were treated primarily with pancreatic resection including one pancreateoduodenectomy. The peri-operative mortality was 0% with a morbidity of 50% (one small bowel obstruction treated conservatively, one post-operative splenic infarction after distal pancreatectomy, and an episode of exocrine pancreatic insufficiency requiring enzyme replacement). The long-term results are encouraging with all patients alive and well after a mean follow-up of 8.5 years. These data suggest that aggressive surgical therapy is warranted in the management of pediatric pancreatic tumors.

Barry Shandling, MD
Dept. of Surgery
The Hospital For Sick Children,
555 University Avenue
Toronto, ON M5G 1X8
(416) 596-6402

188 words
INTRAOPERATIVE FINE NEEDLE ASPIRATION IN CHILDHOOD TUMORS

Forozan Navid, P.S. Feldman, M.L. Silen
University of Virginia Health Sciences Center

Over the past seven years, 16 pediatric patients have undergone 18 intraoperative fine needle aspirations (IFNA). The ages ranged from newborns to 17 years. Superficial and easily palpable lesions were aspirated directly. Other lesions were localized by ultrasound or fluoroscopy.

Seven aspirations yielded a malignant diagnosis. Confirmation was obtained by open biopsy, excision, autopsy, or clinical follow-up. In one case electronmicroscopy enhanced the diagnostic yield. Two samples were inadequate for evaluation. In this small series there were no false positives or false negatives.

IFNA was useful in a number of clinical situations: (1) confirmation of diagnosis of a presumed malignancy which was felt to be unresectable, (2) confirmation of diagnosis of presumed recurrent primary disease or metastases, (3) avoidance of open biopsy in malnourished or debilitated patients and (4) confirmation of diagnosis of malignant or nonmalignant disease intraoperatively prior to definitive surgical treatment.

Mark L. Silen, MD
Box 181, Department of Surgery
University of Virginia Health Sciences Center
Charlottesville, Virginia 22908

143 words
FETAL NUTRITION IN INTESTINAL ATRESIA:
STUDIES IN THE CHICK EMBRYO

Juan A. Tovar, B. Lopez de Torre, S. Uriarte, P. Aldazabal
Universidad del País Vasco. Hospital N.S. de Aranzazu, San Sebastián

Babies born with intestinal atresia (IA) are often small for gestational age. Associated defects can account for undernutrition in only a certain number of cases. In an attempt to further understand the mechanisms of fetal undergrowth in IA we studied the nutritional status in chick embryos with this malformation.

Fertile domestic hen eggs were operated upon on the 14th day of incubation. IA was produced by bipolar bowel electrocoagulation and incubation was resumed. Animals sacrificed on the 19th day were measured, weighed and blood-sampled. Nine control, 10 sham-operated and 11 IA chicks were studied.

Animals with IA were severely undernourished by weight (27.6±3.2 vs 42.4±3.7 g, p<.001) and length (15.3±1.1 vs 18.1±.9 mm tibial length, p<.001) in comparison with sham-operated ones. Haematocrit was slightly lower, and total protein increased. Pre-albumin was almost absent and albumin was decreased whereas gamma-globulin was moderately increased. Potassium was normal, chloride was decreased and sodium slightly, albeit insignificantly, increased.

The lack of placenta in the avian embryo precludes any supply of nutrients by this route and the ingestion of protein-rich amniotic fluid becomes the main source of calories and substrates during the last days of incubation. Obstruction of the main income avenue by IA induces severe malnutrition in this model and, in spite of the obvious biological differences, the contribution of this mechanism to fetal undergrowth in babies with IA is thus indirectly demonstrated.

Prof. Dr. J.A. Tovar
Hospital N.S. de Aranzazu
Apartado 477, 20080
San Sebastián, Spain
Tel. 34-43-212501

THE TREATMENT OF SIMULTANEOUS
CHORIOCARCINOMA IN MOTHER AND BABY

Graham C. Fraser, G.K. Blair, A. Hamming, J. Murphy, P. Rogers
British Columbia’s Children’s Hospital

Choriocarcinoma occurring in mother and child is extremely rare and up until 1989 only 9 such cases had been reported.

We present a further case in which the discovery and diagnosis of a massive hepatic neoplasm in an infant led to the detection of the same histological tumour in her apparently well mother.

Following partial tumour reduction by chemotherapy, the lesion was resected from the child using hypothermia and cardiopulmonary bypass with argon gas coagulation. The patient made a rapid uneventful recovery from this procedure. The mother also underwent chemotherapy with excellent early results and both patients are doing well.

Simultaneous choriocarcinoma is described in regard to its pathology and treatment and the literature briefly reviewed with respect to prognosis.

Graham C. Fraser, M.B.
B.C.’s Children’s Hospital
4480 Oak Street
Vancouver, BC V6H 3V4
(604) 261-2324

121 words
In the newborn cystic masses of the adrenal gland are unusual findings and most are secondary to hemorrhage. We present a patient with a clinical history typical for adrenal hemorrhage who was found to have a thick walled cystic adrenal mass on both physical and ultrasound examination. During evaluation the mass decreased in size but VMA and HVA levels were elevated. Laparotomy and left adrenalectomy confirmed the diagnosis of a cystic neuroblastoma. Adrenal cyst, adrenal abscess, and cystic neuroblastoma are all rare entities in the newborn. We recommend that all cystic masses of the adrenal be evaluated by urinary VMA and HVA's and that the possibility of cystic neuroblastoma be kept in mind when an adrenal cystic mass is followed nonoperatively.

Jean-Martin Laberge, MD
Montreal Children's Hospital
Department of Pediatric Surgery C-1130
2300 Tupper Street
Montreal, PQ H3H 1P3
(514) 934-4497

121 words
Cystic Neuroblastoma

D.P. Crottoru, A.B. Sinsky, J-M. Laberge
Montreal Children's Hospital, McGill University

In the newborn cystic masses of the adrenal gland are unusual findings and most are secondary to hemorrhage. We present a patient with a clinical history typical for adrenal hemorrhage who was found to have a thick walled cystic adrenal mass on both physical and ultrasound examination. During evaluation the mass decreased in size but VMA and HVA levels were elevated. Laparotomy and left adrenalectomy confirmed the diagnosis of a cystic neuroblastoma. Adrenal cyst, adrenal abscess, and cystic neuroblastoma are all rare entities in the newborn. We recommend that all cystic masses of the adrenal be evaluated by urinary VMA and HVA's and that the possibility of cystic neuroblastoma be kept in mind when an adrenal cystic mass is followed nonoperatively.

Jean-Martin Laberge, MD
Montreal Children's Hospital
Department of Pediatric Surgery C-1130
2300 Tupper Street
Montreal, PQ H3H 1P3
(514) 334-4497

INGUINAL HERNIAS IN LBW INFANTS (<1500 GMS): INCIDENCE AND TIMING OF REPAIR

Michael W.L. Gauderer, A. Rajput, M. Hack
Case Western Reserve University, Cleveland

The increased occurrence of inguinal hernias (IH) in premature children is well known. However, the incidence of IH in the very low birth weight (VLBW) sub-population has not been previously established. We sought to determine the incidence of IH, rate of incarceration, perioperative problems and possibly define the ideal time for correction.

Between 1977 and 1987, 1933 children under 1500 gms birth weight were admitted to our NICU. Of these, 1391 lived for at least 28 days and were followed until 20 mos of corrected age.

IH was established in 222/1391 (16%) of those who survived 28 days or more. IH occurred in 174/670 (26%) of the boys and 48/721 (7%) of the girls. The incidence by side was: right - 19.8%; left - 14.9%; bilateral 61.7%; and was unclear in 3.6%.

Of the 222 infants with IH, 190 were operated at our institution at a mean postnatal age of 28 wks (range 5 to 110 wks). Of these, 35 were operated prior to neonatal discharge. One or more incarcerations occurred in 35 (VLBW) infants operated at our hospital. In only one infant, an emergency operation was needed because of irreducibility. There was no operative mortality and minimal morbidity. Five recurrences occurred during the 20 mos follow up.

This series establishes the incidence of IH in VLBW (during the first 20 mos). The wide range in age at operation suggests that no single criterion can be established for ideal timing of repair. Therefore, the approach must be individualized.

Michael W.L. Gauderer, MD
Rainbow Babies & Childrens Hospital
Room 122, 2074 Abington Road
Cleveland, OH 44106
(216) 844-3015

28% Incarceration
5% Recurrence
5% Incarceration on the opposite side
20% Operation
FETAL NUTRITION IN INTESTINAL ATRESIA: STUDIES IN THE CHICK EMBRYO

Juan A. Tovar, B. Lopez de Torre, S. Uriarte, P. Aldazabal
Universidad del País Vasco. Hospital N.S. de Aranzazu, San Sebastián

Babies born with intestinal atresia (IA) are often small for gestational age. Associated defects can account for undernutrition in only a certain number of cases. In an attempt to further understand the mechanisms of fetal undergrowth in IA we studied the nutritional status in chick embryos with this malformation.

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The lack of placenta in the avian embryo precludes any supply of nutrients by this route and the ingestion of protein-rich amniotic fluid becomes the main source of calories and substrates during the last days of incubation. Obstruction of the main income avenue by IA induces severe malnutrition in this model and, in spite of the obvious biological differences, the contribution of this mechanism to fetal undergrowth in babies with IA is thus indirectly demonstrated.

Prof. Dr. J.A. Tovar
Hospital N.S. de Aranzazu
Apartado 477, 20080
San Sebastián, Spain
Tel. 34-43-212501

241 words
Optimal fetal management during and after fetal surgery has been limited by our inability to reliably monitor the fetal heart rate and temperature, and by our lack of access to the fetal circulation. In order to solve these problems, we developed and tested an implantable radio-telemetry device that transmits the fetal electrocardiogram and temperature and an intraosseous access device in early third trimester fetal sheep.

We implanted the radio-telemetry device subcutaneously in the axilla of 4 fetal sheep. It was technically feasible to safely implant the radiotelemeter and reliably record the fetal electrocardiogram and temperature both intraoperatively and postoperatively. We subsequently tested the radiotelemeter in four human fetal surgery cases and found that the radio-telemeter improved fetal monitoring both during and after the operation.

Many possible routes for access to the fetal circulation have been tried clinically and experimentally for both resuscitation and blood sampling. None have proven satisfactory. We assessed the use of intraosseous access in fetal sheep (n=6) for both infusion and blood sampling. Humeral medullary cavity access with an intraosseous needle (18g) was obtained in both sheep fetuses and human fetal cadavers. Intraosseous access allowed rapid infusion of epinephrine (0.01 mg/kg) in fetal sheep with rapid physiological effect, measured as a 30 mmHg increase in fetal mean blood pressure at 45 seconds (p≤0.01). Additionally, blood gas values (pH, PCO2 and PO2) and electrolytes obtained from the medullary cavity accurately reflected peripheral venous values.

Application of the implantable radio-telemeter and intraosseous access may increase fetal surgery safety by improving fetal monitoring and permitting access to the fetal circulation.
PANCREATO-DUODENECTOMY WITH PRESERVATION OF THE STOMACH AND PYLORUS - A SAFE AND EFFECTIVE ALTERNATIVE IN CHILDREN

Children's National Medical Center, Washington

The traditional approach to a malignancy in the distal common bile duct or head of the pancreas has been a Whipple pancreato-duodenectomy including hemi-gastrectomy, vagotomy, pyloric resection, and gastrojejunostomy. Pylorus-preserving pancreato-duodenectomy was introduced for adults to avoid the post gastrectomy symptoms and resultant nutritional complications common to the standard Whipple procedure.

Because these salutary features have special implications in children, we used the pylorus-preserving pancreatoduodenectomy in a 15 year old female who presented with obstructive jaundice due to a carcinoid tumor of the distal common bile duct, a rare malignancy previously unreported in a pediatric patient. This approach permitted complete resection of the tumor. The stomach, pylorus, and vagus nerves were spared and reconstruction was with an antecolic duodeno-jejunostomy distal to the common duct and pancreatic anastomoses. She had an uncomplicated hospital course and is well with no evidence of recurrence at 3 years. Gastric emptying, nutrition, and glucose levels are normal.

Pancreatoduodenectomy with preservation of the pylorus is a safe and effective modification of the classic Whipple procedure for children with resectable tumors of the distal common duct or head of the pancreas.

Kurt Newman, MD
Children's National Medical Center
Department of Surgery, Room 4400
111 Michigan Avenue, N.W.
Washington, D.C. 20010

184 words
MANAGEMENT OF CATASTROPHIC NEONATAL MID-GUT VOLVULUS WITH A SILO AND "SECOND LOOK" LAPAROTOMY

C.L. Johnson, T. Moore, M.A. Hoffman
Walter Reed Army Medical Center

Silo techniques for temporary coverage of abdominal viscera have enjoyed wide-spread usage in the treatment of abdominal trauma, sepsis, and pancreatic necrosis. In the pediatric age group, the silo has been utilized to establish the right of domain in large congenital abdominal wall defects (omphalocele and gastroschisis). We have applied this methodology to the management of a premature newborn infant with mid-gut volvulus and indeterminate intestinal viability of initial exploration. After reduction of the volvulus, a marlex/silastic mesh was sewn to the edges of the wound in a lax fashion. The silo was opened in the ICU at 24 hours, and with dramatic improvement noted in the colon. Formal re-exploration at 48 hours resulted in the resection of 7 cms. of terminal ileum, ileostomy, and ileal mucous fistula. The mesh was subsequently removed at 96 hours. The practical advantages of this technique included: (1) maintenance of low ventilator PIP despite reperfusion edema of the entire mid-gut; (2) adequate urinary output unhampered by increased intra-abdominal pressure; and (3) easy inspection of the intestine in the ICU. Potentially, the decreased intra-abdominal pressure resulted in improved intestinal perfusion and a resultant minimal loss of intestine.
PASSIVE STRETCHING EXERCISES IN THE TREATMENT OF EARLY
CONGENITAL MUSCULAR TORTICOLLIS: 88 CONSECUTIVE
INFANTS WITH NO OPERATION

B.H. Cameron, J.C. Langer, G.S. Cameron
McMaster University

Congenital muscular torticollis (CMT) is a rotational and flexion
deformity caused by sternomastoid shortening. This review of one
surgeon's experience with early CMT was designed to assess the efficacy
of passive stretching exercises (PSE) in resolving the deficit in neck
rotation and the associated secondary facial asymmetry.

Eighty-eight infants presented before 3 months of age, from a total
of 126 consecutive patients with CMT managed over a 30 year period.
Severity was graded using standardized criteria: 30% were mild,
53% moderate, and 17% severe. Facial asymmetry was present in
48%.

All infants were treated with PSE, consisting of forceful ipsilateral
rotation 10 times, twice daily. Close monitoring every 1 to 4 weeks, with
parental encouragement and support, were considered essential
components of management. Maintenance exercises were
continued from the time full neck

movement was attained until 9
months of age.

Seven patients (6 mild, 1
moderate) did not return for follow-up. In the remaining group, median
follow-up was 9 months (range 1
month to 12 years). Outcome was
excellent in 65%, good in 27%, and
fair in 8%. Eighty-nine percent of
infants with moderate or severe CMT
had an excellent or good outcome. Mild facial asymmetry persisted in
22%.

Tenotomy was not required in any
of the 88 infants, but was necessary
in 45% of the 35 older children over
the same period. The need for
surgery in the older group was
directly related to age at initiation of
therapy.

We conclude that PSE are
effective in the treatment of CMT
diagnosed before 3 months of age,
and that no such infant should
require surgery. Success is
dependent on early initiation of
therapy, and on frequent follow-up
and parental encouragement.

Gordon S. Cameron, MD
Department of Surgery
McMaster University
1200 Main Street West
Hamilton, ON, L8N3Z5
(416) 521-2100 ext. 5231

281 words
BRANCHIAL REMNANTS IN CHILDREN

BJ. Hancock, S. Yazbeck, A. Abela, P. Russo
Hôpital Sainte-Justine

Branchial remnants are infrequent and poorly understood anomalies. Most series report a limited number of patients. One hundred twelve patients with branchial remnants were reviewed over a 10 year period: 47 were male and 65 female giving a M:F ratio of 1:1.4. The average age at diagnosis was 44 months. The position, reported in 110 patients, was on the right in 45.4%, the left in 42.7% and bilateral in 11.8%. A history of discharge from a cutaneous orifice was present in 42.8% of patients. Infection occurred in 28.6%. The anomalies reported included fistulae (31.2%), sinuses (29.5%), cysts (21.4%), a combination of lesions (16.2%) and tags alone (1.8%). The types, as classified at surgery, were as follows: 21.4% first, 66.1% second, 5.3% third, 2.7% fourth, 2.7% not determined and 1.8% a combination of first and second branchial arch remnants. Of the patients with first arch remnants, 25.0% had otitis or ear pain and 29.2% had duplication of the external auditory canal. Two of three patients believed to have a left fourth arch remnant presented with suppurrative thyroiditis. The average age at surgery was 60 months. Recurrences were reported in 8.9% of patients. Complications following excision occurred in 13.4% of patients; of note was that 4 instances of temporary partial paralysis of the facial nerve occurred following surgery for a first arch remnant. Pathology reported a lining of squamous or respiratory epithelium in 76.8%, lymphoid tissue in 26.8%, and ectopic salivary or thymic tissue in 7.1%. Cartilage was present in 79% of patients with first branchial remnants and 12.2% of patients with second or third branchial remnants. Hospital stay for excision averaged 2.4 days. Although second branchial arch remnants represent the majority of lesions, remnants of the first branchial arch are more frequent than previously thought. The existence of third and fourth branchial arch remnants remains controversial, however, the presentation, surgical anatomy and pathology of several lesions found in this review suggested that they represent true branchial remnants.

Salam Yazbeck, MD
Hôpital Sainte-Justine
3175, Côte Sainte-Catherine
Montréal, PQ H3T 1C5
Tel. (514) 345-4686

354 words
MANAGEMENT OF PENETRATING NECK INJURIES IN CHILDREN

Steven S. Rothenberg, Wm J. Pokorny,
M L. Brandt, F. J. Harberg
Baylor College of Medicine, Ben Taub General Hospital,
Texas Children's Hospital

The management of penetrating neck injuries in adults has been well-defined, however a similar experience in children has not yet been reviewed. We examined our 10-year experience in order to determine if specific guidelines were warranted in the pediatric age group. There were 24 significant penetrating neck injuries between January 1980 and December of 1989. Ages ranged from 2 to 13 years old. There were 13 gunshot wounds; 2 stab wounds; 3 dog bites; and 6 injuries from metal, glass and wood shards from various causes. There were 2 zone I, 22 zone II, and no zone III injuries. Arteriograms were obtained in both zone I patients with demonstration of one traumatic A-V fistula. Esophagoscopy and bronchoscopy were performed in 3 patients with complaints of dysphonia or dysphagia. All zone II injuries were explored with the findings of 7 vascular injuries, one esophageal tear, and one tracheal contusion.

This data confirms the need for aggressive management of penetrating neck wounds in children with 42% sustaining significant injury. Ancillary tests, other than arteriograms in zone I, seem to add little in small children and exploration and/or endoscopy should be performed under general anesthetic. Older children may be managed selectively if the patient is cooperative and there are no signs or symptoms warranting further investigation.

Franklin J. Harberg, MD
6560 Gannin, Suite 938
Houston, Texas 77030
(713) 796-4276

Zone 1: below external rectal
Zone 2: between
Zone 3: above clavicular

Suggest: Explore, Endoscopy, Explore

214 words
MULTI-LUMEN PERCUTANEOUS CENTRAL VENOUS CATHETERIZATION IN NEONATES

DP Croitoru, AR Hong, J-M Laberge, LT Nguyen, FM Guttman
Montreal Children's Hospital,

Many critically ill neonates require central venous access. In many institutions, this procedure is performed in the operating room using single lumen catheters placed via cutdown. We report our experience with percutaneous placement of 94 multi-lumen central lines in 65 neonates weighing ≤ 4.0 kg. In all NICU patients requiring central venous access percutaneous cannulation was attempted. Successful placement was achieved 100% of the time: 88 (94%) cannulations required one attempt, 4 (4%) required 2 attempts and 1 (1%) required 3 attempts. No patient required a cutdown for venous access. Cannulation was performed with a 4.0 French double lumen catheter utilizing the Seldinger wire technique. Placement was in the infraclavicular subclavian vein (88/94) and femoral vein (6/94). Patient size ranged from 600 grams to 4 kilograms (avg. 2.43). 42 cannulations (46%) were in patients weighing 2 kg or less. Catheter duration ranged from 1 - 88 days (avg. 22 d). The most common reason for removal was that the line was no longer required. Complications included catheter occlusion 11 (12.2%), catheter leak 6 (6.6%), line sepsis 3 (3.3%), chylothorax 1 (1.1%), subclavian artery cannulation 1 (1.1%), apnea 1 (1.1%), and arrhythmia 1 (1.1%). Percutaneous placement has significant advantages, including ease of placement in the NICU, the use of local anesthetic only, and repeated use of the same vein. Small multi-lumen catheters permit simultaneous administration of medications, TPN, or blood products and also allows for continuous central venous pressure monitoring when needed. We conclude that percutaneous placement of multilumen catheters is the method of choice for central venous access in critically ill neonates.

Frank M. Guttman, MD
Montreal Children’s Hospital
Department of Pediatric Surgery C-1130
2300 Tupper Street
Montreal, Quebec, Canada H3H 1P3
(514) 934-4498
SMALL BOWEL TRANSPLANTATION IN THE RAT: THE EFFECT OF DONOR SPECIFIC TRANSFUSION AND LOW DOSE CYCLOSPORIN

A. Fecteau, J. Tchervenkov, F.M. Guttman
Montreal Children’s Hospital

Definitive therapy for short bowel syndrome is small bowel transplantation (SBT). The combination of pre-transplant donor specific transfusion (DST) and cyclosporin (Cys) has been proven to be an effective mode of immunomodulation in kidneys, heart, and skin allotrafts. DST has been studied in SBT: Martinelli showed an improved survival with one DST on -8 day and Cys for 30 days; DeBruin demonstrated no improvement of survival with a protocol of 3 pre-transplant DST. Our experiment was designed to study the effect of a clinically applicable protocol of one DST 24 hours pre-transplant and low Cys for 14 days.

Adult male BN rats were used as blood and bowel donors and LEW as recipients. Heterotopic SBT was performed. Rats were examined daily for signs of rejection and biopsied at 4 and 8 days. Rats were killed and autopsied at the appearance of an abdominal mass. Group A received no immunosuppression. Group B: Cys 10 mg/kg sc 24 hours pre-transplant, 5mg/kg for the following 7 days and 2.5 mg/kg for the next 7 days, Group C: one DST the day pre-transplant with the same Cys protocol. Table 1 shows survival time of grafts. Survival curves (Kaplan-Meier statistical analysis) are shown in diagram 1. The improved survival of Group B and C reached statistical significance compared to controls (p < .01 by log-rank test) but not between each other. These results confirm the immunosuppressive effect of Cys even at low dose but may also indicate that the number of suppressor cells induced by a single DST is not sufficient to combat the massive immunological challenge of a SBT.

Table 1.

<table>
<thead>
<tr>
<th>Group</th>
<th>Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10.1 ± 3.3</td>
</tr>
<tr>
<td>B</td>
<td>16.5 ± 11.1</td>
</tr>
<tr>
<td>C</td>
<td>16.8 ± 13.6</td>
</tr>
</tbody>
</table>

Frank. M. Guttman, MD
Montreal Children’s Hospital
2300 Tupper, C1137
Montreal, PQ H3H 1P3
(514) 934-4498

289 words
NEONATAL GASTROINTESTINAL PERFORATIONS

Dickens St-Vil, G LeBouthillier, F I. Luks,
A L. Bensoussan, H Blanchard and S Youssef
Hôpital Sainte-Justine, Montreal

Neonatal gastrointestinal perforation has been associated with mortality rates of 40 of 70%, the lowest survival occurring in infants less than 1000 grams. Over the past 20 years, 81 infants (50 males and 31 females) were treated for a gastrointestinal perforation at our institution. Perforation occurred from birth to 50 days postnatally (average 8.4 days), and was due to necrotizing enterocolitis (NEC) (67%), idiopathic gastric perforation (7%) and other causes (26%), including ileal atresia and meconium ileus. The most commonly associated factors were neonatal asphyxia (26%), respiratory distress (21%), maternal complications (14%) and congenital cardiac anomalies (11%). Seventy-five infants underwent surgical exploration and six infants, considered too small or too sick to withstand surgery, were treated with peritoneal lavage. There were 29 deaths, an overall mortality of 36%.

Ninety percent of the deaths were in infants with NEC, while none of the infants with gastric or duodenal perforation died. In infants with NEC, mortality was doubled with prematurity ≤ 30 weeks gestation and with birth weight ≤ 1500 grams. Although the salvage rate of very premature infants has steadily increased over the years, the overall survival of infants with NEC-related gastrointestinal perforations has not been significantly affected (61% before 1985 and 67% after 1985). When weight alone is considered however, the difference in survival of low birth weight infants (< 1500 gram) between these two periods is more substantial (42% and 56%). Thus surgical mortality depends more on birth weight and less on gestational age. Infants with gastrointestinal perforation not related to NEC have an excellent prognosis, regardless of weight or gestational age.

Arié L. Bensoussan, MD
Hôpital Sainte-Justine
3175 Côte Sainte-Catherine
Montreal (Quebec)
H3T 1C5
(514) 731-0647

261 words
CLINICAL FACTORS AFFECTING MORTALITY IN CHILDREN WITH MALROTATION OF THE INTESTINE

A. Messineo, R.M. Filler, S. Palder
Hospital for Sick Children, Toronto

A retrospective statistical study was undertaken to determine factors associated with an increased risk of mortality in children with intestinal obstruction due to malrotation. Between 1964-1989, 182 underwent surgery for obstruction; 17 died. In 71 the obstruction was in the duodenum; 1 died. Of 111 children with midgut volvulus 79 had no gut necrosis and 1 child died. 32 patients had necrotic intestine; 15 died.

In those 32 the relationship was evaluated between mortality and age at presentation (< 3 months, ≥ 3 months), presence of other serious disease, time from presentation to surgery, need of TPN, and length of necrotic bowel.

Deaths were 7 times (adjusted odds) more likely in children under 3 months (95% confidence interval, 2.1-12.6), 9 times when other diseases were present (4.1-13.8), and 6 times when TPN was not used (1.6-10.4). Time from presentation until surgery was not associated with an increased risk of mortality.

For children older than 3 months without other disease who had TPN, the predicted probability of death was calculated for different lengths of intestinal necrosis expressed as a percentage of total intestinal length. At 10, 25, 50 and 75% necrosis, the predicted probabilities of death were .32, .46, .72, and .88 respectively.

These data indicate that age at presentation, presence of other diseases and the need of TPN are associated with an increased risk of mortality. Intestinal infarction implies at least a 30% mortality and survival is unlikely if infarction exceeds 75% of intestinal length.

Robert M. Filler, MD
555 University Avenue
Toronto, ON
M5G 1X8
(416) 598-6400
GASTROCHISIS WRINGER CLAMP: A SAFE, SIMPLIFIED METHOD FOR DELAYED PRIMARY CLOSURE

Robert Sawin, P L. Gilick, R Schaller, E Hatch, D Hall, L Hicks
Children’s Hospital and Medical Center, University of Washington
Children’s Hospital of Buffalo, S.U.N.Y.

When primary abdominal wall closure in a newborn with gastrochisis cannot be accomplished safely, placement of a reinforced Silastic silo facilitates delayed primary closure (D.P.C.). In this report we describe our experience with the Gastrochisis Wring Clamp (G.W.C.).

The G.W.C. is an autoclavable, 140 gram, aluminum alloy device reminiscent of an old wringer washing machine. It consists of two apposing serrated rollers which pull the Silastic silo through a slotted base plate. This protects the intestine and converts the circular defect into a vertical slit to ease D.P.C. The G.W.C. is adjusted daily on the awake newborn in the nursery and the magnitude of each adjustment is gauged by the infant’s cardiac and pulmonary status.

For the past ten years we have cared for 116 newborns with gastrochisis. The average birth weight was 2530 grams (range 1380 to 3300 grams). Eighty-six infants (74.1%) have undergone primary closure. The remaining 30 infants (25.9%) were treated by placement of a Silastic silo and application of the G.W.C., forming the basis of this report. The D.P.C. operation was performed an average of 6.7 days (range 3 to 23 days) following the application of the silo. Extubation was usually possible prior to the D.P.C., with the mean length of mechanical ventilation being 3.8 days. Three patients developed serious complications including two dehiscences of the silo-fascia interface. There were no deaths in this group of 30 patients.

The G.W.C. offers many technical advantages and can be easily reversed when the infant’s cardio-pulmonary status deteriorates. We advocate its adoption as a method of choice in the newborn with gastrochisis who requires delayed primary closure.
Primary repair is the best method of closure in congenital abdominal wall defects. When the defect is very large the use of prosthetic material such as Silon pouch can be life saving, but it requires staged reduction, prolonged hospitalization and has a higher incidence of complications. In the past 3 years we have seen 3 neonates with large Gastroscisis, in whom primary repair could not be accomplished. They were successfully treated with primary closure using a Gore-Tex patch.

All three cases were diagnosed by prenatal ultrasound. Birth weights were 2550g, 2700g and 3180g; they were all male. There were no other associated anomalies except for bilateral undescended testicles in one case. After reducing the viscera into the peritoneal cavity we realized that primary fascial closure could not be accomplished. A Gore-Tex patch of 1 mm thickness was fashioned to fit the size of the defect. The patch was secured circumferentially to the fascia with a continuous monofilament nylon suture; the skin was closed with a purse string subcuticular Vycril suture for better cosmetic result.

All three infants received prophylactic antibiotics. TPN was started after surgery. Two babies were extubated within 12 hours after operation and the third one remained intubated for 3 days because of prolonged neuromuscular blockade. Two babies still have the Gore-Tex patch in place. In the third one, removal was necessary at 4 weeks of age, an extraperitoneal fascial closure was easily accomplished.

Experimentally with a volume capacity reservoir comparable to the size of the abdomen of a newborn baby, we found that a 2 cm defect reduces the volume capacity by 17%; a 3 cm defect by 27%; a 4 cm defect by 39% and a 5 cm defect by 51%.

Primary Gore-Tex closure is a safe and good alternative in large abdominal wall defects when primary fascial repair is not feasible.

Gustavo Stringel
Methodist Hospital of Indiana
1701 N. Senate Blvd.
Indianapolis, Indiana 46202
(317) 929-8617
INTESTINAL BLOOD FLOW AND SMOOTH MUSCLE MORPHOMETRY IN EXPERIMENTAL GASTROCHISIS

S Srinathan, JC Langer, CA Rudolph, MG Blenerhassett, MT Longaker, TM Crombleholme, SM Bradley, MR Harrison
McMaster University and University of California

Using a fetal lamb model, we have shown that intestinal damage in gastrochisis is primarily caused by constriction at the abdominal wall defect. The present study used the same model to determine whether this damage is mediated by ischemia or by luminal obstruction.

An abdominal wall defect was created at 80 days gestation; controls had hysterotomy alone. In 4 lambs, radioactive microspheres were used to measure intestinal blood flow at term (135 days). Twelve further lambs were sacrificed at 100, 120 and 135 days, and morphometric analysis was done to determine smooth muscle cell size (hypertrophy) and number (hyperplasia). Experimental and control specimens were compared at each gestational age.

Mean intestinal blood flow/100 gm was 46.1±7 in the gastrochisis animals, and 34.5±8 in the controls (NS). In the circular muscle, there was significant hyperplasia in the gastrochisis group at 100 days (15832 ± 4208 vs 6077 ± 723 cells/cross section) and 120 days (16447 ± 3412 vs 6848 ± 2685), and significant hypertrophy at term (16.7±3 vs 10.1±6 nuclei/mm²). The same trend was present in the longitudinal muscle, although the hyperplastic changes did not reach statistical significance.

Our data suggest that 1) Gastrochisis does not result in intestinal ischemia in this model; 2) Bowel wall thickening is due to hyperplasia initially and hypertrophy toward the end of gestation; both of which are often seen postnatally in intestinal obstruction. We conclude that the mechanism of intestinal damage in gastrochisis is most likely luminal obstruction due to bowel constriction at the abdominal wall defect, rather than to ischemia.

Jacob C. Langer, MD
Department of Surgery
McMaster University
1200 Main Street West, room 4E2
Hamilton, Ontario L8N 3Z5
(416) 521-2100 ext. 5231

263 words
NECROTIZING ENTEROCOLITIS: FACTORS AFFECTING MORTALITY

Ian R Neilson, RJ Touloukian, FMeric and JH Seashore
Yale University

Risk factors predisposing to the development of NEC are well known. This study was undertaken to determine the factors which influence outcome.

<table>
<thead>
<tr>
<th></th>
<th>(n)</th>
<th>gestational age</th>
<th>weight at operation</th>
<th>near total involvement</th>
<th>exploration only</th>
<th>perforation</th>
</tr>
</thead>
<tbody>
<tr>
<td>survivors</td>
<td>44</td>
<td>29.9</td>
<td>1240.2</td>
<td>34%</td>
<td>5%</td>
<td>61%</td>
</tr>
<tr>
<td>deaths</td>
<td>26</td>
<td>27.0</td>
<td>1061.2</td>
<td>77%</td>
<td>31%</td>
<td>50%</td>
</tr>
</tbody>
</table>

The only factor that correlated with mortality was near total intestinal involvement. Risk factors which did not influence outcome were: gestational age, weight at surgery, time from onset of symptoms to operation, and perforation. The mean duration of postoperative mechanical ventilation (13.2 days), total parental nutrition (28.2 days), antibiotic therapy (7.9 days), and vasopressor therapy (3.4 days) did not differ between survivors and nonsurvivors. Death occurred in 3 periods and reflected the extent of intestinal involvement.

<table>
<thead>
<tr>
<th>cause of death</th>
<th>total (26)</th>
<th>closed without resection</th>
<th>sepsis despite resection</th>
<th>withdrawal of support</th>
<th>Intraoperative DIC</th>
<th>catheter sepsis</th>
<th>multisystem organ failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>time death</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 24 hours</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 30 days</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 14 months</td>
<td>9</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Extensive intestinal involvement, regardless of gestational age or birth weight, determines whether resection is possible without irreversible short bowel syndrome and is the principal predictor of mortality. Critical care as well as risk factors do not seem to correlate with outcome. Improvement in outcome will await new operative strategies for extensive involvement or new methods of prevention.

Robert J Touloukian, MD
Yale Medical School
Department of Surgery
PO Box 3333
New Haven, CT 06510

248 words
IMMUNOSUPPRESSIVE THERAPY WITH MONOCLONAL ANTIBODY TO ICAM-1 RATIONAL AND APPLICATIONS IN SMALL BOWEL TRANSPLANTATION

Juntendo University, Meikai University

Aim: At present organ transplantation has been conducted in various areas of pediatric surgery. But the most crucial problem is to find an efficient way to determine whether allograft rejection could be blocked by a novel approach, namely, interference of adhesive interaction between cytotoxic cells and target organs with a monoclonal antibody (mAb) to intercellular adhesion molecule-1 (ICAM-1).

Method: We have studied the effect of anti-rat-ICAM-1 mAb on small bowel transplantation. Inbred Fischer and Lewis rats weighing 250 g were utilized. In allotransplant, a Fischer donor small bowel was transplanted to a Lewis recipient. Group 1 consisted of untreated controls. (n=8)

Group 2 was treated with the anti-ICAM-1 mAb (1 mg/kg/day i.p.) for the first 5 days post-transplantation. (n=8)

Result: A dramatic inhibitory effect on allograft rejection was observed in the early stage of post-transplantation. In histological studies of the small intestine, Group 2 showed normal morphological appearance, in contrast with Group 1 which showed rejection. However, post-operative 15 days, both Groups showed histological changing around the crypt cells and endothelial cells of the microvasculature.

Conclusion: Anti-ICAM-1 mAb was effective on small bowel transplantation in the early stages of post-transplantation. Endothelial cells and crypt cells may represent the target cells of rejection.

Tamiki Yamataka, MD
Dept of Pediatric Surgery
Juntendo University School of Medicine
2-1-1 Hong Bunkyo-Ku Tokyo, Japan 113.
(03) 3813-3111

205 words
UNILATERAL LEG EDEMA CAUSED BY ABDOMINO-SCROTAL HYDROCELE: ELEGANT DIAGNOSIS BY MRI

Irwin H. Krasna, M. Solomon, R. Mezrich
Robert Wood Johnson Medical School

A five month old boy presented with bilateral hydroceles since birth, and right leg edema. An ultrasound of the pelvis revealed a 4 cm cystic mass which was diagnosed as a teratoma or cystic hygroma. A MRI was performed which showed a dumbbell shaped continuous, fluid-filled mass extending intra-abdominally from the level of the pelvic brim through the right inguinal canal into the scrotum. The cystic portion in the right iliac fossa was lying on the right iliac vessels, which were patent.

A bilateral hydrocelectomy was performed, and the intraperitoneal sac was excised through the inguinal incision. The edema of the right leg disappeared a few days after surgery.

We present this interesting case to demonstrate two points: 1.) Intraabdominal extension of a hydrocele can cause lower extremity edema by compression of the veins in the pelvis. 2.) MRI is a very accurate way to make this diagnosis.

Irwin H. Krasna, MD
UMDNJ-Robert Wood Johnson Medical School
One Robert Wood Johnson Place, CN 19
New Brunswick, NJ 08903-0019

148 words
Cloacal extrophy is a complex anomaly characterized by diastasis of the pubis, extrophy of bowel and bladder, omphalocoele, and in many cases a neural tube defect. This condition is theoretically caused by failure of primitive streak mesoderm to invade the allantoic extension of the cloacal membrane. This leads to persistence of the infraumbilical cloacal membrane, which prevents normal closure of the anterior abdominal wall. According to this theory, the membrane ruptures around the fifth embryonic week, resulting in the characteristic bowel and bladder extrophy. We report a case of cloacal extrophy in which a prenatal diagnosis was made prior to rupture of the cloacal membrane.

A 29 year old woman underwent a routine ultrasound at 17 weeks gestation which demonstrated monoamniotic twins. One twin was normal, but the other was found to have a sacral myelomeningocele, "rocker-bottom" feet, splaying of the pubic rami, and a large cystic mass protruding from the infraumbilical anterior abdominal wall. A repeat ultrasound was performed at 22 weeks, with the same findings. At 26 weeks, further examination revealed disappearance of the abdominal cyst, a small omphalocoele, no demonstrable bladder, and the suggestion of prolapsed bowel inferior to the umbilical cord insertion. At 34 weeks, male twins were delivered by cesarian section. The abnormal twin was found to have the typical findings of cloacal extrophy, myelomeningocele, bilateral lower limb anomalies, and extremely foreshortened small bowel.

We conclude that: 1) rupture of the presumed cloacal membrane after 22 weeks in this case is inconsistent with the traditional explanation for the etiology of this anomaly, and suggests that this theory should be reevaluated; 2) if the characteristic features are recognized, cloacal extrophy can be diagnosed by prenatal ultrasound, permitting prenatal counselling and appropriate management of the pregnancy.

Jacob C. Langer, MD
Department of Surgery, McMaster University
1200 Main St. West, room 4E-2
Hamilton, ON L8N 3Z5
(416) 521-2100 ext. 5231
NEONATAL CONGENITAL DIAPHRAGMATIC HERNIA AND ECMO

Allen H Hayashi, NN Finer, AJ Tierney, RA Hallgren, A Peliowski, PC Etches
Royal Alexandria Hospital, Edmonton

Infants born with congenital diaphragmatic hernia (CDH) and presenting with severe respiratory distress are associated with a high mortality. Recently, extracorporeal membrane oxygenation (ECMO) has been utilized to improve survival. We wish to report our experience in treating neonates born with CDH who were referred to our institution for consideration of ECMO support. From 1989 to the present, 14 infants with CDH of a gestational age greater than 36 weeks were treated. Three infants were stabilized successfully using conventional methods and underwent delayed surgical correction (18-48 hours). Eleven infants failed to stabilize with intensive conventional support and met standard criteria for ECMO. All cannulations and surgical repairs were performed in the NICU. Six neonates were cannulated for ECMO prior to attempted surgical repair. Of these, 4 infants underwent surgical repair during ECMO, 2 infants survived. Five infants were cannulated following surgical repair and all were successfully weaned and decannulated. One of these neonates was later found to have a hypoplastic right heart and later died of congenital heart disease. The average time on ECMO was 110.5 hours. None of the previously described predictors of outcome for CDH were useful in determining outcome in the present series, including prenatal diagnoses before 25 weeks gestation. The selective use of ECMO for neonates with CDH and severe respiratory distress appears to improve outcome.

Neil N Finer
Department of Newborn Medicine
Royal Alexandra Hospital
10240 Kingsway, Edmonton, AB, T5H 3V9
403-477-4644

221 words
THE KIDNEYS IN CONGENITAL DIAPHRAGMATIC HERNIA: STUDIES ON A RAT EXPERIMENTAL MODEL

Juan A. Tovar, L.F. Alfonso, P. Aldazabal, B. Lopez de Torre, S. Uriarte, J. Villanova
Universidad del País Vasco. Hospital N.S. de Aranzazu, San Sebastian

Glick et al. pointed out recently (J. Pediatr. Surg., 1990, 25:492) that kidney weight was increased in human congenital diaphragmatic hernia (CDH) and hypothesized on a bi-directional growth control mechanism between lungs and kidneys. Lung hypoplasia would give rise to pulmonary-derived renotropins which would account for renal enlargement.

In an attempt to validate this hypothesis in a rodent experimental model we induced CDH by administering intragastrically 115 mg/kg of Nitrofen in olive oil to timed-dated pregnant Wistar rats on the 9th day of gestation. The litters were recovered by cesarean section on the 21st day, autopsy was performed and pulmonary and renal weights were determined and expressed in percentage of fetal weight. Tissue samples were processed for histologic studies. For comparison we used rats treated with olive oil alone.

Twenty-nine normal fetuses from 4 control rats and 24 left CDH fetuses from 7 Nitrofen rats were studied. Fetal (3.6±.8 v. 4.9±.4 g, p<.001) and total lung (2±.5 v. 2.6±.3 %, p <.001) weights were significantly decreased in animals with CDH. Surprisingly, kidneys were also significantly smaller (.7±.1 v. .8±.1 %, p<.05) and histologically immature in CDH animals.

Glick's hypothesis could not be validated. Despite its striking similarity to the human malformation, CDH induced by Nitrofen is accompanied by hypoplasia of other organs demonstrating the widespread effects of the teratogen mediated through thyroid dysfunction. Extreme caution should be exerted when transposing knowledge obtained from this experimental model to human disease.

Prof. Dr. J.A. Tovar
Hospital N.S. de Aranzazu
Apartado 477, 20080
San Sebastián, Spain
Tel. 34-43-212501
"DO IT YOURSELF" VIDEO RECORDING OF PEDIATRIC SURGERY

Ray. Postuma and H. R. Taylor
Winnipeg Children’s Hospital and University of Manitoba

"Do it yourself" video recording (D.I.Y.V.R.) is used increasingly in the home and industry. Surgical teachers have traditionally relied on audio-visual professionals to record operative procedures for teaching purposes. This arrangement requires a high degree of planning and coordination, is expensive and precludes the recording of most surgical emergencies and unusual cases. This paper describes our experience with D.I.Y.V.R. Informed consent was obtained from the parents of those children whose surgical condition was considered suitable for audio-video recording. The recordings were taken with a tripod mounted Sony EVO-9100 Hi 8mm video camera available on the wards and in the operating rooms. During a six month period (October 1990-April 1991) we obtained 159 video recordings, totalling 75 hours and involving 94 patients, of pre, post and non-operative clinical scenarios, ward procedures, diagnostic images, endoscopy, 73 operative procedures, and pathology materials. Edited versions of the video tapes were used for education purposes at surgical and pediatric rounds, undergraduate and postgraduate seminars and lectures. The tapes have been catalogued into a library of common and unusual pediatric surgical conditions. The quality of the video images is excellent. We conclude that D.I.Y. audio-video recording is a powerful educational tool for all levels of students and colleagues. We will show examples of our work.

Ray Postuma, MD
Winnipeg Children’s Hospital
840 Sherbrook Ave.,
Winnipeg, MB R3A 1S1
(204) 787-4203
Although girls with Turner’s Syndrome (45 XO) are not at risk for malignancy, patients with Feminizing Testicular Syndrome and "mixed gonadal dysgenesis" are at risk for malignancy and bilateral gonadectomy is performed. We have treated seven girls with "Turner-Like" Syndrome, who we believe are also "at risk" for development of malignancy and gonadectomy should be performed.

We present seven cases of phenotypically typical females, without sexual ambiguity, who presented with primary amenorrhea and short stature (5) or minor dysmorphic features (2). Chromosome analysis showed 45 XO karyotype plus a fragment which was felt to be part of a Y chromosome. In two patients, the fragment was definitely identified as a Y, using a DNA probe. In view of the high incidence of development of gonadoblastoma in the dysgenetic gonads of phenotypic females with a Y chromosome, bilateral gonadectomy was performed in these girls. Bilateral genital streaks with normal uterus and Fallopian tubes were found in all patients. In two patients unsuspected gonadoblastoma, without metastases, was found. In five cases, Leydig cells and tubular structures resembling rete testes were found, cells that are associated with Y-chromosomal tissue.

We stress the need for complete chromosomal evaluation of phenotypically female patients with primary amenorrhea or features of Turner’s Syndrome. If a Y or unidentified fragment is found, gonadectomy should be performed, because of the risk of malignancy.
A RARE INTRAPERICARDIAL MASS IN A NEONATE

Allen H Hayashi, A Peliowski, AJ Tierney, DR McLean, NN Finer
Royal Alexandra Hospital, Edmonton

We describe a rare case of a neonate born with an intrapericardial mass composed of an extralobar pulmonary sequestration with a cyst of bronchogenic origin. After an uneventful delivery, this full term newborn was noted to be grunting and indrawing. Bilateral pneumothoraces were diagnosed and managed prior to transport to our facility. He arrived intubated, pink and stable on 60% Oxygen. A chest Xray demonstrated bilateral upper lobe atelectasis. The cardiac shadow was normal in size but unusual in outline. An Echocardiogram revealed a 3 x 4 cm diameter cystic lesion in the anterior mediastinum; the heart itself was structurally normal. CT of the chest demonstrated posterior-lateral displacement of the SVC by this lesion. He continued to have tachypnea and indrawing. Bronchoscopy and esophagoscopy failed to show any structural abnormalities. At 3 weeks of age, sternotomy and resection of the lesion was performed. The mass was clearly intrapericardial and consisted of sequestrated pulmonary tissue with a central unilocular mucous filled bronchogenic cyst. Small systemic tributaries fed the lesion from the posterior-superior aspect. There was no connection with the heart or great vessels. A short narrow stalk of cartilaginous tissue appeared to connect this mass with the distal aspect of the trachea. Postoperative recovery was uneventful.

Allen H Hayashi, MD
10155-120 St
Edmonton, AB
T5K 2A2
403-482-7551

205 words
61. Sunday, 11:30-11:40; (C) (five minute paper, followed by five minute discussion of papers # 60 and # 61)

**Rhabdomyosarcoma Arising Within Congenital Pulmonary Cysts: Report of Three Cases**

British Columbia Children’s Hospital

Over the past nine months, three cases of primary pulmonary rhabdomyosarcoma have been treated at British Columbia’s Children’s Hospital. Two patients (ages 24 and 37 months) presented with spontaneous pneumothoraces and had cystic changes in the affected lung on chest radiograph. The third patient (age 42 months) was evaluated for chronic cough, fever, and failure to thrive. Chest x-ray showed a large mass in the left lower lobe as well as mediastinal adenopathy. All three of these lesions originated within congenital lung cysts, one a peripheral bronchogenic cyst and the others cystic adenomatoid malformations. This report suggests that there is a significant risk for the development of rhabdomyosarcoma within malformed pulmonary tissue.

Geoffrey K. Blair, MD
B.C. Children’s Hospital
4480 Oak Street
Vancouver, BC  V6H 3V4
(604) 261-6424

112 words

This ends the 1991 CAPS scientific meeting.
Thank you for participating.
Closing remarks follow this paper.
Please see the secretary if your 1991 annual dues or registration fee for this meeting haven’t yet been paid!!
See you next September 11-13, 1991 in OTTAWA for the joint CAPS-BAPS meeting.
Have a safe trip home!!
Dr. Colin Campbell Ferguson 1921-1991
IN MEMORIAM

Dr. Colin Campbell Ferguson died on March 26, 1991 after a two year battle with prostate cancer. Colin graduated with the gold medal in medicine from the University of Manitoba in 1945, served in the Canadian Navy during WW II and completed seven years of graduate training. He was one of Dr. Robert Gross' outstanding residents and returned to Winnipeg in 1953 as the Professor and Head of the Surgery Department at the tender age of 32 years! Colin made many significant contributions to pediatric surgery and medical education. He was an excellent surgeon and first rate teacher. Colin was a founding member and president of CAPS and charter member of APSA. He, along with other CAPS members, was responsible for initiating the CAPS Education fund. Colin retired in 1985. A Fellowship in Paediatric Surgery bearing Dr. Ferguson's name was established at that time and he was subsequently appointed as Professor Emeritus. I had the privilege of spending several memorable evenings with Colin during the months before his death. He could look back over the achievements with pride and knowledge that the surgical care of infants and children had improved during his career. It was a privilege to be one of his many students. Rest in peace, Colin. Our condolences went out on behalf of CAPS to his devoted wife, Angie and his family. They very much appreciated the kindness shown by many CAPS members during Colin's final days.

Contributed by Ray Postuma
LISTING OF
MEMBERS
AND
HONORARY MEMBERS
AS OF
AUGUST 27, 1991

abbreviations:
* - Associate Member
** - Life Member
° - Honorary Member
note: second telephone number is the Fax number

please notify the secretary of any changes or corrections:

Ray Postuma, M.D.
C.A.P.S. Secretary/Treasurer
AE 201-840 Sherbrook St
Winnipeg, MB, R3A 1S1
Canada
Telephone 1-204-787-4203
Fax 1-204-787-4618
Dr. Mohamed Amin Alawadi *
P.O. Box 56
Manama,
Bahrain

Dr. Michael S. Allen
210-688 Coxwell Avenue
Toronto, ON
M4C 3B7
(416) 466-1220
(416) 469-6106

Dr. Kathryn D. Anderson *
Department of Surgery, Children's Hospital
111 Michigan Avenue, N.W.
Washington, D.C.
20010
U.S.A.
(202) 745-2153
(202) 939-4492

Dr. Phillip G. Ashmore
1L7-Children's Hospital
4480 Oak Street
Vancouver, BC
V6H 3V4
(604) 879-4324
(604) 875-2292

Dr. Thomas J. Baeul *
Suite 801
725 Irving Ave
Syracuse, N.Y.
13210
U.S.A.
(315) 470-7951
(315) 682-7566

Dr. Charles E. Bagwell *
University of Florida
P.O. Box J-286, JHMHC
Gainesville, Florida
32610
USA
(904) 395-0630
(904) 392-9081

note: second telephone number is the Fax number
* - Associate Member   ** - Life Member   ° - Honorary Member

Please notify the secretary of any changes
Dr. Juan Bass  
C. H. E. O.  
401 Smyth Road  
Ottawa, ON  
K1H 8L1  
(613) 737-2799  
(613) 738-3216  

Juan and Nancy  
1845 Robinwood Place  
Gloucester, ON  
K1C 6L3  
(613) 526-3396

Dr. Harvey E. Beardmore **  
Montreal Children's Hospital  
C-1129-2300 Tupper Street  
Montreal, PQ  
H3H 1P3  
(514) 934-4478  
(514) 934-4311

Harvey and Frances  
4501 Sherbrooke Street W., #6E  
Montreal, PQ  
H3Z 1E7  
(514) 933-2332

Dr. Arie Leon Bensoussan  
Hôpital Ste. Justine  
3175 Côte Ste. Catherine  
Montréal, PQ  
H3T 1C5  
(514) 731-0647  
(514) 345-4822

Arie and Gilou  
6160 Ave Notre Dame de Grace  
Montreal, PQ  
H4B 1K8  
(514) 486-0783

Dr. Geoffrey K. Blair  
210-650 West 41st Avenue  
Vancouver, BC  
V5Z 2M9  
(604) 261-6424  
(604) 266-4860

Geoffrey and Catherine  
6316 Wiltshire Street  
Vancouver, BC  
V6M 3M4

Dr. Herve Blanchard  
Hôpital Ste. Justine  
3175 Côte Ste. Catherine  
Montreal, PQ  
H3T 1C5  
(514) 731-0647  
(514) 345-4822

Herve  
2518 Côte Ste. Catherine  
Montreal, PQ  
H3T 1B2  
(514) 733-8141

Dr. Michael A. Bleicher *  
4001 Laurel Street, Suite 209  
Anchorage, Alaska  
99508  
USA  
(907) 561-0111

Michael and Laurie  
(907) 276-7577

note: second telephone number is the Fax number

* - Associate Member  
** - Life Member  
* - Honorary Member

Please notify the secretary of any changes
Dr. Robert S. Bloss *
6524 Fannin, Suite 1590
Houston, Texas
77030
USA
(713) 796-1600
(713) 796-8285

Dr. Petr Braun *
1 bis Ave. J.D. Maillard
1217 Meyrin
Geneve,
Suisse
(022) 782-9233

Dr. Gordon S. Cameron **
11 West 34th Street
Hamilton, ON
L9C 5J8

Dr. Claude Chartrand
Hopital Ste. Justine
3175 Cote Ste. Catherine
Montreal, PQ
H3T 1C5
(514) 731-4931
(514) 345-4822

Dr. Harvey Chochinov
Manitoba Clinic, #404
790 Sherbrooke Street
Winnipeg, MB
R3A 1M3
(204) 744-6541
(204) 783-7163

Dr. Shirley Chou
C. H. E. O.
401 Smyth Road
Ottawa, ON
K1H 8L1
(613) 737-2721
(613) 738-3216

Robert and Linda
2239 Southgate Boulevard
Houston, Texas
77030
USA
(713) 629-8550

Petr
2 rue Grand Bay, 1220 Avanchets
Geneve,
Suisse
(022) 785-0963

Gordon and Pat
11 West 34th Street
Hamilton, ON
L9C 5J8
(416) 383-8760

Claude and Suzanne
1600 Algonquin
Fabreville, Lavalle, PQ
H7T 4R6
(514) 622-5054

Harvey and Loretta
655 Brock Street
Winnipeg, MB
R3N 0Z3
(204) 489-5830

Shirley
19 Bearbrook Road
Blackburn Hamlet, ON
K1B 3H4
(613) 830-0135

note: second telephone number is the Fax number

* - Associate Member  ** - Life Member  o - Honorary Member

Please notify the secretary of any changes

70
Dr. William N. Jr. Clatworthy *
Department of Pediatric Surgery
700 Columbus
Columbus, Ohio
43205
USA

Dr. Raymond J.P. Cloutier
2705 Boul. Laurier
Ste. Foy, PQ
G1V 4G2
(418) 654-2259
(418) 654-2774

Prof. Douglas Cohen *
Department of Surgery
Royal Alexandra Hosp. F. C.
Camperdown, N.S. Wales
2050
Australia

Dr. Pierre Paul Collin **
St. Justine Hospital
3175 Cote Ste. Catherine
Montreal, PQ
H3T 1C5
(514) 731-4931
(514) 932-5917

Dr. Robert W. Cram **

Dr. Bassam M. Dahman *
156 Bronson Medical Centre
Kalamazoo, Michigan
49007
USA
(616) 349-6689
(616) 343-1636

note: second telephone number is the Fax number

* - Associate Member  ** - Life Member  * - Honorary Member

Please notify the secretary of any changes
Dr. Jean G. Desjardins
Hopital Ste. Justine
3175 Cote Ste. Catherine Rd.
Montreal, PQ
H3T 1C5
(514) 345-4686
(514) 345-4822

Jean and Ninon
652 Av. Hartland
Montreal, PQ
H2V 2X3
(514) 345-9416

Dr. Maria Di Lorenzo
Hopital Ste. Justine
3175 Cote Ste-Catherine
Montreal, PQ
H3T 1C5
(514) 731-0647
(514) 345-4822

Maria
(514) 342-1589

Dr. A.R.C. Dobell
Montreal Children's Hospital
2300 Tupper Street, Rm C-1139
Montreal, PQ
H3H 1P3
(514) 934-4488
(514) 934-4341

Tony and Cynthia
3495 Holton Avenue
Montreal, PQ
H3Y 2G6
(514) 935-9061

Dr. James C. Donald
302-2020 Richmond Avenue
Victoria, BC
V8R 6R5
(604) 385-2451

Jim and Marie
1220 Transit Road
Victoria, BC
V8S 5A3
(604) 598-2572

Dr. Jacques C. Ducharme
Hopital Ste-Justine
3175 Chemin Cote Ste-Catherine
Montreal, PQ
H3T 1C5
(514) 737-5448
(514) 345-4806

Jacques and Monique
640 Dawson
T.M.R., Quebec
H3R 1C6
(514) 733-1537

Dr. Fred W. Duval
Medical Arts Building
1513-233 Kennedy Street
Winnipeg, MB
R3C 3J5
(204) 943-7145
(204) 957-1818

Fred and Ethel
255 Waverly Street
Winnipeg, MB
R3M 3K4
(204) 488-1946

note: second telephone number is the Fax number

* - Associate Member       ** - Life Member    * - Honorary Member

Please notify the secretary of any changes

72
Dr. Sigmund H. Ein
315-250 Lawrence Avenue West
Toronto, ON
M5M 1B2
(416) 781-1411
(416) 444-1809

Sigmund and Arlene
9 Caravan Drive
Don Mills, ON
M3B 1M9
(416) 444-5102

Dr. James C. Fallis
Hospital for Sick Children
555 University Avenue
Toronto, ON
M5G 1X8
(416) 591-4925
(416) 598-7505

Jim and Barbara
12 Parkhurst Boulevard
Toronto, ON
M4G 2C5
(416) 487-2375

Dr. Robert Filler
Hospital for Sick Children
555 University Avenue
Toronto, ON
M5G 1X8
(416) 598-6400
(416) 598-7477

Bob and June
16 Connable Dr
Toronto, ON
M5R 1Z8
(416) 324-9880

Dr. James D. Fischer
Suite #502
8215 - 112 Street
Edmonton, AB
T6G 2C8
(403) 433-3107
(403) 433-0289

Jim
9039 Saskatchewan Drive
Edmonton, AB
T6G 2B2
(403) 433-3983

Dr. Graham C. Fraser
210-650 West 41st Avenue
Vancouver, BC
V5Z 2M9
(604) 261-2324
(604) 875-2292

Graham and Rae
6925 Cypress Street
Vancouver, BC
V5Z 1J2
(604) 263-6160

Dr. Murray M. Fraser
417 Cornwall Professional Bldg.
2125 11th Avenue
Regina, SK
S4P 3X3
(306) 359-3220
(306) 584-6760

Murray and Ruth
33 Academy Park Road
Regina, SK
S4S 4M8
(306) 586-3562

note: second telephone number is the Fax number
* - Associate Member     ** - Life Member     * - Honorary Member

Please notify the secretary of any changes
Dr. Stephen L. Gans *
717 N Ressford Dr
Beverly Hills, California
90210
USA

Stephen

Dr. Mike Giacomantonio
Izaak Walton Killam H. F. C.
5850 University Avenue
Halifax, NS
B3J 3G9
(902) 428-8114
(902) 429-4026

Mike and Joyce
1612 Oxford Street
Halifax, NS
(902) 423-3289

Dr. D. Alexander Gillis
Izaak Walton Killam H. F. C.
5850 University Avenue
Halifax, NS
B3J 3G9
(902) 428-8113
(902) 429-4026

Alex and Rose
1612 Cambridge Street
Halifax, NS
B3H 4A6
(902) 422-3890

Dr. David P. Girvan
Victoria Hospital
375 South Street
London, ON
N6A 4G5
(519) 667-6772
(519) 667-6642

David and Beth
929 Richmond Street
London, ON
N6A 3J3
(519) 672-8662

Dr. Thomas K. Goodhand **
Abbott Clinic
274 Osborne Street North
Winnipeg, MB
R3C 1V8
(204) 786-5481
(204) 783-6769

Tom and Loreen
1306 Wolseley Avenue
Winnipeg, MB
R3G 1H4
(204) 775-0645

Dr. Noelle Grace
North York General Hospital
138-4001 Leslie Street
Willowdale, ON
M2K 1E1
(416) 756-6223
(416) 756-6705

Noelle and Morrie
74 Don Woods Drive
North York, ON
M4N 2G5
(416) 487-3018

note: second telephone number is the Fax number
* - Associate Member  ** - Life Member  * - Honorary Member

Please notify the secretary of any changes

74
Dr. Enrique Grisoni *  
Cleveland Metropolitall G. H.  
3395 Scranton Road  
Cleveland, OH  
44109  
USA  
(216) 459-4572  
(216) 459-3551  

Enrique and Ines  
46002 Falls Road  
Hunting Valley, OH  
44022  
USA  
(216) 247-6870  

Dr. Frank M. Gutman  
Montreal Children's Hospital  
2300 Tupper Street  
Montreal, PQ  
H3H 1P3  
(514) 934-4498  
(514) 934-4341  

Frank and Herta  
2661 Hill Park Circle  
Montreal, PQ  
H3H 1S8  
(514) 989-9030  

Dr. David Hitch *  
Pediatric Surgeons of Dayton, Inc.  
1 Children's Plaza  
Dayton, OH  
45404  
USA  
(513) 461-5020  
(513) 461-1450  

David and Melanie  
4591 Cascade Drive  
Manlius, NY  
13104  
USA  

Dr. Mark A. Hoffman *  
Dept. of Surg. Children's Hosp. of  
Philadelphia  
34th St. & Civic Blvd.  
Philadelphia, PA  
19104  
USA  
(215) 590-4216  
(215) 386-4036  

Mark  

Dr. Joseph Janik *  
Pediatric Surgery Assoc., P.C.  
1950 Ogden St., Suite 330 HC  
Denver, CO  
80218  
USA  
(303) 861-0035  
(303) 861-6678  

Joseph and Betty Anne  
25 Huntwick Lane  
Englewood, Colorado  
80110  
USA  
(303) 762-1127  

note: second telephone number is the Fax number  
* - Associate Member  
** - Life Member  
° - Honorary Member  

Please notify the secretary of any changes  

75
Mr Peter G. Jones °
Royal Children's Hospital
Flamington Road
Melbourne, Victoria
3502
Australia

Dr. Angus Juckes
Regina General Hospital
1440-14th Avenue & St. John St
Regina, SK
S4P 0W5
USA
(306) 359-4542
(306) 359-4723

Dr. Ihab M. Kamal
Doctors Building, #230
955 Queen Street East
Sault Ste. Marie, ON
P6A 2C3
(705) 949-1618

Dr. Richard Kennedy
P.O. Box 386
St. John's, Nfld.
A1C 5J9
CANADA
(709) 778-4300
(709) 722-9605

Dr. John W. Kerr
Department of Surgery, DIIII
Kingston General Hospital
Kingston, ON
K7L 2V7
(613) 544-6133

Dr. Ken Kimura °
Department of Surgery
University of Iowa Hospitals
Iowa City, IA
52242
USA
(319) 356-1884
(319) 356-8378

note: second telephone number is the Fax number

* - Associate Member      ** - Life Member      ° - Honorary Member

Please notify the secretary of any changes
Dr. Sylvain Kleinhaus *
Montefiore Hosp. and Med. Centre
111 East 210th Street
Bronx, NY
10467
(212) 920-4758
(212) 920-4214

Dr. Murray R. Kilman **

Dr. Sam Kling **

Dr. Irwin H. Krasna *
U of Medicine of NJ, Rutgers M.S.
One Robert Wood JohnsonPl,CN19
New Brunswick, New Jersey
08903
USA
(201) 937-7821
(201) 418-8013

Irwin and Anne
236 Grant Ave.
Highland Park, NJ
08904
USA
(201) 247-7621

Dr. Jean-Martin Laberge
Montreal Children's Hospital
c1137-2300 Tupper Street
Montreal, PQ
H3H 1P3
(514) 934-4497
(514) 934-4341

Jean-Martin and Louise
347 Lockhart
T.M.R., PQ
H3P 1Y6
(514) 737-1707

Dr. Dennis J. Lafer *
Nemours Children Clinic
P.O. Box 5720
Jacksonville, FL
32247
USA
(904) 390-3740
(904) 390-3699

Dennis
8340 Barquero
Jacksonville, FL
32217
USA
(904) 731-9444

note: second telephone number is the Fax number
* - Associate Member        ** - Life Member        ° - Honorary Member

Please notify the secretary of any changes
Dr. Jacob C. Langer
Rm 4E-2, Dep. of Surg., McMaster
1200 Main Street West
Hamilton, ON
L8N 3Z5
(416) 521-2100
(416) 521-9922

Dr. George Y.P. Lau
25 Charlton Ave. East, #704
Hamilton, ON
L8N 1Y2
(416) 529-5732

Dr. Henry Lau
Izaak Walton Killam Hospital for Childre
5850 University Avenue
Halifax, NS
B3H 3G6
(902) 428-8194
(902) 429-4026

Dr. Gordon M. Lees
Suite 602
8215-112th Street,
Edmonton, AB
T6G 2C8
(403) 433-3107
(403) 433-0289

Dr. Louis Levasseur**
Bureau de Pédagogie médicale
Faculté de Médecine
Université Laval, Québec, PQ
G1K 7P4
(418) 666-7722

Jack and Feine
9 Willowtree Court
Dundas, ON
L9H 6T3
(416) 628-5292

George and Philoria
1211 Appleford Lane
Burlington, ON
L7P 3M1
(416) 335-9490

Henry and Asian
5897 Inglis Street
Halifax, NS
B3H 1K7
(902) 422-3876

Gordon and Colleen
323 Routledge Road
Edmonton, AB
T6R 1B9
Canada
(403) 430-8843

Louis and Gisele
1330 Pelletier
Sillery, PQ
G1T 2H4
(418) 527-4861

Dr. Gilberto Antonio Lopez Perez *
Spain

note: second telephone number is the Fax number
* - Associate Member  ** - Life Member  * - Honorary Member

Please notify the secretary of any changes
Prof. J.H. Louw *
U of Cape Town, Dept. of Surgery
Medical School Obs. 7925
Cape Town,
South Africa

Prof. Jan

Dr. G. Gary Mackie *
1201 West La Veta, #301
Orange, California
92668
USA
(714) 997-3131
(714) 997-4235

Gary
(714) 645-6081

Dr. Donald G. Marshall
Suite 302
450 Central Avenue
London, ON
N6C 5J3
(519) 439-7381
(519) 438-5652

Don and Barbara
44 Baron's Crt.
London, ON
N6C 5J3
(519) 685-2476

Dr. Russell H. Marshall **
Fairmont Medical Bldg., #1314
750 West Broadway
Vancouver, BC
V5Z 1J3
(604) 737-7600

Russ
3982 West 33 Avenue
Vancouver, BC
V6N 2H8
(604) 266-4021

Dr. Adolfo Martinez-Caro *
Jefe del Dept. Cirugia H. I. S. S.
Ave. Reina Mercedes, 31-2C
Sevilla, 12,
Spain

Adolfo
Ave. Reina Mercedes, 31-2C
Sevilla, 12,
Spain

Ms Mabel McMillen *

Mabel
Apt. 602, 164 Paris Road
Brantford, ON
N3R 5M4

note: second telephone number is the Fax number
* - Associate Member    ** - Life Member    ° - Honorary Member

Please notify the secretary of any changes
Dr. Stanley Mercer **
210 Buena Vista Road
Ottawa, ON
K1M OV7
(613) 741-3049

Stanley and Sylvia
210 Buena Vista Road
Ottawa, ON
K1M OV7
(613) 741-3049

Prof. Jan Molenaar *
Sophia Children's Hospital
160 Gordeweg
Rotterdam,
3038 G-E
The Netherlands

Prof. Jan and To
Kastanjeplein 105
3053 CB Rotterdam, ZH
The Netherlands

Prof. Pierre Mollard *
Hopital de Brousse
29 rue Soeur Bouvier
Lyon, Cedex 1
69322
France

Prof. Pierre

Dr. Harold O. Nason
P.O. Box 1450
Middleton, NS
B0S 1P0
(902) 825-6106
(902) 825-4811

Harold and Norma
R.R. #3
Middleton, NS
B0S 1P0
(902) 825-6279

Dr. Luong T. Nguyen
Montreal Children's Hospital
C1132-2300 Tupper Street
Montreal, PQ
H3H 1P3
(514) 934-4438
(514) 934-4341

Luong
326 Leacross
Montreal, PQ
H3P 1M1
(514) 737-5065

Prof. Barry O'Donnell *
Our Lady's Hosp. for Sick Children
Crumlin
Dublin,
12
Ireland

Prof. Barry

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* - Associate Member    ** - Life Member    * - Honorary Member

Please notify the secretary of any changes

80
Dr. Gian B.G. Paloschi
Department of Surgery
Hotel-Dieu Hospital
Kingston, ON
KL7 5G2
(613) 548-8600

Gian and Susan
30 Seaforth Road
Kingston, ON
K7M 1E2
(613) 546-5093

Mr. Paul Pare
Westmount, PQ

Mrs. Donald S. Paterson

Mrs. Donald S.
131 Ridgedale Road
Winnipeg, MB

Prof. D. Pellerin
Hôpital des Enfants Malades
9 Avenue Frederic Le Play
Paris VII,
France

Prof. D.

Dr. John B. Pietsch
338 Medical Arts Building
1211 21st Avenue South
Nashville, Tennessee
37212
USA
(615) 322-2567
(615) 343-0134

John and Joey
6528 Edinburgh Drive
Nashville, Tennessee
37221
USA
(615) 377-0965

Dr. Reinder Postuma
AE 201, Winnipeg Children's Hospital
840 Sherbrooke Street
Winnipeg, MB
R3A 1S1
(204) 787-4203
(204) 787-4837

Ray and Jane
232 Glenwood Crescent
Winnipeg, MB
R2L 1J9
(204) 668-7498

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Please notify the secretary of any changes
Dr. David Price  
Janeway Child Health Centre,  
Bldg A 205  
St John's, NFLD  
A1A1R8  
(709) 754-4666  
(709) 722-9605

Dr. John G. Raffensperger  
The Children's Memorial Hosp.  
2300 Children's Plaza  
Chicago, Illinois  
60614  
USA

Dr. R. Hampton Rich  
Suite 104  
2545 Chicago Ave.So.,  
Minneapolis, Minnesota  
55404  
USA  
(612) 871-4551  
(612) 871-4553

Dr. Bradley M. Rodgers  
Department of Surgery, Box 181  
U of Virginia School of Med.  
Charlottesville, Virginia  
22908  
USA  
(804) 924-2673  
(804) 982-1024

Dr. Steven Z. Rubin  
C. H. E. O.  
401 Smyth Road  
Ottawa, ON  
K1H 8L1  
(613) 737-2601  
(613) 738-3216

Dr. Alois Scharli  
Dept of Pediatric Surgery  
Children's Hospital Lucerne  
6000 Lucerne,  
16  
Switzerland

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Please notify the secretary of any changes

82
Dr. Leslie A. Scott  
Hotel Dieu Hospital, Brock III  
Kingston, ON  
K7L 5G2  
(613) 546-1011  
(613) 544-9897

Dr. Leslie and Christopher  
56 Faircrest Blvd., R.R. #1  
Kingston, ON  
K7L4V1  
(613) 546-4226

Dr. C. Geoffrey F. Seagram  
1820 Richmond Road S.W.  
Calgary, AB  
T2T 5C7  
(403) 229-7807  
(403) 229-7221

Geoff and Shirley  
1110 Stilton Blvd. S.W.  
Calgary, AB  
T2T 2L1  
(403) 243-0031

Dr. Barry Shandling  
The Hospital for Sick Children  
555 University Avenue  
Toronto, ON  
M5G 1X8  
(416) 597-0705  
(416) 598-7505

Barry and Mary E.  
10 Sunnydene Crescent  
Toronto, ON  
M4N 3J6  
(416) 484-1811

Dr. Pierre Soucy  
C. H. E. O.  
401 Smyth Road  
Ottawa, ON  
K1H 8L1  
(613) 737-2396  
(613) 738-3216

Pierre and Jeanne Drouin  
7 Valecrest Court  
Gloucester, ON  
K1B 4G2  
(613) 824-7766

Dr. F. Douglas Stephens °  

Douglas

Dr. Gustavo Stringel *  
Methodist Hospital of Indiana  
1701 North Senate Blvd  
Indianapolis,, IN  
46202  
USA  
(317) 929-5339  
(317) 929-2082

Gustavo and Lina  
8651 Jaffa Cl E. Dr. #13  
Indianapolis, IN  
46260  
USA  
(317) 571-0654

**Note: second telephone number is the Fax number  
* - Associate Member  ** - Life Member  ° - Honorary Member  

Please notify the secretary of any changes

83
Dr. Peter Sudermann
The Winnipeg Clinic
425 St. Mary Avenue
Winnipeg, MB
R3C 0N2
(204) 957-1900
(204) 943-2164

Peter and Barbara
792 Montrose
Winnipeg, MB
R3M 3N3
(204) 489-4050

Dr. Riccardo A. Superina
The Hospital For Sick Children
555 University Avenue
Toronto, ON
M5G 1X8
(416) 598-6357
(416) 598-7477

Riccardo
(416) 489-3877

Dr. Orvar Swenson *
Main Street
Rockport, Maine
04856
USA

Orvar

Dr. William H. Taylor
26 Daleberry Place
Don Mills, ON
M3B 2A7
(416) 449-3701
(416) 449-2862

Bill and Jane
26 Daleberry Place
Don Mills, ON
M3B 2A7
(416) 449-2526

Dr. Sivarajan Venugopal *
Department of Surgery
University of the West Indies
Mona, Kingston 7
Jamaica, W. I.
(809) 927-1270
(809) 927-1270

Venu and Chippy
5 Ring Road
Kingston 7,
Jamaica, WI
(809) 927-2536

Dr. Carl Eric Walburgh *
Children's Surgical Associates
Suite A, 400 w. Olney Rd.
Norfolk, Virginia
23507
USA
(804) 628-7703
(804) 627-3701

Carl and Regina
(804) 440-1127

note: second telephone number is the Fax number
* - Associate Member  ** - Life Member  * - Honorary Member

Please notify the secretary of any changes
Dr. John F. Waldron *
Suite 104
2545 Chicago Ave. S,
Minneapolis, Minnesota
55404
USA
(612) 871-4551
(612) 871-1040

Dr. David E. Wesson
Hospital For Sick Children,Rm1526
555 University Avenue
Toronto, ON
M5G 1X8
(416) 598-6401
(416) 598-7477

Prof. A. W. Wilkinson *
Auchenbrae, Rockcliffe
Dalbeattie
Kircudbrightshire,
DG5 4OF
Scotland

Dr. Andrea Winthrop
McMaster Univ. Med. Centre, Dep.o.S.
1200 Main St. W
Hamilton, ON
L8N 3Z5
(416) 521-2100
(416) 521-9992

Dr. Nathan Wiseman
AE 206, Winnipeg Children's Hospital
840 Sherbrook Street
Winnipeg, MB
R3A 1S1
(204) 787-2682
(204) 787-4837

Dr. Philip J. Wolfson *
Room 607-A
1025 Walnut Street,
Philadelphia, PA
19107
USA
(215) 955-7635
(215) 923-1420

John and Helen
6230 Braeburn Circle
Edina, MN
55435
USA
(612) 941-3791

David and Jill
428 Fairlawn Ave
Toronto, ON
M5M 1V1
(416) 782-9354

Prof. A. W.

Andrea and Brian Back
4 Parkway Place
Dundas, ON
L9H 6K4
(416) 627-3193

Nathan and Eva
43 Folkstone Boulevard
Winnipeg, MB
R3P 0B4
(204) 832-2805

Philip
(609) 428-8376

note: second telephone number is the Fax number

* - Associate Member ** - Life Member * - Honorary Member

Please notify the secretary of any changes
Dr. Andrew Wong  
Alberta Children's Hospital  
1820 Richmond Road S.W.  
Calgary, AB  
T2T 5C7  
(403) 229-7253  
(403) 229-7221

Dr. Salam Yazbeck  
Hopital Ste. Justine  
3175 Chemin Cote Ste.Catherine  
Montreal, PQ  
H3T 1C5  
(514) 737-5448  
(514) 345-4822

Dr. Sami A. Youssef  
444-5757 Decelles Avenue  
Montreal, PQ  
H3S 2C3  
(514) 737-5448  
(514) 345-4822

Andrew and Maureen  
614 Elbow Dr. S.W.  
Calgary, AB  
T2T 2H7  
(403) 228-9429

Salam and Diane  
1672 Beaudet  
St. Laurent, PQ  
H4L 2K6  
(514) 744-5229

Sami and Donna  
21 Bellevue  
Westmount, PQ  
H3Y 1G4  
(514) 933-7221

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