22nd Annual Meeting
Réunion Annuelle
St. Johns, Nfld.
August 22-25, 1990
Canadian Association of Paediatric Surgeons
l’Association Canadienne de Chirurgie Infantile
Twenty-second Annual Meeting
CANADIAN ASSOCIATION of PAEDIATRIC SURGEONS
l'ASSOCIATION CANADIENNE de CHIRURGIE INFANTILE

Wednesday August 22-Sat August 25, 1990
HOTEL NEWFOUNDLAND
and
DR CHARLES A. JANEWAY CHILD HEALTH CENTRE
ST JOHN'S, NEWFOUNDLAND
CANADA

please bring this program to the meeting
program index is found on page 6
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 from overseas 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: 1-204-787-4837
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St. Johns, Nfd
August 22-25, 1990
Dr Kathryn Anderson was born in England, graduated from Cambridge University (U.K.) and received her medical education from Harvard Medical School. She interned at the Boston’s Children’s Hospital and did her surgical training at Georgetown University Hospital. Dr Anderson completed her Pediatric Surgical training in 1972 at the Children’s Hospital National Medical Center, Washington D.C. where she is now Senior Attending Surgeon and vice-chairman of the department of surgery. She is Professor of Surgery at the George Washington University and Adjunct Scientist and Consulting Surgeon at the National Institutes of Health. Dr Anderson continues to serve in many professional organizations, including the Board of Governors and the Advisory Council for Pediatric Surgery of the American College of Surgeons, and as secretary of A.P.S.A. She is a member of many national and hospital committees and is on the editorial board of the Journal of Pediatric Surgery and editor of the Practice of Surgery. Dr Anderson has an ongoing clinical and research interest in the esophagus and has published extensively in this area. She has also investigated diaphragmatic hernia and the application of ECMO.

In addition to the C.A.P.S. meeting in St John’s, Dr Anderson will be the guest lecturer and visiting professor in the following Canadian centres: Montreal, Quebec City, Halifax, Ottawa, Toronto, Hamilton and London. This extensive tour is sponsored by the C.A.P.S. Education Fund and the Royal College of Physicians and Surgeons of Canada.

Kathy is married and her husband, Dr W. French Anderson, hopes to join us for part of this CAPS meeting.
SCIENTIFIC and BUSINESS PROGRAM

OVERVIEW

Wednesday August 22-Sat August 25, 1990
HOTEL NEWFOUNDLAND and JANEWAY CHILD HEALTH CENTRE
ST JOHN'S, NEWFOUNDLAND
CANADA

Wednesday August 22: HOTEL NEWFOUNDLAND
10:30-15:00 COUNCIL (EXECUTIVE) MEETING
Hotel Newfoundland, Hospitality room, #220
15:00-19:00 REGISTRATION;
outside Garrison and Signal rooms

Thursday, August 23: HOTEL NEWFOUNDLAND
07:00 REGISTRATION and CONTINENTAL BREAKFAST
outside Garrison and Signal rooms
07:50-08:00 WELCOME AND OPENING CEREMONY
President and Minister of Health
08:00-11:15 SESSION 1: ORIGINAL PAPERS and CASE
REPORTS
11:15-12:15 FRED MCLEOD LECTURE:
Dr K ANDERSON, Washington
12:15-13:45 Lunch (own arrangements)
13:45-16:45 SESSION 2: ORIGINAL PAPERS and CASE
REPORTS

Friday, August 24: HOTEL NEWFOUNDLAND
07:00- REGISTRATION and CONTINENTAL BREAKFAST
outside Garrison & Signal rooms
08:00-12:30 SESSION 3: ORIGINAL PAPERS and CASE
REPORTS
12:30-14:00 ASSOCIATION BUSINESS MEETING
(lunch will be served)

Saturday, August 25: JANEWAY CHILD HEALTH CENTRE
07:30- CONTINENTAL BREAKFAST outside
LECTURE THEATRE
08:00-12:20 SESSION 4: ORIGINAL PAPERS and CASE
REPORTS
12:20 CLOSING COMMENTS and ANNOUNCEMENTS

NOTE:
detailed scientific program beginning on page 17
instructions to presenters on page 24
abstracts begin on page 26
SOCIAL PROGRAM

ST JOHN'S, NEWFOUNDLAND
CANADA
LOCAL HOSTS: DR DICK and MRS MAUREEN KENNEDY

Wednesday August 22:

15:00-19:00 REGISTRATION; Hotel Newfoundland
outside Garrison and Signal rooms
19:00-22:00 WELCOMING COCKTAIL PARTY:
Hotel Newfoundland, COURT GARDEN ROOM;
(RSVP)

Thursday, August 23:

08:00-16:00 Hospitality Suite (room #220) open
no planned social activities
EVENING FREE

Friday, August 24:

08:00-16:00 Hospitality Suite (room #220) open
no planned social activities
18:30 buses leave for Presidential banquet at the
MURRAY'S POND COUNTRY CLUB
19:00-20:00 Cocktails
20:00 Gourmet Dinner
22:30-01:00 Entertainment
23:00 First bus returning to the HOTEL
01:00 Second bus returning to the HOTEL
(time may be earlier)

Hotel NEWFOUNDLAND TELEPHONES:
1-709-726-4980
FAX 1-709-726-2025
TELEX 016-4565

NOTE: THE C.A.P.S. HOSPITALITY SUITE WILL BE OPEN IN THE HOTEL
NEWFOUNDLAND 08:00-16:00 AUGUST 23 & 24 TO ENABLE YOU TO
OBTAIN INFORMATION AND PLAN ACTIVITIES IN ST JOHN'S AND THE
SURROUNDING AREA

NOTE: ST. JOHN'S IS SAFE- YOU MAY WALK ABOUT
WITHOUT DANGER !!!
FUTURE C.A.P.S MEETINGS:

23rd ANNUAL MEETING:
1991
SEPT 20-23, QUEBEC CITY

24th ANNUAL MEETING:
1992
SEPT 11-14 OTTAWA
(joint meeting with B.A.P.S.)

25th ANNUAL MEETING:
1993
SEPT 10-13 VANCOUVER
(site of CAPS first annual meeting in 1969)
Here is some information from the brochures sent to all of us by Dick Kennedy earlier in the year:
"All kinds of people like to visit St. John's. Some come for the scenery, some for the history, some for the architecture" (and of course others for all that and the C.A.P.S. meeting!-ed). "St. John's has much to offer" and here are some of the sites:
1) Signal Hill, now National Historic Park offers a panoramic view of the City, especially at night.
2) Downtown St. John's and its harbor. Be sure to visit Water Street, probably the oldest street in North America, where Sir Humphrey Gilbert is said to have claimed Newfoundland as the first colony of what was to later become the British Empire. Also take in the Basilica of St. John.
3) Newfoundland Museum on Duckworth Street which houses exhibits reflecting the extensive history of Newfoundland and Labrador, including the six aboriginal groups which lived here before the arrival of the Europeans.
4) Quidi Vidi Village, a tiny fishing village alongside the eastern edge of St. John's where the French built a battery defence against the British in 1762.
5) Cape Spear near St. John's is one of 70 major National Historic Parks in Canada, offering a breath taking view of the Atlantic Ocean and also the site of the famous Cape Spear Light House.
6) Although it is a bit late in the season, you may see the great Humpback and the Fin whales on the Southern portion of the Avalon Peninsula
ENJOY !!!

(reprinted from CAPSULE, june/july '90)

For more information, please visit the hospitality room at the Hotel Newfoundland; room #220; times are on page10

NOTE: ST. JOHN'S IS SAFE: YOU MAY WALK ABOUT WITHOUT DANGER !!!
### PRESIDENTS

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>City</th>
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<tbody>
<tr>
<td>1967-1972</td>
<td>Harvey Beardmore</td>
<td>Montreal</td>
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<tr>
<td>1973-1974</td>
<td>Colin Ferguson</td>
<td>Winnipeg</td>
</tr>
<tr>
<td>1975-1976</td>
<td>Jim Simpson*</td>
<td>Toronto</td>
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<tr>
<td>1977-1978</td>
<td>Sam Kling</td>
<td>Edmonton</td>
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<tr>
<td>1979-1980</td>
<td>Pierre Paul Collin</td>
<td>Montreal</td>
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<tr>
<td>1981-1982</td>
<td>Barry Shandling</td>
<td>Toronto</td>
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<tr>
<td>1983-1984</td>
<td>Gordon Cameron</td>
<td>Hamilton</td>
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<tr>
<td>1985-1986</td>
<td>Stanley Mercer</td>
<td>Ottawa</td>
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<tr>
<td>1987-1989</td>
<td>Alex Gillis</td>
<td>Halifax</td>
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<tr>
<td>1989-</td>
<td>Jacques-C Ducharme</td>
<td>Montreal</td>
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### SECRETARY-TREASURERS

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<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>City</th>
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<tbody>
<tr>
<td>1967-1973</td>
<td>Barry Shandling</td>
<td>Toronto</td>
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<tr>
<td>1974-1978</td>
<td>Gordon Cameron</td>
<td>Hamilton</td>
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<tr>
<td>1978-1983</td>
<td>Frank Guttman</td>
<td>Montreal</td>
</tr>
<tr>
<td>1989-</td>
<td>Ray Postuma</td>
<td>Winnipeg</td>
</tr>
</tbody>
</table>

* deceased
CAPS COUNCIL 1989-90:

DIRECTORS

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

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A. Bensousson
G. Blair
R. Filler
M. Giacomantonio
R. Kennedy
Local arrangements: R. Kennedy
Nominating: A. Gillis
M. DiLorenzo
P. Soucy
Publication: B. Shandling
R. Cloutier
S. Ein
A. Juckes
S. Rubin
S. Yazbeck
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G. Fraser
R. Superina
B. Rodgers
Liaison with Royal College: S. Mercer

Constitution and Bylaws: A. Juckes
D. Girvan
S. Youssef
Health and Manpower: G. Fraser
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J. Donald
J. Langer
P. Soucy
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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 American College: S. Ein
Liaison with World Federation: B. Shandling
Residency Program: A. Gillis
J. Desjardin
R. Filler
G. Fraser
F. Guttman
P. Soucy
Trauma: D. Wesson
G. Blair
M. Giacomantonio
J.M. Laberge
Congenital Anomalies: N. Wiseman
M. DiLorenzo
P. Soucy
Archivist: B. Shandling
Liaison with Trauma
Association of Canada: D. Wesson

underline indicates chairman of committee
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
07:00  Registration and Continental Breakfast outside meeting room

07:50  Welcome and Opening Ceremonies:
   President, Dr Jacques-C Ducharme and
   the Honourable Chris Decker, Minister of Health

0800-0945: SESSION 1a: original papers and case reports

Co-Chairmen / Les Co-Présidents:
   Dr R. Kennedy and Dr. N. Wiseman

(O=original 10 minute paper; R=resident paper;
C=5 minute case report; S=special session paper)
abstracts are found on pages 26 to 33.

1.  O  0800  POST-OPERATIVE RECOVERY: THE VANCOUVER
   SEDATIVE RECOVERY SCORE.
   Andrew J Macnab et al;
   British Columbia's Children's Hospital, Vancouver

2.  O,R 0815  IMPROVED POSTOPERATIVE PAIN MANAGEMENT IN
   CHILDREN USING INTERMITTENT SUBCUTANEOUS
   MORPHINE.
   J. Proctor et al.; Halifax

3.  O,R 0830  TESTICULAR TORSION: SAFETY AND EFFICACY WITH
   MANUAL DETORSION AND NUCLEAR SCANNING.
   Morash C et al; Halifax

4.  O,R 0845  INCARCERATED INGUINAL HERNIAS IN INFANTS: IS
   HOSPITAL ADMISSION NECESSARY?
   P. Baguley, et al; Hamilton

5.  O,R 0900  MODIFIED NISSEN FUNDOPLICATION: IMPROVED
   RESULTS IN HIGH RISK CHILDREN.
   Daniel K. Robie et al.; Washington

6.  O  0915  THE UNCUT COLLIS-NISSEN FUNDOPLICATION IN
   NEUROLOGICALLY IMPAIRED CHILDREN: THE
   PROCEDURE OF CHOICE. Mark A. Hoffman et al.; Boston

7.  C  0930  LONG GAP ESOPHAGEAL ATRESIA: STAGED
   RECONSTRUCTION WITH GASTRIC "PULL-UP" AND
   COLLIS-NISSEN GASTROPLASTY.
   AH Hayashi et al.; Halifax

8.  C  0935  RESPIRATORY FAILURE DUE TO RETAINED
   ESOPHAGUS: A COMPLICATION OF ESOPHAGEAL
   REPLACEMENT.
   Kurt Heiss, M.D. et al.; Toronto and Winnipeg

0945 - 1015  Coffee Break
1015-1115: SESSION 1b: original papers and case reports

Co-Chairmen / Les Co-Présidents:
Dr. J-C. Ducharme and Dr M. Giacomantonio

(O=original 10 minute paper; R=resident paper;
C=5 minute case report; S=special session paper)
abstracts are found on pages 34 to 38.

9. O,R 1015 SURGICAL RESTRAINT IN BURKITT'S LYMPHOMA IN CHILDREN. J.E Stein ;Boston

10. O,R 1030 DUODENAL MALROTATION: A SUBTLE ROTATIONAL DEFECT CAUSING FAILURE TO THRIVE. K. Azarow M.D.et al.; Washington,

11. C 1045 PYLORIC STENOSIS ASSOCIATED WITH INTESTINAL MALROTATION. Croitoru DP et al.; Montreal


1115-1215

FRED MCLEOD LECTURE

Dr Kathryn D. ANDERSON
Washington, D.C.

"The Esophagus-
the Organ that Nature Forgot to Finish"

1215-1345 Lunch; please make your own arrangements
1345-1500: SESSION 2a: original papers and case reports
Co-Chairmen / Les Co- Presidents:
Dr. R. Filler and Dr. S. Mercer
abstracts are found on pages 40 to 45.

14. O 1345 RECURRENCE OF CONGENITAL DIAPHRAGMATIC
HERNIA IN INFANTS WITH VIRTUAL TOTAL ABSENCE
OF THE DIAPHRAGM.
R. Kennedy et al. St. John's

15. O,R 1400 TOPICAL SUCRALFATE. EFFECTIVE THERAPY FOR THE
MANAGEMENT OF RESISTANT PERISTOMAL AND
PERINEAL EXCORIATION. AH Hayashi et al.; Halifax

16. O,R 1415 THE MORBIDITY OF TUBE ENTEROSTOMIES
Evans M. et al.; Ottawa

17. C 1430 FALSE DIAGNOSIS OF INTESTINAL OBSTRUCTION IN A
FETUS WITH CONGENITAL CHLORIDE DIARRHEA. JC
Langer et al.; Hamilton

18. C 1435 PROGRADE DILATATION OF POST-OPERATIVE
ANORECTAL STRicture WITH TUCKER BOUGIES.
Gamliel Z, et al.; Toronto,

19. O 1445 CHILDREN WITH SPINA BIFIDA: PHASES IN
SUCCESSFUL BOWEL MANAGEMENT
Barry Shandling et al.; Toronto
1500-1530 COFFEE BREAK

1530-1645: SESSION 2b: original papers and case reports
Co-Chairmen / Les Co-Presidents:
Dr. N. Wiseman and Dr. A. Juckes
abstracts are found on pages 46 to 51.

20. O,R 1530 MECKEL'S DIVERTICULUM IN CHILDREN: A FIFTEEN
YEAR REVIEW
Dickens St-Vil et al.; Montreal

21. O,R 1545 INFLAMMATORY BOWEL DISEASE IN CHILDREN
Adel Ayed et al. London

22. C 1600 HETERO TOPIC GASTRIC MUCOSA IN THE
GALLBLADDER: A CAUSE OF CHRONIC ABDOMINAL
PAIN IN A CHILD.
N Lamont et al.; Hamilton

23. C 1605 ECTOPIC GASTRIC MUCOSA CAUSING RECTAL
BLEEDING: A CASE REPORT
Gervais O. Andze et al.; Montreal

ACUTE APPENDICITIS IN CHILDREN: THE USE OF HIGH
RESOLUTION ULTRASONOGRAPHY
Mary L. Brandt et al.; Montreal

25. O,R 1630 PRIMARY CLOSURE OF CONTAMINATED WOUNDS IN
PERFORATED APPENDICITIS
C. Burnweit et al. Toronto

FREE EVENING; ENJOY!!
0800-1000: SESSION 3a: original papers and case reports

Co-Chairmen / Les Co-Présidents:
Dr. M. Giacomantonio and Dr. P. Soucy

(O = original 10 minute paper; R = resident paper;
C = 5 minute case report; S = special session paper)
abstracts are found on pages 52 to 59.

26. O 0800 SUCCESSFUL TRACHEAL AUTOTRANSPLANTATION WITH A VASCULARIZED OMENTAL FLAP.
Messineo A et al.; Toronto

27. O 0815 LARYNGOTRACHEAL SEPARATION AND DIVERSION FOR COMPLICATED ESOPHAGEAL ATRESIA WITH INTRACTABLE SALIVARY ASPIRATION
Kerry S. Bergman et al.; Boston

28. O,R 0830 THE ABSENCE OF CLINICALLY SIGNIFICANT TRACHEOMALACIA IN PATIENTS HAVING ESOPHAGEAL ATRESIA WITHOUT TRACHEOESOPHAGEAL FISTULA.
DT Rideout et al.; Halifax

29. O 0845 NON RENAL CYSTIC MASSES IN NEONATES AND CHILDREN
B. Cramer et al.; St. John's,

30. O,R 0900 MANAGEMENT OF OVARIAN CYSTS PRESENTING IN THE FIRST YEAR OF LIFE
Aaron LE et al.; Montreal

31. O,R 0915 MESENTERIC CYSTS IN CHILDREN.
Maureen A. Chung et al.; Montreal

32. O,R 0930 PEDIATRIC ABDOMINAL LYMPHANGIOMAS: A PLEA FOR EARLY RECOGNITION
MA Kosir et al.; Cleveland

33. O,R 0945 URACHAL ANOMALIES IN CHILDREN.
James P. Rielly et al.; Montreal

1000 - 1030 Coffee Break
CANADIAN ASSOCIATION OF
PEDIATRIC SURGEONS
FRIDAY, AUGUST 24, 1990
1030-1230: SESSION 3B: original papers and case reports
special ethics session (papers 39-41)

Co-Chairmen / Les Co-Présidents:
Dr. R. Filler and Dr. J-M. Laberge

(O=original 10 minute paper; R=resident paper;
C=5 minute case report;S=special session paper)
abstracts are found on pages 60 to 67.

34. O,R 1030 MATERNAL COCAINE USE AND GASTROCHISIS: IS
THERE AN ASSOCIATION?
James J. Murphy et al.; Vancouver

35. O 1045 CLINICAL DECISION MAKING: OPERATIVE VS NON-
OPERATIVE THERAPY FOR BLUNT ABDOMINAL
TRAUMA IN CHILDREN. RH Pearl et al.; Toronto

36. O,R 1100 THE VALUE OF PRE-OPERATIVE MEASUREMENT OF
LEAK POINT PRESSURE (LPP) AND LEAK POINT
VOLUME (LPV) IN MYELODYSPLASTIC CHILDREN
UNDERGOING ANTI-INCONTINENCE SURGERY.
John Pike et al.; Montreal

37. O,R 1115 COLONIC VOLVULUS IN CHILDREN.
Sylvie Bois et al.; Montreal

38. O 1130 THE ANAL SPHINCTER FORCE IN THE EVALUATION OF
POSTOPERATIVE IMPERFORATE ANUS.
Barry Shandling et al.; Toronto

39. S 1145 A CASE OF ABSENT SMALL BOWEL.
B.J. Hancock et al.; Winnipeg

40. S 1150 JEWISH ETHICS AND THE PEDIATRIC SURGEON.
S.Z. Rubin et al.; Ottawa.

41. S 1200 ETHICS IN PEDIATRIC SURGERY — A CAPS SURVEY
Charles E. Bagwell et al.; Gainesville

Note: The Association annual business meeting will follow immediately
after 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 buses leave from the Hotel at 6:30pm for
the Presidential Banquet.
Please bring your banquet ticket; available at registration desk.
The scientific sessions resume tomorrow at 0800 hrs at the Janeway
Health Centre, Lecture Theatre; continental breakfast at 07:30
outside the theatre.

21
07:30-08:00, CONTINENTAL BREAKFAST

0800-1010: SESSION 4A: original papers and case reports
Co-Chairmen / Les Co-Présidents:
Dr. N. Wiseman and Dr. A. Gillis
abstracts are found on pages 68 to 78.

42. O,R 0800  ATYPICAL TUBERCULOSIS IN THE PEDIATRIC PATIENT: IMPLICATIONS FOR PEDIATRIC SURGEONS.
David Sigalet et al.; Edmonton

43. O,R 0815  CYCLOSPORINE EFFECTS ON THE FUNCTION OF NORMAL BOWEL
DL Sigalet et al.; Edmonton

44. C 0830  A UNIQUE PRESENTATION OF A PLEOMORPHIC ADENOMA ARISING IN A SALIVARY REST IN CHILDHOOD. M. Evans, et al.; Ottawa

45. O 0840  QUALITY ASSURANCE IN PEDIATRIC SURGERY: A COMPARATIVE STUDY
Ray Postuma et al.; Winnipeg

46. O,R 0855  REVIEW OF THORACIC TRAUMA IN CHILDREN
B.J. Hancock, et al.; Winnipeg

47. C 0910  RUPTURE OF THE THORACIC TRACHEA FOLLOWING BLUNT TRAUMA—DIAGNOSIS BY CT SCAN.
Steven B. Paider et al.; Toronto

48. C 0915  THE MUSCLE SPARING THORACOTOMY IN INFANTS AND CHILDREN.
Soucy P et al.; Ottawa

49. O,R 0925  THORACOTOMY WITHOUT THE ROUTINE USE OF CHEST TUBE DRAINAGE
Kennedy R et al.; Halifax

50. O,R 0940  BENIGN LIVER TUMORS IN CHILDREN: A 25 YEAR EXPERIENCE.
F.I. Luks et al.; Montreal

51. C 0955  GLISSON'S CAPSULE FLAP TO DECREASE HEMORRHAGE IN REDUCED ORTHOTOPIC LIVER TRANSPLANTATION.
Mary L. Brandt et al.; Montreal

52. C 1000  FAMILIAL BILIARY ATRESIA: THREE SIBLINGS INCLUDING TWINS.
Smith BM et al.; Montreal

1010 - 1040 Coffee Break
CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS
L'ASSOCIATION CANADIENNE DE CHIRURGIE INFANTILE
SATURDAY, AUGUST 25, 1990 JANEWAY CHILD HEALTH CENTRE,
LECTURE THEATRE

1040-1220: SESSION 4B: original papers and case reports

Co-Chairmen / Les Co-Présidents:
Dr. M. DiLorenzo and Dr. G. Cameron

(O = original 10 minute paper; R = resident paper;
C = 5 minute case report; S = special session paper)
abstracts are found on pages 79 to 87.

53. O,R 1040 COMBINED ESOPHAGEAL AND DUODENAL ATRESIAS.
SB Palder et al.; Toronto,

54. C 1055 SIRENOMELIA IN AN IDENTICAL TWIN: A CASE REPORT.
Mary L. Brandt et al.; Montreal

55. C 1100 EMERGENCY SEPARATION OF OMPHALOPEGASUS CONJOINED TWINS.
JM Walton et al.; Halifax

56. O,R 1110 JUNCTIONAL EPIDERMOLYSIS BULLOSA AND PYLORIC ATRESIA: A REPORT OF LONG TERM SURVIVAL.
AH Hayashi et al.; Halifax

57. C 1125 LIFE THREATENING FLUID EXTRAVASATION OF CENTRAL LINES TO INTRAPLEURAL AND INTRAPERITONEAL SPACES.
I.R. Krasna et al.; NewBrunswick

58. O 1135 ISOLATED BOWEL SEGMENT (IOWA MODEL II): ABSORPTION STUDIES.
Hiroaki Yoshino et al.; Iowa City,

59. O,R 1150 PNEUMATOSIS CYSTOIDES INTESTINALIS (PCI) IN CHILDREN BEYOND THE FIRST YEAR OF LIFE.
H.L. Reynolds et al.; Cleveland

60. C 1205 INTRA-ABDOMINAL PULMONARY SEQUESTRATION.
M.D. Black et al.; Ottawa,

61. C 1210 PNEUMATOSIS IN CHRONIC IDIOPATHIC INTESTINAL PSEUDO-OBSTRUCTION.
François L. Luks et al.; Montreal

1220 CLOSING REMARKS AND ADJOURNMENT
A REMINDER

PRESENTERS: PLEASE BE REMINDED OF THE FOLLOWING INSTRUCTIONS ISSUED WITH THE CALL FOR ABSTRACTS - 1990:

The Program Committee invites the submission of abstracts for presentation at the Annual Meeting of CAPS to be held in St. John's, Newfoundland from Thursday, August the 23rd to Saturday, August the 25th, 1990. We are interested in all topics related to Paediatric Surgery including: clinical and laboratory research, education, thoracic surgery, trauma, and urology. All materials submitted must be original and may NOT have been published or presented elsewhere (except locally).

This year the Program Committee would like to organize a special session entitled: Ethical Issues and Concerns in the Paediatric Surgical Patient. We would invite the submission of either original papers or case presentations which will be included in this session. Case presentations concerning specific and unique ethical issues would be most welcome. This session will only be successful with your support. The categories will be as follows:

1) Original Papers
   (abbreviation "O"; 10 minutes with discussion)
2) Case Presentation, Special Technique or Methods
   (abbreviation "C"; 5 minutes with discussion)
3) Special Session — Ethical Issues.
   (abbreviation "S")

PLEASE NOTE

Since most of the papers presented at this meeting will be published in the Journal of Paediatric Surgery, the Publication Committee expects a manuscript to be submitted at the time of presentation.

DEADLINE for abstracts this year is APRIL 16, 1990

INSTRUCTIONS FOR SUBMITTING ABSTRACTS

1. Abstract page (enclosed) — 5 copies which include:
   a. Category in which paper is to be considered:
      "Original Paper" or "Case Presentation, Special Techniques or Methods" or "Special Session-Ethical Issues"
   b. Check if Resident Paper (there is a prize for the best Resident Paper!)
   c. Title of abstract
   d. Author(s)
   e. Institution
   f. Abstract (no more than 250 words; must fit into the square box provided — photocopies allowed; type font size: 12, letter quality
   g. Name of senior author and mailing address

2. Abstracts must accurately reflect the content of the presentation, and data must be included in the abstract. "Special Techniques or Methods" should be described in the abstract. Assuring that data "will be presented" or that techniques "will be described" will be frowned upon by the Committee.

3. More than one abstract may be submitted (no limit).
4. An individual may present more than one paper.
5. DEADLINE: ABSTRACTS MUST BE POSTMARKED NO LATER THAN APRIL 16, 1990
6. MAIL TO: Dr. N. Wiseman
7. Receipt of abstracts will be acknowledged by mail.
8. Computer diskette (Macintosh or IBM are welcome)
ABSTRACTS

abbreviation:
"O"=Original Paper (10 minutes with discussion)
"C"=Case Presentation, Special Technique or Methods (5 minutes with discussion)
"S"=Special Session — Ethical Issues.
POST-OPERATIVE RECOVERY: 
THE VANCOUVER SEDATIVE RECOVERY SCORE

Andrew J Macnab, MB, FRCP(C); Marc Levine, PhD; Ned Glick, PhD; 
Lark Susak, BScN; Gloria Baker-Brown, MA; 
Jan Emerton-Downey, RN 
British Columbia’s Children’s Hospital, Vancouver

Because of our concern that children take an inordinately long time to become fully awake once sedation has been discontinued, we planned a drug study comparing two sedative regimens. When we reviewed the literature, we were unable to find an appropriate tool to measure degree of alertness. The existing scales are either inappropriate for use in children, or are not sensitive to degree of sedation once the child is conscious. We therefore developed the Vancouver Sedative Recovery Score (VSRS) through an iterative process. Initially, our research team examined a group of children in various stages of recovery from sedation, to determine any visible characteristics that differentiated the level of alertness. We ultimately selected 12 items, in three areas - response (eg. response to stimuli); eyes (eg. accommodation); and movement (eg. coordination).

The scale was administered to 77 ICU and PAR patients (mean age 6.4 years, range 6 months to 17.7 years). Adequate agreement was found on the total scale scores between pairs of raters and indexed by an intra-class correlation of .89 (p<.001). A bias plot (Altman and Bland) indicated that neither bias nor precision appeared to be related to level of scores on the scale. The scale was found to have good internal consistency (alpha = .86).

The VSRS will allow us to study various post-operative sedative regimens. Our ultimate goal is to reduce the protracted post-surgical recovery time with its related morbidity and high costs, and to improve bed utilization. The Score will also be very useful in assessing a variety of paediatric premedication, sedative and post-operative situations for procedures such as oncology therapy, endoscopy, minor surgery and diagnostic studies.

Andrew J Macnab  
Room IM2, Intensive Care Unit  
BC Children’s Hospital  
4480 Oak street  
Vancouver, B.C. V6H 3V4
2. Thursday, 08:15-08:30; (O, R)

IMPROVED POSTOPERATIVE PAIN MANAGEMENT IN CHILDREN USING INTERMITTENT SUBCUTANEOUS MORPHINE.

Department of Surgery, IWK Children's Hospital, Halifax, Nova Scotia.

Until recently, postoperative pain control in children has been a neglected topic. "Prn" intramuscular (IM) method for administration of narcotics is not ideal. The intravenous route is effective, but special pumps and required monitoring often limits their usefulness on busy pediatric surgical wards. We compared intermittent scheduled subcutaneous (SC) morphine with the standard IM method. SC morphine was delivered via an indwelling 25G butterfly catheter thus avoiding repetitive needlesticks. Patients after abdominal or thoracic procedures not requiring ICU admission were studied. Each child received morphine (0.1-0.15 mg/kg) on a fixed q3h schedule. A total of 16 patients were studied. Eight patients were randomized to receive 6 SC doses followed by 6 doses of IM morphine. In 8 patients the order was reversed. Pain was assessed by patient, parent and nurse using a linear analogue scale from 0 to 10. Discomfort during administration of analgesia was also recorded. At the end of the 12 scheduled doses, the patients were asked for their preference of methods.

Pain control was effectively achieved by either SC or IM routes; no significant difference between routes could be determined. The majority of patients (15) preferred the SC route (p<0.0006). Reasons strongly related to the fact that minimal discomfort was experienced compared to IM injections. No significant complications were encountered in either group. Intermittently administered morphine delivered on a fixed schedule is a safe and effective method of pain control. SC morphine via an indwelling butterfly catheter is a simple method preferred by children, and obviates the need for the child to sustain painful injections in order to obtain pain relief.

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P.O. Box 3070
Halifax, NS
B3J 3G9

269 words
Testicular salvage following torsion depends on the degree of ischemia and length of delay in reestablishing perfusion. Detorsion at the time of diagnosis would reduce the interval of ischemia and potentially convert a surgical emergency into a less urgent one. Controversy exists whether the relief of pain following detorsion accurately reflects adequate re-perfusion to the gonad. Four cases of testicular torsion were managed by manual detorsion and evaluated by $^{99}$mTc radionuclide scanning. Clinically, all had torsion. Two had scans prior to manipulation showing a classic halo effect with peritesticular perfusion and an absence of central flow to the involved gonad. All four underwent successful manual detorsion. Three had immediate pain relief with detorsion, one did not. On subsequent scans, three patients with symptomatic relief had re-perfusion of the involved testes. These patients had viable testes and had semi-elective bilateral orchidopexy. The patient with continued pain had post manipulation views showing no perfusion. Emergency surgery revealed an infarcted testicle requiring orchidectomy. In all 4 cases, the testes had bell clapper deformities and were found to be completely detorted at exploration. No adverse effects were noted with manipulation. Testicular scanning did not delay urgent surgical intervention when required. These cases illustrate successful detorsion by relief of symptoms and re-perfusion proven by testicular scan. With detorsion and reperfusion, orchidopexy may be performed on a less urgent basis. Failure to relieve pain or document testicular perfusion is indication for emergent surger. Manual detorsion may be useful at initial contact to decrease ischemia time especially if time or distance would delay surgical intervention.
4. Thursday, 0845-0900 (O,R)

INCARCERATED INGUINAL HERNIAS IN INFANTS: IS HOSPITAL ADMISSION NECESSARY?

McMaster University, Hamilton, Ontario

The standard treatment for infants with an incarcerated inguinal hernia is immediate manual reduction, admission, and repair within 72 hours. Increasing limitations on hospital beds have stimulated us to manage some of these cases as outpatients. In order to assess the effectiveness of this approach, we reviewed our experience with 91 infants seen over a 7 year period. Included in this review were all infants with an incarcerated inguinal hernia less than 1 year of age, who were initially treated by manual reduction in the emergency department.

Of the 53 infants who were admitted, 11 (21%) reincarcerated prior to surgery. Twenty-eight (75%) of the 38 infants sent home reincarcerated. The incidence of reincarceration was not affected by patient age or weight. In the admission group, mean time to surgery was 1.7 days for those that reincarcerated, and 1.6 days for those that did not. In the outpatient group, mean time to surgery was significantly longer for those that reincarcerated (9.9 days vs 6.1 days). The incidence of operative and early postoperative complications was not affected either by admission or by the presence of reincarceration.

Our data suggests that the incidence of reincarceration after manual reduction of an incarcerated inguinal hernia in infants is high, and increases with time prior to operative repair. We conclude that outpatient management is acceptable, provided that surgery is scheduled within several days after hernia reduction.

Dr. J.C. Langer
McMaster University Medical Centre
Department of Surgery
1200 Main Street West
Hamilton, Ontario L8N 3Z5

234 words
MODIFIED NISSEN FUNDOPPLICATION: IMPROVED RESULTS IN HIGH RISK CHILDREN

Daniel K. Robie, MD, Richard H. Pearl, MD,
Department of Surgery, Walter Reed Army Medical Center, Washington, D.C.

INTRO: The results in 30 children of a Modified Nissen Fundoplication are presented. The modifications of the standard 360 degree Nissen wrap are: 1) Deliberate repair of the crura with pledget reinforcement, 2) Recreation of the angle of His, 3) Anchoring the wrap to the diaphragm. These modifications are based on our recent report showing neurologically impaired (NI) children undergoing standard Nissen had 19% reoperation rate for late operative failure, 9% aspiration induced mortality rate, and a combined failure rate (reops & aspiration deaths) of 28%. In these high risk children, wrap herniation through the esophageal hiatus into the chest accounted for 55% of reoperations.

PT DATA: Prospective evaluation of 30 consecutive children - 27 NI (5 with failed standard Nissens) G-tubes placed in 29; Follow-up - 27 (Aver. 12 mths); operative indication - respiratory 20, nutritional 8, prophylaxis 2.

RESULTS: Perioperative complications (<30Days) in 3(10%) - none for operative failure/recurrent reflux; Perioperative deaths - 0; Morbidity (>30Days) - 1(3%) - for wrap herniation and recurrent reflux; Late deaths - 5 (none aspiration induced); Postoperative barium studies in 19 of 25 survivors - all intact wraps, one intrathoracic with recurrent reflux; Significant morbidity and mortality from primary disease and pulmonary problems despite absence of reflux.

DISCUSSION: The modified Nissen is designed to prevent wrap herniation and recurrent reflux in NI high risk group. Comparison of standard and modified Nissen in the NI shows:

<table>
<thead>
<tr>
<th></th>
<th>Wrap Hernia</th>
<th>Reops</th>
<th>Mort.(A)*</th>
<th>Combined Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI Standard (n=153)</td>
<td>12%</td>
<td>19%</td>
<td>9%</td>
<td>28%</td>
</tr>
<tr>
<td>NI Modified (n=27)</td>
<td>4%</td>
<td>4%</td>
<td>0%</td>
<td>4% p&lt;0.02</td>
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*A=aspiration

Results support modifications to prevent operative failure in the high risk neurologically impaired group.

Richard H. Pearl, MD
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Georgia Ave
Washington, D.C. 20307-5001

244 words plus table
THE UNCUT COLLIS-NISSEN FUNDOPPLICATION IN NEUROLOGICALLY IMPAIRED CHILDREN: THE PROCEDURE OF CHOICE

Mark A. Hoffman, Steven Stylianos, Kerry S. Bergman, Nabil N. Jacir
Division of Pediatric Surgery, New England Medical Center, and
Tufts University School of Medicine, Boston, MA 02111 U.S.A.

Antireflux operations are commonly performed procedures in neurologically impaired children with complicated gastroesophageal reflux (GER). The Nissen fundoplication has emerged as the "gold standard" procedure. However, as many as one third of these children are destined to operative failure secondary to wrap herniation into the posterior mediastinum, wrap slippage over the stomach, or wrap disruption. The high risk nature of this patient population with respect to the Nissen fundoplication has caused a change in our operative approach to these patients over the past 2 years. We performed the uncut Collis-Nissen fundoplication in 50 children with severe neurological impairment and complicated GER. (median age=6 years). The technique lengthens the esophagus with the TA 30 stapler over an appropriate sized esophageal dilator. Minimal dissection is performed within the esophageal hiatus to prevent axial tension. The elongated fundus with fixed angle of His is loosely wrapped 360 degrees about and secured to the "neo-esophagus" composed of the lesser curvature of the stomach. All patients have been evaluated clinically and with barium swallow during the postoperative period at 6 month intervals, with 23 patients (46%) followed for at least 1 year. Complications occurred in four patients (8%): one early small bowel obstruction requiring adhesiolysis, and 3 wound infections. There was 1 early and 1 late postoperative death unrelated to GER. There has been 1 failure (2%) due to early partial disruption of the gastric staple line. We conclude that the uncut Collis-Nissen fundoplication is the antireflux procedure of choice in neurologically impaired children, who constitute a high risk group for failure of the Nissen fundoplication.
LONG GAP ESOPHAGEAL ATRESIA: STAGED RECONSTRUCTION WITH GASTRIC "PULL-UP" AND COLLIS-NISSEN GASTROPLASTY

AH Hayashi, JM Giacomantonio, HYC Lau, DA Gillis.
Department of Surgery, IWK Children's Hospital, Halifax, Nova Scotia.

We report 2 cases of neonates born with long gap esophageal atresia. The gap was greater than 5 cm in length in each and precluded primary esophagoesphagostomy. Staged reconstruction was performed.

Tube gastrostomy and proximal pouch decompression with continuous nasoesophageal suction was initially done during the neonatal period. Next, exploration by right thoracotomy was performed at 1 month in one patient and 4 months of age in the other. Extensive mobilization of the proximal pouch and distal esophageal remnant decreased the gap by 2-3 cms when both ends were pulled together under moderate tension. Transhiatal mobilization of the proximal aspect of stomach allowed good mobilization and permitted a tension free esophagoesphagostomy. Contrast studies postoperatively demonstrated free reflux into the intrathoracic portion of stomach and esophagus. The final stage of repair entailed a Collis-Nissen gastroplasty via a left thoracoabdominal incision. This achieved satisfactory esophageal lengthening and permitted positioning of the fundoplication within the abdominal cavity.

Short term follow up has been encouraging with each child requiring dilatations periodically. Staged gastric "pull-up" and Collis-Nissen gastroplasty is an attractive alternative in neonates with long gap esophageal atresia.

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184 words
8. Thursday, 0935-0945 (C) (5 minute paper, followed by 5 minute discussion of papers #7 and #8)

RESPIRATORY FAILURE DUE TO RETAINED ESOPHAGUS: A COMPLICATION OF ESOPHAGEAL REPLACEMENT

Kurt Heiss, M.D., David Wesson, M.D., Desmond Bohn, M.D., Charles Smith, M.D. and Nathan Wiseman*, M.D.
Hospital For Sick Children, Toronto and the *Winnipeg Children’s Hospital

Recurrent fistulas occur in about 10% of infants treated for esophageal atresia with distal tracheo-esophageal fistula (TEF). Rarely, failed repair of a recurrent TEF may require esophageal replacement and removal or diversion of the native esophagus. We present a patient with multiple operations for recurrent TEF whose native esophagus was eventually abandoned and replaced with a colonic interposition graft. Over the subsequent 9 years he experienced failure to thrive, respiratory distress and repeated pulmonary infections which were attributed to chronic aspiration. Eventually he developed respiratory failure and required endotracheal intubation and IPPV. He became increasingly difficult to ventilate and in spite of aggressive ventilation he suffered a cardiac arrest from which he could not be resuscitated. At post mortem a dilated blind segment of native esophagus which was compressing the trachea and obstructing it from behind was found in the mediastinum. Death was caused by massive air embolus which was in turn attributed to the high airway pressures needed to ventilate the patient. Tracheal compression by a dilated segment of native esophagus should be considered in the differential diagnosis of respiratory failure after esophageal replacement.

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Division of General Surgery
555 University Avenue
Toronto, Ontario M5G 1X8

185 words

Coffee break to follow this paper (0945-1015)
SURGICAL RESTRAINT IN BURKITT'S LYMPHOMA IN CHILDREN

JE Stein, MD, MR Schwenn, MD, NN Jacir, MD and BH Harris, MD
Tufts University School of Medicine and The Floating Hospital, Boston

Burkitt's lymphoma is an important solid tumor of childhood. We have reviewed our experience with this disease to assess the role of surgery in its treatment.

Nine patients, 5-12 years of age, were treated. Only one child had disease limited to the head and neck. Of the eight patients with abdominal disease, two had biopsies of oral lesions and non-invasive imaging of their abdominal tumors. The other six patients presented with abdominal complaints including jaundice, mass, obstruction, and peritonitis. Two underwent exploratory laparotomy and biopsy, one had an extended subtotal resection, and another had complete resection of a tumor confined to the terminal ileum. One other patient had only diagnostic paracentesis, and the remaining child had a gastroscopic biopsy which led to a misdiagnosis requiring subsequent surgery.

Four of the eight patients are alive without evidence of disease, six months to six years after treatment. The diagnosis in one of these four was established by biopsy of an oral lesion, and in two others by exploratory laparotomy; these children all had rapid initiation of chemotherapy, and the fourth had complete resection of abdominal disease. Of the four who died, two had delayed induction of drug therapy following cytoreduction and gastroscopic biopsy, and the other two died despite immediate chemotherapy.

Burkitt's lymphoma has the fastest known doubling time of any tumor. Its cytokinetics account for the bulky tumors often seen on presentation, and for sensitivity to chemotherapy. Cytoreduction has not been shown to increase survival and may delay appropriate treatment, while biopsy permits diagnosis and rapid initiation of chemotherapy.

We conclude that except in rare instances in which a solitary lesion lends itself to total resection, the proper role of surgery is a simple, safe procedure to obtain enough viable tumor for prompt and accurate diagnosis.

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295 words
DUODENAL MALROTATION: A SUBTLE ROTATIONAL DEFECT CAUSING FAILURE TO THRIVE.

K. Azarow M.D., R. Pearl M.D., J. O'Connor M.D., J.S. Latimer M.D.
Walter Reed Army Medical Center Washington, D.C. 20307-5001.

This paper describes a previously unreported anatomic abnormality identified as the cause of failure to thrive in four children. Each presented with feeding intolerance, weight below 3%, and intermittent vomiting. In each case an upper G. I. revealed a "J" shaped stomach, with a retroflexed duodenum, posteriorly and superiority placed. Despite no demonstrable obstruction, each had marked delay in gastric emptying. Historically, each child had undergone previous surgery for diagnosis which included rotational defects of the abdomen.

Operations have been performed on all four children. Each child underwent a repositioning of the duodenum inferiorly, and enterolysis with the midgut placed in the nonrotated position. An anterior portal vein was noted in each instance.

This clinical scenario is explained embryologically by failure of the duodenum to fully rotate. Duodenal rotation occurs as the midgut is extracoelomic and has rotated 90 degrees. If an event occurs which prevents the midgut from returning to the abdomen, the fourth portion of the duodenum could be tethered posterior to the stomach by the partially rotated midgut. We conclude, for children who have had surgical correction of diseases which include rotational defects and present with failure to thrive, the possibility of isolated duodenal malrotation should be entertained.

Richard H. Pearl M.D.
Chief, Pediatric Surgery Division
Dept. of General Surgery
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Washington, D.C. 20307-5001

202 words
PYLORIC STENOSIS ASSOCIATED WITH INTESTINAL MALROTATION

Croitoru DP, M.D., Neilson IR, M.D., Guttmann FM, M.D.
Montreal Children’s Hospital, McGill University
Montreal, Quebec H3H 1P3, Canada

We present three cases of pyloric stenosis associated with malrotation, one diagnosed synchronously, and two following correction of malrotation in the neonate. All three patients underwent pyloromyotomy. These cases are different from the few reported hereditary cases of pyloric stenosis associated with malrotation and which have congenitally shortened bowel. Only one of the patients with this familial syndrome is reported to be alive. None of our patients had short bowel and all are doing well after surgery. The unusual finding of pyloric stenosis and malrotation occurring together was diagnosed by a high index of suspicion. When clinical findings do not support the presumed diagnosis, even in the face of a palpable pyloric tumor and positive ultrasound examination, further investigation with upper gastrointestinal series, prior to surgery, is recommended so that rare concomitant malrotation can be corrected.

Frank M Guttmann, M.D.
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Montreal Children’s Hospital
Montreal, Quebec H3H 1P3

136 words
PREDUODENAL PORTAL VEIN CAUSING INTESTINAL OBSTRUCTION: CASE REPORT AND A REVIEW OF THE LITERATURE.

D.L. Sigalet and J.D. Fischer
Dept. of Surgery, University of Alberta Hospitals, Edmonton, Alberta.

Preduodenal portal vein (P.D.P.V.) has been described both as an isolated finding, and in association with other anomalies, especially biliary atresia. Previous reports of PDPV and associated duodenal obstruction have emphasized that it is not the compliant PDPV that causes obstruction, but rather associated bands, or duodenal webs. We report a case of a one year old male with tetralogy of Fallot, and abdominal situs solitus who presented with gastric outlet obstruction and esophageal reflux, documented both with barium studies and endoscopy. At operation, he was found to have a preduodenal portal vein, obstructing the first part of the duodenum with no bands or duodenal or gastric webs. Duodenojejunostomy was performed, immediately improving feeding. However, at 3 months the stoma had narrowed, requiring revision and placement of a gastrostomy. He has since done well with no further obstruction or GE reflux. This is the first case of PDPV to be reported where the portal vein has been shown to be the cause of duodenal obstruction.

The spectrum of anomalies associated with this malformation and their embryology are reviewed. The implications for the pediatric surgeon dealing with this anomaly as a cause of obstruction, or at liver transplantation are discussed.
GASTROESOPHAGEAL REFUX FOLLOWING REPAIR OF ESOPHAGEAL ATRESIA: A THERAPEUTIC CHALLENGE

James J. Murphy, M.D., Graham C. Fraser, M.B.,
Geoffrey K. Blair, M.D.
B.C. Children's Hospital, Vancouver, British Columbia, Canada

A high incidence of gastro-esophageal reflux has been documented in patients after repair of esophageal atresia. In our experience, results of anti-reflux procedures in this group of patients has been poor. Sixty-five patients underwent repair of esophageal atresia between 1983 and 1989. A retrospective review of the 30 patients who subsequently developed gastro-esophageal reflux was undertaken. Seven patients responded to medical therapy alone. Twenty-three patients underwent a total of 33 anti-reflux procedures (Nissen-29, Collis-Nissen-1, Thal -2, Hill-1). Successful outcome was noted in 10 patients (43%), while thirteen had persistent gastro-esophageal reflux postoperatively. The average length of time before failure of anti-reflux procedure was 26 months. A number of parameters were examined for correlation with failed anti-reflux surgery. Low birth weight, presence of significant anastomotic tension and postoperative leak at esophageal atresia repair appear to predispose to failure of anti-reflux procedures. Esophageal strictures occurred more commonly in patients requiring anti-reflux surgery and in all patients with failed anti-reflux procedures. Etiology of the high failure rate of anti-reflux procedures after repair of esophageal atresia is unclear, but may be related to the congenitally "short" esophagus. An alternative surgical approach may be required to achieve a satisfactory outcome in this group of patients.

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199 words

NOTE: The Fred McLeod Lecture will follow this paper (11:15-12:15)
1115-1215

FRED MCLEOD LECTURE

Dr Kathryn D. ANDERSON
Washington, D.C.

"The Esophagus-
the Organ that Nature Forgot to Finish"

Dr Anderson's biography appears on page 8

39
RECURRENT OF CONGENITAL DIAPHRAGMATIC HERNIA IN INFANTS WITH VIRTUAL TOTAL ABSENCE OF THE DIAPHRAGM

Richard Kennedy, M.D., C.M., F.R.C.S.,(C).
Walter Heneghan M.D., F.R.C.P.,(C), A. S. Gill, M.B., B.S.
The Dr. Charles A. Janeway Child Health Centre, St. John's, Newfoundland.

Sixteen diaphragmatic hernias have been treated in the last six years. Four of these had virtually complete absence of the diaphragm. This group stands out as there was 100% recurrence and serious bowel complications. The recurrence happened more than once even after using different techniques. The high risk of serious life threatening complications in this group is to be noted.

R. Kennedy, M.D.,
Department of Surgery
Dr. Charles A. Janeway Child Health Centre
Janeway Place
St. John's, Newfoundland, A1A 1R8
TOPICAL SUCRALFATE. EFFECTIVE THERAPY FOR THE MANAGEMENT OF RESISTANT PERISTOMAL AND PERINEAL EXCORIATION.

AH Hayashi, HYC Lau, DA Gillis.
Department of Surgery, IWK Children's Hospital, Halifax, Nova Scotia.

Peristomal and perineal excoriation commonly occurs despite preventive measures. Drainage from around gastrostomy tubes or ongoing perineal soilage after a pullthrough procedure can lead to chemical irritation, cutaneous denudation, and chronic discomfort. A multitude of topical agents have been tried with variable results. We present our experience using topical sucralfate.

Fifteen patients with stomal or perineal skin ulceration were treated with topical sucralfate only after other agents had failed. Clinical photographs were first obtained. Sucralfate, prepared as either a powder or an emollient, was liberally applied to the affected area during diaper changes or when the stomal appliance was emptied. For tube gastrostomy sites, sucralfate was applied every 4-6 hours as required to maintain a visible layer. In 13 patients, complete healing occurred. Recovery time was dependent on the severity and extent of skin denudation. Partial healing occurred in one patient. In another patient, the skin excoriation healed but a residual candidal rash required addition of an antifungal agent.

General observations included: (1) A lag time of 2-3 days before visible healing was evident (2) Healing occurred from the perimeter (3) Sucralfate was soothing and reduced discomfort (4) It was ineffective for fungal dermatitis (5) Topical sucralfate did not appear to have toxic or systemic effects.

Topically applied sucralfate is soothing, safe and effective.

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P.O.. Box 3070
Halifax, Nova Scotia
B3J 3G9

214 words
THE MORBIDITY OF TUBE ENTEROSTOMIES

Evans M., Rubin S.
Children's Hospital of Eastern Ontario, Ottawa

The use of tube enterostomies is common in pediatric surgery. Their long term placement is associated with a significant morbidity. A retrospective review of tube enterostomies at our institution is being made. All gastrostomies (G-tubes) were performed by the Stamm method and the Witzen technique was used for all jejunostomies (J-tubes). The indications for insertion of 17 G-tubes was nutritional in 16 neurologically impaired patients and followed bowel obstruction in one. Six G-tubes were inserted alone and 11 accompanied a Nissen fundoplication. J-tubes were placed in 9 patients for nutritional reasons, 6 of whom had Cystic Fibrosis (C. F.) and the remaining 3 were neurologically impaired. Twenty-eight complications occurred following G-tube insertion, all in neurologically impaired patients, including tube dislodgement, blockage, leaking, cellulitis and duodenal obstruction. Of these 28 complications, 26 occurred in patients with Nissen fundoplication and only 2 accompanied G-tube insertion alone. After J-tube placement, 13 complications were seen, 10 of which occurred in one neurological impaired individual. In summary, J-tubes placed in C.F. patients were associated with few long term problems. G-tubes inserted into neurologically impaired patients were attended by a high incidence of complications but only when performed in association with a fundoplication.

Steven Rubin
401 Smyth
Ottawa Ontario
K1H 8L1

198 words
FALSE DIAGNOSIS OF INTESTINAL OBSTRUCTION IN A FETUS WITH CONGENITAL CHLORIDE DIARRHEA

JC Langer, AL Wlnthrop, RF Burrows, RM Issenman, CC Caco
McMaster University, Hamilton, Ontario

Intestinal obstruction is often diagnosed prenatally by ultrasound, providing an opportunity for prenatal counselling, genetic investigation, and planned delivery at a perinatal centre. We describe a case with typical features of fetal bowel obstruction, who was found at birth to have congenital chloride diarrhea.

A 25 year old Caucasian woman had an ultrasound at 30 weeks gestation because of size-dates discrepancy. The sonogram showed marked polyhydramnios and multiple dilated, fluid-filled loops of intestine in the fetal abdomen. There was normal peristalsis, and no ascites or calcification. There was no family history of cystic fibrosis. Weekly ultrasound examinations were done, with no significant change. She went into labour at 35 weeks gestation, and delivered a 3 kilogram girl by vaginal delivery.

Plain X-rays during the first day of life showed no evidence of bowel obstruction. The infant passed large amounts of watery stools, but tolerated feeds well. A rectal biopsy revealed normal innervation. On the fourth day of life her serum sodium and chloride were found to be markedly decreased, and several stool chloride levels were greater than 90 mEq/l (normal<60mEq/l). A diagnosis of congenital chloride diarrhea was made, and she was placed on sodium chloride and potassium chloride supplements. Her serum electrolytes normalized and she was discharged home on the tenth day of life.

Congenital chloride diarrhea is a rare, inherited condition caused by an abnormality of intestinal electrolyte transport. This case illustrates that it may also cause polyhydramnios and bowel dilatation in the fetus, theoretically because of inadequate amniotic fluid absorption by the gut. Although the wrong diagnosis was made prenatally in this case, the resulting delivery and management of the infant in a perinatal center prevented the severe dehydration usually seen in this disease when diagnosed after birth.

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L8N 325

293 words
Thursday, 1435-1445 (5 minute paper, followed by 5 minute
discussion of papers #17 and #18)

PROGRADE DILATATION OF POST-OPERATIVE ANORECTAL STRicture
WITH TUCKER BOUGIES

Gamliel Z. Wesson DE
The Hospital For Sick Children, Toronto, Ontario M5G 1X8

Postoperative strictures occur occasionally following pullthrough procedures for anorectal malformations in infants. Although most resolve with digital or Hegar dilatation, those that are very high, long or tight are more difficult to correct.

We wish to report our experience using Tucker esophageal bougies to dilate postoperative anorectal strictures in two infants, one with Hirschprung's disease and one with imperforate anus. Both developed very tight strictures with no visible lumen following their pullthrough procedure (Soave and Pena respectively). In both cases, the stricture most likely resulted from complete anastomotic dehiscence.

In each case, the lumen was identified by passage of filiform urethral catheter from below. The filiform was visualized from above through a colonoscope which was passed via the colonic mucus fistula. The filiform and a follower were then pulled out the mucus fistula. The stricture was strung by tying a heavy Tevdek ligature to the filiform which was then pulled back out the anus. The string was tied to itself and left in situ. The stricture was subsequently dilated easily and painlessly, without anesthesia, with graded Tucker bougies up to 32 Fr passed prograde via the mucus fistula. In both cases, the stricture resolved and the colostomy was subsequently closed.

This method of dilating postoperative anorectal strictures has several advantages: (1) it minimizes the risk of creating a false passage or perforating the rectum, (2) it draws the stricture distally rather than pushing it proximally, (3) it is painless and can easily be done without anesthesia once the stricture is strung, and (4) it may obviate a major revision or repeat pull-through procedure.

Dr. David Wesson
General Surgery
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263 words
CHILDREN WITH SPINA BIFIDA:
PHASES IN SUCCESSFUL BOWEL MANAGEMENT

Barry Shandling and Robert Gilmour
The Hospital for Sick Children Toronto

Since 1980 we have directly managed the bowel problems of 395 patients with spina bifida. An analysis of 254 patient visits in 3 years indicates the types of problems encountered and how they are dealt with. In this paper we discuss the optimal age of onset of treatment and the different modalities of treatment available. The measurement of the anal sphincter force is of value in determining the type of management to be adopted. Two phases we have come to recognize are those of pre-teen age children and those who are older. Each group presents different problems and even successful bowel management in one group may have to be modified as the child gets older. The attitude of the parents is as important to the success of the program as is that of the child.

By far the most predictably successful management of fecal incontinence in spina bifida is by the use of the enema continence catheter. Patients are rendered continent and independent.

Dr. B. Shandling

162 words

Coffee break (1500-1530) following this presentation.
MECKEL'S DIVERTICULUM IN CHILDREN:
A FIFTEEN YEAR REVIEW

Dickens St-Vil, Mary L. Brandt, Stéphane Panic, Hervé Blanchard
Hôpital Sainte-Justine, Montreal (Quebec).

Meckel's diverticulum (MD) is a common cause of gastrointestinal hemorrhage and/or obstruction in children. From 1975-1989, 151 children were diagnosed with MD. There were 109 males and 42 females with a mean age of 5.6 years (newborn to 18 years). Forty-one cases were incidentally found at laparotomy and 20 (50%) were resected. 6/20 (30%) had ectopic tissue on histologic examination; Of the 110 symptomatic patients, 52 (47%) presented with bowel obstruction, 40 (36%) had lower gastrointestinal hemorrhage, 13 (12%) had an acute abdomen, and 5 (5%) had umbilical drainage. The 52 patients with bowel obstruction had pre-operative barium enemas which were diagnostic of an intussusception (18 pts) or obstruction proximal to the ileocecal valve (34 pts). At surgery 20 patients were found to have a volvulus, 10 patients had mechanical obstruction at the level of the MD, and 22 patients had an intussusception. 30/40 patients who presented with bleeding were diagnosed preoperatively by technetium scan (29/34 pts) or arteriogram (1/1 pt). Patients with an acute abdomen underwent immediate exploration and all had Meckel's diverticulitis. The 5 patients who presented with umbilical drainage underwent resection of patent omphalomesenteric ducts. Histology showed gastric mucosa in 54/110 (49%), pancreatic tissue in 5/110 (5%), gastric + pancreatic tissue in 2/110 (2%), and colonic + gastric mucosa in 1/110 (.9%). Ectopic tissue was found in 15/52 (29%) of patients with bowel obstruction, 40/40 (100%) of patients with hemorrhage, 7/13 (54%) of patients with Meckel's diverticulitis and 3/5 (60%) with a patent omphalomesenteric duct. MD most often presents with bowel obstruction and is rarely diagnosed preoperatively. Complications are more common in patients with abnormal tissue in the MD, therefore, resection of incidentally found MD is recommended if there is a suspicion of abnormal tissue.

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INFLAMMATORY BOWEL DISEASE IN CHILDREN

AYED, Adel and GIRVAN, David P.
Children’s Hospital of Western Ontario, London, Ontario.

Fifty-six cases of inflammatory bowel disease presenting in children under the age of 16 from 1980 to 1990 were reviewed. Thirty-six cases of Crohn’s disease (C.D.) and 20 cases of ulcerative colitis (U.C.) were diagnosed. The mean ages at diagnosis were 11.5 years and eight years, respectively. Family history was present in 13.8% of patients with C.D. and 20% in patients with U.C. Clinical symptoms were varied but abdominal pain was prominent in patients with C.D. (91%) and bloody diarrhea in U.C. (75%).

Diagnosis was made by barium studies, endoscopy and occasionally at laparotomy. Surgical resection was performed in 63% of patients with C.D. and 35% in patients with U.C.. Failure of medical treatment was the most common indication for surgery. At follow-up, 56% of patients with C.D. had recurrent disease and three patients in each operative group required further surgery. Inflammatory bowel disease in children is aggressive, frequently requires surgical resection and needs long-term follow-up.

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167 words
HETEROTOPIC GASTRIC MUCOSA IN THE GALLBLADDER: A CAUSE OF CHRONIC ABDOMINAL PAIN IN A CHILD.

N Lamont, AL Winthrop, FM Cole, JC Langer, RM Issenman, KC Finkel
Departments of Surgery, Pediatrics and Pathology, McMaster University,
Hamilton, Ontario, Canada

A twelve year old boy presented with a seven year history of intermittent colicky epigastric pain. Serial abdominal ultrasounds revealed a contracted gallbladder, and single and double dose oral cholecystograms demonstrated non-function. All other investigations were normal. At cholecystectomy, there was a fibrotic stricture at the junction of the gallbladder neck and cystic duct. The small thin-walled gallbladder contained white bile. Histologically, the gallbladder was lined with normal mucous secreting columnar epithelium. The area of stricture showed diffuse fibrosis with islands of heterotopic gastric mucosa containing all gastric mucosal cell types. Eight months post-operatively, there have been no further episodes of abdominal pain.

This is the fourth reported case in the pediatric age group of heterotopic gastric mucosa in the gallbladder causing symptoms necessitating cholecystectomy. We conclude that a child with abdominal pain and a non-functioning gallbladder should be considered for cholecystectomy even in the absence of cholelithiasis.

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L8N 3J5

148 words
ECTOPIC GASTRIC MUCOSA CAUSING RECTAL BLEEDING:
A CASE REPORT

Gervais O. Andze, Mary L. Brandt, Claude Roy, Khazal Paradis,
Salam Yazbeck, Pierre Russo.
Hôpital Sainte-Justine, Montreal (Quebec).

Ectopic gastric mucosa can occur anywhere in the gastrointestinal (GI) tract and may be a cause of unexplained GI hemorrhage. RN, a boy six years of age, presented with recurrent episodes of minor lower GI bleeding associated with lower abdominal cramping since age 4. Upper endoscopy revealed mild duodenitis. Lower endoscopy was performed 3 times with a questionable sessile polyp seen at 4 cm on the last exam. A biopsy showed mild eosinophilic infiltration of the submucosa. A CT scan showed a 1 x 2 solid mass in the left antero-lateral wall of the rectum. At surgery a sessile polyp of 3 x 4 cm was found 4 cm from the anal verge. The mucosa was a slightly darker color and the mucosal folds were more prominent than the surrounding mucosa. Total submucosal excision was performed. Pathology revealed gastric mucosa with parietal cells present. Ectopic gastric mucosa is a rare cause of GI hemorrhage but should be considered in children with unexplained recurrent bleeding, especially if there is a history of tenesmus or rectal pain. Submucosal excision is recommended and is curative.

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182 words
IMPROVING THE ACCURACY OF THE DIAGNOSIS OF ACUTE APPENDICITIS IN CHILDREN:
THE USE OF HIGH RESOLUTION ULTRASONOGRAPHY

Mary L. Brandt, François Vignault, Alain Ouimet, Denis Filiatrault, Laurent Garel, Andrée Grignon.
Hôpital Sainte-Justine, Montreal (Quebec).

Acute appendicitis remains the most common indication for emergency surgery in children, and may be more difficult to diagnose in children than in adults. 210 patients with abdominal pain were evaluated during a 12 month prospective, nonrandomized trial to establish the diagnostic accuracy of high resolution ultrasonography (US) in acute appendicitis. 158 children underwent abdominal US. Eight patients were lost to follow up and are excluded. 52 patients underwent appendectomy without preoperative ultrasound. There were 14% acute, 36% suppurative, 13% gangrenous, 33% perforated, and 4% normal appendices removed in 153 patients. The ultrasonographic criterion for appendicitis was a noncompressible appendix >6 mm in transverse diameter. There were 118 males and 92 females and the average age was 10.3 years (range 3-18). The appendix was seen in 125 patients (79%) and was >6 mm in diameter in 100:92 of these patients had appendicitis at surgery and eight were observed, with resolution of their symptoms. Twenty-five patients had appendices ≤ 6 mm by US: 23 of these patients were observed, with resolution of their symptoms, and 2 had appendicitis at surgery. The appendix was not visualized in 33 patients (21%): 10 underwent appendectomy for acute appendicitis and 23 were observed with resolution of their symptoms. The overall sensitivity was 92%, specificity was 92%, positive predictive accuracy was 97.8%, and negative predictive accuracy was 74.2%. Ultrasonography is highly specific and sensitive in diagnosing acute appendicitis in children, and may serve as an additional tool in diagnosing appendicitis in children who present with a confusing or unobtainable clinical history, and/or equivocal physical examination.

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262 words
PRIMARY CLOSURE OF CONTAMINATED WOUNDS IN PERFORATED APPENDICITIS

Drs. C. Burnweit, R. Bilik, B. Shandling
The Hospital For Sick Children, Toronto, Ontario M5G IX8

We studied clinical courses of 506 children consecutively admitted with appendicitis at The Hospital For Sick Children from 1985 to 1989. 181 children (35%), ranging in age from 1 to 17 years, presented with perforation verified by histologic examination. 95 of these (52%) had generalized peritonitis, 47 (26%) had local peritonitis and 38 (21%) had abscess formation. Usually triple antibiotics were begun preoperatively if perforation was suspected; otherwise cefoxitin was started. Triple antibiotics were used postoperatively for 5 to 7 days in almost all children in the perforated group. Neither abdominal nor subcutaneous drainage was routinely used even in cases of intra-abdominal abscess. The skin was closed primarily with steristrips (63%), staples (18%), subcutaneous Dexon (13%), or silk (5%).

Postoperative wound infection arose in 20 children (11%). Wound infections were noted from 1 to 14 days postoperatively (mean at 5.9 days). While 9 of these were treated with local therapy only, 11 delayed the child's discharge or necessitated readmission. No patient suffered major complications from his wound infection in that there were no cases of necrotizing fasciitis, reoperation for debridement, sepsis, or death. The intra-abdominal abscess rate in this group of 181 children was 6% (n=11). Our low rate of infective complications fully justifies the policy of primary closure in contaminated wounds. This policy eliminates the necessity for painful and time-consuming dressing changes, shortens hospitalization and obviates the trauma of delayed suturing of wounds in children.

Dr. Barry Shandling
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250 words
SUCCESSFUL TRACHEAL AUTOTRANSPLANTATION WITH A VASCULARIZED OMENTAL FLAP

Messineo A, Filler RM, Bahoric B, Smith C, Bahoric A
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A major problem in tracheal transplantation is the restoration of an adequate vascular supply to the transplanted trachea. Previous studies suggest that wrapping a free graft of trachea with omentum might produce adequate vascularization.

In these experiments a portion of trachea (6 rings) was completely removed in pigs through a right thoracotomy; a silastic stent was inserted in the trachea and the excised trachea was sutured back in place. In 9 animals (group A) a vascularized omental flap, created in the abdomen, was used to revascularize the autotransplanted trachea. The flap was passed into the thorax and wrapped around the transplanted trachea. The other 3 pigs served as controls (group B). The silastic stent was removed bronchoscopically after 2 weeks. 8 of 9 group A pigs were sacrificed, after 4 weeks, with no signs of airway obstruction. The other pig died after 14 days with airway obstruction. The omental graft was necrotic in this animal. 2 pigs in Group B died after 12 days; the third was sacrificed after 11 days because of respiratory obstruction.

All tracheas were removed and examined grossly and histologically. In the 8 surviving pigs in group A, trachea growth was normal with no differences in diameter between normal and autotransplanted trachea. Histologically intact cartilage was lined with respiratory epithelium. In the group A pig who died and in the controls, extensive mucosal necrosis and non viable cartilage was noted. These findings indicate a free graft of trachea can be transplanted with vascularization provided by an omental flap.

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225 words
LARYNGOTRACHEAL SEPARATION AND DIVERSION FOR COMPLICATED ESOPHAGEAL ATRESIA WITH INTRACTABLE SALIVARY ASPIRATION

Kerry S. Bergman and Mark A Hoffman
Division of Pediatric Surgery, New England Medical Center, and Tufts University School of Medicine, Boston, MA 02111 U.S.A

**Introduction:** Intractable salivary aspiration results from defective laryngeal protective mechanisms and leads to progressive lung damage. We present a patient with complicated esophageal atresia and distal tracheo-esophageal fistula who required an aerodigestive separation and diversion procedure to eliminate chronic salivary aspiration with deteriorating pulmonary function.

**Case Report** A female 1145 gram product of 28 weeks gestation born with esophageal atresia and distal tracheo-esophageal fistula. Gastrostomy and fistula division were planned. At surgery, the tip of the nasogastric tube was found in the mediastinum, and a perforated ultrashort proximal pouch was oversewn in the neck. Repeated aspiration prompted tube pharyngostomy and tracheostomy. At age 6 months, a substernal right colon esophageal conduit was fashioned to improve salivary drainage because of multiple "dying" spells secondary to aspiration. Severe gastrocolonic interposition graft reflux necessitated disconnection of the gastro-colonic anastomosis with maturation of a distal colon conduit "spit" fistula. Despite improved swallowing skills, salivary aspiration continued, with progressive pulmonary deterioration. At age 17 months, laryngotracheal separation and diversion were performed, with creation of an end tracheostome and ansstomosis of the proximal trachea to the side of the colon conduit. Postoperative barium swallow demonstrated flow of barium into the colon conduit by both the transpharyngeal and translaryngeal routes. The colo-gastric anastomosis was subsequently performed. The child remains well with stable pulmonary function at age 3 yrs.

**Discussion:** This is the first report of laryngotracheal separation and diversion in a baby, and the first instance of proximal tracheal diversion into a colon interposition graft for esophageal replacement. This procedure should be reserved selected patients with highly unfavorable anatomy leading to chronic salivary aspiration with pulmonary compromise.

Mark A. Hoffman, FRCS(C)
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THE ABSENCE OF CLINICALLY SIGNIFICANT TRACHEOMALACIA IN PATIENTS HAVING ESOPHAGEAL ATRESIA WITHOUT TRACHEO ESOPHAGEAL FISTULA.

DT Rideout, AH Hayashi, PA Gillis, JM Giacomantonio, HYC Lau.

Department of Surgery, IWK Children’s Hospital, Halifax, Nova Scotia.

The association of tracheomalacia (TM) with esophageal atresia (EA) has been well described. This study attempted to find a correlation between the severity of TM and the presence or absence of an associated tracheoesophageal fistula (TEF) in patients with EA. A review of all patients presenting to our institution with EA through the years 1970 to 1989 was carried out. Six patients with EA without fistula (Type A) and sixty-one patients having EA with fistula (Types B, C, D, and E) were analyzed. Five of the six Type A patients required esophageal dilatations and antireflux procedures; none had clinically significant TM. Thirty-five of the sixty-one patients with fistula required esophageal dilatation, and eight had an antireflux procedure; eleven (18%) required either long tube tracheostomy or aortopexy for TM. This small study supports a recent hypothesis of different embryological events resulting in different types of esophageal and trachea anomalies. When EA occurs without fistula, it appears that no significant alteration in trachea development occurs.

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163 words
NON RENAL CYSTIC MASSES IN NEONATES AND CHILDREN

B. Cramer, M.D., C. Pushpanathan, M.D., R. Kennedy, M.D.
Dr. Charles A. Janeway Child Health Centre & Memorial University of Newfoundland, St. John's, Newfoundland.

With the increasing use of ultrasound in the pediatric age group, abdominal cystic masses are being detected both antenatally and postnatally. A significant proportion of these are non renal in origin.

Over the past 5 years, 18 predominantly cystic abdominal masses of non renal origin were detected on ultrasound at our institution in patients less than 10 years. Ten patients were neonates of whom 4 were detected antenatally. Pathology correlation was obtained in 15.

Six were duplication cysts, 2 of which were in the antral region and one of these had ulceration and had perforated.

Five were ovarian in origin, 2 cystic teratoma, 2 with tortion and hemorrhage and 1 simple cyst with herniation in a newborn. In a miscellaneous group of 6, only 2 were newborn, one being a colonic atresia and another a choledochal cyst.

Several of these masses were picked up as incidental abnormalities or in patients with non specific abdominal pain. Ultrasound correctly predicted location and pathology in most. A significant proportion of the patients had complications from these masses which were necessary to diagnose and treat.
30. FRIDAY, 0900-0915 (O.R)

MANAGEMENT OF OVARIAN CYSTS PRESENTING IN THE FIRST YEAR OF LIFE

Aaron LE, Neilson IR, Croitoru D, Laberge J-M, Nguyen LT and Guttman F

Montreal Children’s Hospital, McGill University, Montreal, Quebec

With more frequent antenatal diagnosis of ovarian cysts there has been controversy about if, when, and what operation is indicated. The purpose of this study was to determine whether antenatal diagnosis has affected the management of ovarian cysts presenting in the first year of life. We reviewed the presentation of 10 infants who underwent surgical treatment for ovarian cysts over a 10 year period.

In 5 infants, ovarian cysts were diagnosed by antenatal ultrasound and ranged in size from 3.5 to 5.5 cm. At birth all had a palpable mass which was mobile in 2. Postnatal ultrasound revealed complicated cysts in all and exploration with oophorectomy was carried out at 2 to 17 days of age. The histology in all cases was compatible with follicular cysts which had undergone torsion antenatally. In the other 5 infants, cysts up to 7 cm were diagnosed postnatally from 1 day to 7 months of age (mean 2 months). Two had ovarian torsion and underwent oophorectomy. One cystic ovary was incarcerated in an inguinal hernia and was aspirated. In another case, an ovarian cyst was an incidental finding at laparotomy and was aspirated. The final patient had a juvenile granulosa cell tumor which was resected as a cyst and is now well at 4 years of age.

Antenatal diagnosis may lead to earlier surgery and thus affect management. We recommend exploration of all ovarian masses presenting in the first year of life if on ultrasound examination they are greater than 4 cm in size or appear complicated. Ovarian tissue should be conserved if at all possible.

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McGill University
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261 words
MESENTERIC CYSTS IN CHILDREN

Maureen A. Chung, Mary L. Brandt, Dickens St-Vil, Salam Yazbeck.
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Mesenteric cysts are rare intra-abdominal lesions of childhood which may vary in presentation from an asymptomatic mass to an acute abdomen. From 1970 to 1988, twelve children were diagnosed and treated for mesenteric cysts. The ages ranged from 2 weeks to 16 years of age (average age 5 years). There were seven males and five females. Eight patients required emergency surgery, two underwent elective surgery and in two patients the mesenteric cyst was an incidental finding. Two of the eight patients requiring emergency surgery had undergone exploration and appendectomy for presumed appendicitis one month previously, with normal appendices at surgery. Of the ten symptomatic patients, six presented with abdominal pain, two with abdominal distention, and two with an abdominal mass. Seven patients had preoperative ultrasounds which were diagnostic for mesenteric cyst in five patients. The second most frequent preoperative diagnosis was appendicitis, in 3 patients. The cysts were in the small bowel mesentery in 6 cases, the transverse colon in 4 cases and the gastrocolic ligament in 2 cases, and ranged in size from 2 cm to 45 cm. Operative procedures performed included enucleation (6 patients), partial or complete resection with intestinal resection (5 patients) and marsupialization (1 patient). The only recurrence occurred after marsupialization.

Mesenteric cysts are rare in children, are usually symptomatic, and are most commonly misdiagnosed as acute appendicitis. Previous series had few patients diagnosed preoperatively. Accurate preoperative diagnosis is possible with current ultrasonographic imaging techniques. Total resection is the procedure of choice and results in an excellent outcome.

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252 words
Abdominal lymphangiomas are classified together with mesenteric cysts. However, they differ by location, histology, and potential for recurrence, and should be considered as a separate clinical entity.

Thirteen children aged 2 weeks-11 years (mean 5.8 years) were identified over the past 16 years at our institution. Of these, 12 were symptomatic. Abdominal pain (11), vomiting (8), increased abdominal girth (8) and nausea (6) predominated. Other presentations were less frequent. Symptoms were present for an average of 2 months (7 less than 1 week) before correct diagnosis. An abdominal mass was palpable in 10. Intestinal gangrene was present in 2 cases. Although multiple imaging modalities were employed, ultrasonography (8/8) and CT can (4/4) proved expedient and reliable. In 2 cases, the lymphangioma could not be completely resected. There was 1 recurrence.

Although intraabdominal cystic lesions are described in the literature as relatively symptom free, our experience suggests otherwise. In this series, peritoneal signs and an abdominal mass were common. Catastrophic complications can occur and excision is facilitated by earlier diagnosis and the benefit of smaller size. Ultrasound and CT can accurately diagnose the lesion and should be used liberally in children with intermittent or ill-defined abdominal pain, leading to prompt recognition and definitive treatment.

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URACHAL ANOMALIES IN CHILDREN

James P. Rielly, Mary L. Brandt, Dickens St-Vil, Sami Youssef.
Hôpital Sainte-Justine, Montreal (Quebec).

Urachal remnants are uncommon congenital anomalies usually diagnosed in the newborn period. In a retrospective review from 1961 to 1989, 34 children were diagnosed with urachal remnants. There were 27 males and 7 females. Ages ranged from birth to 12 years (median age 3 months). Twelve (35%) were 1 month or younger. Umbilical drainage was the most common presentation (26/34). A palpable mass was found in 8 patients. Two patients presented with abdominal pain, and in one patient, a urachal cyst was noted incidentally during renal ultrasound. Anatomy of the urachal remnant found at surgery included a fistula or sinus (24 patients), vesico-urethral diverticulum (5 patients), a cyst (4 patients), and a band (1 patient). One of the fistulas consisted of a widely patent urachus, in a patient with no urethra, ambiguous genitalia, streak gonads, imperforate vagina, and imperforate anus. Two other patients also had an associated imperforate patients had drainage with interval excision, and 2 patients underwent incision and drainage and await excision. The only recurrence followed an attempted resection of an infected cyst. Cultures were performed in 20 cases and grew staph. Aureus in 9 cases and E. Coli in 2. Ultrasound was used preoperatively in 6/34 patients and was diagnostic for a urachal anomaly in 4. Cystogram or cystoscopy was performed in 9/34 and was positive in 2/9 cases. Ultrasound is the most helpful imaging technique in the diagnosis of urachal anomalies, if a cyst is present, and may also be indicated for routine evaluation of patients with imperforate anus. Umbilical drainage is the most common presentation in the newborn. Older children usually present with an abdominal mass. Primary excision in the treatment of choice for non-infected urachal remnants. Initial drainage, followed by excision, is the procedure of choice for infected urachal cysts.

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300 words

A coffee break will follow this paper (1000-1030)
Cocaine use has increased dramatically in North American women of childbearing age over the past decade. Exposure to cocaine in-utero can cause a variety of adverse effects including intrauterine growth retardation, neurological abnormalities, and an increased frequency of prematurity and abruptio placenta. At our institution a history of maternal cocaine use was noted in several newborns with gastroschisis. Therefore, a retrospective review of all patients born with gastroschisis was undertaken. Fifty cases of gastroschisis were treated between January 1985 and April 1990. Six of these infants were exposed to cocaine in-utero.

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Over the same time period, in a random sample of 200 normal children, maternal cocaine use was 3.75% compared to 12% in the gastroschisis group. This difference was statistically significant (P<0.05, chi squared). Incidence of gastroschisis was approximately one in 4,000 live births in the general population. Cocaine causes vasoconstriction, sudden hypertension, and cardiac arrhythmias. These factors may interrupt the blood supply to fetal tissues and result in the disruption of normal morphogenesis. In addition to the maternal effects, cocaine crosses the placenta by simple diffusion and acts directly on the fetus. Maternal cocaine use and gastroschisis appear to be related in this retrospective review. Incidence of cocaine use is obviously underestimated in hospital records due to legal implications. A prospective study has been undertaken wherein a careful history of substance abuse is taken from each mother whose child is treated for gastroschisis.

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242 words
CLINICAL DECISION MAKING: OPERATIVE VS NON-OPERATIVE THERAPY 
FOR BLUNT ABDOMINAL TRAUMA IN CHILDREN.

RH Pearl, DE Wesson LJ Spence, SH Ein, B Shandling, RA Superina, 
JC Langer, D Loeff, RM Filler 
Hospital for Sick Children, Toronto, Canada.

A 2yr study of our splenic injury protocol was done to include all blunt trauma. 1600 traumatized children during 24 consecutive months were admitted. 123 had abdominal injuries (AIS >2) and are evaluated. Per protocol management was based on clinical findings. Operative indications were based on: 1) acute blood replacement (>40 cc/KG) 2) peritonitis 3) need for fecal diversion. Only 23 patients had CT; 2 had peritoneal lavage, neither required surgery.

RESULTS: Time for OR averaged <2.5 hours

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<td>99.5 (N=12)</td>
<td>2.1 +1</td>
<td>19 +3</td>
</tr>
<tr>
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<td>18</td>
<td>33.3 (N=12)</td>
<td>0.72</td>
<td>12 +1</td>
</tr>
</tbody>
</table>

OR for: Hemorrhage=7, peritonitis=4, colostomy required=8

<table>
<thead>
<tr>
<th>DEATHS</th>
<th>ISS</th>
<th>blood cc/kg</th>
<th>ICU days</th>
<th>Hospital days</th>
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<tbody>
<tr>
<td>OR (N=10)</td>
<td>57</td>
<td>363.5 (N=10)</td>
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<td>&lt;1</td>
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<tr>
<td>No OR (N=6)</td>
<td>42</td>
<td>123.8 (N=6)</td>
<td>&lt;1</td>
<td>&lt;1</td>
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</tbody>
</table>

4 died in the ER, (3 vital signs absent on arrival). All laparotomies were for hemorrhage. Cause of death: multisystem=7, head=6, aspiration=1, tamponade=1, spinal cord=1. Six died w/o operation: Aspiration=1, Head=5.

CONCLUSION:
1) Protocol indications were reliable indices for surgery
2) Clinical parameters alone dictated most operations
3) When non-operative therapy is indicated it shortens hospital stay and potentially decreases long-term complications.

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167 words plus table
THE VALUE OF PRE-OPERATIVE MEASUREMENT OF LEAK POINT PRESSURE (LPP) AND LEAK POINT VOLUME (LPV) IN MYELODYSPLASTIC CHILDREN UNDERGOING ANTI-INCONTINENCE SURGERY

John Pike, Gina Berardinucci, B. Hamburger and George Kiruluta,
Montreal Children's Hospital

Aim: To evaluate leak point pressure and leak point volume during preoperative urodynamic studies and determine continence status postoperatively.

Methods: This is a retrospective study of 74 myelodysplastic children (age range 7-18) with intractable urinary incontinence unamenable to conventional medical management who underwent preoperative urodynamics. Particular attention was paid to intravesical pressure, and volume at time of urine leakage from urethral meatus (leak point pressure (LPP) and leak point volume (LPV) respectively). A LPP of less than 55 cm H₂O was considered an indication to increase outlet resistance with bladder neck sling or artificial sphincter. A LPV of less than 100 cc was an indication for bladder augmentation. A combination of these parameters was indication for combining bladder augmentation with procedure to increase outlet resistance.

Results: Bladder augmentation - 30 patients; 27/30 are dry on intermittent catheterization. Bladder augmentation and artificial sphincter - 10 patients; 10/10 are dry. Spontaneous voiding - 7, spontaneous voiding and intermittent catheterization - 3. Bladder neck sling - 4 patients; 2/4 are dry. Bladder augmentation and sling - 5 patients; 5/5 are dry. Artificial sphincter - 25 patients; 19/25 are dry.

Conclusion: Preoperative LPP and LPV are essential in the type of surgery required.
Colon volvulus in children is rare. Six children with colonic volvulus were treated from 1970-1990. There were three males and three females with an average age of 9 years (2-18 years). The volvulus occurred in the sigmoid (2 patients), cecum (3 patients) and transverse colon (1 patient). Two patients had cerebral palsy. All patients presented with either abdominal distention (4/6), abdominal pain (3/6), and/or vomiting (3/6). Previous history included recurrent intermittent abdominal pain (2 patients) and chronic constipation (2 patients). One patient with cerebral palsy presented with a fecaloma, fever, and cough. Delay in the diagnosis of colonic volvulus lead to his death, the only mortality in this series. Autopsy showed volvulus and perforation of the cecum and right colon with no congenital anomalies identified. Initial radiographs in this patient showed minimal large bowel distention with no signs of obstruction. 3/6 patients had evidence of small bowel obstruction, 1/6 had colon and small bowel dilatation, and 1/6 had a dilated sigmoid colon on plain films of the abdomen. Barium enema was performed in 4/6 patients, was diagnostic in all patients, and was therapeutic in one patient with a sigmoid volvulus. 4/5 surviving patients underwent surgery. Three patients had congenital bands which were lysed. One patient with cerebral palsy had necrosis of the transverse colon with no congenital anomalies identified and underwent resection. Colonic volvulus, through rare, should be considered in children who present with unexplained bowel obstruction, especially with a history of previous episodes of abdominal pain or chronic constipation. Mentally handicapped children may be at increased risk. Barium enema is diagnostic and may be therapeutic, allowing appropriate bowel preparation prior to surgery. Because of a high incidence of congenital anomalies surgical exploration is recommended for all children with colonic volvulus.
THE ANAL SPHINCTER FORCE IN THE EVALUATION OF POSTOPERATIVE IMPERFORATE ANUS

Barry Shandling, Robert Gilmour and S.H. Ein
The Hospital for Sick Children, Toronto

We have evaluated 48 children, all of whom had imperforate anus, by measuring the anal sphincter force (ASF).

Thirty-four were boys and of these 26 had a high imperforate anus and 8 the low anomaly. There were 4 girls with cloacal malformations, 7 girls with high and 3 with low type of malformation. In all the boys with a high imperforate anus the ASF ranged from 50 to 300 gm. Those boys with a low type had an average ASF of 502 gm. Normal values vary from 380 to 600 gm. Almost all the boys with a high imperforate anus had undergone posterior sagittal anorectoplasty and none were clinically continent. Their ASF measurements were lower than in patients with spina bifida. Those patients with a low anomaly, both boys and girls, were continent and had high ASF readings.

Thus the ASF is a simple, inexpensive and objective measurement of fecal incontinence when this is the consequence of muscular inadequacy. A reproducible evaluation is now available to compare results of different operations and different centres.

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174 words
A 2 kg male twin was born at 35 weeks gestation. An antenatal ultrasound had indicated the presence of dilated loops of bowel. At birth, a palpable mass was present in the upper abdomen. Bile-stained fluid was aspirated from the stomach. Abdominal x-ray demonstrated a double-bubble without distal gas. At laparotomy, a globular mass was found at the duodenujejunal junction. The entire small bowel was absent except for a 1 cm segment of terminal ileum. Excision of the enteric cyst, duodenoplastic and duodenocoileal anastomosis were performed. The infant was supported postoperatively with TPN. Enteric feeds were slowly advanced to 53 kcal/kg/day supplemented with TPN. However, full enteral nutrition was not tolerated. Progressive liver failure and thrombocytopenia necessitated discontinuance of parenteral nutrition. The infant succumbed from liver failure at the age of 9 months. As this infant and his twin were HLA identical it may have been possible to prevent his death with a small bowel transplant. The use of a healthy infant as a transplant donor poses a difficult ethical dilemma which at present remains unresolved.
JEWSHE ETHICS AND THE PEDIATRIC SURGEON

Rubin S.Z., Rabbi R. Bulka.
Children's Hospital of Eastern Ontario, Ottawa.

This review of Jewish ethics and the practice of pediatric surgery concerns the physician-patient relationship, medical research, and the sanctity of life. In Jewish tradition, a physician is given Divine licence to practice medicine. Advice and counselling are mandatory e.g., genetic counselling. The physician has to balance the patient's right to know his exact prognosis with the physician's responsibility to protect the patient. Jewish law condemns cruelty to animals, but legitimate scientific experiments on animals that might lead to cure of disease are necessary. The basic medical ethical principle of Judaism is the supreme value of life. Euthanasia is contrary to the teachings of Judaism. Whereas abortion may be mandatory when the life of the mother is threatened, once the child is born its life may not be compromised. Fetal tissue may be used for medical treatment if the abortion was inevitable or permissible. In transplantation, the major consideration concerns the establishment of the donor's moment of death. Hazardous therapy and human experimentation are permitted if the life of the patient may be saved. From the Jewish perspective the sanctity of life is the operative theoretical base for all medical ethical decisions. Differing circumstances may lead to different applications of this principal e.g., use of fetal tissue or transplantation; but the principle itself remains inviolate.
Pediatric surgeons are often faced with patients who present ethical dilemmas, including those who require urgent surgical intervention which may allow survival of the child but with prolonged suffering or a hopeless condition as a result. To survey attitudes of pediatric surgeons in North America regarding ethics and surgical care, a questionnaire was mailed to members of the Canadian Association of Paediatric Surgeons and responses (51 of 89 members; 57%) tabulated. Views were sought on topics of abortion, fetal research, AIDS, and indigent care. Clinical dilemmas in surgical treatment were posed, all involving an expected poor outcome, but with legitimate alternatives to surgical intervention. Respondents were separated by computer program according to age, religion, and "religiousness" for each question. Strong feelings regarding many questions on the survey were evident by enclosed comments and accompanying letters. From review of the survey, the following conclusions may be drawn: Respondents to this survey reflect a heterogenous group of varying ages, religions, and adherence to religious doctrine. There is surprisingly little difference in surgical management among these groups to the clinical case scenarios posed. Most feel that a child’s hopeless condition or pain and suffering should be of paramount consideration in surgical decision-making, with contribution to society and cost to society as much less significant factors. However, should a surgical dilemma between aggressive support and futility of care arise, results of this survey indicate the surgeon will opt in favor of preservation of life for the child rather than not prolonging life because of future suffering or long-term hopeless condition. Ethical guidelines for decision-making (parental authority, quality of life, absolute value of life, best interest of the child) may be artificial constructs when confronted by actual patient care issues. The operating surgeon appears to apply his/her medical knowledge and surgical "experience" to each individual case, incorporating his/her own ethical beliefs, and cognizant of legal guidelines for "standard care."

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316 words

NOTE: This is the final paper for the day. Association members are requested to stay for the business meeting; lunch will be served. The Presidential dinner is this evening. The meeting will begin at 08:00 tomorrow at the Janeway Child Health Centre; breakfast there at 07:30
ATYPICAL TUBERCULOSIS IN THE PEDIATRIC PATIENT: IMPLICATIONS FOR PEDIATRIC SURGEONS

David Sigalet ¹, Gordon Lees ¹, and Anne Fanning ²

¹ Dept. of Surgery, and ² Div. of Infectious Diseases, Dept. of Medicine, University of Alberta Hospitals, Edmonton Alberta.

A typical species of mycobacteria are now the commonest cause of tuberculous lymphadenopathy. It is important for pediatric surgeons to be aware of this disease, since excision remains the mainstay of therapy. We reviewed the regional experience in Northern Alberta with atypical tuberculosis causing lymphadenopathy by reviewing the records of the Provincial Laboratory of Public Health from 1979 to 1989. This facility processes all TB cultures for this area. A total of 25 cases of atypical mycobacterium species causing lymphadenopathy were identified in patients under 15. These infections were characterized by a short history (2.25 months) of remarkably nontender regional adenopathy (usually cervicofacial, 21/25), in young (average age 2.75 years) Caucasian (24/25) children. All were eventually treated surgically, with one recurrence, and no surgical complications. These are usually indolent infections, however in immunocompromised patients they can be life threatening. An illustrative case of progressive infection with M. Avium in a neutropenic patient receiving chemotherapy is reviewed. The epidemiology, presentation, diagnosis and treatment of atypical tuberculosis is then described in detail.

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CYCLOSPORINE EFFECTS ON THE FUNCTION OF NORMAL BOWEL

DL Sigalet 1, MN Kneteman 1, M. Keelan 2, and ABR Thompson 2
1Depts. of Surgery and 2Medicine, University of Alberta, Edmonton.

Although Cyclosporine (CsA) is required for immunosuppression after bowel transplantation, its effects on gut function have not been investigated; this study examined CsA effects on normal juvenile rats. CsA (15 mg/kg, subcutaneously) or control injections (C) of carrier oil were given following a typical rat bowel transplant protocol of injections daily x 3 then alternate days x 60 days (n=10 in each group).

Nutritional status was followed by monitoring feed intake, weight gain, and performing balance studies. In vitro studies included nutrient uptake studies and M.H.C. expression by gut epithelial cells.

Results: (mean + STD)

<table>
<thead>
<tr>
<th></th>
<th>Final Weight</th>
<th>Feed Intake</th>
<th>Nutrient Absorption</th>
<th>Glucose Uptake (active)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>grams</td>
<td>g/day</td>
<td>protein</td>
<td>fat</td>
</tr>
<tr>
<td>Controls</td>
<td>251±6</td>
<td>87±22</td>
<td>76±1</td>
<td>79±1</td>
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<tr>
<td>CsA treated</td>
<td>252±7</td>
<td>74±15</td>
<td>77±2</td>
<td>80±2</td>
</tr>
</tbody>
</table>

(*) = p<0.05 Student's T-test. ** units Vmax=nmol/100 mg mucosa/min, Km=mM

CsA levels were therapeutic: peak 368±44 microg/L, trough 311±96ug/L. In vitro assessments of fatty acid uptake showed no effect of CsA treatment. MHC expression by gut mucosa was unchanged by CsA.

The changes in Vmax suggest that the density of glucose carriers decreased in the proximal bowel with a compensatory increase in distal bowel, with no change in the affinity of the carrier for glucose. Although nutritional status was not affected, the changes at the cellular level suggest that further evaluation of CsA effects on normal and transplanted bowel should be carried out, especially before transplanting bowel into pediatric patients.

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217 words plus table
The presence of heterotopic salivary tissue in the anterior aspect of the neck is a rare but well described phenomenon. Even more unusual is the occurrence of neoplasia within such remnants, this having been previously reported on only 3 occasions. We report the case of a 14 yr old girl presenting with a painless 2 x 3 cm nodule located in the left carotid triangle of the neck, which had been increasing in size over the previous 6 months. Clinical exam revealed no associated abnormalities and the lesion was distinct from the parotid and submandibular gland. Excisional biopsy was performed and a 2.5 x 2.5 x 2.0 cm nodule, which was deep to the platysma muscle and not contiguous with other structures, was removed. Histological examination revealed this to be a pleomorphic adenoma associated with residual normal salivary tissue of mixed serous/mucous variety. Subsequent sonographic examination revealed normal parotid and submandibular glands bilaterally. A review revealed 1 case of adenocarcinoma arising in heterotopic salivary tissue of the anterior neck in a 58 year old male and 2 similar cases of pleomorphic adenoma in a male and female aged 40 & 36 yrs respectively. In summary we have presented a case of pleomorphic adenoma arising in heterotopic salivary tissue in the anterior neck of a 14 yr old female. This lesion has not previously been described in the paediatric literature.

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232 words
QUALITY ASSURANCE IN PEDIATRIC SURGERY:
A COMPARATIVE STUDY

Ray Postuma, Nathan Wiseman, Nora Watters, Evelyn Fondse
Winnipeg Children’s Hospital, Health Sciences Centre

Quality Assurance (Q/A) defined as patient outcome improvement activity, is a vital aspect of patient care and medical education. However, the ideal method has not been developed.

This study compared two methods of Q/A: Concurrent Audit (C.A.), defined as the systematic identification and peer discussion of all treatment complications; Occurrence Screening (O.S.), a recent method of assessing patient care against a set of general outcome criteria (adverse patient occurrences) and performed concurrently and retrospectively by a trained screener in consultation with one surgical peer reviewer. C.A. and O.S. were performed on all 302 patients admitted to the Pediatric General Surgical service during May to Nov 1988. Day Surgery procedures were excluded from the study.

The study found that the strengths of C.A. were the regular peer review by surgeons and housestaff, the focus on outcome, and good data collection. However, C.A. lacked forwarding and trending of collected information and focused on individual events. The strengths of O.S. were the good reporting mechanism, a strong trending ability, multidiscipline (nursing) component, focused outcome and the objective data collection. The weakness of O.S. was its narrow audience and total reliance on medical documentation. The cost of O.S. was $3.00 per screen; cost for C.A. could not be determined.

Based upon the results of this parallel study, we conclude that a combination of C.A. and O.S., which takes advantage of the strength of each system, is likely the optimal audit construct for Pediatric Surgery Quality Assurance

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257 words
REVIEW OF THORACIC TRAUMA IN CHILDREN

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Department of Pediatric General Surgery, Winnipeg Children's Hospital

Sixty-seven children with thoracic trauma were admitted to Winnipeg Children's Hospital over a six year period. Their ages ranged from 4 months to 17 years with an average of 8.5 years. Sixty cases were secondary to blunt thoracic trauma while seven were penetrating injuries. Two-thirds of blunt injuries were related to motor vehicle accidents. The majority of injuries were contusions to the chest wall or lung, fractured ribs, pneumothoraces or hemothoraces that were adequately managed nonoperatively. Of the five cases requiring surgical intervention for thoracic injuries, three were bronchial avulsions. Although a bronchial injury was suspected early, the diagnosis was delayed in all three cases. Approximately 90% of the children had complications of the thoracic injuries. The three deaths that occurred were the result of severe cerebral trauma. Of the children requiring intensive care, the average length of stay was four days. Length of stay in hospital ranged between 1 - 83 days with an average of 12 days.

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159 words
RUPTURE OF THE THORACIC TRACHEA FOLLOWING BLUNT TRAUMA—
DIAGNOSIS BY CT SCAN

Steven B. Palder and Barry Shandling
The Hospital for Sick Children, Toronto

A case of isolated rupture of the thoracic trachea due to blunt trauma in a 4 year old child is presented. The rarity of this injury and its initial presentation as massive subcutaneous emphysema and bilateral pneumothoraces warrant its description. This child was diagnosed as having a trachea injury by CT scan. The diagnosis was confirmed at bronchoscopy and was successfully treated by thoracotomy and primary closure of a 3 cm rent in the membranous portion of the trachea. Mention is made of the difficulty of intraoperative ventilation due to the large air leak. This was controlled by intermittent tamponade of the defect with sequential closure. Post-operatively the child did well and was discharged on the sixth post-operative day. Rigid bronchoscopy done 2 months postoperatively showed no abnormality.

This case demonstrated that CT scan is a helpful modality in the diagnosis of tracheal injuries. The treatment resides in early operative intervention and closure of the defect.

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156 words
THE MUSCLE SPARING THORACOTOMY IN INFANTS AND CHILDREN.

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Deformities of the chest wall, breast, shoulder girdle and spine are well documented sequelae of major thoracotomies that transect muscles, divide major motor nerves, resect ribs or cause them to fuse.

These deformities are probably aggravated by the growth process. This is why we make a plea for the routine use, in infants and children, of a muscle sparing thoracotomy which will minimize these sequelae without sacrificing exposure.

Major (postero-lateral) thoracotomy by this technique involves these steps: transverse incision below the tip of the scapula, elevation of skin flaps to expose the muscles, retraction of the latissimus dorsi posteriorly; retraction of the serratus anterior and scapula superiorly; freeing of the lower insertions of the serratus if required only; opening in the desired intercostal space; reapproximation of the ribs without crowding, using a pericostal suture which is passed along the interior rib subperiosteally, to avoid any compression on the neurovascular bundle; the muscles are allowed to fall back into place, the serratus insertions are reattached as indicated. Lessened post-operative pain and improved respiratory function are additional benefits.

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176 words
THORACOTOMY WITHOUT THE ROUTINE USE OF CHEST TUBE DRAINAGE

Kennedy R, Hayashi AH, Hassell LI, Lau HYC, Gilis DA.
Department of Surgery, IWK Children's Hospital, Halifax, Nova Scotia.

We questioned the usefulness of routine chest tube (CT) drainage for nonpulmonary thoracic procedures in neonates and children. Over a 8 year period 127 cases of patent ductus ligations were reviewed retrospectively. Demographic data, OR time, surgical blood loss, and complications were noted for 2 groups: those who had chest catheters placed at the time of surgery and those where no chest tube was employed. Neonates were studied separately from infants and children. Age, sex, OR time, blood loss, and length of intubation were comparable in both groups. The complications are tabulated below.

<table>
<thead>
<tr>
<th>COMPLICATIONS</th>
<th>Neonates n=49</th>
<th>Infants/Children n=78</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CT (n=5)</td>
<td>NO CT (n=44)</td>
</tr>
<tr>
<td>Pleural Effusion</td>
<td>0% (0)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>Pneumothorax</td>
<td>60% (3)</td>
<td>9 (4)</td>
</tr>
<tr>
<td>s.c. Emphysema</td>
<td>20 (1)</td>
<td>20 (9)</td>
</tr>
<tr>
<td>Atelectasis</td>
<td>40 (2)</td>
<td>14 (6)</td>
</tr>
<tr>
<td>Chylothorax</td>
<td>0 (0)</td>
<td>2 (1)</td>
</tr>
</tbody>
</table>

The data suggest that thoracotomy without chest catheter drainage is safe and associated with few complications. Currently, chest catheters are not employed provided that the following criteria are met.

1 - Absence of pulmonary injury
2 - Hemostasis
3 - Complete lung expansion upon closure.

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137 words plus table
The most common benign liver tumors are hemangiomas and hamartomas, both of mesenchymal origin. Mortality for patients with these tumors has traditionally been substantial despite non-invasive histology. Between 1965 and 1989, 24 patients were treated for a benign liver tumor. This represents 42% of all primary neoplasms of the liver seen during this period. Incidental findings of liver tumors at autopsy were excluded from this series. There were 10 males and 14 females with a mean age at presentation of 27 months (ranging from birth to 14 years). Sixteen were hemangiomas and presented earlier in life (mean age 4.4 months). In this subgroup, high output cardiac failure was present in 78% of the newborns. Six hemangiomas were resected, four were observed, one was treated with digitalis and diuretics only, three received steroids, and one received steroids and epsilon-aminocaproic acid. Non-hemangiomatous tumors included seven hamartomas and two focal nodular hyperplasias. All nine were resected. There was one death early in the series. At a mean follow-up of 38 months, 23 patients are cured or asymptomatic. In the past, mortality rates of 60 to 90% have prompted many authors to advocate resection of every symptomatic hemangioma. With the availability of more sophisticated imaging techniques and refinements in the treatment of cardiac failure, surgery can be used more selectively. Hepatic resections, once considered heroic, can now be performed with minimal morbidity and virtually no mortality. The 96% survival in our series of benign liver tumors contrasts with high mortality rates reported in the literature and illustrates the spectacular improvements that have been made in the diagnosis and management of these once ill-reputed tumors.
GLISSON'S CAPSULE FLAP TO DECREASE HEMORRHAGE IN REDUCED ORTHOTOPIC LIVER TRANSPLANTATION

Mary L. Brandt, François I. Luks, Dickens St-Vil, Jean-Martin Laberge, Louise Caouette-Laberge, Hervé Blanchard,
Hôpital Sainte-Justine, Montreal (Quebec).

Pediatric orthotopic liver transplantation is an accepted treatment of end stage liver disease and metabolic diseases of childhood. The development of the technique of reduced liver transplantation has made a much larger pool of donor livers available for transplantation in children. The major disadvantages of technique are a longer bench time for the donor liver, increased peri-operative blood loss and a higher incidence of subphrenic abscesses. We report a technique which may decrease blood loss during reduced liver transplantation.

Glisson's capsule is divided with a scalpel and a flap is developed superiorly with blunt instrument and finger dissection. After dividing the liver parenchyma, all visible vessels and bile ducts are ligated with 4-0 braided nylon suture. The cut surface of the liver is dried and a 5 ml layer of aerosolized fibrin sealant is sprayed on to the cut surface, keeping the rest of the liver submerged in the cold solution. The flap is placed onto the raw liver edge and smoothed into position, allowing it to adhere to the liver parenchyma. A second 5 ml layer of fibrin sealant is applied to the surface and edges of the flap.

The technique of graft reduction has increased the donor pool for children in need of orthotopic liver transplantation. However, this technique has been associated with increased peri-operative blood loss. Further refinements, such as covering the cut surface of the donor liver with a flap of Glisson’s capsule may help reduce this complication.

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242 words
FAMILIAL BILIARY ATRESIA: THREE SIBLINGS INCLUDING TWINS.

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Less than twenty cases of familial extrahepatic biliary atresia (EHBA) have been reported since 1855. To this series we add a report of EHBA in one girl, intrahepatic biliary atresia (IHBA) in her twin sister and EHBA in a subsequent female sibling.

In 1981 twin sisters were born to an 18 year old Algonquin Indian. Twin 1 developed jaundice at 1 month, twin 2 at 2 months. Workup including metabolic tests, abdominal, ultrasound, liver biopsy and DISIDA scan was consistent with EHBA for twin 1 and IHBA for twin 2. Twin 1 underwent an unsuccessful Kasai procedure at 1 1/2 months followed by multiple infections and death at 1 year. Twin 2 had a laparotomy at 3 months showing small patent ducts without retrograde liver flow. A Kasai was not done and death occurred at 1 year. A third sister was normal and a fourth sister was born in 1986 whose investigations revealed renal tubular acidosis and EHBA although liver biopsy was ambiguous—mild giant cell transformation with minimal cholestasis. An unsuccessful Kasai procedure at 1 1/2 months was followed by death at 2 years while awaiting liver transplantation.

In contrast to 7 reported cases of discordant findings in monozygotic twins, this is the first report of biliary atresia in both twins. The variety of pathology and a family history of one uncle with Amerindian cirrhosis raise questions about the relative contribution of genetic and environmental etiologic factors.

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NOTE: Coffee break (1010-1040) following this paper

240 words
COMBINED ESOPHAGEAL AND DUODENAL ATRESIAS

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16 neonates with isolated esophageal atresia (EA, n=7) or with a tracheo-esophageal fistula (EA-TEF, n=9) and duodenal stenosis (DS) or atresia (DA) were reviewed to define the clinical features and assess morbidity and mortality of this association. Other anomalies were present in 9, Down's syndrome in 5. Factors evaluated were birth weight, gestational age, associated anomalies, type of esophageal or duodenal anomalies, type of esophageal or duodenal repair and the presence of preoperative respiratory distress.

4 neonates died from either respiratory failure or sepsis prior to repair of both anomalies. The other 12 neonates underwent repair of esophageal and duodenal anomalies. In 10 of these, the repairs were staged.

Repair of EA/EA-TEF was done at a mean of 22 days (range 2-67 days) post repair of DS/DA. There were 11 early survivors. 2 died from aspiration 2 and 3 months after discharge.

Overall survival was related to the type of esophageal anomaly (EA-TEF: 8/9 survivors, EA: 3/7 survivors) and the presence of preoperative respiratory distress 25% survivors. Among 3 neonates with EA the diagnosis of DS/DA was delayed by several days. 2 of these were among the deaths.

We conclude that: 1) staged repair is a suitable method of management for the neonate with EA/EA-TEF and DS/DA. 2) In the neonate with EA the coexistence of DS/DA needs to be considered as a delay in diagnosis may directly affect the patients outcome.

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242 words
SIRENOMELIA IN AN IDENTICAL TWIN: A CASE REPORT.

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Sirenomelia, or the mermaid syndrome, is the most extreme example of the caudal regression syndrome. It invariably presents with lower limb fusion, sacral and pelvic bony anomalies, absent external genitalia, anal imperforation and renal agenesis or dysgenesis. Because of the resultant oligohydramnios these infants most often have Potter's facies and pulmonary hypoplasia. There are less than 100 cases reported in the literature, 15% of which are associated with twinning. BB J was the 2725 g, 38 week product of an uneventful pregnancy. His monozygotic twin was without anomaly. A prenatal ultrasound at 18 weeks gestation was suggestive of caudal regression in one twin. Physical examination of the infant revealed normal facies, fusion of the lower extremities with bilateral presence of hip, knee, and ankle joints, and absence of the external genitalia and anus. Ultrasound and evaluation revealed absence of both kidneys and the bladder. Radiographs revealed normal femurs, tibias and fibulas with fusion of the soft tissue between the lower limbs, non-fusion of the bodies of the lower lumbar vertebrae, sacral agenesis, and malformation of the pelvis. The infant was sedated and allowed to die. Autopsy confirmed the radiographic findings. The syndrome of caudal regression is thought to be the result of injury to the caudal mesoderm early in gestation. It has been suggested that the association of the most extreme form of caudal regression, sirenomelia, with monozygotic twinning may represent developmental arrest of the primitive streak, with creation of a second primitive streak, which gives rise to the usually normal twin. The embryology of the various presentations of the caudal regression syndrome may be further delineated by studying infants with this dramatic and fatal syndrome.

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276 words
A case of omphalopagus conjoined twins is presented. Female twins were successfully delivered vaginally and required emergency surgical separation shortly after birth for gastrochisis. Shared tissue included conjoined bowel. Both were born with anorectal malformations; one twin had a complex cloacal abnormality and patent urachus. A two year follow-up is presented as well as a review of the literature concerning omphalopagus twins.
JUNCTIONAL EPIDERMOLYSIS BULLOSA AND PYLORIC ATRESIA:
A REPORT OF LONG TERM SURVIVAL.

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The coexistence of congenital pyloric atresia (PA) and epidermolysis bullosa (EB) in newborns is a rare but distinct association. A universally fatal outcome has been reported in neonates born with the junctional type of EB and PA. This has led some to advocate that surgical correction of PA be withheld to obviate needless suffering. Five patients including one set of siblings constitutes our experience. Maternal hydramnios, and nonbilious vomiting were constant features. Delayed passage of meconium was found in four. Plain X-rays demonstrated gastric dilatation in an otherwise gasless abdomen. Blistering skin lesions were noted at birth in 4 and developed soon after in the last patient. Junctional EB was confirmed by electron microscopy in all.

The clinical course for these children has been far better than the literature predicts.

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Successful primary gastroduodenostomy was performed after appropriate stabilization. One infant died at 4 months with septicemia, malnutrition, and chronic urinary tract obstruction. Another child, born with dysmorphic features to consanguineous parents, is 9 years and has a seizure disorder. The remaining 3 are alive and well at 20 months, 9 and 16 years. The oldest 2 are siblings. In all 4 surviving patients, the blistering nonscarring lesions were found to significantly improve with age. Presently, these lesions are mild and require little therapy. Their nails, initially normal at birth, have become thick and dystrophic. The management of pitted, carious and yellow teeth is currently the major problem. Healthy long term survival in patients with Junctional EB and PA is documented in this report. Non operative management of PA is inappropriate in the stable neonate with EB.

266 words
LIFE THREATENING FLUID EXTRAVASATION OF CENTRAL LINES TO INTRAPLEURAL AND INTRAPERITONEAL SPACES.

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Central line insertion carries with it the risk of migration outside of the “central” vein and extravasation, presenting with edema of the neck or chest wall for superior vena cava catheters or edema of the thigh and abdominal wall for inferior vena cava catheters. These necessitate removal and are not serious to the patient, because the fluid usually resorbs in a few days. We present four babies with life-threatening migration of the catheter tip and extravasation. Three extravasated into the pleural cavity with complete opacification of the involved side on x-ray, and were cured by inserting a chest tube. One extravasated into the peritoneal cavity, due to migration of an inferior vena cava line (confirmed by contrast injection) and presented with abdominal distension, fever and leucocytosis in a patient who had a bowel resection, and improved with NG decompression and antibiotics, without tapping the abdomen.

The catheters migrated after a number of days of being in the vein and functioning well and permitting blood to be withdrawn. The machines did not register “occlusion” when the catheter migrated from the vein and the pump forced large volumes of fluid into the thoracic and abdominal cavities.

Sudden respiratory deterioration with a catheter in a superior vena cava location or sudden abdominal distention with an inferior vena cava catheter should alert one to catheter migration and fluid extravasation and an urgent chest x-ray or contrast study through the catheter should be performed.

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239 words
ISOLATED BOWEL SEGMENT (IOWA MODEL II): 
ABSORPTION STUDIES.

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We developed a new surgical technique to create an isolated bowel segment (IBS: Iowa Model II) in experimental animals which is completely free of its mesenteric attachment and yet has its viability preserved. The technique consists of two staged procedures: (1) initial enteropexy between the anterior margin of the liver and the antimesenteric border of the IBS with its ends forming cutaneous stomas, and (2) division of the mesentery of IBS 5 weeks later. In our previous studies, viability and motility of the IBS were preserved after its mesenteric division. In this study absorption function of the IBS was tested.

Thirty five rats (300-350gm) were divided into two groups. In the experimental group (n=20), the IBS (Iowa Model II) was created using an 8 cm long isolated segment of jejunum with the remaining bowel reconstructed by an end-to-end anastomosis. Five weeks later, the mesentery of the IBS was divided. In the control group (n=15), an 8 cm long segment of jejunum was arranged to form a Thiry-Vella loop. Five weeks later, a sham operation was performed in the control group of animals.

Using the constant perfusion technique, absorption of glucose and leucine was studied at 3, 8 and 11 weeks after the initial operation in both groups of animals. Absorption of glucose was 32.85 3.03, 18.30 3.89 and 15.50 1.81 mg/hr at 3, 8 and 11 weeks respectively, in the experimental group, while it was 30.22 4.83 and 23.13 3.86 mg/hr at 3 and 11 weeks, respectively in the control group. Absorption of leucine was 24.42 6.67, 7.62 2.63 and 8.30 2.09 umol/hr at 3, 8 and 11 weeks after the initial operation respectively, in the experimental group, while it was 18.62 4.51, 8.77 4.41 umol/hr at 3 and 11 weeks, respectively, in the control group.

This study concludes that absorption of glucose and leucine in the IBS is preserved after its mesentery is divided, suggesting that the IBS can be used as a functioning bowel for bowel reconstruction.

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Beyond infancy, PCI is rare. Data concerning pathogenesis and treatment are limited. Our experience with 12 children was examined to define predisposing factors, presentation, treatment and outcome. Nine children were immunosuppressed, thus identifying an important etiologic subgroup. Presentation was variable but included abdominal pain, distention, diarrhea and hematochezia. *C. difficile* was found in 3 patients and CMV in 1. Radiographs showed free air in 3. Nine were treated with antibiotics and bowel rest, 1 with bowel rest alone, 1 with oral metronidazole and one with observation. PCI resolved in 7/9 treated with antibiotics though 1 leukemic had severe hematochezia secondary to colonic ulceration and required hemicolectomy. No other patient required laparotomy. The free air resolved in 2/3. There were 2 deaths, both from sepsis. One had free air on admission but no perforation was found at autopsy. Treatment recommendations remain unclear, however, *C. difficile* and CMV are important pathogens which should be identified and treated promptly. In symptomatic patients bowel rest and antibiotics seem beneficial. Operative intervention should be reserved for patients with peritoneal signs, progressive deterioration, obstruction, or persistent, severe bleeding. Free air alone is not an indication for operative management in children with PCI.

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198 words
INTRA-ABOMINAL PULMONARY SEQUESTRATION

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With the routine use of prenatal ultrasound in monitoring fetal well-being, the fortuitous antenatal diagnosis of an intra-abdominal mass raises questions regarding diagnosis and management. Adequate communication between obstetrician and pediatric surgeon is essential, in order to avoid unnecessary obstetrical interventions. We present a case in which the antenatal diagnosis of a left suprarenal mass was made. Later it proved to be an intra-abdominal pulmonary sequestration containing cystic adenomatoid elements. Although an intra-abdominal lung sequestration was contemplated after the post-natal ultrasound, the diagnosis was not certain. In the few reported cases, surgical intervention was performed without an accurate reoperative diagnosis, thus surgical excision is obviously indicated. Better knowledge of this entity might lead to an accurate diagnosis, raising controversial issues regarding adequate management. Although there might be a role for conservative management, that is without excision, as presently performed for asymptomatic intrathoracic extralobar sequestration, little is known about the natural history of intra-abdominal pulmonary sequestration.

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156 words
PNEUMATOSIS IN
CHRONIC IDIOPATHIC INTESTINAL PSEUDO-OBSTRUCTION

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Chronic idiopathic intestinal pseudo-obstruction is a diagnosis of exclusion for the rare patient with severe small bowel atony without any demonstrable organic cause. The very poor prognosis associated with this disease has been somewhat improved with the advent of parenteral nutrition; nevertheless, these patients follow a stormy course characterized by malnutrition, recurrent obstruction, infection, hemorrhage and perforation. We describe a 16-year-old male with this disease who presented to us with vague abdominal pain and pneumoperitoneum. Laparotomy revealed pneumatosis cystoides intestinalis without intestinal perforation. The presence of free air in the abdominal cavity is an almost pathognomonic sign of intestinal perforation. Pneumatosis cystoides intestinalis is one of the very few nonsurgical causes of pneumoperitoneum. Beyond the neonatal period, where it is the hallmark of necrotizing enterocolitis, it has been described in patients with severe obstructive lung disease, in collagenous disorders and in the short bowel syndrome. In the present case, it may have resulted from chronic intestinal distension, allowing air under pressure to dissect through the bowel wall. The challenge of such a unique association of conditions lies in the avoidance of unnecessary surgery in a chronic, essentially nonsurgical disease while avoiding unnecessary delay in a possibly acute surgical event.

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199 words

This ends the 1990 scientific meeting.
Thank you for participating.
Closing remarks follow this paper.
Please see the secretary if your 1990 annual dues or registration fee for this meeting haven’t yet been paid!!
See you next September 19-22, 1991 in Quebec City.
Have a safe trip home!!
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Dr. Clinton Stephens died at the end of April 1990 after a brief illness. Clinton Ashworth Stephens graduated in medicine from the University of Toronto (U of T) in 1942 and his internship at Toronto General Hospital (TGH) was attenuated by the war. He served in the Royal Canadian Navy in the North Atlantic, rising to the rank of Surgeon Lieutenant Commander. His postgraduate training continued at Toronto General Hospital and at the Hospital for Sick Children (HSC) where he was chief resident. He joined the staff of HSC and the University's Department of Surgery in 1951. At the hospital, he held the title of Head of the Division of General Surgery for many years. Clint Stephens was an examiner for the Royal College of Physicians and Surgeons for six years, and a founding member of the Canadian Association of Paediatric Surgeons; he was one of the first Canadians to devote his practice entirely to pediatric surgery. He organized the first Canadian Graduate Training Programme in Pediatric Surgery, and his former residents are to be found in North America, South America, Australia and Africa; they returned to pay tribute to him on the occasion of his retirement in May 1985.

He was a superb teacher in the operating room; his results were outstanding. He was a precise, gentle, definitive technical surgeon, and always taught conservative surgery. His patient care was simple, easy and impeccable; his patients seldom took a step backwards. He was a walking textbook of pediatric surgery; his recall for patients and their problems was accurate and uncanny. He taught what high points his students should touch upon when they spoke, and he knew what subjects needed to be written about and what needed to be said about them. His teaching of Pediatric Surgery will continue in children's hospital wards and operating rooms all over the world.

Sigmund H. Ein
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