21st

Annual Meeting
Réunion Annuelle

EDMONTON
September 20-23, 1989

Canadian Association of Paediatric Surgeons
l’Association Canadienne de Chirurgie Infantile
EDMONTON
September 20-23, 1989
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 commonest 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.
MEETING AND BUSINESS PROGRAM

WEDNESDAY, SEPTEMBER 20, 1989

1030 - 1500 - COUNCIL MEETING
Edmonton Hilton, Northcot Room

THURSDAY, SEPTEMBER 21, 1989 - EDMONTON HILTON, WINTERLAKE SUITE

0700 - REGISTRATION and COFFEE
0800 - 1200 - ORIGINAL PAPERS
1330 - 1430 - FRED McLEOD LECTURE
Professor Jan Molenaar
1430 - 1600 - ORIGINAL PAPERS

FRIDAY, SEPTEMBER 22, 1989 - EDMONTON HILTON, WINTERLAKE SUITE

0800 - 1215 - ORIGINAL PAPERS
1230 - ANNUAL BUSINESS MEETING (lunch available)
REUNION D'AFFAIRES ANNUELLE

SATURDAY, SEPTEMBER 23, 1989 - WALTER McKENZIE CENTRE
UNIVERSITY CAMPUS
2F1.04 (CLASSROOM D)

0800 - 0830 - COFFEE
0830 - 1200 - ORIGINAL PAPERS & CASE REPORTS
SOCIAL PROGRAM

WEDNESDAY, SEPTEMBER 20, 1989:

WELCOMING RECEPTION

Place: Rutherford House
       111th Street and Saskatchewan Drive

Time: 19:00           RSVP

THURSDAY, SEPTEMBER 21, 1989:

C.A.P.S. BANQUET

Place: Mayfair Golf and Country Club

Time: 19:30           RSVP
       BLACK TIE
FUTURE ANNUAL MEETINGS

22nd ANNUAL MEETING
TORONTO, ONTARIO
September 14-18, 1990

23rd ANNUAL MEETING
QUEBEC CITY, QUEBEC
September 20-23, 1991

24th ANNUAL MEETING
OTTAWA, ONTARIO
September 11-15, 1992
CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS
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1st ANNUAL MEETING - January 22, 1969 - VANCOUVER

* DECEASED
0700  Registration - coffee and donuts

0800 - 0945  Co-Chairmen / Lea Co-Presidents
            G. Lees, N. Wiseman

0800  SURGICAL IMPLICATIONS OF THE HEMOLYTIC UREMIC SYNDROME
      M.L. Brandt, S. Yazbeck, S. O'Regan, E. Rousseau
      Hopital Sainte-Justine, Montreal, Quebec

2. 0840  PROSPECTIVE STUDY OF 900 CHILDREN ADMITTED WITH SUSPECTED APPENDICITIS
      R. Postuma
      Section of Pediatric General Surgery, Winnipeg Children's Hospital
      University of Manitoba

3. 0830  ANTIBIOTICS AND APPENDICITIS IN CHILDHOOD
      I. Neilson, R. Sonnino, C. Moir, D. Doody, J.-M. LaBerge, S. Youssef,
      F.M. Guttman, L.T. Nguyen
      Department of Surgery, The Montreal Children's Hospital & McGill University

4. 0845  APPENDICITIS - SONIC BOON OR BUST: A CRITICAL LOOK AT ULTRASONOGRAPHY IN
         THE DIAGNOSIS OF APPENDICITIS
      S.Z. Rubin, D.J. Martin
      Children's Hospital of Eastern Ontario, Ottawa, Ontario

5. 0900  UMBILICAL FOLD INCISION FOR PYLOROMYOTOMY
      P.G. Fitzgerald, G.Y. Lau, J.C. Langer, G.S. Cameron
      Department of Surgery, McMaster University, Hamilton, Ontario

6. 0930  BALLOON CATHETER DILATATION FOR HYPERTROPHIC PYLORIC STENOSIS
      A.H. Hayashi, J.M. Giacomantonio, H.Y.C. Lau, D.A. Gillis
      Department of Surgery, I.W.K. Children's Hospital, Halifax, N.S.

7. 0945  INTUSSUSCEPTION IN CHILDHOOD: EXPERIENCE OF THE MONTREAL CHILDREN'S
         HOSPITAL - A REPORT OF 282 CASES
      Department of Surgery, The Montreal Children's Hospital & McGill University
0945 - 1015 Coffee
1015 - 1200 Co-Chairmen / Les Co-Présidents
R. Postuma, D. Girvan

9. 1015 TIMING AND REVERSABILITY OF BOWEL DAMAGE IN GASTROSCHISIS
J.C. Langer, J.G. Bell, R.O. Castillo, T.M. Crumbieholme, M.T. Longaker,
B.W. Duncan, S.M. Bradley, W.E. Pinkheiner, M.R. Harrison
University of California, San Francisco

8. 1030 COMPLICATIONS ASSOCIATED WITH SURGICAL TREATMENT OF CONGENITAL INTRINSIC
DUODENAL OBSTRUCTION
N. Spigland, S. Yazbeck
Hopital Sainte-Justine, Montreal

10. 1045 JEJUNUM IS PREFERENTIAL FOR THE CONSTRUCTION OF A BIANCHI SEGMENT IN SHORT
BOWEL SYNDROME
M.D. Boie, R.N. Fedorak, O.G. Thorston
Departments of Surgery and Medicine, University of Alberta

11. 1100 L'ATRESIE DE GUTTMAN: A PROPOS D'UNE OBSERVATION ET DE L'ETUDE RETRO-
SPECTIVE DE 4 CAS
R. Cloutier, S. Leclerc
Le Centre Hospitalier de l'Universite Laval

12. 1130 LETHAL SHORT BOWEL SYNDROME
B.J. Hancock, M.E. Wiseman
Department of Pediatric General Surgery
Children's Hospital, Winnipeg, Manitoba

13. 1150 ULTRASHORT HIRSCHSPRUNG'S DISEASE: MYTH OR REALITY
T.R. Neilson, S. Yazbeck
Departments of Pediatric Surgery, Hopital Sainte-Justine, Montreal,
and Montreal Children's Hospital, McGill University, Montreal,
Quebec

14. 1200 IS MALROTATION PRESENTING BEYOND THE NEONATAL PERIOD A FORGOTTEN DIAGNOSIS?
N. Spigland, M.L. Brandt, S. Yazbeck
Hopital Sainte-Justine, Montreal

1200 - 0130 Lunch Break
1330 - 1430  FRED MCLEOD LECTURE
PROFESSOR JAN MOLENAAR
ROTTERDAM, NETHERLANDS

"RECENT ADVANCES IN THE RESEARCH OF ENTERIC NERVOUS SYSTEM DISORDERS"

1430 - 1600  Co-Chairmen / Les Co-Présidents
M. Giacomantonio, G. Sebag-

15. 1430 A NEW SURGICAL TREATMENT OF HIGH AND INTERMEDIATE ANORECTAL ANOMALIES
COMBINING POSTERIOR SAGITTAL ANORECTOPLASTY AND THE MONTREAL PERINEAL
ANOPLASTY
S.Z. Rubin, J. Bass
Children’s Hospital of Eastern Ontario, Ottawa, Ontario

16. 1445 ANTERIORLY DISPLACED ANUS: AN UNRECOGNIZED CAUSE OF SEVERE CONSTIPATION
M. B. Ishitani, B. M. Rodgers
University of Virginia, Department of Surgery, Charlottesville, VA

17. 1500 MALIGNANT THYMOMA IN CHILDREN: A 20 YEAR REVIEW
N. Spiegel, M. Di Lorenzo, S. Youssef
Hôpital Sainte-Justine, Montreal

18. 1515 EFFECTS OF TALC PLEURODESIS IN GROWING SWINE
D. McGahren, G. Teague, T. Flanagan, B. White, B.M. Rodgers
University of Virginia, Department of Surgery, Charlottesville, VA

19. 1530 LASER EXCISION OF PEDIATRIC AIRWAY LESIONS
C.E. Bagwell, J.L. Talbert
University of Florida College of Medicine, Gainesville, Florida
0800 - 1000 Co-Chairmen / Les Co-Présidents
N. Wiseman, G. Fraser

20. 0800 EARLY EXPERIENCE WITH REDUCED-SIZE LIVER TRANSPLANTS IN CHILDREN
R.A. Superine, S.M. Strasberg, P.B. Greig, B. Langer
Department of Surgery, University of Toronto, The Hospital for Sick Children, Toronto, Ontario

21. 0845 EFFECTS OF CONGENITAL HEART LESIONS ON MORTALITY IN CONGENITAL DIAPHRAGMATIC HERNIA
M.O. Cayless, P. Wong, D. Bohn
Intensive Care Unit, The Hospital for Sick Children, Toronto, Ontario

22. 0850 LIVER TRAUMA IN CHILDREN
M.L. Brandt, N. Spigland, A. Ouimet
Hôpital Sainte-Justine, Montreal, Quebec

23. 0855 TRAUMATIC BILIARY AND INTESTINAL TRACT INJURIES REQUIRING SURGICAL INTERVENTION IN CHILDREN
N. Spigland, R. Sonino, M.L. Brandt, S. Yousef
Hôpital Ste-Justine and Montreal Children's Hospital, Montreal

24. 0900 PEDIATRIC CHANCE FRACTURES AND INTRA-ABDOMINAL INJURIES
A.H. Reid, R.M. Lett
University of Manitoba, Health Sciences Centre, Winnipeg, Manitoba

25. 0915 BLUNT HEPATIC INJURIES IN CHILDREN
E. Grisoni, J. Galat, M. Gauderer
Case Western Reserve University, School of Medicine

26. 0930 DIAPHRAGMATIC INJURY IN CHILDREN
M.L. Brandt, M. Di Lorenzo, A. Ouimet
Hôpital Sainte-Justine, Montreal, Quebec

27. 0945 UNSUSPECTED DIAPHRAGMATIC HERNIA — A POTENTIAL CAUSE OF SUDDEN DEATH IN INFANCY AND EARLY CHILDHOOD
R.W. Byard, D.J. Bohn, G. Wilson, C.R. Smith, S.H. Ein
The Hospital for Sick Children (HSC), University of Toronto, Toronto, ONT.

1000 - 1030 Coffee break
28. 10:00 ASSESSING STUDENTS AT THE END OF THE SURGICAL CLERKSHIP. O.S.C.E. vs. M.C.Q.
S. Z. Rubin
Children’s Hospital of Eastern Ontario, Ottawa, Ontario

29. 10:15 TUMOR NECROSIS FACTOR LEVELS IN NEONATAL SURGICAL EMERGENCIES
I.R. Neilson, T. Whiteside, M.I. Rose
Division of Pediatric Surgery, Children’s Hospital of Pittsburgh and Pittsburgh Cancer Institute, University of Pittsburgh

30. 11:40 PEPTIC ULCER DISEASE IN CHILDREN
A. Alawadhi, S. Chou
Children’s Hospital of Eastern Ontario

31. 11:55 EFFICACY OF THE BUTTON GASTROSTOMY IN CHILDREN
T. Almalki, G. Lau, J.C. Langer, R. Issenman, G.S. Cameron
McMaster University Medical Centre, Hamilton, Ontario

32. 12:00 FEEDING GASTROSTOMY FOR CHILDREN WITH CANCER
G.K. Blair, G.C. Fraser, D. May, C. Heenan, K.W. Chan
Department of General Pediatric Surgery, Department of Pediatrics, Department of Nutrition Services, B.C. Children’s Hospital, Vancouver, B.C.

33. 11:55 THE UNCU POD COLLIS–NISSEN FUNDOPICATION IN INFANTS AND CHILDREN
M.A. Hoffman, S. Stylianos, N.N. Jacir
Division of Pediatric Surgery, New England Medical Centre, Boston, MA

34. 12:00 COMPLICATIONS OF ANTI-REFLUX SURGERY IN NEUROLOGICALLY IMPAIRED VS. NORMAL CHILDREN
K. Mettaggart, J.A. O’Connor, R.M. Filler
Department of Surgery, Walter Reed Army Medical Centre, Washington, D.C. and Hospital for Sick Children, Toronto, Ontario

1230 - 1400 CAPS ANNUAL BUSINESS LUNCHEON MEETING
EDMONTON HILTON HOTEL
WINTERLAKE SUITE
(CAPS MEMBERS ONLY)
0800 - 0830 Coffee

0830 - 1000 Co-Chairmen / Les Co-Présidents
G. Blair, M. Giammonia

35. 0830
ENODSIC LASER THERAPY FOR FOREIGN BODY BRONCHIAL OBSTRUCTION
A.H. Hayashi, D.A. Gillis, D. Bethune, D. Hughes, M. O'Neill
Department of Surgery, I.W.K. Children's Hospital, Halifax, N.S.

36. 0845
INFLAMMATORY PSEUDOTUMOURS OF THE LUNG. TWO CASES AND A REVIEW.
F.A. Daoud, G.M. Lees, T.E. Higa
The University of Alberta Hospital and the Royal Alexandra Hospital, Edmonton

37. 0845
DELAYED PRESENTATION OF HIRSCHSPRUNG'S DISEASE: ACUTE OBSTRUCTION SECONDARY TO MEGACOLON WITH TRANSVERSE COLONIC VOLVULUS
I.R. Neilson, R.E. Sommio, S. Youssel
Montreal Children's Hospital, McGill University, Montreal, Quebec

38. 0850
GASTRIC VOLVULUS - A LATE COMPLICATION OF GASTROSTOMY
A. Alawadi, S. Chou, P. Soucy
Children's Hospital of Eastern Ontario

39. 0900
SPONTANEOUS PERFORATION OF THE COLON IN A 15 YEAR OLD GIRL WITH EHLERS-DANLOS SYNDROME TYPE IV
P. Soucy, L. Eldon, F. Keeley
Children's Hospital of Eastern Ontario, Ottawa General Hospital, Ottawa Hospital for Sick Children, Toronto

40. 0905
EPSTEIN-BARR VIRUS (EBV) LYMPHOMA IN LEUKEMIA PRESENTING WITH BOWEL PERFORATION: A CASE REPORT
M. Di Lorenzo, S. Yazbeck, J. Bass, H. Hume
Hôpital Sainte-Justine, Montreal

41. 0915
ARTERIOVENOUS ANOMALY OF THE RIGHT LUNG WITH ANOMALOUS ARTERIAL SUPPLY FROM THE AORTA
B.J. Hancock, N.E. Wiseman
Department of Pediatric General Surgery, Children's Hospital, Winnipeg

42. 0930
REVERSAL OF CIRRHOSIS ASSOCIATED PULMONARY SHUNTS BY ORTHOTOPIC LIVER TRANSPLANTATION (OLT)
Hôpital Sainte-Justine and Montreal Children's Hospital, Montreal

43. 0930
CHYLOPERICARDIUM: NEW THOUGHTS ON MANAGEMENT
B.B. Chan, B.H. Rodgers
University of Virginia Medical Centre, Department of Surgery, Charlottesville, VA
44. 0935  SILASTIC TUBING REPAIR OF INGROWN TOENAILS
R. Postuma
Section of Pediatric General Surgery, Winnipeg Children's Hospital
and University of Manitoba

45. 0945  THREE CASES OF ACALULOUS CHOLECYSTITIS IN CHILDREN - A SPECTRUM OF
SEVERITY
S. Wilson, M. Giacomantonio, C. Neave
The Departments of Surgery and Pathology, I.W.K. Hospital for Children
Dalhousie University, Halifax, N.S.

46. 0950  GRACILIS SLING: THE MOVIE
R.E. Sonnino, J.-M. Laberge, A.L. Bensoussan
Department of Surgery, Montreal Children's Hospital and Hopital Ste-Justine
Montreal, Quebec

1000 - 1030  Coffee break

1030  1145  Co-Chairmen / Les Co-Présidents
R. Postuma, J.-M. Laberge

47. 1040  A 24 YEAR FOLLOWUP OF A LARGE OMPhALOCeLE -- FROM SILOn POUCH TO PREGNANCY
S.H. Ein, A. Bernstein
Hospital for Sick Children and Mount Sinai Hospital, Toronto, Ontario

48. 1055  RECTAL DuplicATIONS IN CHILDREN: 2 CASE REPORTS AND REVIEW OF THE
LITERATURE
N. Spigland, A.L. Bensoussan, P.P. Collin, M.L. Brandt
Hopital Sainte-Justine, Montreal

49. 1100  POSTOPERATIVE INYUSSUSCEPTION IN A PREMATute NOvNATE
G.K. Blair, J.T. Lee, J.E. Dimmick
Department of General Pediatric Surgery, Department of Pathology
B.C. Children's Hospital, Vancouver

50. 1105  NECROTIZING YERSINIA ENTEROCOLITIS
B.K. Blair, J.T. Lee, G.C. Fraser, J.E. Dimmick
Department of General Pediatric Surgery, Department of Pathology
B.C. Children's Hospital, Vancouver

51. 1110  INTRARENAL NEUROBLASTOMA
D.A. Gillies, C. Neave, E.B. Grantmyre
Departments of Surgery, Pathology, & Diagnostic Imaging
The I.W.K. Children's Hospital, Halifax, N.S.

52. 1115  INTRAOPERATIVE TRANS PYLORIC JEJUNAL FEEDING TUBE PLACEMENT
G.K. Blair, J.T. Lee, G.C. Fraser, L.D. Scott
Department of General Pediatric Surgery
B.C. Children's Hospital, Vancouver

53. 1120  THE ANTE NATAL DIAGNOSIS OF HEPATIC NEOPLASMS
G.C. Fraser, G.K. Blair, J.T. Lee
Department of General Pediatric Surgery
B.C. Children's Hospital, Vancouver
54. THE EMERGENCY PRESENTATION OF NON OVARIAN CONGENITAL ABDOMINAL CYSTS
G.C. Fraser, R.H. Marshall, J.T. Lee
Department of General Pediatric Surgery
University of B.C. and B.C. Children's Hospital, Vancouver

55. ECTOPIC CERVICAL THYMUS IN CHILDREN: 3 CASE REPORTS AND A REVIEW OF
THE LITERATURE
N. Spigland, A.L. Bensoussan
Hopital Sainte-Justine, Montreal

56. AN UNUSUAL INTRAORAL MASS IN A CHILD - THE ORGAN OF CHIEVITZ
P. Soucy, G. Cimone, B. Carpenter
Children's Hospital of Eastern Ontario, Ottawa
abstracts
FRED G. MCLEOD LECTURE

"Recent Advances in the Research of
Enteric Nervous System Disorders"

Professor Jan C. Molenaar, Rotterdam, The Netherlands

Dr. Molenaar was born in Maassluis, The Netherlands and did his medical training at the School of Medicine of the Free University of Amsterdam. From 1959 to 1962 he did a missionary posting in Dutch New Guinea working as a government physician including three months as senior medical officer for the United Nations. From 1962 to 1969 he did his surgical residency at the University Hospital of the Free University of Amsterdam. This included 18 months with the Department of Experimental Surgery preparing a doctoral thesis.

Dr. Molenaar was head of the Department of Pediatric Surgery of the School of Medicine of the Free University of Amsterdam for three years until he was appointed head of the Department of Pediatric Surgery of the Sophia Children's Hospital in Rotterdam in 1973. Since 1982 he has been a professor of pediatric surgery at the School of Medicine of the Erasmus University of Rotterdam and served as chairman of the Standing Committee on Academic Research of this institution. He has membership in a number of medical societies and is an honorary member of the Pediatric Surgical Associations of Scotland, Greece, Japan and South Africa. He is also an honorary fellow of the American Academy of Pediatrics. He is an active member of several editorial boards and is an editorial consultant to the Journal of Pediatric Surgery. Dr. Molenaar has had an ongoing interest in the research and etiology of innervation disorders of the bowel and also has had a major interest in the role of basic research in pediatric surgery.

Hemolytic uremic syndrome (HUS) of childhood is a triad of acute anemia, thrombocytopenia and acute renal failure associated with a gastrointestinal prodrome. From 1977-1988 134 patients with HUS were admitted to our institution. All patients presented with diarrhea and abdominal pain, with or without rectorrhagia. Seventy-eight patients (60%) required dialysis. Five patients died (4%). Three patients underwent exploratory laparotomy. One patient presented acutely with pancolitis and perforation of the transverse colon. Despite surgical intervention he died on the sixth postoperative day. The second patient had been operated on elsewhere for presumed intussusception with pancolitis found at exploration. His initial postoperative course was complicated by severe fluid and electrolyte imbalances requiring hemodialysis. Twenty-four days postoperatively he suffered a spontaneous perforation of the transverse colon. The third patient had a hemoperitoneum from mesenteric and transmural bleeding of the entire intra-abdominal colon. One other patient was treated conservatively for pancreatitis which developed one month after her presentation with HUS.

Complications requiring surgical intervention in HUS are rare, potentially lethal, and usually involve the colon. Descriptions of these complications have not previously been reported in the surgical literature. A high index of suspicion is required to accurately diagnose the hemolytic uremic syndrome, appropriately diagnose and treat its complications and avoid inappropriate intervention.

2 PROSPECTIVE STUDY OF 900 CHILDREN ADMITTED WITH SUSPECTED APPENDICITIS

Ray Postuma, M.D.
Section of Pediatric General Surgery, Winnipeg Children's Hospital and University of Manitoba

The clinical data and outcomes were recorded prospectively in 900 children admitted with suspected appendicitis during five years, 1984-1989. Multiple regression equations (MRE) were developed from data of the first 450 patients and applied to the remaining patients. This study found that MRE could accurately predict appendicitis and perforation in individual patients. Measurements of tenderness (Algometry) and diagnostic ultrasound were also performed on some of the patients and were found to be useful adjuncts in the diagnosis of childhood appendicitis.
ANTIBIOTICS AND APPENDICITIS IN CHILDHOOD

Department of Surgery, The Montreal Children's Hospital and McGill University

Since 1986, a protocol for rational use of antibiotics in appendicitis has been followed:

- One dose of preoperative triple antibiotics (Ampicillin, Gentamycin, Clindamycin) is given.
  * If no perforation is found, the patient receives only 2 postop doses.
  * At laparotomy, if perforation is found or suspected, triple antibiotics are continued for at least 5 days or until afebrile with normal WBC.
- Copious irrigation is used.
- All wounds are closed primarily without drainage.

From December 1986 to December 1988, 380 appendectomies were performed. 90 (23.68%) were perforated, of which 16 had a localized abscess. 27 (7.11%) were gangrenous. Mean age was 10.23 years (range 3-18). 190 (50%) were under 10 years with 37 (9.7%) under 4 years. Of those under 4 years, 21/37 (57%) were perforated. 19 were Inuit and transferred from remote locations with 9/19 (47%) perforated. 19 were given a full course of antibiotics because perforation was suspected, however, pathology failed to demonstrate a perforation. 6 microperforations were treated as acute non-perforated appendicitis.

Infectious complications occurred in 1.58%. In non-perforated appendices, the wound infection rate was 0.42%. In ruptured appendices, there were: 2 intra-abdominal abscesses, 2 wound abscesses and 1 cellulitis of the abdominal wall which represent 6.67% of the perforated group.

Rational use of antibiotics with primary wound closure and without drainage may be acceptable management of appendicitis in children.

APPENDICITIS - SONIC BOON OR BUST. A CRITICAL LOOK AT ULTRASONOGRAPHY IN THE DIAGNOSIS OF APPENDICITIS.
S. Z. Rubin and D. J. Martin

Children's Hospital of Eastern Ontario, Ottawa, Ontario

In 1988, one hundred and thirty-four children (88 girls and 46 boys) with acute abdominal pain underwent ultrasonography at the Children's Hospital of Eastern Ontario.

RESULTS OF ULTRASONOGRAPHY

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>75</td>
</tr>
<tr>
<td>Appendicitis</td>
<td>45</td>
</tr>
<tr>
<td>Gynaecological Disease</td>
<td>11</td>
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<tr>
<td>Other Diagnoses</td>
<td>3</td>
</tr>
</tbody>
</table>

The length of history, site of maximal tenderness, vomiting, temperature, pulse and white count elevation, and ultrasonography were all compared. Ultrasound correlated best with final outcome, especially in perforated appendicitis (23/24). There were 5 false positive and 5 false negative ultrasound diagnoses of appendicitis.

CONCLUSION: When a definitive clinical diagnosis of appendicitis is made, ultrasonography may be unnecessary. However, in undiagnosed acute abdominal pain in childhood, ultrasound is an important diagnostic adjunct.
UMBILICAL FOLD INCISION FOR PYLOROMYOTOMY

P.G. Fitzgerald, G.Y. Lau, J.C. Langer and G.S. Cameron
Department of Surgery, McMaster University, Hamilton, Ont.

The umbilical fold incision, with division of the linea alba, has recently been described for pyloromyotomy, in
order to leave an "apparently unscarred abdomen".

We retrospectively reviewed 100 infants undergoing pyloromyotomy over 5 years. Fifty infants had a standard
right upper quadrant incision (RUQ), and 50 infants had an umbilical fold incision (UMB). The groups were similar in
age of presentation, sex, duration of symptoms, degree of
dehydration, and admission weight.

There was no significant difference in the length of
operating time between the two groups. Intraoperative
complications for the UMB group included 2 mucosal
perforations and 3 minor serosal tears; the RUQ group had
1 mucosa perforation and 1 minor serosal tear. There were
no significant differences in postoperative feeding
tolerance, or in length of hospital stay. Wound complica-
tions included 2 wound infections, 3 stitch abscesses,
and 1 hypertrophic scar in the UMB group and 1 wound
infection, 1 stitch abscess, 1 hematoa, and 1 hyper-
trophic scar in the RUQ group.

The umbilical fold incision permits excellent access to
the pylorus and has a comparable complication rate to the
standard RUQ incision, while leaving an almost
undetectable scar.

Balloon Catheter Dilatation for Hypertrophic Pyloric Stenosis

A.H. Hayashi, J.M. Giacomantonio, H.Y.C. Lau, D.A. Gillis
Dept. of Surgery, T.W.K. Children's Hospital, Halifax, N.S.

Balloon dilating catheters (BDC) have provided a non oper-
avative means of managing obstructive lesions within the GI
tract. We studied its utility in infants with hypertrophic
pyloric stenosis (HPS). Six patients with HPS underwent bal-
loon catheter dilatation of the pylorus under the direct ob-
servation of the surgeon. The pylorus was exposed using a
standard right upper quadrant incision. The BDC was passed
transorally into the stomach and manipulated into the pyloric
canal by the surgeon. The balloon was inflated with saline
to a pressure of 50 PSI for 2 minutes. Four patients were
dilated with a 10 mm diameter balloon catheter and in 2 pa-
tients, a 15 mm balloon was used. Success was defined as the
complete and longitudinal disruption of the seromuscular
ring without violation of mucosal integrity. Using this cri-
teria, none had successful pyloric dilatation. No disruption
occurred in 3 patients, partial disruption in 2. These pa-
tients subsequently underwent a Ramstedt pyloromyotomy. Com-
plete disruption was observed in one; however, a breach of
the mucosa was evident. This was repaired without incident.
All seromuscular breaks occurred at the point of vascular
entry along the lesser curve, presumably the weakest point
of the ring.

Pyloric dilatation using BDC does not reliably disrupt the
muscular ring. Our preliminary report recognizes that major
refinements must occur before this method will supplant the
time honoured surgical pyloromyotomy for HPS.
7 INTUSSUSPECTION IN CHILDHOOD: Experience of The Montreal Children's Hospital - A Report of 282 Cases
Department of Surgery, The Montreal Children's Hospital and McGill University
During the period from April 1977 to December 1987, 282 patients were
treated for intussusception. The mean age was 11.4 months (range 4 mon.-
13yr.).

Clinical findings were: - pain 72%
- vomiting 83.5%
- blood in stool 48.5%
- mass 32%

166/266 (60%) were treated successfully with barium enema.
116 underwent surgery of which:
- 95 (82%) were manually reduced
- 9 (8%) were already reduced spontaneously at
  laparotomy
- 12 (10%) were non-reducible and required
  bowel resection.

A "lead point" was found on
21 occasions (18.1%) of which:
- 3: Meckel
- 6: lymphoid hyperplasia
- 2: duplication
- 2: Peutz-Jeager polyph
- 2: lymphoma
- 1: Henoch-Scholein

In 16 (14%) pre-operative diagnosis was not intussusception. 5 patients
underwent repeated operations of which one had lymphoid hyperplasia as "lead
point".

No death in our series.

8 TIMING AND REVERSIBILITY OF BOWEL DAMAGE IN GASTROCHISIS
JC Langer, JG Bell, RO Castillo, TM Crombleholme, MT Longaker, BW Duncan,
SM Bradley, WE Finkbeiner, MR Harrison, University of California, San Francisco
Previous work in the fetal lamb examined the effects of amniotic fluid and bowel
constriction in the etiology of bowel damage in gastrochisis. This study used the
same model to assess the timing and reversibility of these changes during gestation.

Methods: Gastrochisis was created at 80 days, and a tape placed around the bowel
to cause gradual constriction with growth. Bowel damage was assessed at 100, 120
and 135 days (term=145) using histology, mucosal enzyme activity, and in vitro
motility. In another group, the constriction was removed at 120 days and a silastic
pouch placed over the bowel ("repair"); bowel damage was then assessed at term.

Results: Prolonged atrophy and venous dilatation were mild
at 100 and 120 days, but severe at term; these changes were only partially reversed by
"repair". Percentage changes in mucosal enzyme function, muscle thickness, and
contractility between control and gastrochisis animals are shown:

<table>
<thead>
<tr>
<th></th>
<th>100 day</th>
<th>120 day</th>
<th>Term</th>
<th>&quot;Repair&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maltase</td>
<td>-4%</td>
<td>-15%</td>
<td>+35%</td>
<td>+70%</td>
</tr>
<tr>
<td>Peptidase</td>
<td>-25%</td>
<td>-49%</td>
<td>-46%</td>
<td>-80%</td>
</tr>
<tr>
<td>Muscle thickness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circular</td>
<td>+2%</td>
<td>+5%</td>
<td>+84%</td>
<td>+43%</td>
</tr>
<tr>
<td>Longitudinal</td>
<td>+12%</td>
<td>+51%</td>
<td>+96%</td>
<td>+24%</td>
</tr>
<tr>
<td>Maximal response to acetylcholine</td>
<td>-17%</td>
<td>-17%</td>
<td>-56%</td>
<td>-37%</td>
</tr>
</tbody>
</table>

Conclusions: 1) Amniotic fluid causes early peel formation; 2) Severe obstructive
changes, and the greatest loss of contractility and mucosal function, occur late in
gestation; 3) These changes are only partially and variably reversible. This study does
not support intervention in utero, but does have important clinical implications in
determining the appropriate timing of delivery for fetuses with gastrochisis.
COMPLICATIONS ASSOCIATED WITH SURGICAL TREATMENT OF CONGENITAL INTRINSIC DUODENAL OBSTRUCTION. N. Spigland, S. Yazbeck. Hôpital Sainte-Justine, Montréal.

Although survival rates for infants undergoing surgical treatment for congenital intrinsic duodenal obstruction are high, long term follow-up suggests a high complication rate related to surgical therapy. We reviewed 33 neonates who were operated for congenital intrinsic duodenal obstruction during the past 10 years. There were 20 females and 13 males, the mean gestational age was 36 weeks and mean birthweight was 2405 grams. Bilious vomiting and intestinal obstruction were the most frequent presenting symptoms. Hydramnios was present in 75% of cases and 21% had associated Down's syndrome. Findings at laparotomy included duodenal atresia (14 pts), annular pancreas (11 pts) and duodenal diaphragms (9 pts). The most frequent surgical procedure was side-side duodeno-duodenostomy (DD) followed by duodenojunostomy and resection of web with Heineke-Mikulicz type duodenoplasty. Bowel transit was reestablished at a mean of 13.1 days (6-45 days). 70% of our patients developed post-op complications, the most frequent being megaduodenum with blind loop syndrome or bile, reflux gastritis (22%), cholestatic jaundice (17%), gastroesophageal reflux (17%), delayed transit (8%), bowel obstruction (8%). Six patients (12%) required surgical re-intervention for complications related to the initial procedure (i.e. megaduodenum, nonfunctioning anastomosis, missed intrinsic stenosis). Two patients died (6%). Stagnation and functional obstruction in the proximal duodenum is the main factor influencing the morbidity rate among these patients. Consideration should be given to the tapering duodenoplasty and diamond shaped anastomosis in order to help reduce problems associated with megaduodenum and help restore earlier bowel transit.

JEJUMIN IS PREFERENTIAL FOR THE CONSTRUCTION OF A BIANCHI SEGMENT IN SHORT BOWEL SYNDROME. Rule WD, Fedorak RN and Thurston OC, Departments of Surgery and Medicine, University of Alberta.

The Bianchi bowel lengthening procedure is effective in enhancing adaptation to short bowel syndrome (SBS) both experimentally and clinically. The object of this experiment was to compare the efficacy of residual ileum and jejunum in the construction of a Bianchi segment.

Eighteen female piglets weighing 14 – 17 Kg underwent a 75% mid small bowel resection. After a six week postoperative period the animals were randomly assigned to one of three treatment groups; a control group receiving no further therapy, a group receiving a jejunal Bianchi procedure and a group receiving an ileal Bianchi procedure. The animals were followed for a further 12 weeks with weekly feed intakes and weights.

The weights at 18 weeks for control, jejunal and ileal groups were 64 ± 7.2 (X ± SEM), 78.1 ± 5.4 and 72.8 ± 7.0 (Kg) respectively. Weight gain between weeks 8 – 18 was 35.7 ± 4, 50.3 ± 3.4 and 45.9 ± 6.4 (Kg). Weight gain in the jejunal, but not ileal group was significant (p < 0.02) when compared to that of the control group. The increase in bowel length due to growth of the animal and/or operative manipulation was not related to weight gain.

We conclude that within this model of SBS 1) weight gain was significantly higher in animals when the Bianchi procedure was performed in jejunum and 2) the mechanism of action was not related to an absolute increase in bowel length. Furthermore we speculate that weight gain was not related solely to mechanical obstruction.
11 L'ATRESIE DE GUTTMAN: A PROPOS D'UNE OBSERVATION ET DE L'ETUDE RETROSPECTIVE DE 4 CAS.
R. Cloutier, S. Leclerc

Le Centre Hospitalier de l'Université Laval

L'atresie multiple hereditaire decrite par Guttmman en 1973 est une pathologie rare qu'il faut differencier des formes habituelles d'atresie intestinale. Cette maladie a d'abord ete decouverte chez des canadiens francais, mais on l'a, depuis, rencontree ailleurs qu'au Quebec.

Nous rapportons l'observation d'une fillette qui presentait a l'echographie prénatale des anomalies suggestives d'atresie intestinale de la 16e semaine de vie intrauterine. L'investigation a la naissance nous a permis de poser chez elle le diagnostic d'atresie de Guttmman.

Nous presentons egalement les conclusions de l'étude retrospective des dossiers de 4 autres patients etudies au CHUL et decedeses malgre traitement, confirmant l'extreme gravite de cette maladie, tel que rapporte dans la litterature.

Ceci nous a conduits a offrir aux parents de l'enfant dont nous rapportons l'observation une attitude de non-intervention, limitee a une laparotomie diagnostique et a une therapie de paliattion.

12 LETHAL SHORT BOWEL SYNDROME
B.J. Hancock, M.D., and N.E. Wiseman, M.D.

Department of Pediatric General Surgery
Children's Hospital, 840 Sherbrook Street, Winnipeg, MB R3A 1S1

Infants with short bowel syndrome are a difficult problem to manage. Despite promising supportive measures with parenteral nutrition and surgical attempts to lengthen the remaining bowel, the outcome for many of these infants is poor. We have reviewed a series of seven infants diagnosed with severe short bowel. Causes included malrotation (3), atresia (2), and total intestinal aganglionosis (2). The survival time ranged from 15 days to 8 months. During their hospital course, each of these infants underwent from 1 to 5 operative procedures and all received parenteral nutrition ranging from 10 days to 6 months. One infant died of liver failure and another developed significant liver dysfunction secondary to prolonged TPN. With the exception of a few days, these infants remained hospitalized until their demise. When sufficient length of small bowel remains there is a remarkable ability to adapt and grow. However, a small group of infants suffer severe loss of functional bowel. Should these infants be managed at all? This review suggests that infants lacking functional small bowel beyond the Ligament of Treitz will inevitably succumb to their disease or treatment complications. Until alternative treatment options such as bowel transplant become feasible, operative intervention and nutritional support may prolong survival but do not change the outcome of these infants and should be discouraged.
13 ULTRASHORT HIRSCHSPRUNG'S DISEASE: MYTH OR REALITY.

Ian R Neilson and Salam Yazbeck*, Departments of Pediatric Surgery, *Hôpital Sainte-Justine, University of Montreal, and Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada.

The terms ultrashort Hirschsprung's disease or pseudo-Hirschsprung's disease have been used to define a spectrum of conditions with clinical presentation similar to Hirschsprung's disease but with presence of ganglion cells at rectal biopsy. Barium enema does not show a transition zone. However, as in classical Hirschsprung's disease, anorectal manometry demonstrates absence of the internal sphincter relaxation reflex.

We reviewed the presentation of 5 patients with chronic constipation who ranged in age from 3 to 57 years who fulfilled the above criteria for ultrashort Hirschsprung's disease. The duration of constipation was chronic or from birth in all patients and a history of straining at stool and soiling were common. All had been treated with maximal medical therapy without success. After suction rectal biopsy and anorectal manometry, internal sphincter myectomy was carried out with resolution of symptoms with up to 5 year follow-up. In four patients in whom pathology was available there were normal ganglion cells throughout the length of the myectomy specimen.

The pathophysiology of this condition seems analogous to esophageal achalasia. We propose that the terms ultrashort Hirschsprung's disease or pseudo-Hirschsprung's disease be replaced by anorectal achalasia reflecting the failure of relaxation of the internal anal sphincter, the causative factor in this condition.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (years)</th>
<th>Duration symptoms</th>
<th>Manometry</th>
<th>Pathology</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>no relaxation</td>
<td>+ ganglion</td>
<td>4 years</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>birth</td>
<td></td>
<td></td>
<td>4 years</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>birth</td>
<td></td>
<td></td>
<td>5 years</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>birth</td>
<td></td>
<td></td>
<td>1 month</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>birth</td>
<td></td>
<td></td>
<td>1 year</td>
</tr>
<tr>
<td>5</td>
<td>57</td>
<td>15 years</td>
<td>not available</td>
<td>not available</td>
<td></td>
</tr>
</tbody>
</table>


The diagnosis of malrotation is easily made in the neonatal period but is often delayed in older patients. Among 82 patients treated for malrotation in our institution, 45 patients presented with symptoms related to their malrotation, 7 were diagnosed at exploration for concomitant intrinsic duodenal obstruction, and 30 patients had malrotations discovered as incidental findings at laparotomy or autopsy. Among the 45 symptomatic patients, 25 (56%) were operated in the first month of life, while 20 patients (44%) were operated at an older age. In this last group, the mean age at surgery was 51.5 months (2 months - 16 years), the mean age of onset of symptoms was 2 years (0 - 15 years) and the mean delay in diagnosis was 1.7 years. Although biliious vomiting was the presenting symptom in most patients operated in the neonatal period, clinical features of older patients, included intestinal obstruction (7), chronic abdominal pain (4), malabsorption/diarrhea (3), peritonitis/septic shock (2), solid food intolerance (1), common bile duct obstruction (1), abdominal distention (1) and delayed transit post appendectomy (1). The frequency of midgut volvulus was equal among both groups. Unusual forms of malrotation were more frequent in patients operated beyond the neonatal period. In this group there was evidence of chronic venous and lymphatic obstruction with one case of superior mesenteric vein thrombosis and 2 cases of intestinal gangrene. A Ladd's procedure was performed in all cases and the most frequent post-op complication was adhesive intestinal obstruction. There were no deaths. Awareness of the unusual presentation in patients who present beyond the neonatal period may help reduce delays in diagnosis and surgical treatment.
A NEW SURGICAL TREATMENT OF HIGH AND INTERMEDIATE ANORECTAL ANOMALIES COMBINING POSTERIOR SAGITTAL ANORECTOPLASTY AND THE MONTREAL PERINEAL ANOPLASTY.
S.Z. Rubin and J. Bass
Children's Hospital of Eastern Ontario, Ottawa, Ontario

Reconstruction of high and intermediate anorectal malformations may be complicated by incontinence and an abnormal appearing perineum. Improved preservation of pelvic neuromusculature is obtained by posterior sagittal anorectoplasty (DeVries and Pena). Anoplasty utilizing the perineal skin (Yazbeck) re-establishes anal sensation and a more normal appearing perineum. A new procedure combining the two techniques is described.

Three children, 2 males and 1 female, with one high and two intermediate anorectal anomalies, have undergone the combined procedure. Clinical and manometric follow-up is continuing. The cosmetic appearance of the perineum is very satisfactory.

The initial positive experience with this combined approach may indicate the use for this procedure, especially in supralevator anomalies.

ANTERIORLY DISPLACED ANUS: AN UNRECOGNIZED CAUSE OF SEVERE CONSTIPATION
Michael B. Ishitani and Bradley M. Rodgers
University of Virginia, Department of Surgery, Charlottesville, VA.

Anterior displacement of a normal anus is recognized as a cause of severe constipation in some children and undoubtedly continues to cause symptoms in many adults. We have reviewed our experience with 14 children treated for this disorder over the past 8 years at the University of Virginia Medical Center. Ten of the patients were female and the age at the time of operation ranged between 11 months and 9 years. In all patients, constipation began in the first three months of life. Symptoms were characterized by marked straining and difficulty in passage of stool, often accompanied by perineal pain. All patients had been unsuccessfully treated with aggressive use of stool softeners and cathartics. The anus had a normal appearance, although it was located anterior to its normal position in every patient. There was no evidence of analstenosis on digital examination. In each case a large posterior rectal cul-de-sac could be palpated. A barium enema examination disclosed a prominent posterior shelf of the rectum, often with enormous dilation of the colon posteriorly. All patients underwent surgical treatment using a posterior anoplasty with advancement of the posterior rectal wall. In 9 patients a posterior rectal myectomy was added to the procedure. Pathologic evaluation of the rectal muscle was normal in each instance. Complete relief of constipation has been achieved in all patients, with followup extending as long as seven years. Two patients continue to require occasional use of stool softeners. Anterior displacement of the anus is a frequently overlooked, although easily corrected, cause of severe constipation in childhood.

Malignant thymomas are extremely rare in children with only 27 patients reported thus far in the pediatric surgical literature. We report 4 additional cases diagnosed in our institution over the past twenty years. There were 3 males and 1 female with a mean age of 7.5 years (range 3 to 14 years). Three of the patients presented with superior vena cava syndrome, cough, dyspnea and cyanosis and one presented with a rapidly enlarging anterior mediastinal mass secondary to acute hemorrhage of the tumor. One of the 4 patients also presented with spontaneous pneumothorax and a large pleuropericardial effusion. All patients had anterior mediastinal masses on CXR. Three patients underwent incomplete resection of the mass or biopsy because of "unsectability" and one underwent near complete macroscopic resection. Pathologic diagnosis revealed lymphocytic malignant thymoma (2), malignant epithelial thymoma (1) and in 1 case where initial diagnosis was lymphocytic thymoma, pathological findings were compatible with thymic T-cell lymphoma. All 4 patients received radiotherapy and 3/4 received adjunctive chemotherapy. All patients died at intervals ranging from 6 months to 3.5 years after diagnosis. All were found to have extensive metastatic disease at autopsy. One patient with thymic T-cell lymphoma died of leukemia 6 months after near complete surgical resection followed by radiotherapy. Malignant thymomas are highly aggressive tumors in children in contradistinction to their adult counterparts where the tumors are often slowly growing and asymptomatic with a 5 year survival of 65%. A radical surgical approach with complete excision of the tumor and contiguous structures in continuity, with adjunctive radiotherapy and chemotherapy remains the only hope for survival in children with these rare lesions.

EFFECTS OF TALC PLEURODESESIS IN GROWING SWINE Eugene D. McGahren, M.D., Gerald Tengue, M.D., Terry Flanagan, Bonnie White and Bradley M. Rodgers, M.D. University of Virginia, Department of Surgery Charlottesville, VA.

Talc pleurodesis (TP) via thoracoscopy is an effective means of preventing recurrent pneumothorax. We have successfully used this technique in 8 children with cystic fibrosis who suffered pneumothorax. Little is known about the effects of TP on lung compliance in growing children. We therefore studied the effects of TP in six growing pigs. Three pigs underwent unilateral thoracoscopic (TX) and TP. In 3 pigs, TX and TP were performed on one side and TX alone on the other. After 5 and 10 weeks, transpulmonary (TPC), transrespiratory (TRC), and static chest wall compliance (SC) were calculated in each lung. Hemithoraces having undergone TX or no procedure were considered CONTROL and those having undergone TP as TALC.

<table>
<thead>
<tr>
<th></th>
<th>(TPC)</th>
<th>(TRC)</th>
<th>(SC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 weeks (wt=34±1 kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=5 TALC</td>
<td>17±2*</td>
<td>16±1**</td>
<td>35±4</td>
</tr>
<tr>
<td>n=5 CONTROL</td>
<td>39±9</td>
<td>27±2</td>
<td>52±7</td>
</tr>
<tr>
<td>10 weeks (wt=62±1 kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=5 TALC</td>
<td>60±11</td>
<td>58±11</td>
<td>61±9*</td>
</tr>
<tr>
<td>n=4 CONTROL</td>
<td>69±15</td>
<td>56±10</td>
<td>118±20</td>
</tr>
</tbody>
</table>

*p < .05:  **p < .005 (Compared to Control Values)

TP caused impairment in TPC and TRC acutely but this resolved at 10 weeks. SC was minimally disturbed acutely, but demonstrated a restriction as the animals grew. An absolute increase in SC did occur, however, on the TALC side with growth. These data indicate that TP has no long term adverse effects on TPC or TRC in growing individuals and may be used safely to prevent recurrent pneumothorax.
LASER EXCISION OF PEDIATRIC AIRWAY LESIONS
C. E. Bagwell, M.D. and J. L. Talbert, M.D.
University of Florida College of Medicine
Gainesville, Florida

Treatment of life-threatening pediatric airway lesions has been greatly enhanced by development of the CO₂ laser. Using this modality, endoscopic access and precise tissue destruction are possible with minimal local inflammation and subsequent edema of the narrow airway. From 10/66 through 10/68, 26 patients underwent 90 laser procedures for excision of airway lesions, in 23 patients via bronchoscopy and via microlaryngoscopy in three patients. Ages ranged from one day to 20 years with most patients under two years of age. Diagnoses included: laryngeal cysts - 1; cystic hygroma - 3; tumors (neurofibroma) - 1; subglottic hemangioma - 1; excision of airway granulation tissue - 8; tracheal stenosis - 13 (including subglottic stenosis in 9). Therapy of the offending lesion required from one to eight laser procedures (mean 2.8), excluding one patient with congenital long-segment tracheal stenosis who required 34 laser treatments for repeated excision of tracheal granulation tissue. Most lesions responded to only one or two laser treatments. No bleeding or perforation occurred secondary to laser use. Use of the laser was responsible for salvaging the airway or simplifying management of the airway in 21 of the 26 patients. In three patients with cystic hygroma affecting laryngeal structures as well as soft tissues of the neck, laser excision was performed to maintain upper airway patency with a tracheostomy for airway control. Two patients with critical subglottic stenosis initially responded to laser excision, but moved away from the area and developed recurrence of their subglottic stenosis requiring tracheostomy as further laser treatment was either unavailable or was deferred in their new locale. Of the remaining six patients with subglottic stenosis, two were cured following a single laser treatment; two were cured following laser treatments to establish a lumen followed by cartilage interposition procedures. Two patients are undergoing laser excision in anticipation of a cartilage interposition procedure in the near future. We feel the significant benefits and minimal risk associated with laser endoscopy makes this modality an important part of the armamentarium of pediatric surgeons in treating obstructive airway lesions of infants and children.

EARLY EXPERIENCE WITH REDUCED-SIZE LIVER TRANSPLANTS IN CHILDREN.
EA Superina, SM Strasberg, PD Greig, B Langer, Department of Surgery,
University of Toronto, The Hospital for Sick Children, Toronto, Ontario.

Scarcity of small donors results in higher mortality rates for children on liver transplant waiting lists. We have recently started reducing the size of livers from adult donors to transplant into smaller recipients and our experience with the first 3 such transplants is reported here. All 3 patients required ventilation pre-operatively. Two had previously been transplanted and required urgent re-transplantation 64 and 29 days later. Graft failures were from rejection and arterial thrombosis. The 3rd patient underwent reduced-sized transplantation primarily. The recipients weighed 9.5, 5.9, and 35 kg and received livers from 80, 35, and 81 kg donors. The first 2 patients received left lateral segments and the 3rd received the entire left lobe. The additional backtable work added a mean of 2.2 hrs to the cold ischemia time. Operative blood loss was 18.5, 10, and 1.2 blood volumes and was related to previous surgery and coagulopathy rather than bleeding from the cut liver surface. Immediate liver function was excellent in all cases as indicated by bile production, good post-op prothrombin time (15.7-1.4 sec.) and correction of metabolic acidoses. Two patients died, 1 24 hrs after surgery from myocardial infarction, and the other 24 days later from systemic CMV disease. Both patients had good liver function. The 3rd patient is alive and well. The most important determining factor of survival is the patients’ condition rather than any hazard of the procedure itself, as improved results can be obtained by earlier transplantation and increased use of reduced size liver transplantation as primary procedures rather than as salvage operations for failed first transplants.
EFFECT OF CONGENITAL HEART LESIONS ON MORTALITY IN CONGENITAL DIAPHRAGMATIC HERNIAS. M.O. Cayle, P. Wong, D. Bohn, Intensive Care Unit, The Hospital for Sick Children, Toronto.

Congenital Diaphragmatic Hernia (CDH) is associated with over 50% mortality rate (MR) when diagnosed in the first 24 hours of life. This high MR has been attributed to pulmonary hypoplasia. However, a significant proportion of these infants have other lethal non-pulmonary conditions, including congenital heart lesions (CHL), which may go undetected prior to surgery and could affect the overall MR in this group of infants with CDH.

With this in mind, we reviewed all newborn infants with CDH referred to The Hospital for Sick Children, Toronto from 1980 to June 1988. Over this period (7.5 years) there were 143 cases of CDH. Ten (7%) of these newborns with CDH had CHL. These lesions included atrioventricular septal defects (2), pulmonary stenosis (2), truncus arteriosus (1), ventricular septal defect (1), atrial septal defect secundum (1), hypoplastic left heart syndrome (1), polyvalvular syndrome affecting the pulmonary and tricuspid valves (1) and right aortic arch (vascular ring) (1).

Three of 10(30%) with CHL died prior to surgery. The remaining 7 (70%) underwent surgical correction of the CDH. Five of these 7 patients died. The overall mortality of newborns with CDH and CHL was 8/10 (80%). Only one patient had a cardiologic evaluation including 2 dimensional echocardiography (2DE) prior to surgery. The majority of CHL were diagnosed either after surgery or at postmortem.

Our review indicates that children with CDH associated with CHL have a higher MR (80%) in contrast to the published figure of 50% MR for children with CHL. We would recommend that all CDH patients presenting in the newborn period, have cardiologic evaluation, including 2DE, prior to surgical correction of their CDH.


The liver is one of the most commonly injured organs in pediatric abdominal trauma. From 1974-1987 38 children were treated in our institution for liver trauma. There were 28 boys and 10 girls and the average age was 7 years. Thirty-five patients (92%) suffered blunt trauma and 3 (8%) had penetrating injuries. The most common cause of injury was being struck by a moving vehicle (58%) with falls (11%) and bicycle injuries (8%) being the next most common cause of injury. Associated injuries were present in 25 of the patients (66%). Fractures were the most common associated injury (14 pts). Associated neurologic injury was present in twelve patients and accounted for six of the seven deaths in this series. Thirty of the patients (79%) underwent laparotomy. Nine patients had associated intra-abdominal injuries. Fifteen had suture closure of the liver injury, five had resection of the injured liver, four required lobectomy, and six had drainage of their injury without repair. Three patients had injury to the suprahepatic vena cava. Eight patients were observed without surgery. Ultrasound, CT scan, liver spleen scan and clinical status were used to serially follow their liver injury. None of these patients required subsequent surgical intervention. Twenty one patients (55%) required transfusions ranging from 20-165 cc/kg (average 70 cc/kg). There was no difference in transfusion need between the operated and observed groups. Liver injury in children requires prompt resuscitation, evaluation and surgical intervention when indicated. A small group of stable patients may be candidates for observation rather than immediate surgical intervention. For those patients requiring surgical intervention, a knowledge of all available surgical options is mandatory.
TRAUMATIC BILIARY AND INTESTINAL TRACT INJURIES REQUIRING SURGICAL INTERVENTION IN CHILDREN. N. Spigland, R. Sonnino, M.L. Brandt, S. Youssef. Hospital Ste-Justine and MtL Children's Hospital, MtL.

Most pediatric patients sustaining blunt abdominal trauma present with lesions that resolve with non-operative therapy. Surgical intervention is necessary for certain biliary and G-I tract injuries. We reviewed a series of 19 patients who underwent surgical therapy for traumatic biliary and intestinal lesions. There were 12 males and 7 females (ages 3 years - 15 years). Mode of injury included most frequently MVA (passenger) (26%) followed by seat belt injuries (21%). Other less frequent causes included sledding accidents, MVA-pedestrian injuries, bicycle injuries, child abuse and falls. The most frequent injuries were bowel perforations (jejunal 6, duodenum 4, ileal 3, rectal 2, multiple small bowel 1). Other injuries included disruption of jejunal mesentary (1), CBD transection (1) and hepatoduodenal fistula (1). Presenting symptoms included most frequently abdominal pain, distention and increased temperature. Unusual presentations included a patient who presented with a biliol cystic collection simulating a pancreatic pseudocyst; another presented with a liver abscess 2" to a hepatoduodenal fistula, a third presented with abdominal distension and hyperamylasemia which was diagnosed initially as acute hemorrhagic pancreatitis and was later found to be an intestinal perforation. A 4th patient presented with diffuse gas gangrene secondary to a missed rectal injury. Delay in diagnosis ranged from several hours to 13 days. Because of the multiplicity of clinical presentations, early innocuity of symptoms and non-operative approach to blunt trauma in children these lesions are rarely suspected initially when they present as isolated injuries. A high index of suspicion and aggressive diagnostic approach will minimize delays in diagnosis and treatment.

PEDICATRIC CHANCE FRACTURES AND INTRA-ABDOMINAL INJURIES. A. Bruce Reid, MD, Resident in Orthopaedics & R. M. Lotsa, MD, FRCS(C), University of Manitoba, Health Sciences Centre, Winnipeg, Manitoba Canada.

Mandatory seatbelt legislation has lead to an increase in injuries of the spine and abdominal viscera. Previous reports of the "seatbelt syndrome" have shown the association of these two injuries to occur from a similar mechanism. Presented are seven cases of Chance fractures of the spine in the pediatric population and their association with the seatbelt sign, and intra-abdominal injuries. This clinical retrospective review looks at the mechanism of injury and the type of seatbelt used, presence of visceral injury, neurologic deficit, presence of seatbelt sign, delay in diagnosis and vertebral level of injury. The ages range from 7 to 17 years and L3 was the most frequent level injured. Six injuries occurred using seatbelts with four of them the lap variety. Five of seven patients displayed the "seatbelt sign" and three were associated with visceral injury. Only one patient suffered neurologic deficit and one patient required surgery for progressive kyphosis. Specific variations of the pediatric anatomy increase the susceptibility of these patients to this type of injury. Inadequate restraint and the adult design of manufacturers seatbelts along with mandatory seatbelt legislation may be increasing the frequency of this combination of injuries. It is felt that a closer look at seatbelt design with more attention to pediatric seating is required to guard these patients from further injury.
BLUNT HEPATIC INJURIES IN CHILDREN
E. Grisoni, M.D., J. Galar, M.D., and M. Gauderer, M.D.
Case Western Reserve University, School of Medicine
From 1979 through 1988, 33 children (ages 11-18 years) sustained documented blunt hepatic injury. Motor vehicle accident (24), child abuse (4), falls (3), other (1).
Twenty were diagnosed by computerized axial tomography (CT). They were treated non-operatively. Eight of these patients required blood transfusion (average 14.8 ml/kg). There were no complications or deaths. Thirteen other children underwent immediate exploration. Three (average age 3 years) were explored because of massive transfusion requirements (260 ml/kg). They all died from uncontrollable hemorrhage. The other 10 children were found to have no active bleeding from their liver lacerations. The transfusion requirements in this group was 26 ml/kg. Five of these 10 patients were adolescents (median age 16) who were managed by the general surgeon on call for trauma. Their indication for laparotomy was a positive peritoneal lavage. Three died of other injuries post-operatively.
Conclusions:
1) The incidence of reported hepatic injuries will increase due to comprehensive trauma care and CT scanning.
2) Hemodynamic stability, absence of peritoneal signs, and low transfusion requirements (< 30 ml/kg) are reliable guides for non-operative management of hepatic injury.
3) Peritoneal lavage is of limited value in assessing the need for surgical intervention.
4) Trauma surgeons must be familiar with the non-operative management of liver injuries in the pediatric population. It is a safe therapy in a monitored setting.

DIAPHRAGMATIC INJURY IN CHILDREN
Mary L. Bracht MD, Martha DiIorio MD, Alain Gurnet MD
Ste-Justine Hospital, Montréal, Québec
The diaphragm is rarely injured in the traumatized child. In the last ten years, eight children have been treated for diaphragmatic injury at Ste-Justine Hospital in Montréal. There were six boys and two girls. The ages ranged from 5 to 15 years with an average of 9.9 years. Seven patients had injuries due to penetrating trauma and one patient had a complete disruption of the left diaphragm from blunt trauma. All patients underwent exploratory laparotomy with repair of the diaphragmatic injury. Seven patients had associated injuries. Injury to the liver was the most common associated lesion. There were no deaths in our series.
An index of suspicion for diaphragmatic injury must be maintained for any child suffering penetrating trauma to the chest and/or abdomen or any child with major blunt trauma to the trunk. Because of the increased compliance of the thoracic cage in children, pressures high enough to rupture the diaphragm can be generated without external evidence of chest or abdominal wall trauma. Patients with any suspicion of diaphragmatic injury should be evaluated by serial chest x-ray, ultrasound, fluoroscopy, CT scan, barium swallow or peritoneal lavage. Diaphragmatic injuries of any size should be repaired as soon as they are identified. The morbidity and mortality of diaphragmatic injuries can be minimized by prompt recognition and surgical correction.

Occasionally, diaphragmatic hernias present in later life with mild gastrointestinal or respiratory problems. The prognosis is felt to be better in this latter group. A 37 year review of the files of the HSC from 1952 to 1989, however, located three previously well patients who suffered unexpected cardiorespiratory arrests due to unsuspected congenital diaphragmatic defects with intestinal herniation. Case 1: A 4 month old male collapsed after sudden onset of irritability and seizures. Case 2: A 2 month old male died in his sleep. Autopsies in both cases revealed posterolateral diaphragmatic defects with herniation of the bulk of the intestines into the left pleural cavities. The hearts and lungs were markedly displaced to the right. Case 3: A 24 month old female unexpectedly arrested after one day's history of vomiting. Chest x-ray showed a left sided hernia with a markedly dilated stomach lying in the thorax causing mediastinal shift. Autopsy was refused. These cases are described in detail to demonstrate that undiagnosed diaphragmatic hernias in infancy and early childhood may have lethal consequences with sudden collapse and death occurring due to massive intestinal herniation, with mediastinal and pulmonary compression.

ASSESSING STUDENTS AT THE END OF THE SURGICAL CLERKSHIP. O.S.C.E. vs M.C.Q.

S.Z. Rubin

Children's Hospital of Eastern Ontario, Ottawa, Ontario

At the University of Ottawa, 4th year students do a 2-week clerkship in Pediatric Surgery. At the conclusion of their "Pediatric" clerkship, students write an M.C.Q test (includes 40 surgical questions) and do an OSCE (includes 5 surgical stations). To evaluate the student assessment, two questions were asked:

A) Is there a significant difference in the results of the MCQ and the OSCE done by the same student?

B) Do these tests demonstrate an advantage to the student when the clerkship is done later in the academic year?

Test results were statistically analysed in 4 groups of 19-20 students in the same academic year.

In "A" there is a significant difference, decreasing later in the year, between the OSCE and the MCQ. (A paired T-test with a = 0.05 level of significance showed a difference of 2.332 initially and later in the year of 0.449.) In "B" the MCQ tests showed a definite advantage to the students writing later in the year. (2-sample T-test.) The OSCE results failed to indicate any advantage to students writing later in the year.

Individual student assessment may be quite different when assessed at the same time by OSCE and MCQ. Although knowledge (MCQ test) improved over the year, clinical performance (OSCE tested) was variable.
TUMOR NECROSIS FACTOR LEVELS IN NEONATAL SURGICAL EMERGENCIES

Ian R Neilsen MD, Theresa Whiteside PhD* and Marc I Rowe MD, Division of Pediatric Surgery, Children's Hospital of Pittsburgh, and *Pittsburgh Cancer Institute, University of Pittsburgh.

Tumor necrosis factor (TNF), a macrophage cytokine, has been reported to be elevated in sepsis, malignancy, and after endotoxin administration. TNF may be the major mediator of endotoxin shock and it has been implicated in the pathogenesis of hemorrhagic necrosis of the adrenal, kidney and gastrointestinal tract. There have been few prospective studies of TNF serum levels in patients at risk for endotoxin shock. The purpose of this preliminary study was to determine serum TNF levels by ELISA in ten neonates with surgical emergencies.

Two neonates with necrotizing enterocolitis (NEC) had normal preop and postop levels. A third with an elevated level died from sepsis before operation. Peritonitis, whether meconium peritonitis (MP) or after gastric perforation, was associated with an elevated level. One neonate with both esophageal and duodenal atresia had a normal postop level. Uncomplicated congenital diaphragmatic hernia (CDH) was associated with normal preop and postop levels. However, two patients with CDH, complicated by severe postoperative pulmonary hypertension, had extremely high levels. One of these patients required ECMO and had an elevated level which persisted while on ECMO, returning to normal only on the third post-ECMO day.

These preliminary results show that severely stressed neonates are capable of producing high systemic TNF levels. Elevated TNF levels might be the result of endotoxemia, sepsis or activation of macrophages. TNF might be involved in the pathogenesis of these conditions and clearly deserves further study.

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>NEC</th>
<th>NEC</th>
<th>NEC</th>
<th>Gastric Perf</th>
<th>Eso * Duo</th>
<th>CDH</th>
<th>CDH</th>
<th>CDH</th>
<th>CDH</th>
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<td>-</td>
<td>N</td>
<td>N</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>POSTOPERATIVE</td>
<td>N</td>
<td>N</td>
<td>DIED</td>
<td>0.8</td>
<td>0.3</td>
<td>N</td>
<td>N</td>
<td>6.3</td>
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Peptic Ulcer Disease in Children

A. Alawadhi, S. Chou

Children's Hospital of Eastern Ontario

A fourteen year experience of peptic ulcer disease in children is reviewed. There were thirteen females and twenty-seven males with an age range of 2 months to 17 years. The mode of presentation was mainly pain and/or bleeding. Ten percent of the children presented with perforation; the average age in this group being 4.8 years. A definite predisposing factor was present in 45 percent of the cases. Diagnosis of peptic ulcer disease was established by upper G-I contrast studies and endoscopy. Radiography failed to show peptic ulcers in 47 percent of the patients, while endoscopy was diagnostic in all cases.

Medical therapy was deemed successful in 28 of the 40 patients. Of the remaining 12 patients, 6 required elective surgery (average age: 12.75 years), while 6 needed emergency operations (average age: 4.5 years). The overall mortality of the 40 patients was 7.5 percent.

In conclusion, peptic ulcer disease in children is best diagnosed by endoscopy. It is usually amenable to medical therapy, and has a good overall prognosis. In the younger child, however, it tends to run a more fulminating course.
Efficacy of the Button™ Gastrostomy in Children

T Almakti, G Lau, JC Langer, R Issenman, GS Cameron
McMaster University Medical Centre, Hamilton, Ontario

The Button™ gastrostomy has recently been popularized for patients requiring chronic enteral feeding. This device is felt to be less irritating, more stable and more esthetically acceptable than traditional tube gastrostomies. We have evaluated by standardized questionnaire and personal interview the efficacy and complication rate in 19 children who have used the Button for 3 months to over 3 years. Fifteen were replacements for standard tube gastrostomies (Mallicot, Depezer, or Foley) and 4 were inserted primarily at operation. Thirteen children had severe chronic neurologic disabilities, and 6 required enteral supplemental feeding for management of other chronic disease.

In every case, the Button was esthetically more acceptable, and produced significantly less skin irritation than standard tube gastrostomy. The most common complication was accidental dislodgement of the connection tubing during feedings (11 cases), managed successfully by secure adhesive taping of the tube to the Button. Five patients, all neurologically impaired, had problems with the valve plugging or leaking; this was preventable by careful irrigation after each feed. Despite these problems, all but 1 parent felt that the Button gastrostomy was preferable to tube gastrostomy. This feeling was especially strong in the 6 neurologically normal children who could be more active, with an improved self-image.

We conclude that the Button gastrostomy is a useful alternative for selected patients, and that careful attention to detail in using the device improves the results and minimizes complications. Close long-term followup, and adequate education of the care-giver in the appropriate management of the Button are extremely important to ensure a good result.

Feeding Gastrostomy for Children with Cancer

Blair GK, Fraser GC, May D, Heenan C, Chan KW

Department of General Pediatric Surgery, Department of Pediatrics, Department of Nutrition Services
B.C. Children's Hospital
Vancouver, B.C.

Eight children ages 15 months to 18 years (median 2 years 5 months) received enteral nutrition via feeding gastrostomy (FG), for 2-1/2 to 40 months (median 8 months). The primary diagnosis included brain and spinal tumour (6), choriocarcinoma and hepatoblastoma. The indications for FG were chemotherapy-induced anorexia (5), panhypopituitarism (2) and recurrent apnea. FG was established by the Stamm Procedure (3) and by percutaneous endoscopy (5). All patients continued to receive chemotherapy and were able to come off parenteral nutrition. Six of eight patients gained weight while the remaining two maintained pre-FG weights. Four children regained their appetite while using FG. Complications of FG included cellulitis (4 episodes), blockage (1) and leakage (2). Most of these complications occurred in the three youngest patients of this series. Displacement of FG tubes requiring reinsertion affected four children. None of the complications were serious despite periods of pancytopenia and only one FG tube was removed due to sepsis. In conclusion, FG may provide an alternate route for prolonged nutritional support of children with cancer.
THE UNCOIL NISSSEN FUNDOPLICATION IN INFANTS AND CHILDREN
M.A. Hoffman, S. Stylianos, N.N. Jacir. Division of Pediatric Surgery, New England Medical Center, Boston, MA 02111, USA

Nissen fundoplication with gastrostomy is frequently performed in children with poor feeding skills, growth failure, and gastro-esophageal reflux (GER). While generally considered the standard anti-reflux procedure, problems with migration of the wrap through the esophageal hiatus into the mediastinum, or slippage of the wrap distally over the stomach, occur in 10-15% of patients and may lead to recurrent GER. Addition of a gastroplasty to the Nissen fundoplication may eliminate these problems.

We performed the uncoll Nissen fundoplication in 14 children with a mean age of 8 years. Eleven patients (79%) had neurologic impairment. All patients had documented GER and required gastrostomy. Thirteen procedures were performed via an abdominal approach, while 1 was performed through the chest. The gastroplasty was performed with the TA 30 stapler over a Maloney dilator. Complications included 1 wound infection and 1 delayed bowel obstruction requiring laparotomy. Follow-up at 6-10 months reveals that all children are tolerating feeds with positive weight gain, and none have recurrent GER or wrap migration on upper gastrointestinal series.

The uncoll Nissen fundoplication is advantageous because it (1) lengthens the segment of intra-abdominal esophagus; (2) recreates a fixed angle of His; (3) obviates the need for extensive mobilization of the esophagus at the hiatus; (4) creates a tension-free wrap fixed at 2 points along the neo-esophagus composed of gastric wall; and, (5) eliminates the need for sutures to the esophagus. These features more closely approximate the ideal anti-reflux procedure.

COMPILATIONS OF ANTI-REFLUX SURGERY IN NEUROLOGICALLY IMPAIRED VS. NORMAL CHILDREN.
Pearl, RH: Robie, DK; Ein, SH: Shandling, B; Wesson, DE; Suprina, R; McCarthy, JR; 0'Connor, JA; Filler, RM; Department of Surgery, Walter Reed Army Medical Center, Washington, D.C. and Hospital for Sick Children, Toronto, Ontario.

INTRO: Surgical management of gastroesophageal reflux (GER) in 213 patients was reviewed. PATIENT DATA: Presenting complaints (see below - Neurologically Normal(NN), Neurologically Impaired(NI)).

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>Respiratory</th>
<th>Vomiting</th>
<th>Hiatal hernia</th>
<th>Esophageal</th>
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<tr>
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<td>45</td>
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<td>45</td>
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<td></td>
<td>62</td>
<td>45</td>
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Aspiration, recurrent pneumonia, cardiac, anemia, stricture

Operation - Nissen 158, Thorn 55; G-tube Nn 23, Nn 115, p<.001; Follow-up - NN 67 (aver 2yrs), NI 121 (aver 1.6yrs).

RESULTS: Perioperative (<30days) morbidity (NN 1, NI 9); mortality (NN 2, NI 2); Postoperative morbidity and mortality (<360 Days):

Wrap | Herniation | Failure | Complications | Reoperation | Death |
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<tbody>
<tr>
<td>NN 1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>(2/17)</td>
<td>(3/3)</td>
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<tr>
<td>NI 1</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>(2/17)</td>
<td>(3/3)</td>
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P VALUE: .02 .02 .05 .02

Wrap herniations accounted for 38% of postop complications and 50% of the reoperations. Recurrent reflux accounted for 24% of complications and 28% of reoperations. 13 of 22 deaths in NN vs. 1 of 4 in NN were aspiration induced. The combined failure rate (reop and death) to effectively control reflex was 27% in the NI vs. 41 in NN. DISCUSSION: Wrap herniation occurs through disruption of the right and left leaf of the right crus, and was the major cause of morbidity and reoperation in our pts. At Walter Reed we have instituted three modifications to the Nissen and our preliminary results show no herniations, recurrent reflexes, or deaths. We have begun a prospective evaluation of GER children to identify factors implicated in poor postop results.
35  Endoscopic Laser Therapy for Foreign Body Bronchial Obstruction
A.H.Hayashi, D.A. Gillis, D.Bethune, D. Hughes, M. O'Neill
Dept. of Surgery, I.W.K. Children's Hospital, Halifax, N.S.
A case is presented where the Nd:YAG laser obviated the need for a major surgical procedure. A 9 year old boy presented with an 18 month history of persistent nonproductive cough. Symptoms were preceded by a choking spell while eating pistachio nuts. Moderately severe air trapping was clinically detected and imaging studies confirmed high grade left mainstem bronchial obstruction.
At bronchoscopy, the left main bronchus was near completely blocked by friable granulation tissue from a point just distal to the carina. The lesion bled easily precluding attempts to identify the presence of an underlying foreign body. The following week, the Nd:YAG laser was used with the child breathing spontaneously through a 5mm Storz ventilating bronchoscope under light general anesthesia. By advancing a quartz fiber through the biopsy channel, the granulation was photocoagulated with low power then vaporized partially with higher power before removing the fragments with a suction catheter. The delivered energy was 277 J pulsed at 0.5 sec intervals over a range of 20-40 W. Minimal bleeding was encountered. Once the granulation was removed, an irregular piece of pistachio nut shell was found embedded within the bronchial wall and retrieved with biopsy forceps. Recovery was complete and uneventful. Followup imaging studies documented complete resolution. Endoscopic laser surgery provided technical advantages over conventional methods and enabled less invasive measures to be performed with gratifying results.

36  INFLAMMATORY PSEUDOTUMOURS OF THE LUNG. TWO CASES AND A REVIEW.
F.A. Daudi, G.M. Lees, E.E. Hage. The University of Alberta Hospital and The Royal Alexandra Hospital, Edmonton.
This paper describes 2 children with inflammatory pseudotumour of the lung and reviews the literature with regards to histopathology and clinical management.
The 2 patients were 4 and 5 years of age and had recurrent lower respiratory tract infections; one patient was asthmatic. Persistent cough and discrete lung lesions were apparent. Both were treated with thoracotomy and excision. There were no operative complications and the convalescent period was normal. Follow-up at 1 and 2 years shows no recurrence. Histologically the lesion consisted of a lymphoplasmacytic proliferation within fascicles of collagen in a storiform pattern and presumably represented an exaggerated inflammatory response to an unknown immune trigger.
Biologic activity of this tumour is unpredictable; surgical excision is diagnostic and therapeutic. In the setting of a discrete lung lesion in a child exclusive of congenital, metastatic and infectious etiologies, inflammatory pseudotumour of the lung has emerged as the most common entity.
DELAYED PRESENTATION OF HIRSCHSPRUNG'S DISEASE: ACUTE OBSTRUCTION SECONDARY TO MEGACOLON WITH TRANSVERSE COLONIC VOLVULUS.

Ian R. Neilson, Roberta E. Sommio, Semi Youssef: Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada.

Despite advances in the diagnosis of Hirschsprung's disease, occasionally there is a delay in presentation. We report a case of acute abdominal distension secondary to transverse colon volvulus in a patient with unrecognized Hirschsprung's disease.

An eleven year old boy presented to the emergency department with complaints of painless abdominal distension. There was a history of constipation since birth and an investigation for Hirschsprung's disease had been undertaken in infancy. His constipation was managed with mineral oil and high fibre diet. On admission he was in no distress. An unprepared barium enema revealed a mid-sigmoid transition zone with a massively distended proximal colon. A presumptive diagnosis of Hirschsprung's megacolon was made. Despite nasogastric decompression and rectal irrigations his abdominal girth increased and for the first time he complained of abdominal and back pain. An emergency laparotomy was performed. Megacolon with distention of the sigmoid colon to a diameter of 21 cm was found with a 360 degree volvulus of the distal transverse colon. There was cyanosis and venous thrombosis of the mesentery, however, after detorsion the colon appeared viable. Liquid stool (4600 cc) was evacuated with a rectal tube. An end colostomy was performed at the transition zone. Pathology confirmed the diagnosis of Hirschsprung's disease. The patient did well postoperatively and is awaiting definitive surgery.

The implications of delayed diagnosis and a review of volvulus in Hirschsprung's disease are discussed.

Gastric Volvulus - a late complication of gastrostomy
A. Alawadhi, S. Chou, P. Soucy

Children's Hospital of Eastern Ontario

Two cases of gastric volvulus are reviewed. Both patients are non-verbal, mentally handicapped children who are fed by gastrostomy. Both had intermittent intolerance to bolus feeds per gastrostomy, accompanied by abdominal distention and vomiting of gastric contents. One patient had a previous partial fundoplication and gastrostomy, while the other had two pyloroplasties and gastrostomy. The axis of torsion ran from the esophago-gastric junction to the gastrostomy site. Both patients were treated by detorsion and gastroscopy.

It is postulated that the gastrostomy served as a fixed point for the volvulus. This is facilitated by chronically dilated stomachs induced by bolus tube feeds. These cases are reported to alert the clinician to this possibility when a neurologically impaired child with gastrostomy presents with feeding difficulties and persistent vomiting.

43
Spontaneous perforation of the colon in a 15 year old girl with Ehlers-Danlos syndrome Type IV.

Soucy, P.*, Eidus, L, Keeley, F.

Children’s Hospital of Eastern Ontario, Ottawa, Canada Ottawa General Hospital, Hospital for Sick Children, Toronto

A 15 year old girl presented with severe fecal peritonitis due to a large spontaneous colonic perforation.

The sigmoid colon was the site of a cluster of white serosal lesions with omental adhesions, of an appearance identical to that of the edges of the perforation.

Her father had died at 30 years of age of spontaneous rupture of an iliac artery aneurysm, preceded by rupture of a splenic artery aneurysm and a spontaneous carotid-cavernous fistula.

The clinical diagnosis of Ehlers-Danlos syndrome type IV was made. At the time of writing laboratory confirmation is being sought by collagen typing.

Spontaneous perforation of the colon is a well-described complication of this syndrome, with a high incidence of recurrence. We recommend total abdominal colectomy to minimize the latter possibility.

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This is the case report of a 4 year old male who was diagnosed as having acute lymphoblastic leukemia (ALL) in November 1985. While in remission and on maintenance chemotherapy, he developed a primary EBV respiratory infection in October 1986. On October 27, 1986 a plain abdominal radiograph taken for abdominal distention revealed free air. At surgery, multiple nodules were noted to stud the bowel. Central necrosis of these nodules with perforations were noted in the distal small bowel. Resections and end to end anastomoses were performed. Three days later the patient presented with a similar acute abdominal episode. At exploration, similar lesions in the duodenum proximal jejunum and colon were resected and end to end anastomoses were performed along with a loop ileostomy. Polymorphic B-cell lymphoma positive for EBV was found in the specimens as well as in mesenteric lymph nodes and in the liver biopsy. After cessation of chemotherapy and institution of radiotherapy, these lesions were seen to resolve on CT scan. The patient’s course was complicated by the development of cervical and mediastinal abscesses which were drained and E. Coli sepsis accompanied by chronic diarrhea requiring intravenous hyperalimentation. By January 1988 he appeared to be recovering. His ileostomy was closed in March 1988. Despite the absence of chemotherapy since October 1986, the patient is now well and in complete remission.
ARTERIOVENOUS ANOMALY OF THE RIGHT LUNG WITH ANOMALOUS ARTERIAL SUPPLY FROM THE AORTA

B.J. Hancock, M.D., and N.E. Wiseman, M.D.

Department of Pediatric General Surgery
Children's Hospital, 840 Sherbrook Street, Winnipeg, MB R3A 1S1

A 12 year old caucasian female presented with recurrent pleuritic right chest pain, hemoptysis and shortness of breath. She had previously undergone repair of an atrial septal defect with anomalous right pulmonary venous return. Bronchoscopy and bronchography demonstrated a hypoplastic right lung with ectopic origin of the right upper lobe bronchus and subepithelial bronchial hyperemia. Ventilation-perfusion scan showed 1% perfusion and 28% total ventilation to the right lung. Baffle obstruction to total anomalous right pulmonary venous return was associated with an anomalous vessel arising from the aorta at the level of the diaphragm. This aberrant vessel supplied the right lower lobe with retrograde flow into the right pulmonary artery resulting in absent pulmonary perfusion to the right lung and a significant left-to-right shunt. A right pneumonectomy was performed and the child recovered uneventfully. Only one similar case of arteriovenous malformation associated with aberrant arterial supply to the lung has been described.


Severe hypoxemia due to pulmonary shunting has been considered a contraindication to OLT. CB developed progressive cirrhosis secondary to biliary atresia. In July 1987, at 11 years of age, she developed cyanosis. Pulmonary function tests were normal. A shunt fraction of 35% was calculated by cardiac catheterization. In May 1988 her PaO₂ was 33 mm Hg (72% saturation) with minimal effort. Despite a normal coagulation profile and near normal liver function tests, she was accepted for transplantation. She underwent OLT in September 1988. Postoperatively she remained severely hypoxic for a period of 7 days. She began to improve on the 8th postoperative day (POD) and was extubated on the 17th POD with a saturation of 85% on 50% O₂. She was discharged two months postoperatively. Six months after OLT, her saturation was 98% on RA. A similar patient was successfully transplanted in Brussels. This 14 year old girl had a severe right to left shunt also associated with cirrhosis secondary to biliary atresia. Respiratory symptoms worsened over a 4 year period and preoperative PaO₂ varied between 40 and 58 mm Hg on RA. She was extubated 13 hours postoperatively and discharged 7 weeks later with supplemental O₂. Nine months after OLT, PaO₂ was 96 mm Hg and saturation 99% on RA. This experience suggests that hypoxemia is no longer an absolute contraindication to OLT. Right to left shunt associated with cirrhosis may be reversed by OLT.
Chylopericardium: New Thoughts on Management: Barry B. Chan, M.D. and Bradley M. Rodgers, University of Virginia Medical Center, Department of Surgery, Charlottesville, VA.

Chylopericardium (CP) is a rare entity which may be congenital in origin or secondary to surgical trauma, mediastinal lymphangiomas - hygromas (MLH) or radiation. Traditional treatment includes use of dietary MCT oil, pericardial drainage and thoracic duct ligation. Over half of the reported cases have required thoracotomy for control. Between January, 1985 and January, 1989 we have treated 4 children with CP: 3 secondary to MLH and 1 following cardiac surgery. The patients ranged in age from newborn to 16 years. All had symptoms of cardiac tamponade and underwent initial pericardiocentesis or tube drainage. One 3 month old infant with MLH developed CP following resection and responded to 4 days of tube drainage. The remaining children did not respond to repeated taps or prolonged drainage and underwent pericardio-peritoneal shunting (PPS) with Denver shunts. The shunt was removed in 9 days in one patient. One patient had the shunt exteriorized for 6 weeks and one patient continues to use the shunt after 3 years. The CP resolved in each case without recurrence. PPS provides a simple and effective alternative to prolonged pericardial drainage or thoracotomy in patients with CP of various etiologies.

SILASTIC TUBING REPAIR OF INGROWN TOENAILS

Ray Postuma, M.D.
Section of Pediatric General Surgery, Winnipeg Children's Hospital and University of Manitoba

Ingrown toenails are a frequent cause of morbidity in active adolescent patients. Many forms of treatment have been prescribed including antibiotics, soaking, packing of the nail and even removal. This paper describes a new (?) technique of inserting a silicone sleeve over the nail edge under local anesthesia. The procedure has been used in over 50 patients with very satisfactory results. The risk of recurrence appears to be lower than conventional techniques.
THREE CASES OF ACALCULOUS CHOLECYSTITIS IN CHILDREN -- A SPECTRUM OF SEVERITY

S. Wilson, M.D., M. Giacomantonio, M.D., F.R.C.S. (C)
C. Neave, M.D., Dr. F.H.

The Departments of Surgery and Pathology, I.W.K. Hospital for Children, Dalhousie University, Halifax, Nova Scotia

Three recent cases of acalculous cholecystitis in children have given us an appreciation of the spectrum of severity that can occur with this problem. In all three patients, the acalculous cholecystitis was secondary to a febrile illness. In one patient nonoperative management was adequate; in a second patient the edematous gallbladder, removed during laparotomy for suspected intra-abdominal sepsis, demonstrated the presence of a significant mucosal ulcer; the third patient required laparotomy because of the complications of hemorrhage and spontaneous perforation of the severely inflamed gallbladder. Acute dilatation of the gallbladder and acalculous cholecystitis are well recognized secondary events that can occur in sick infants and children. Although treatment of the underlying disease process, with observation only of the acalculous cholecystitis is appropriate initial management in most cases, the spectrum of severity of acalculous cholecystitis warrants close observation of these patients, as significant complications can occur.

GRACILIS SLING: THE MOVIE

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A review of experience with the gracilis sling procedure for incontinence following anorectal surgery was presented at this meeting one year ago. We now present a videotape of the procedure intended to elucidate the technical details for those surgeons who have not had the opportunity of observing the procedure directly.

A 17 year old girl remained totally incontinent after a pullthrough for imperforate anus in infancy and several other operations. She was evaluated and accepted for the procedure. Preoperative assessment, including physiotherapy, was satisfactory. She underwent a gracilis sling procedure, shown in the videotape. Highlighted in the videotape are the important steps in the procedure including placement of the incisions, mobilization and orientation of the muscle and its neurovascular pedicle. Perianal tunneling of the muscle and securing it on the ischium is detailed.

Despite poor patient compliance with postoperative exercises, the clinical results and anorectal manometry, six months post-op were excellent and are shown in the videotape.
A 24 YEAR FOLLOWUP OF A LARGE OMPhALOCELE -- FROM SilON
POUCH TO PREGNANCY
Sigmund H Ein, Abe Bernstein
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In 1970, this patient (NX) was first reported after her
massive ventral hernia was repaired. Her large omphalocele
was initially covered with skin flaps as a newborn, and at
three years of age the resulting ventral hernia was
completely repaired using the staging technique described
by Schuster, and modified by Plzak and Groes. Silon
sheeting was used as a temporary prosthesis. She remained
well until 1988 (age 23 years) when she became pregnant
with the expected date of confinement of January 10, 1989.
The first two trimesters were uneventful with reported
ultrasound showing a normal male fetus who was gaining
weight appropriately. By the third trimester the abdominal
girth did not increase coincident with the baby's size, so
that vomiting prevented adequate caloric intake, and pelvic
pressure from the baby's head caused increasing discomfort.
She spent seven weeks in hospital on peripheral TPN and
spontaneously delivered vaginally with the aid of forceps
of a 3.1 kg normal boy five weeks prematurely. This is the
first reported case of a large omphalocele patient
conceiving and delivering a normal fetus. It also reveals
the potential problems related to multiple surgical
procedures to close a large congenital abdominal wall
defect.

RECTAL Duplications IN ChILDREN: 2 CASE REPORTS AND REVIEW OF THE
Hôpital Sainte-Justine, Montreal.
Duplications of the rectum are extremely rare with only 56 cases
reported in the world literature. We would like to report 2 patients
who presented with cystic duplications of the rectum, who underwent
surgical intervention in our institution during the past 10 years.
J.M. was a 5 year old white male who presented with symptoms of con-
sipation and tenesmus as well as a 4 cm cystic mass that protruded
from the anus when he strained to pass stool. Rectal examination and
ultrasound suggested the clinical diagnosis of rectal duplication. A
trans-anal submucosal resection of a 3 cm cystic mass adherent to the
posterior rectal wall was carried out. Pathology revealed rectal
duplication containing certain zones of ciliated respiratory epit-
ethelium. The 2nd patient J.C., a 6 year old white female, presented
with a history of chronic constipation. A large cystic pre-sacral
mass was detected by rectal examination and confirmed by CT scan.
Complete submucosal resection of the cystic duplication was performed
through a posterior trans-sacral approach. Pathology revealed rectal
duplication lined by respiratory epithelium. Although duplications
are generally lined by mucosa of the adjacent bowel, heterotopic
mucosa, most commonly gastric or pancreatic may exist. Rectal dupli-
cations with ectopic gastric mucosa have been previously described,
however to our knowledge the presence of respiratory epithelium in a
rectal duplication has never been previously described. Complete
resection of these lesions results in cure.
49 POSTOPERATIVE INTUSSUSCEPTION IN A PREMATURE NEONATE

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Intussusception occurs most commonly between the 5th and 9th month of life. Affected infants are usually healthy and born at full gestational age. We describe a case of intussusception occurring in a 10 day old, 700 gram neonate born at 28 weeks of gestation. The diagnosis was made at laparotomy 7 days after colostomy for imperforate anus. There were 3 associated bowel perforations. This case demonstrates that postoperative intussusception can occur in the premature infant. It also serves to illustrate the difficulty in making the diagnosis preoperatively.

50 NECROTIZING YERSINIA ENTEROCOLITIS

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Yersinia enterocolitica is a recognized cause of an acute surgical abdomen. In older children, the clinical presentation may be similar to acute appendicitis. Infections in younger children and infants usually present as a mild, self-limiting gastroenteritis.

We managed a moribund, 6 month old infant who required an urgent operation for what appeared to be bowel obstruction. At laparotomy, the viability of the terminal ileum, cecum, and ascending colon was in doubt. The bowel was resected and the pathology revealed necrotizing enterocolitis. Yersinia enterocolitica was isolated from stool samples. The infant's condition improved and the ileostomy was closed 4 weeks later.

A review of the literature reflects the spectrum of clinical presentation of Yersinia infection. Our case illustrates the potential virulence of this disease.
INTRAOPERATIVE TRANSPYLORIC JEJUNAL FEEDING TUBE PLACEMENT

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This simple technique allows for early postoperative enteral alimentation particularly to patients in whom prolonged postoperative ileus is expected. Such feeding also bypasses the pylorus and eliminates any concern about gastrosesophageal reflux. It is especially ideal as a temporary feeding method for the child who because of complex upper gastrointestinal surgery, will not tolerate early oral or gastric feeding. The advantage over a radiologically placed jejunal tube is that the tube placed surgically will be softer and the risk of jejunal perforation would be decreased.

We present 10 children who have benefitted by this technique. They have recently undergone esophageal, gastric, or duodenal surgery.

The technique would be an adjuvant to a pre-existing gastrostomy, or a newly created gastrostomy when one is already indicated. A soft silastic feeding tube is passed through the gastrostomy site adjacent to the gastrostomy tube. With the aid of a guidewire, it is maneuvered across the pylorus and duodenum into the proximal jejunum. The guidewire is removed and the tube is sewn, then taped to the skin separately from the gastrostomy. Within 24 hours postoperatively, feeds may be administered via this tube. This technique is not new, but we feel it is under-utilized. In our patients, it has proved to be a quick, simple and safe procedure.
THE ANTE NATAL DIAGNOSIS OF HEPATIC NEOPLASMS

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Between January 1984 and March 1989, 18 children presented to B.C. Children's Hospital with liver tumours. Of these, seven were less than one year of age.

Three patients were seen in the perinatal period, a fetal ultra-sound having shown an abdominal mass in each case. Post-natal ultrasound showed that these masses were hepatic in situation.

In 1 case, the infant presented with mild congestive heart failure during the first day of life. Ultrasound and computer axial tomography suggested the presence of a hemangioendothelioma. Pathologic diagnoses were available for 2 other cases. A benign lymphohemangiomia was resected from the left lateral lobe of the liver on the second day of life in 1 baby. Another baby had a benign cyst removed from the medial segment of the left hepatic lobe. This was thought to have arisen from a degenerating benign hemangiomia.

The diagnosis, treatment and pathology of these lesions will be described and the recent relevant literature briefly reviewed.

THE EMERGENCY PRESENTATION OF NON OVARIAN CONGENITAL ABDOMINAL CYSTS

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Acute presentation of ovarian cysts is not uncommon in childhood. Congenital abdominal cysts of other origin do not often appear unexpectedly as emergencies in older children.

Two such cases have recently been treated in the B.C. Children's Hospital and will be described.

In one instance there was no other presentation of a congenital splenic cyst in a 14-year old girl and in the other a large cholecystocholedochal cyst presented suddenly in a 9 year old girl.

The signs, symptoms, investigation and treatment of these 2 patients will be discussed and the recent situation briefly reviewed.

Aberrant migration of thymic tissue occurs, with ectopic thymus described in the mediastinum, base of the skull, tracheal bifurcation and cervical region. We would like to report 3 cases of ectopic cervical thymus to add to the 72 cases that have been reported in the world literature. There were 2 males and 1 female, ages ranged from 7 months - 8 years. All patients presented with asymptomatic cervical masses and preoperative diagnosis included branchial cleft cyst, cervical lymphangioma and cervical teratoma. All patients underwent complete surgical resection of their masses. Aberrant cervical thymus rarely produces symptoms because it does not invade contiguous structures. Despite its rarity it should be considered in the differential diagnosis of asymptomatic neck masses in children.

An unusual intraoral mass in a child—The organ of Chievitz.

Soucy, P. *, Cimone, G., Carpenter, B.
Children’s Hospital of Eastern Ontario, Ottawa, Canada

A five year old girl presented with a hard, asymptomatic, fixed mass protruding intraorally at the level of the ascending ramus of the mandible on the right. Plain roentgenograms of the jaw, Panorex, C.T scan and NMR scan of the area failed to demonstrate any lesion.

An incisional biopsy showed neuroectodermal tissue with a pattern characteristic of the juxtaoral organ of Chievitz. At 2 years follow-up the residual mass remains the same.

The organ of Chievitz is a normal structure that can be frequently identified at routine autopsy if sought for but is seldom large enough to present as a mass.

A conservative biopsy without further treatment is recommended when the clinical diagnosis is in doubt.
Le fond d'éducation permet d'inviter chaque année d'experts chirurgiens pédiatiques étrangers pour enseigner dans différents centres médicaux du Canada. Il permet également à notre Association de déléguer un conférencier en chirurgie pédiatique lors de la réunion de la Société Canadienne de Pédiatrie. Il rend possible une participation élaborée de notre Association au programme scientifique du Congrès Annual du College Royal des Médecins et Chirurgiens du Canada. Il nous aide enfin à défraîyler le coût de la réunion annuelle de l'Association Canadienne de Chirurgie Infantile.

Des particuliers, des associations appartenant ou non au domaine médical, ainsi que différentes agences philanthropiques s'intéressant au progrès de la chirurgie infantile ont bien voulu contribuer à ce fond.

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