19th

Annual Meeting
Réunion Annuelle

WINNIPEG
September 9-12, 1987

Canadian Association of Paediatric Surgeons
l’Association Canadienne de Chirurgie Infantile
programme détaillé
programme schedule

WINNIPEG
September 9-12, 1987
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.
SOCIAL PROGRAM

WEDNESDAY, SEPTEMBER 9, 1987:

WELCOMING RECEPTION

Place: Sheraton Winnipeg Solarium Room

Time: 18:00 RSVP

THURSDAY, SEPTEMBER 10, 1987:

DINNER & CRUISE
M.S. Lord Selkirk (optional)

Time: 19:00

FRIDAY, SEPTEMBER 11, 1987:

C.A.P.S. BANQUET

Place: The Manitoba Club,
194 Broadway Avenue,
Winnipeg

Time: 18:30 RSVP
FUTURE ANNUAL MEETINGS

20th ANNUAL MEETING
OTTAWA, ONTARIO
September 23-27, 1988

21st ANNUAL MEETING
EDMONTON, ALBERTA
September 22-26, 1989

22nd ANNUAL MEETING
TORONTO, ONTARIO
September 14-18, 1990
# CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS

L'ASSOCIATION CANADIENNE DE CHIRURGIE INFANTILE

## PRESIDENTS

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

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<td>1967-1973</td>
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<td>1983-</td>
<td>David Girvan</td>
<td>London</td>
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CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS
L'ASSOCIATION CANADIENNE DE CHIRURGIE INFANTILE

DIRECTORS
President
Past President
3rd of Three Years
2nd of Three Years
1st of Three Years
Secretary-Treasurer

COMMITTEE CHAIRMAN
Nominating
Programme
Local Arrangements
Membership and Credentials
Publications
Health Care & Manpower
Ethical and Moral Issues
Education Fund
Liaison to the Royal College
Liaison to the American College
Archivist
World Federation
Constitution and Bylaws
Trauma
Oncology
Congenital Anomalies
Residency Program

Alex Gillis
Stanley Mercer
Sigmund Ein
Nathan Wiseman
Jacques Ducharme
David Girvan

Stanley Mercer
Sigmund Ein
Ray Postuma
Noelle Grace
Don Marshall
Stanley Mercer
Jacques Ducharme
Ray Postuma
Gordon Cameron
Sigmund Ein
Barry Shandling
Barry Shandling
Alexander Gillis
David Wesson
Herve Blanchard
Nathan Wiseman
Jean Desjardins
CANADIAN ASSOCIATION OF
PAEDIATRIC SURGEONS
L'ASSOCIATION CANADIENNE DE
CHIRURGIE INFANTILE

THURS SEPT 10
WINNIPEG CHILDREN'S HOSPITAL
BLUE ROOM, COMMUNITY SERVICES BLDG

0700 - REGISTRATION - coffee & donuts
0800 - 1000

CO-CHAIRMEN/LES CO-PRESIDENTS: J. Donald, N. Wiseman

INTENSIVE CARE COURSE FOLLOWING LIVER TRANSPLANTATION IN CHILDREN: 
N. Gayle, T. Frewen, W. Wall, D. Grant, D. Girvan, C. Ghent, 
C. Steiller, Departments of Paediatrics and Surgery, University of 
Western Ontario

A TWENTY-YEAR EXPERIENCE WITH THYROID CARCINOMA: Juan Bass, 
Maria Di Lorenzo, Abid Khan, Jean Desjardins, Gilles Leboeuf, 
Jacques Letarte, Hôpital Ste-Justine, Montreal, Quebec

PEDIATRIC HODGKIN'S DISEASE: THE ROLE OF STAGING LAPAROTOMY: 
A.L. Schneeberger, D.P. Girvan, Children’s Hospital of Western 
Ontario, London, Ontario

NIPPLE DISCHARGE AND BREAST LUMP RELATED TO MONTGOMERY'S TUBERCLES 
IN ADOLESCENT FEMALES: F. Watkins, H. Giacomantonio, S. Salisbury, 
Department of Pediatric Surgery, Department of Surgery, Dalhousie 
University, Halifax, Nova Scotia

BLUNT PANCREATIC INJURIES IN CHILDREN: OUR PAST 10-YEAR EXPERIENCE: 
Juan Bass, Jean Desjardins, André Grignon, Alain Ouimet, Hôpital 
Ste-Justine, Montreal, Quebec

MANAGEMENT AND PROGNOSIS OF PEDIATRIC BLUNT CHEST TRAUMA: Steven Z. 
Rubin, Children’s Hospital of Eastern Ontario, Ottawa, Ontario

MORBIDITY AND MORTALITY FROM BICYCLE ACCIDENTS IN CHILDREN: J.C.E. 
Wey, G. Cornel, Department of Surgery, Memorial University of 
Newfoundland, Dr. Charles A. Janeway Child Health Centre, St. John’s, 
Newfoundland

1000 - 1030 - COFFEE
18. TRACHEAL STENOSIS - LOGOF


9. ABDOMINAL TENDERNESS THRESHOLD (A.T.T.) IN SUSPECTED CHILDHOOD APPENDICITIS: Ray Postuma, Perry Gray, Section of Pediatric General Surgery, Winnipeg Children's Hospital and University of Manitoba, Winnipeg, Manitoba

10. INDICATIONS FOR AND RESULTS OF SURGERY IN CROHN'S DISEASE IN CHILDREN. ASSOCIATION WITH ACID FAST BACILLI AS A DIAGNOSTIC DILEMMA: Stanley Mercer, Pierre Soucy, University of Ottawa, Children's Hospital of Eastern Ontario, Ottawa, Ontario

11. MALROTATION - THE WINNIPEG EXPERIENCE: N.E. Wiseman, Children's Hospital, Winnipeg, Manitoba

12. ISCHEMIC BOWEL AFTER PRIMARY CLOSURE FOR GASTROSCHISIS: Sigmund H. Ein, Riccardo Superina, Charles Bagwell, Nathan Wiseman, Hospital For Sick Children, Toronto, Ontario, University of Florida, Gainesville, Florida and Children's Hospital, Winnipeg, Manitoba

13. FIBROSCOPIC ENDOSCOPY FOR UNDIAGNOSED G.I. BLEEDING IN CHILDREN: Ray Postuma, Section of Pediatric General Surgery, Winnipeg Children's Hospital and University of Manitoba, Winnipeg, Manitoba

14. RADIOLOGICAL DIAGNOSIS OF PYLORIC STENOSIS: A WARNING: Steven Z. Rubin, Children's Hospital of Eastern Ontario, Ottawa, Ontario

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6:00
Last call
Bus leave
at Sheraton
Hotel
9:00
at 100 Redwood
Ave
Elevator leaves at 100
Fan crane
Back at 10 - 10:30
5:00
broach at Sheraton
CANADIAN ASSOCIATION OF 
PAEDIATRIC SURGEONS 

L'ASSOCIATION CANADIENNE DE 
CHIRURGIE INFANTILE 

FRI SEPT 11 
CONVENTION CENTRE 
MEETING ROOM 13 

0800 - 1000 

CO-CHAIRMEN/LES CO-PRESIDENTS: S. Ein, M. Giacomantonio 


2. THE LATE PRESENTING PEDIATRIC BOCHDAK HERNIA: A 20 YEAR REVIEW: Lawrence A. Berman, David Stringer, Sigmund H. Ein, Barry Shandling, Hospital For Sick Children, Toronto, Ontario 

17. ESOPHAGEAL ATRESIA-A RABBIT MODEL TO STUDY Anastomotic Healing AND THE USE OF TISSUE ADHESIVE FIBRIN SEALANT: Geoffrey Blair, Paul Castner, Donald Newman, Glen Taylor, Bing Santoso, British Columbia Children's Hospital, Vancouver, B.C. 


19. SURGICAL MANAGEMENT AND FOLLOW-UP OF VASCULAR RING: F. Rivilla, J.G. Utrilla, Department of Surgery, Children's Hospital, La Paz, Madrid (Spain) 


21. NEURENTERIC CYSTS - A SPECTRUM: A. Alrabeelah, D.A. Gillis, M. Giacomantonio, H. Lau, Division of Pediatric Surgery, Department of Surgery, I.W.K. Hospital for Children and Dalhousie University, Halifax, Nova Scotia 

1000 - 1030 - COFFEE 

At 10:30 a.m., the meeting will be held in the Double Projection Room.
CO-CHAIRMEN/LES CO-PRESIDENTS: J. Donald, N. Wiseman

22. INFLAMMATORY PSEUDOTUMOURS IN CHILDREN: Leslie Scott, Geoffrey Blair, Glen Taylor, James Dimmick, Graham Fraser, British Columbia Children’s Hospital, Vancouver, B.C.

FIBROUS HAMARTOMA OF INFANCY: J. Lee, D.P. Girvan, R. Armstrong, Children’s Hospital of Western Ontario, London, Ontario


PULMONARY METASTASES IN CHILDREN: RESULTS OF SURGICAL TREATMENT: Maria Di Lorenzo, Pierre-Paul Collin, Hôpital Ste-Justine, Montreal, Quebec

PARAESOPHAGEAL HERNIA AFTER NISSEN FUNDOPLICATION-A REAL COMPLICATION IN PEDIATRIC PATIENTS: A. Alrabeek, M. Giacomantone, D.A. Gillis, Division of Pediatric Surgery, Department of Surgery, I.W.K. Hospital For Children and Dalhousie University, Halifax, Nova Scotia


1200 - 1300 - FRED McLEOD LECTURE

"LASERS IN PEDIATRIC SURGERY"

Dr. S.L. Gans, Los Angeles, California
CANADIAN ASSOCIATION OF
PAEDIATRIC SURGEONS

L'ASSOCIATION CANADIENNE DE
CHIRURGIE INFANTILE

SAT SEPT 12
SHERATON HOTEL
CANADIAN ROOM

0800 - 0935

CO-CHAIRMEN/LES CO-PRESIDENTS: R. Postuma, N. Wiseman

27. WHOLE BOWEL IRRIGATION IN PEDIATRIC PATIENTS: FURTHER IMPROVEMENTS:
Ray Postuma, Section of Pediatric Surgery, Winnipeg Children's Hospital and University of Manitoba, Winnipeg, Manitoba

28. SUCCESSFUL CRYOTHERAPY OF TRACHEAL NEOPLASM: Bradley M. Rodgers,
Farhat Moazam, James L. Talbert, University of Virginia Medical Center
and University of Florida Medical Center, Charlottesville, Virginia

29. MULTIFOCAL FIBROSCLEROSIS IN THE PAEDIATRIC AGE GROUP: Richard
Kennedy, Gary Cornel, David Price. The Dr. Charles A. Janeway Child
Health Centre, St. John's, Newfoundland

30. INTRA-ABDOMINAL TESTIS WITH YOLK SAC TUMOR IN A 2-YEAR-OLD: L. Cox,
J.C. Donald, G.A. Machin, J.S. Popkin, D. Zacks, Children's and Family
Unit, Victoria General Hospital, Victoria, B.C.

31. THE USE OF CARDIOPULMONARY BY-PASS AND CIRCULATORY ARREST IN THE
RESECTION OF MASSIVE TUMOURS: Graham C. Fraser, Geoffrey K. Blair,
Jacques G. LeBlanc, Leslie A. Scott, Departments of General and
Cardiovascular Surgery, British Columbia Children's Hospital,
Vancouver, B.C.

32. OSTEOMYELOTIS OF THE CERVICAL SPINE PRESENTING AS A NEURENERIC CYST:
S.H. Ein, B. Shandling, R. Humphreys, I. Krajbich, Hospital For Sick
Children, Toronto, Ontario

33. CONGENITAL LUMBAR HERNIA IN AN INFANT WITH THE LUMBOCOSTOVERTEBRAL
SYNDROME: B.J. Hancock, N.E. Wiseman, Children's Hospital, Winnipeg,
Manitoba

0935 - 1000 - COFFEE

1000 - 1100 CASE PRESENTATIONS

CO-CHAIRMEN/LES CO-PRESIDENTS: R. Postuma, N. Wiseman

1100 ANNUAL BUSINESS MEETING - Dr. Stanley Mercer
REUNION D'AFFAIRES ANNUELLE
abstracts
FRED G. McLEOD LECTURE

"LASERS IN PEDIATRIC SURGERY"

Dr. Stephen L. Gans, Los Angeles, California

Dr. Gans was born in Cleveland, Ohio and did his undergraduate education at Western Reserve University graduating cum laude. He then graduated in medicine from Ohio State University with honors in 1943. His internship was at the City Hospital in Cleveland, Ohio and he did residencies in general surgery and pathology at City Hospital, Toledo Hospital, and Mount Sinai Hospital in New York from 1944 to 1949. His pediatric surgical training was obtained at Children's Memorial Hospital in Chicago, Illinois in 1950.

In 1951, he moved to Los Angeles and began his academic career. He has been on the attending and academic staff at Los Angeles County Harbor General Hospital, Los Angeles County General Hospital, Loma Linda University Medical Center, University of California at Irvine California College of Medicine and University of Southern California School of Medicine. Since 1972, he has been at the University of California at Los Angeles School of Medicine and is a clinical professor of surgery. Since 1962 he has been associated with Cedars-Sinai Medical Center where he was chief of the Division of Pediatric Surgery from 1962 until 1980. He is Chairman of the Subdivision of Pediatric Surgery at the present time. He is on the attending staff of a number of hospitals in Los Angeles, including the Children's Hospital of Los Angeles and the University of California, Los Angeles, Medical Center.

Dr. Gans has published extensively and been the editor of a number of textbooks related to pediatric surgery. His writings have been numerous and cover a wide area of pediatric surgery. In particular, he is well known for his interest and expertise in pediatric endoscopy. He has been associated with the Journal of Pediatric Surgery since its inception and has been its Editor-in-Chief since 1976. He also serves on the editorial board of five other international pediatric surgical journals. He works as a cancer field liaison physician for the American College of Surgeons.

He has received a number of awards including the Denis Browne Gold Medal from the British Association of Paediatric Surgeons in 1983 and an Alumni Achievement Award from his alma mater, Ohio State University.

Liver transplantation (LT) is now the accepted treatment for end-stage liver disease in children. However, the paediatric literature often does not address the unique post-operative intensive care needs of transplanted children. We, therefore, reviewed the charts of all 13 children aged 8 months to 16 years undergoing LT in London, Ontario to document both the problems, treatment needs, and length of intensive care stay (LOIS) of these children. A retrospective assignment of admission Physiological Stability Index score (PSI) was also done to quantify the degree of physiological derangement.

LT was performed to treat terminal liver failure from chronic active hepatitis 4/13, biliary atresia 4/13, Wilson's disease 2/13, and viral hepatitis 3/13. Nine of 13 children were ventilated for 3 or less days while 4 others were ventilated for a total of 20 days. PEEP therapy >10 cm H2O was used in 5 children. All had pleural effusions with Tobar atelectasis or segmental collapse. Hypertension, despite narcotics, occurred in 9 with sinus bradycardia unresponsive to atropine in 7. Metabolic complications included hyperglycemia >10 mmol/L (13), hypocalcemia (5), and hypomagnesemia in 6 of 7 in whom it was measured. Blood products were required in all children. Central line sepsis did not occur despite CVP monitoring in all and PA catheters in 6. Two children also required catecholamine infusion. Severe metabolic alkalosis (pH >7.5) did not occur. Children requiring LT all survived their initial ICU stay with re-admission in 4. Mean PSI score on day 1 was 20 with a range of 15-28. LOIS averaged 8 days, range 3-24 days.

Our initial experience suggests children, immediately following LT, survive and yet experience a significant degree of physiological instability similar to children following cardiac surgery. This physiological instability can be successfully managed without further surgical intervention and with low infectious morbidity despite active immunosuppression and pre-operative debilitation.

A TWENTY-YEAR EXPERIENCE WITH THYROID CARCINOMA
Juan Bass, Maria Di Lorenzo, Abid Khan, Jean Desjardins, Gilles Leboeuf, Jacques Letarte.
Hôpital Ste-Justine, Montréal.

During the past 20 years, 23 patients (17 males, 16 females) were operated for thyroid carcinoma in our institution. The average age was 12.8 years (range 7 months to 27 years). Our series includes papillary carcinoma in 12, medullary carcinoma in 7 and follicular carcinoma in 4 patients. Follow-up ranged from 7 months to 20 years and was practiced on a yearly basis. All patients are presently alive with no evidence of progressive disease. Patients with papillary and follicular carcinoma underwent sub-total thyroidectomy, those with medullary carcinoma underwent total thyroidectomy. Complications included: 2 permanent hypoparathyroidism, both after secondary neck explorations, and 1 tracheostomy in the early years of this series. The overall results observed in our series of patients seem to support the current conservative approach to well differentiated thyroid carcinoma, reserving total thyroidectomy for medullary cancer of the thyroid. In this respect, a more aggressive search for familial medullary carcinoma through the use of Pentagastrin stimulation lead to total thyroidectomy in a seven months old infant.
3  PEDIATRIC HODGKIN'S DISEASE: THE ROLE OF STAGING LAPAROTOMY

A.L. Schneeberger, M.D., D.P. Girvan, M.D., Children's Hospital of Western Ontario, London, Ontario.

Staging laparotomy in patients with Hodgkin's disease continues to be a controversial procedure in their management. Between 1970 and 1986, 69 patients up to 18 years of age were seen with Hodgkin's disease.

The results of staging laparotomy performed on 39 of these children are reviewed. The clinical stage was changed as a result of laparotomy in 43.6% of cases with 12.8% of cases upstaged and 30.8% of cases downstaged. All changes in stage modified the proposed treatment for the patient. In 20.5% of patients, the laparotomy was positive and in all cases the spleen was involved. Preoperative lymphangiography did not accurately identify nodal disease. Of the patients with negative laparotomies, 10% developed relapse in the abdomen. Major complications included three episodes of bacterial sepsis with one death due to Streptococcus pneumoniae and one to Neisseria gonorrhoea. All septic events occurred prior to the use of pneumococcal vaccine and prophylactic antibiotics. One patient required reoperation for intestinal obstruction with bowel resection.

Staging laparotomy continues to play an important role in the early management of patients with Hodgkin's disease. None of the currently used non-invasive tests accurately identify patients with or without intra-abdominal disease.

4  NIPPLE DISCHARGE AND BREAST 'LUMP RELATED TO MONTGOMERY'S TUBERCLES IN ADOLESCENT FEMALES.

F. Watkins, M.D., M. Giacomantonio, M.D., F.R.C.S.(C) and S. Salisbury, M.D., F.R.C.P.(C)
Department of Pediatric Surgery, Department of Surgery, Dalhousie University, Halifax, Nova Scotia

Four adolescent females, aged twelve to fourteen years, were seen for evaluation of spontaneous "nipple" discharge, two of whom had associated breast lumps in the ipsilateral breast. Clinical examination disclosed the discharge to be arising from one of Montgomery's areolar tubercles within the breast lumps localized to the sub-areolar region immediately beneath the discharging tubercle. The secretions were episodic, thin, varied in colour from yellowish to brown but were not milky. All discharges resolved within three to four weeks and the associated breast lumps resolved within two months without treatment.

There were no associated clinical complaints or physical findings and detailed endocrinologic assessments, including serum prolactin, LH, FSH, thyroid function tests and 17 Beta estradiol, were all normal. None of these patients were pregnant and follow-up from four to eighteen months did not reveal evidence of recurrence or other pathology.

Experience gained from these four cases suggests that cysts and spontaneous, non-milky discharge related to Montgomery's tubercles in otherwise healthy, nonpregnant adolescent females, represents a benign, self-limiting problem. Unless other indications are present, endocrinologic investigation is unnecessary and spontaneous resolution can be expected.
5 BLUNT PANCREATIC INJURIES IN CHILDREN: OUR PAST 10-YEAR EXPERIENCE
Juan Bass, Jean Desjardins, André Grignon, Alain Ouimet.
Hôpital Ste-Justine, Montreal.

During the past 10 years, 28 cases of blunt pancreatic trauma were
diagnosed in our institution. In 42.7% (12/28) the accident was bi-
cycle related. 75% of patients were seen within 48 hours of injury.
The most frequent clinical presentations included: abdominal pain,
tenderness and vomiting. Diagnosis of pancreatic injury was suggested
by hyperamylasemia in most cases. Associated trauma was seen in 8 pa-
tients (28.5%) being intra-abdominal in 5 (17.8%). Ultrasound was
performed in 21 patients and was reported as abnormal in 13, in the
remaining 8, the pancreas was either not well visualized or it was re-
ported as normal. CT-scan was performed in 7 patients demonstrating 2
pancreatic transections, 2 lacerations, 1 pancreatitis and 1 pseudo-
cyst. In 57.1% (16/28) the treatment was conservative. Fifteen in-
terventions were performed in 12 patients as follows: 3 percutaneous
drainage of pseudocysts, 1 orthopedic surgery, 11 laparotomies. Pan-
creatic surgeries included: 2 distal pancreatectomies, 1 Roux-en-Y
pancreaticojejunostomy, and 1 repair and drainage of pancreatic lacer-
ation. Pseudocyst developed in 10 patients, in 2 of them, after pan-
creatic surgery. Five regressed spontaneously between 4 to 8 weeks.
One small asymptomatic pseudocyst persisted for 3 years. One required
distal pancreatectomy. Three pseudocysts were successfully drained
percutaneously with no complications. In 1 of them this was the single
more common treatment. Clinical suspicion of pancreatic injury remains
the most important factor in diagnosis and treatment of pancreatic in-
juries. CT-scan is the most accurate radiological investigation.
Percutaneous drainage is a suitable form of treatment in selected
cases of pancreatic pseudocyst.

6 MANAGEMENT AND PROGNOSIS OF PEDIATRIC BLUNT CHEST TRAUMA
Steven Z. Rubin
Children's Hospital of Eastern Ontario

The factors important in management and prognosis of 40
Children with blunt thoracic trauma were analyzed.
Injuries resulting from child abuse were excluded from
this study. Sex distribution was equal and the mean age
was 10 yrs. Chest injuries were either insignificant or
dire emergencies. Twenty-five children had fractured
ribs; associated extra-thoracic injuries were
ipsilateral. No child with a pneumothorax, hemothorax or
pneumomediastinum required thoracotomy. Immediate tube
thoracostomy resulted in complete resolution of
pneumothoraces. Pulmonary contusion was common, dictated
special care in fluid management and had a benign course.
Children with ruptured diaphragm and ruptured cardiac
apillary muscle survived emergency surgery. Extra-
thoracic injury accounted for morbidity and mortality
(5%). Two of seventeen children with head injuries
succumbed. Fractures were the commonest extra-thoracic
injury . Ten children had intra-abdominal injuries (6 liver;
3 spleen, 1 kidney, 1 traumatic pancreatitis).
The lack of respiratory complications, despite multiple
injuries and ventilation with endotracheal intubation
justifies management of pediatric chest trauma, in
pediatric intensive care settings with specially trained
medical personnel.
MORBIDITY AND MORTALITY FROM BICYCLE ACCIDENTS IN CHILDREN. J. C. E. Way, G. Cornel, Department of Surgery, Memorial University of Newfoundland, Dr. Charles A. Janeway Child Health Centre, St. John's, Newfoundland.

The morbidity and mortality associated with bicycle accidents in children was retrospectively reviewed and compared to three other recognized major problems seen in this age group.

The charts of all patients 5 to 15 years old seen in the emergency department of the Dr. Charles A. Janeway Child Health Centre during the summer of 1982 were reviewed. Those describing bicycle-related injuries were analyzed and data compared to those children seen because of poisoning, burns or motor vehicle accidents (MVA's) not involving bicycles.

There were a total of 206 bicycle accidents averaging 2.6 per day. This corresponded to 48 MVA's, 24 poisonings and 18 burns treated during the same period. Of the 206, 33 required admission with an average length of hospital stay of 9.4 days (range 2 - 47). In comparison, 8/48 MVA's, 3/24 poisonings and 2/18 burns required admission. Head injury was the commonest cause of morbidity and accounted for 36% of all head injuries seen during the study period. Of the 206 children, 102 suffered bicycle-related head injuries of which 43% were maxillo-facial trauma, 31% extracranial injury (scalp), 16% minor intracranial injury and 10% were intracranial injury. Of the summer highway fatalities, 50% were bicycle related while 39% of highway deaths for the year were due to bicycles.

Bicycle accidents do represent a serious health hazard to children during the summer months and as physicians concerned about child welfare, this requires our attention if we are to decrease morbidity and mortality.

8 COMPLICATIONS OF THE MARTIN PROCEDURE FOR TOTAL COLONIC AGANGLIONOSIS (TCA)

Jack H. T. Chang, Mitchell Ross, John D. Burrington, Joseph S. Janik, Eli R. Wayne, Pam Clevenger

The Children's Hospital, Denver, Colorado

From 1976 to 1986, inclusive, 14 patients were treated for TCA. One patient had total intestinal aganglionosis and died. One patient is awaiting pull-through. Martin procedures were performed on 12 patients weighing an average of 9.6 Kg. (range 6.2 to 11.5 Kg) at 15.8 months (range 8 to 24 months) of age.

Serious short term (less than 30 days) complication includes necrosis of the pull-through intestine in one patient. Long term complications include enterocolitis (4 patients with one death from sepsis), persistent septum (4 patients), pelvic abscess (3 patients), intestinal obstruction (2 patients).

Long term follow-up averaged 43.9 months (range 3 to 116 months). One patient has been converted to a permanent ileostomy. One patient is awaiting a re-pull-through. A third patient has recurrent enterocolitis requiring rectal decompression. Five patients have four to five bowel movements a day, all having nocturnal soiling. Two of the five require anti-motility agents. One of the five continues to require repeated hospitalization for dehydration.

Patients having a Martin procedure require close follow-up care. The complications require a re-examination of the procedure and alternatives.
ABDOMINAL TENDERNESS THRESHOLD (A.T.T.) IN SUSPECTED CHILDHOOD APPENDICITIS

Ray Postuma, M.D., Perry Gray, M.D., Randy Guzman, M.D.

Section of Pediatric General Surgery, Winnipeg Children's Hospital and University of Manitoba

Abdominal tenderness, defined as pain in response to pressure, is the most important clinical sign of appendicitis. However, the assessment of tenderness is subjective and dependent upon the patient's response to abdominal palpation and the examiner's interpretation of the abdominal signs.

In this study, the abdominal tenderness threshold (A.T.T.), defined as the least amount of pressure (in kg) on the abdominal wall to cause pain, was measured in 80 children with suspected appendicitis, using a simple, specially designed, spring loaded algometer. Measurements were made in each quadrant and the A.T.T. of the right lower quadrant was compared to the least tender quadrant (tenderness ratio).

The results were as follows: The right lower quadrant A.T.T. was $0.9 \pm 0.5$ and $2.1 \pm 1.1$ kg in appendicitis and non appendicitis patients respectively ($P<0.001$). The tenderness ratio was $2.7 \pm 1.1$ and $1.5 \pm 1.0$ kg respectively ($P<0.005$).

We conclude that tenderness can be quantitated and that the measurement of the A.T.T. is useful in assessing the severity of abdominal tenderness. Furthermore, there is a significant difference in the A.T.T. and threshold ratio of patients with and without appendicitis.

Indications for and Results of Surgery in Crohn's Disease in Children. Association with Acid Fast Bacilli as a Diagnostic Dilemma.

Stanley Mercer, M.D., F.R.C.S.(C), Pierre Soucy, M.D., F.R.C.S.(C)
University of Ottawa
Children's Hospital of Eastern Ontario.

Obstruction, abscesses, fistulae, treatment failure and growth retardation are not always absolute indications for surgery. At the Children's Hospital of Eastern Ontario we have advocated earlier surgery since 1974. Forty-eight cases are reviewed (28 surgical). A) Ileocelecal. (17) B) Ileocelecal with normal rectum. (2) C) colorectal. (3) D) Jejunal (1). E) Perineal (5). Resection, with primary anastomosis (A), produced remission for at least 2.65 years. Remission in colectomy with primary ileocelecal anastomosis (B), was at least 1.46 yrs. Group C, ileostomy and colorectal resection are only nine months post operative but without recurrence. In group D (jejunal) remission was 1.26 yrs. Significant height and weight gains in over 80% encourage earlier surgery. Adequate medical treatment has often not influenced the disease process. Surgery does not remove useful bowel restorable to normal medically. Most post operative cases required no medications and none steriods. Permanent cure of anorectal disease alone was not achieved. Surgical mortality was zero. Average hospital stay was 10.6 days. Post operative fistulae occurred in one case and closed spontaneously. Mycobacteria Tuberculosis were seen in two resected specimens. In one human tuberculous mycobacteria were cultured by 5 months. Both healed spontaneously. Both were otherwise undistinguishable from Crohn's Disease. Both were white native born Canadians. On examination acid fast bacteria were absent from all other resected specimens in our series.
MALROTATION - THE WINNIPEG EXPERIENCE

N.E. Wiseman

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Over a 10 year period in Winnipeg 35 infants and children were diagnosed and treated for intestinal malrotation. In 80% of patients diagnosis was made in early infancy. At the time of surgery a volvulus of the midgut was encountered in 3/4 of the patients and in 10% there was associated ischemic bowel.

Early diagnosis of malrotation failed to occur in over 50% of patients in whom there was noted to be a significant delay. The delay in diagnosis resulted from a failure to recognize the clinical presentation and also a failure to correctly interpret radiologic investigations which included an upper gastrointestinal contrast study and barium enema. It is anticipated that correct early diagnosis of this clinical entity will significantly reduce the incidence of bowel ischemia and its associated morbidity.

Ischemic Bowel after Primary Closure for Gastrochisis

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Between 1983 and 1986, four newborns who had primary closure of their gastrochisis all suffered from ischemic bowel. Suspicion was raised almost immediately after the closure that something was wrong inside the abdomen when there was persistent abdominal wall redness along with acidosis, sepsis and a generalized worsening condition. All four neonates were re-explored finding necrotic bowel; three required silon pouch closure. The two survivors were left with a temporary short gut.

Whether the cause of the bowel ischemia in these three babies was due entirely to excessive intraabdominal pressure, volvulus or to the intestines being too vigorously manipulated causing the sepsis is open to speculation. Nonetheless, if such a newborn has persistence of the above signs and symptoms, immediate reoperation and decompression is warranted. Moreover, excessive manipulation and compression of gastrochisis contents seldom seems warranted.
13 FIBREOPTIC ENDOSCOPY FOR UNDIAGNOSED G.I. BLEEDING IN CHILDREN

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During nine years (1978-1987) 357 fibreoptic G.I. endoscopies were performed in children: 224 gastroscopies, 134 colonoscopies. Undiagnosed G.I. bleeding was the indication in 88 (25%) of these procedures: 41 gastroscopies, 47 colonoscopies. Abnormal findings were noted in 29 (71%) gastroscopies and 28 (60%) colonoscopies. It is concluded that fibreoptic endoscopy plays an important role in the assessment of undiagnosed G.I. bleeding in infants and children.

14 RADIOLOGICAL DIAGNOSIS OF PYLORIC STENOSIS. A WARNING.

Steven Z. Rubin

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It is not possible always to palpate the 'olive' in pyloric stenosis (HPS). Experience with contrast upper gastrointestinal studies (UGI) in HPS reveals a small percentage of false positives and negatives. The past ten years has seen an increasing reliance on ultrasound in the diagnosis of HPS. We describe three infants with non-bilious vomiting in none of whom a pyloric tumour was palpated. UGI and ultrasound were considered diagnostic of HPS. Negative operative findings in one infant and resolution of the vomiting with antireflux treatment in the remaining two infants tend to negata the radiological diagnosis. It might be argued that these patients represent early or mild findings in a disease spectrum. However, with enteral and parenteral feeding, negative laparotomies in vomiting infants need not occur. The operative decision in HPS should follow a combination of clinical and investigative findings and not solely be the result of an ultrasonogram.
Timing of Surgery for Congenital Diaphragmatic Hernia: Is Emergency Operation Necessary?
Hospital for Sick Children, Toronto, Canada

Congenital diaphragmatic hernia (CDH) is generally considered to be a surgical emergency. However, early repair does not usually improve respiratory function or reverse fetal circulation, and many patients deteriorate postoperatively. In addition, some data suggest that chest wall compliance decreases after repair, causing impaired ventilation. As a result, in 1985 we began a protocol in which surgery was delayed until the $pCO_2$ was maintained below 40, and the child was hemodynamically stable; those in whom these criteria could not be met died without repair.

Sixty-one infants with CDH were managed over 4 years; 31 in 1983-84 (Group 1) and 30 in 1985-86 (Group 2). The groups were similar with respect to sex, side of defect, weight, gestational age, incidence of pneumothorax, and blood gases. All patients were initially paralyzed and ventilated. Mean time from admission to surgery was 4.1 hours in Group 1 and 24.4 hours in Group 2 ($p<0.05$).

In Group 1, 87% of patients had surgical repair (77% within 8 hours of admission, 10% after 8 hours), and in Group 2 only 70% of patients had surgery (10% within 8 hours, 60% after 8 hours). All patients who were not operated on died. Overall mortality was 58% in Group 1 and 56% in Group 2; this was not statistically significant.

Our current approach has not increased overall mortality. We believe that early repair in the face of labile respiratory and hemodynamic function may be harmful, and that delayed operation may allow patients with a borderline prognosis to survive. For these reasons we conclude that emergency surgery is not necessary, and that repair should be done only if and when the patient has been satisfactorily stabilized.

The Late Presenting Pediatric Bochdalek Hernia: A 20 Year Review
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A twenty year retrospective study was undertaken of children with congenital posterolateral (Bochdalek) hernias presenting more than eight weeks after birth. The records of 26 patients (16 boys and 10 girls) were evaluated. Sixteen infants and children (62%) were originally misdiagnosed clinically and radiologically as having either infective lung changes, pneumothoraces or congenital lung cysts. Inappropriate thoracentesis occurred in four patients misdiagnosed as having a pneumothorax. Five patients had had previously normal chest radiographs. Four children had evidence of permanent postoperative lung collapse which was visible in all cases on the first postoperative radiograph. Another four had evidence of ipsilateral pulmonary hypoplasia. Coexisting abnormalities (in particular gut malformation and malrotation) were common. Two deaths occurred as a result of acute cardiorespiratory arrest in previously well children. The symptoms, signs and radiological findings of patients with diaphragmatic hernias presenting after the neonatal period may be difficult to interpret and may result in diagnostic delay, misguided therapy and a potentially fatal clinical situation.
ESOPHAGEAL ATRESIA: A RABBIT MODEL TO STUDY Anastomotic HEALING AND THE USE OF TISSUE ADHESIVE FIBRIN SEALANT

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The problem of bringing together two, relatively widely separated, small and fragile ends of a sick newborn's atretic esophagus remains a formidable surgical task wherein the incidence of anastomotic leakage ranges from 10-27%. Recently, a multicomponent tissue adhesive fibrin sealant (TISSEEL®) has been licensed in Canada and declared useful for sealing G.I. tract anastomoses. To study whether TISSEEL® might decrease the leak rate of esophageal anastomoses in neonatal esophageal atresia and perhaps limit stricture formation, a rabbit model of esophageal atresia was developed.

Twenty New Zealand white rabbits weighing 2.8-3.7 kg, underwent thoracotomy and resection of a segment of esophagus with end-to-end, interrupted silk-sutured anastomosis, under tension to mimic the conditions found in newborn esophageal atresia. Four died immediately post-operatively. Ten rabbits had their anastomosis sealed with TISSEEL®, six control animals did not. All animals consumed variable amounts of water and food starting 24 hours after surgery. Survival averaged 10.5 days (range 5-20 days). Eight animals (5 experimental, 3 controls) were evaluated by means of barium esophagograms at one week post-operatively and all except one control animal demonstrated radiologic evidence of anastomotic leakage.

Autopsy specimens revealed gross leakage in nine animals (7 experimental, 2 controls). However, histology revealed leakage and periesophageal abscess formation in all experimental animals and in four control animals. The remaining two controls revealed only some degree of esophageal stenosis.

This experiment showed no demonstrable benefit from the use of a fibrin sealant in preventing esophageal anastomotic leakage such as occurs in repaired esophageal atresia.

Congenital Tracheal Stenosis: A Review of 22 Cases


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A review of 22 children with congenital tracheal stenosis (CTS) from 1965 to 1987 emphasizes key issues in the management of this condition. Patients presented at a few hours to 12 months of age with dyspnea, cyanosis, stridor or recurrent pneumonias. Evaluation of the respiratory tract was accomplished using endoscopy, tracheobronchography and computerized tomography. CTS included segmental lesions (4) "funnel-shaped" tracheal stenosis (8), and extensive tracheobronchial stenosis (10). Measurement of transverse airway diameters from 16 post-mortem exams revealed a mean narrowing of nearly 50% compared to normal diameters for body length. Ten infants had an associated left pulmonary artery sling and one had a vascular ring from a double aortic arch. Patients with CTS were treated as follows: alive/dead: dilatation (1/1), tracheostomy (-/1), primary resection (1/-), esophageal tracheoplasty (1/2), tracheoplasty with peristomal or composite graft (2/7), no surgery (-/6). Overall survival was 23%. Management of infants with CTS requires: (1) adequate evaluation of the tracheobronchial tree, (2) assessment of cardiovascular and other anomalies, (3) awareness that bronchoscopy or bronchography may cause further respiratory deceleration. Selection of a surgical approach depends on the length and degree of stenosis. Dilatation or resection with primary anastomosis are used for localized lesions. CTS involving the carina is best treated by tracheoplasty with autologous tissue. Surgery for extensive tracheobronchial stenosis remains problematic with lung transplantation as a potential alternative in the future.
Surgical Management and Follow Up of Vascular Ring.

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Thirty patients with aortic arch anomalies resulting in tracheoesophageal compression were treated during the period 1966 through 1986. These anomalies are important causes of upper respiratory and esophageal obstruction in babies and small children presenting symptoms included stridor, wheeze, apnea, recurrent pulmonary infections or dysphagia. Although symptoms started within the first month of life in most, only 15 underwent surgery before six months and a delay of more than one year occurred in 6. Diagnosis was established with chest roentgenogram, barium esophagogram and arteriography. 13 (43%) patients had a double aortic arch, 9 (30%) cases had aberrant right subclavian arteries, 6 (20%) patients had right aortic arch with ductus or ligamentum arteriosum, 1 (3%) patient had pulmonary artery sling and 1 (3%) case had right aortic arch and ductus arteriosus and aberrant right subclavian artery. Other associated heart malformations were seen in 8 (27%) cases. Bases surgical procedures include exposure through a left thoracotomy, complete identification of the aortic arch anatomy and division of the constraining ring.

The large majority of the patients have done well, 85% being asymptomatic at follow-up, minimal to moderate stridor persists among the remainder to the present time. Severe tracheomalacia was responsible for the only two deaths in the series.

Plication of the Diaphragm for Infants and Young Children with Phrenic Nerve Palsy

Hospital for Sick Children, Toronto, Canada

Phrenic nerve palsy (PNP) is seen in infants and young children, usually resulting from operative trauma or birth injury. Spontaneous recovery usually occurs, but occasionally surgical plication is necessary.

Twenty-three cases of PNP over a 6 year period were managed surgically. Ages were 1 day to 30 months (median 4 months), 19 were male and 5 female. Cause was operative trauma in 18 (17 cardiac surgery, 1 neuroblastoma), birth trauma in 2, and unknown in 3. Right side was involved in 14, left in 6, and both in 1. Indications for plication were inability to wean from the ventilator (Group 1, 16 pts), recurrent pneumonia (Group 2, 4 pts) and respiratory distress (Group 3, 3 pts).

The 16 Group 1 patients were intubated for a mean of 21.4 days from onset of PNP to plication. Postoperatively 3 had continuing congestive heart failure (1 died at 16 days, 1 is still chronically ventilated at 22 months, and 1 was extubated at 9 days); the other 13 were extubated a mean of 2.3 days postoperatively. All the patients in Groups 2 and 3 were extubated within 2 days of surgery.

Twelve plications were transthoracic, and 11 were transabdominal. Postoperative complications included pneumonia (1), wound infection (1), and pneumothorax (4). One patient died of cardiac failure at 16 days. One patient in Group 3 developed recurrent respiratory distress 4 months postoperatively. He had a recurrent elevated hemidiaphragm requiring a second plication. Mean follow-up for all surviving patients is 23.5 months, and no patients have had recurrent respiratory problems.

Plication of the diaphragm is safe and effective in patients with persistent PNP who have recurrent pneumonia, respiratory distress, or ventilator dependence.
INFLAMMATORY PSEUDOTUMOURS IN CHILDREN

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Inflammatory pseudotumours are so named because they mimic malignant tumours clinically and radiologically. Most often seen in the lungs of young adults, they consist of localized proliferations of mononuclear, inflammatory cells and myofibroblasts. There are scattered reports of these tumours occurring in various sites in children. We report five cases of these rare lesions in children: four arising intra-abdominally, and one in the lung. In contrast to the usual presentation in adulthood, these children were all previously healthy. One child, with the tumour arising from the urinary bladder, was originally diagnosed as having a malignant sarcoma and underwent pelvic exenteration and radiotherapy for this subsequently proven benign lesion.

Local recurrence occurred in one of our cases. Total excision is indicated and usually is possible without unacceptable morbidity.

Our cases and a review of the literature points to the importance of pathologic differentiation of these lesions from malignancy with early appropriate surgery.

NEURENTERIC CYSTS - A Spectrum

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This review encompasses seven patients with clinically important cystic lesions related to the O.I. tract and exhibiting a wide range of vertebral anomalies and connections to the neural canal. Three patients had mediastinal masses connected to lower cervical and upper thoracic anomalous vertebra with intraspinal extensions. One of these patients, in addition, had a separate, juxta- pancreatic intestinal duplication cyst. One infant with colonic duplication had a lumbar vertebral anomaly and an epithelial-lined tract between the two. One patient had a presacral cystic mass which was the site of recurrent infections and meningitis until a connection with the rectum was divided. One newborn had a complete-split notochord syndrome with a large dorsal enteric fistula. One patient had a dorsal enteric cyst with a direct intraspinal connection.

Four of the seven patients had associated significant other congenital anomalies, two of whom died early in the neonatal period. The remainder of the patients did well.
23 FIBROUS HAMARTOMA OF INFANCY

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Fibrous hamartoma of infancy is an uncommon, benign, subcutaneous tumor, found in the first two years of life. It predominately affects healthy boys and can occur in any subcutaneous tissue. Clinically it is firm and may be fixed to underlying structures. This may suggest a diagnosis of a malignant soft tissue tumor. The three histologic features of fibrous stroma, immature mesenchymal cells and mature adipose tissue are diagnostic. Treatment is simple excision. The clinical course is benign and recognition is the key to avoiding excessive surgical resection.

We discuss 6 cases of fibrous hamartoma of infancy seen over a 5 year period.

24 Pediatric Pheochromocytoma: 1959 - 1986

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Thirteen children (9 boys, 8-17 years, 4 girls, 8-17 years) had 20 pheochromocytomas treated over a 27 year period. Headache, visual blurring, sweating and hypertension were the most common signs and symptoms (usually for months). The recurrences were all found by routine followup of blood pressure and/or catecholamines. The most reliable laboratory investigations were the urinary catecholamines. Before 1970, IVP and angiography were successful in localizing the tumor, but since then ultrasonography and CT scan have been the radiological investigations of choice. Anesthesia involvement in the preoperative control of the hypertension was achieved primarily with Phenoxybenzamine. The main anesthetic drugs used were Pentothal, Fentanyl, Methoxyflurane, Isoflurane, Nitrous oxide, Pancuronium and Metocurine. Four tumors were extra-adrenal, and 16 were adrenal. Ligature of the tumor's venous drainage was not always associated with a sudden sustained fall in systemic blood pressure. There were no postoperative complications. One tumor showed a low grade malignancy; the extradural tumor was a malignant metastasis from a right adrenal tumor. Four patients had five recurrences within six years and all were resected. All patients remain well. Long term followup is essential.
PULMONARY METASTASES IN CHILDREN: RESULTS OF SURGICAL TREATMENT

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A retrospective analysis, from 1965 to 1987, of 22 patients less than 18 years of age undergoing thoracotomy for pulmonary metastases from previously diagnosed soft tissue tumors was performed. There were 15 males and 7 females with ages ranging from 8 months to 17 years. Ten patients had primary osteogenic sarcoma, 5 had Wilms' tumor and 7 had miscellaneous other tumors. A total of 41 thoracotomies were performed with 0% mortality. The overall survival rate was 54.5% with an average survival of 6.2 years after initial diagnosis. The osteosarcoma group had a 50% survival after an average of 62 months from initial diagnosis, while the Wilms' tumor group had an 80% survival with a 100-month average. The remaining 7 patients had a 60% survival on average, 62 months after diagnosis. Of the 12 patients undergoing wedge resections, 2 died on follow-up 20 and 21 months after initial diagnosis. As opposed to the survivors in this group, both required more than 4 wedge resections on initial thoracotomy. Two patients requiring extended resections, one for Ewing's sarcoma and one for hepatoblastoma, died 35 and 3 months after diagnosis respectively. Of the 8 patients undergoing lobectomy and/or segmentectomy, 75% died an average of 31.3 months after diagnosis. Ten patients had 2 or more thoracotomies for an average of 2.9, with a 40% survival rate. Of the 27% who presented with initial bilateral lung metastases, 33% survived. Forty-five percent of patients had a tumor-free interval of less than 12 months prior to thoracotomy resulting in a 60% mortality rate. The mortality was 33% among those patients having a tumor-free interval of greater than 12 months. Our survival rates compare favorably with the literature, with the Wilms' tumor group having the best prognosis. This prognosis is dependent on the initial extent of lung metastases, and the tumor-free interval prior to thoracotomy.

PARAESOPHAGEAL HERNIA AFTER NISSEN FUNDOPICATION - A REAL COMPLICATION IN PEDIATRIC PATIENTS.

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Between 1976 and 1986, 89 consecutive pediatric patients who underwent Nissen fundoplication were reviewed. The age range at fundoplication was 6 weeks to 20 years (Mean: 3.8 years). Follow-up, including upper GI series was obtained in 55 patients (61.8%). Fifteen patients developed paraesophageal hernia (PEH) (16.8%). PEH was diagnosed between four and thirty-six months following initial surgery (Mean: 17 months).

Patients were divided into three groups: Group A - those with significant mental dysfunction (45); Group B - those with previous tracheoesophageal fistula repair (12); Group C - all others (32). Incidence of PEH is 20% for Group A; 16.8% for Group B; and 12.5% for Group C. Combining Groups B and C, five of twenty-five (20%) patients who underwent fundoplication under one year of age, developed PEH; whereas, one of nineteen (5.3%) older patients developed PEH.

At surgery for the PEH, 11 of 15 patients had partial (5) or complete (6) disruption of the fundoplication. In most cases the hernia extended along the left posterolateral aspect of the esophageal hiatus. Crural repair had been performed in only one of fifteen patients at the initial surgery.
WHOLE BOWEL IRRIGATION IN PEDIATRIC PATIENTS: FURTHER IMPROVEMENTS

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In 1982 we reported that whole bowel irrigation very effectively cleansed the colon of 24 pediatric patients but required prolonged nasogastric infusions of large volumes of saline which was associated with weight gain and hyperchloremia (J Pediatr Surg 1982;17:350-352). Since March 1985 we have used a commercial balanced polyethylene glycol (PEG solution) and now report its use in 40 pediatric patients. None of the previously noted side effects occurred with the PEG solution and the cleansing results were equal to or superior to saline. Furthermore, the volumes and infusion times required were significantly smaller.

We conclude that whole bowel irrigation remains the preferred technique for lower bowel cleansing and that PEG solution is superior to saline.

SUCCESSFUL CRYOTHERAPY OF TRACHEAL NEOPLASM

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Obstructing neoplasms of the airway in children, although quite uncommon, present difficult management options. Considerations for the growth of the child's larynx and airway preclude the use of irradiation therapy and many radical surgical techniques. Profound cryotherapy has been used to treat many superficial neoplasms of the skin and oropharynx. The safety of profound cryotherapy when applied to the airway has been demonstrated experimentally. A 10 year old black male presented in August, 1978, with a six month history of progressive dyspnea and inspiratory stridor. Radiographs demonstrated near total tracheal obstruction with a subglottic mass. At laryngoscopy, a submucosal mass occupying 75% of the subglottic airway was noted. Biopsies revealed a pleomorphic adenoma of minor salivary gland origin, a tumor with a high predilection for local recurrence after resection. A tracheostomy was performed for airway control and the lesion was treated with endotracheal cryotherapy. The patient underwent four sessions of cryotherapy utilizing a liquid nitrogen probe and temperatures of -80 to -100°C. Two months later the tracheostomy was removed and the patient has remained asymptomatic for nine years. Pulmonary function studies two years following cryotherapy demonstrated a FVC of 81% predicted and FEV-1 of 73% predicted. Bronchoscopy with biopsy at five years showed no evidence of recurrent airway obstruction or persistent tumor. This represents the first reported case of successful treatment of an airway tumor in a child utilizing profound cryotherapy. The case illustrates the utility of endotracheal cryotherapy in the treatment of benign and malignant obstructing lesions of the airway in children.
MULTIFOCAL FIBROSCLEROSIS IN THE PAEDIATRIC AGE GROUP

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Sclerosing mediastinitis is not a singularly unusual problem
in the population as a whole. It has a host of aetiologic
factors including the infective, post traumatic, familial and
the iatrogenic. Commonly no cause is found. This is a very
uncommon problem in the paediatric age group.

Multifocal fibrosclerotic syndromes involving variously the
mediastinum, retroperitoneum, orbit, biliary tract and thyroid
have been sporadically reported. A patient initially presenting
with sclerosing mediastinitis and later with retroperitoneal
fibrosis has been followed at the Janeway Hospital for the
past seven years. We have been unable to find a parallel syndrome
in the paediatric literature. Her case presentation, investigation,
treatment and problems are presented and discussed with appropriate
review of the literature.

INTRA-ABDOMINAL TESTIS WITH YOLK SAC TUMOR IN A 2 YEAR OLD.
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The potential for development of malignancy in the undescended
testicle is well recognised but does not usually present until the
fourth decade on the average although in situ changes are noted
earlier. There has been no previous reported case of a pure yolk
sac tumor present in an intra-abdominal testis in a young child.
A 2 year old boy presented with abdominal discomfort, a palpable
abdominal mass and an undescended left testicle. A C.A.T. scan
demonstrated a posterior mass causing bilateral ureteric compression.
The preoperative serum A.F.P. level was markedly elevated. At
laparotomy a ten cm. intra-abdominal testis which had undergone tor-
sion through 360 degrees was removed. The nodes were negative.
Postoperatively the child did well and was treated with chemo-
therapy. Follow-up A.F.P. levels at 70 and 100 days were normal.
THE USE OF CARDIOPULMONARY BY-PASS AND CIRCULATORY ARREST IN THE RESECTION OF MASSIVE TUMOURS

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The resection of massive soft tissue tumours is always attended by the risk of severe and perhaps, uncontrolled bleeding. In 1981, Ein et al (1) described a technique employing cardiopulmonary bypass for the removal of large hepatic tumours.

We wish to report our experience using a similar technique in the successful removal of five massive liver tumours and one rare external cranial tumour. In no case was there any complication attributable to the technique. The patients' ages varied from 10 days up to 7 years and 5 patients are alive and well.

We consider this technique to be a safe one and adaptable to the removal of any massive tumour when the risk of catastrophic bleeding exists.

Reference


OSTEOMYELITIS OF THE CERVICAL SPINE PRESENTING AS A NEURENTERIC CYST

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A three-week-old healthy female developed cyanotic spells which required intubation and ventilation. As part of her initial emergency examination and treatment, a neck mass was felt and a positive blood culture grew staph. She was transferred to our ICU, ventilated, tube fed, and treated with intravenous cloxacillin. Bronchoscopy was normal, but showed a paralyzed left cord. CAT scan of her neck showed a midline mediastinal mass behind the compressed trachea and esophagus which extended from C7 to the carina. Because of the suspicion of an abnormal C7 vertebral body, the diagnosis of neurenteric cyst was made and a myelogram was done. This showed a complete block at the T1 level, and an absent C7 vertebral body; there were no neurological signs. At the same time, her right knee became red and swollen and needle aspiration was negative, but x-rays showed a lytic area in the distal femur. The knee was explored under general anesthesia and an osteomyelitis found and drained. Several days later, a barium swallow showed the mediastinal mass pushing the esophagus to the left, but now several more cervical vertebrae were "missing". The mediastinal abscess was then drained through the neck. The follow-up has been unremarkable.
33 CONGENITAL LUMBAR HERNIA IN AN INFANT WITH THE LUMBOCOSTOVERTEBRAL SYNDROME.
B.J. Hancock and N.E. Wiseman
Children's Hospital, Winnipeg

A 3 month old infant female was admitted to hospital with vomiting and irritability. On examination she was found to have a bulging left flank mass which had been described as increasing in size. A meningocele extending from L1 to L4 associated with hydrocephaly had been diagnosed at birth; and in the neonatal period the infant had closure of the meningocele carried out and as well had a ventriculoperitoneal shunt. Investigations following admission to hospital revealed an air-filled cystic mass in the left flank as seen on plain x-ray and CT scan. At surgery a herniation of small bowel through Petit's triangle was encountered. The incarcerated bowel was reduced and the defect was repaired. Postoperative recovery was uneventful.

There have been 34 previously reported lumbar hernias in childhood. Many occur as part of the lumbocostovertebral syndrome which includes vertebral anomalies, costal defects, and anterior meningoceles. The case reported herein appears to represent the first in which the lumbar hernia occurred in association with a posterior meningocele. It is important in the child with spinal dysraphism to recognize this entity as distinct from the swelling which occurs with a meningocele.

34 Cyclic Neutropenia with Colonic Perforation and Non-healing Colocutaneous Fistula
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Cyclic neutropenia is an hereditary disorder of white blood cells characterized by profound neutropenic episodes approximately every 3 weeks. Septic complications are usually limited to cutaneous and oropharyngeal infections.

A 4 year old boy with known cyclic neutropenia was admitted in shock with neutropenia, clostridial septicemia, right lower abdominal peritonitis and subcutaneous emphysema. At laparotomy, inflammation of the omentum, with no gross perforation, was found; no resection or appendectomy was done. He subsequently developed a right lower quadrant abscess, which was drained, resulting in a colocutaneous fistula.

For the next 8 months his fistula persisted, with intermittent episodes of fever, increased fistula output, and abdominal pain during his neutropenic periods. Standard nonoperative approaches to healing the fistula failed (i.e. elemental feeds, TPN, irrigations, antibiotics and drains). Attempts to medically abolish his neutropenic episodes using techniques described in the literature also failed (i.e. lithium, gamma globulin, corticosteroids). Ultimately, he underwent an ileocecal resection with primary anastomosis; the operation was done immediately following a neutropenic episode, in order to allow for adequate healing of his anastomosis before his next period of neutropenia. Postoperative course was satisfactory and he remains well after 5 months follow-up.

This case and several similar previously reported cases illustrate that cyclic neutropenia may present with serious surgical complications. It also underlines the important role that neutrophils play in the healing of enteric fistulas.
FOND D'ÉDUCATION

Le fond d'éducation permet d'inviter chaque année d'éminents chirurgiens pédiatriques étrangers pour enseigner dans différents centres médicaux du Canada. Il permet également à notre Association de déléguer un conférencier en chirurgie pédiatrique 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 défrayer 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.

L'objectif de l'Association est d'accroître le capital à un niveau tel que l'intérêt annuel soit suffisant pour défrayer le coût de ce programme.

Le fond d'éducation est enregistré auprès du Gouvernement Fédéral et toute contribution est déductible d'impôt. L'administration de ce fond est consignée dans un rapport annuel.

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