CANADIAN ASSOCIATION of PAEDIATRIC SURGEONS
ASSOCIATION CANADIENNE de CHIRURGIE PÉDIATRIQUE

42nd- 42ième

Annual Meeting -Réunion Annuelle
2010

Saskatoon, Saskatchewan
September 23-25 Septembre
CANADA

JOINT MEETING WITH THE CANADIAN PEDIATRIC ANESTHESIA SOCIETY

CAPS 2011 Annual meeting
ACCP 2011 Réunion Annuelle
Septemper 22-24 Septembre

Ottawa, Canada

PLAN TO JOIN US!
Joignez-vous à nous!

CANADIAN ASSOCIATION of PAEDIATRIC SURGEONS
ASSOCIATION CANADIENNE de CHIRURGIE PÉDIATRIQUE

42nd Annual Meeting
42 ième Réunion Annuelle

September 22-25 Septembre 2010
Delta Bessborough Hotel
Saskatoon, Saskatchewan
CANADA

The Division of Continuing Professional Development (CPD) of the Faculty of Medicine of the Université de Montréal is fully accredited by the Committee on Accreditation of Continuing Medical Education (CACME), by the Collège des médecins du Québec (CMQ).

The Division du CPD approves this activity for 16 hours of category 1 (Main Pro-M1) credits for the attending general practitioner (family physician).

For the specialist physician, the Division of CPD approves 1 credit per hour of attendance for a total of 16 credits for the entire activity in accordance with the Maintenance of Certification program of the Royal College of Physicians and Surgeons of Canada (RCPSC).

For all other participants, this program grants a certificate of attendance of 16 hours.

Participants should claim a number of hours consistent with their attendance

In keeping with CMA Guidelines, program content and selection of speakers are the responsibility of the planning committee. Support is directed toward the costs of the course and not to individual speakers. All speakers have indicated no involvement with industry that may be perceived as potentially influencing the presentation of the educational material.

Educational Objectives

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

- Present current updates on advances in clinical pediatric surgery
- Present current updates on advances in the pathophysiology of pediatric surgical disorders
- Provide for group discussion on controversial issues in pediatric general and thoracic surgery through:
    - Discussion of presented scientific papers
    - Interactive panel discussion on the management of clinical pediatric problems

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

A panel of 6 members of the CAPS Program Committee has chosen the abstracts presented, based on quality of abstracts submitted and reflecting what is commonly relevant to the practice of pediatric surgery. Input for subsequent meetings and how to improve this one will be solicited from the delegates at the conclusion of the meeting.

SCHEDULE FOR CAPS/CPAS
COMBINED ANNUAL MEETING
DELTA BESSBOROUGH
SASKATOON, SASKATCHEWAN
SEPTEMBER 22 – 26, 2010

DATE	TIME	FUNCTION	ROOM	FLOOR
Wednesday 09-22-10				
	08:00 – 10:00	Executive Meeting	Cypress Room	Convention
	10:00 – 17:00	Council Meeting	Carlton Boardroom	Convention
	17:00 – 18:00	CAPSNET Committee Meeting	Carlton Boardroom	Convention
Thursday 09-23-10				
	06:00 – 09:00	RCPSC Committee Meeting	Spadina Boardroom	Mezzanine
	09:00 – 10:30	Publication Committee Meeting	Cypress Room	Convention
	09:00 – 16:00	CAPS Registration	Battleford Ballroom Foyer	Mezzanine
	09:00 – 16:00	Speaker Ready Room	Harvest Room	Convention
	10:00 – 11:30	Ethic Committee Meeting	Spadina Boardroom	Mezzanine
	12:00 – 16:00	Scientific Meeting Sessions	Battleford Ballroom	Mezzanine
	18:30 – 23:00	CAPS Welcome Reception	Battleford Ballroom	Mezzanine
Friday 09-24-10				
	06:30 – 08:00	Poster Set-up	Adam Ballroom Foyer	Convention
	07:00 – 08:00	CAPS Continental Breakfast	Adam Ballroom Foyer	Convention
	07:00 – 16:00	CAPS Registration	Adam Ballroom Foyer	Convention
	07:00 – 16:00	Speaker Ready Room	Harvest Room	Convention
	07:00 – 16:00	CAPS Exhibits	Adam Ballroom Foyer	Convention
	08:00 – 16:00	CAPS Scientific Meeting and Poster Sessions	Adam Ballroom Foyer Convention Floor	Convention
	17:00 – 23:00	CPAS Registration / Cocktails / Scientific Meeting Sessions	William Pascoe	Mezzanine
Saturday 09-25-10				
	08:00 – 11:30	Take-down of Posters	Adam Ballroom Foyer	Convention
	06:30 – 08:45	CAPS Annual Members Business Meeting and Breakfast	Terrace Lounge	Convention
	07:45 – 08:45	Continental Breakfast for Non-Members & CPAS	Adam Ballroom Foyer	Convention
	08:45 – 15:00	CAPS Registration	Adam Ballroom Foyer	Convention
	07:00 – 15:00	Speaker Ready Room	Harvest Room	Convention
	09:00 – 13:00	CAPS-CPAS Scientific Meeting Session	Adam Ballroom	Convention
	13:00 – 14:00	CAPS Lunch	Adam Ballroom Foyer	Convention
	13:00 – 16:00	CPAS Lunch & Scientific Meeting Sessions	William Pascoe	Mezzanine
	18:30 – 23:00	CAPS-CPAS Presidential Reception & Banquet	Battleford Foyer and Ballroom	Mezzanine
Sunday 09-26-10				
	08:00 – 12:00	CPAS Scientific Meeting Sessions	William Pascoe	Mezzanine

SCIENTIFIC AND SOCIAL PROGRAM
PROGRAMME SCIENTIFIQUE ET SOCIAL

Wednesday, September 22, 2010
Mercredi, 23 Septembre 2010

START	END	FUNCTION	ROOM	FLOOR
08:00	10:00	Executive Meeting	Cypress	Convention
10:30	17:00	Council Meeting	Carlton	Convention
17:00	18:00	CAPSNeT Committee Meeting	Carlton	Convention

Thursday, September 23, 2010
Jeudi, 23 Septembre 2010

START	END	FUNCTION	ROOM	FLOOR
06:00	09:00	RCPSC Pediatric General Surgery Specialty Committee Meeting	Spadina Boardroom	Mezzanine
08:00	16:00	Speaker Ready Room	Harvest Room	Convention
09:00	16:00	Registration	Battleford Ballroom Foyer	Mezzanine
09:00	10:30	Publication Committee Meeting	Cypress Room	Convention
10:00	11:30	Ethics Committee Meeting	Spadina Boardroom	Mezzanine
12:00	12:10	President Welcome	Battleford Ballroom	Mezzanine
12:10	13:46	Scientific Session I	Battleford Ballroom	Mezzanine
13:46	14:00	CAPSNeT Update	Battleford Ballroom	Mezzanine
14:00	14:30	Afternoon Break	Battleford Ballroom Foyer	Mezzanine
14:30	15:54	Scientific Session II	Battleford Ballroom	Mezzanine
18:30	23:00	Welcome Reception & Buffet	Battleford Ballroom	Mezzanine

Friday, September 24, 2010
Vendredi, 24 Septembre 2010

START	END	FUNCTION	ROOM	FLOOR
06:30	08:00	Setup of Posters	Adam Boardroom Foyer	Convention
07:00	16:00	Registration	Adam Boardroom Foyer	Convention
07:00	08:00	Continental Breakfast	Adam Boardroom Foyer	Convention
07:00	16:00	Exhibits	Adam Boardroom Foyer	Convention
07:00	16:00	Speaker Ready Room	Harvest Room	Convention
08:00	09:52	Scientific Session III	Adam Boardroom	Convention
09:52	10:20	Morning Break	Adam Boardroom Foyer	Convention
10:20	10:30	Hyponatremia Study	Adam Boardroom	Convention
10:30	12:19	Scientific Session IV	Adam Boardroom	Convention
12:19	12:45	Box Lunch	Adam Boardroom Foyer	Convention
12:45	13:00	CAPS President Talk	Adam Boardroom	Convention
13:00	13:35	2 minutes – 2 slides / videos	Adam Boardroom	Convention
13:35	13:45	CIGITI Presentation	Adam Boardroom	Convention
13:45	14:15	Afternoon Break	Adam Boardroom Foyer	Convention
14:15	16:00	Scientific Session V Posters Display with walk-about presentation	Adam Boardroom Foyer	Convention

Saturday, September 25, 2010
Samedi, 25 Septembre 2010

START	END	FUNCTION	ROOM	FLOOR
06:30	08:45	Annual Members Business Meeting	Terrace Lounge	Convention
07:30	08:45	Continental Breakfast for Non-Members & CPAS	Adam Ballroom Foyer	Convention
07:30	11:30	Take-down of Posters	Adam Ballroom Foyer	Convention
07:30	15:00	Speaker Ready Room	Harvest Room	Convention
07:30	15:00	Exhibits	Adam Ballroom Foyer	Convention
08:45	15:00	Registration	Adam Ballroom Foyer	Convention
09:00	10:30	Combined Session CAPS/CPAS: WHAT and WHERE Panel Discussion Where should infants be operated on? When should we do that case?	Adam Ballroom	Convention
10:30	11:00	Morning Break	Adam Ballroom Foyer	Convention
11:00	12:00	Combined Session CAPS/CPAS Approach to Mediastinal Mass Discussion	Adam Ballroom	Convention
12:00	13:00	Combined Session CAPS/CPAS JPS/Fred MacLeod Lecture: Prof Hugo A Heij 'Noblesse oblige: The Pediatric Surgeon as the Key to Quality Improvement'	Adam Ballroom	Convention
13:00	14:00	Buffet Lunch	Adam Ballroom Foyer	Convention
14:00	15:19	Scientific Meeting Session VI	Adam Ballroom	Convention
15:19	15:34	CAPS Travelling Resident Talk	Adam Ballroom	Convention
15:34	15:45	President's Closing Remarks	Adam Ballroom	Convention
18:30	23:00	CAPS/CPAS Presidential Reception & Banquet	Battleford Foyer & Ballroom	Mezzanine
END OF MEETING SEE YOU NEXT YEAR IN OTTAWA				

PRESIDENT'S WELCOME

Dear Colleagues and guests,

It is a pleasure to welcome you to the 42nd meeting of The Canadian Association of Paediatric Surgeons in Saskatoon. It is the first time that our association meets in this beautiful riverside city, the largest in Saskatchewan. Not only is it the first time ever that CAPS meets in Saskatchewan, but this will be the first meeting held jointly with our pediatric anesthesia colleagues.

Supported by its 141 active and associate members and guided by the wisdom of some of its 29 life members, CAPS has gained strength since 2009 when we adopted the White Paper resulting from the WinterCAPS discussions (I encourage all to read it on www.caps.ca under "What's New"). We were already known and appreciated for our small collegial meetings, but we decided "Nous pouvons faire plus - We Can Do More". Among our goals, we decided CAPS could expand its role in research and education and increase advocacy and partnerships. With these goals in mind, the annual meeting promises to be an excellent opportunity not only to exchange scientific information and ideas, but also to meet colleagues informally, develop or strengthen research collaborations, and connect with our paediatric anaesthesia colleagues in a setting different from the Operating Room.

Another goal outlined in the White Paper was to develop international collaborations. As the opportunity arose, we have applied to host the 2013 World Congress of Pediatric Surgery. We are also discussing ways to facilitate attendance at CAPS meetings for paediatric surgeons from developing countries. In addition, we are actively supporting the Global Paediatric Surgery Network launched in May 2010, and many of our members have offered their services to help children in Haiti.

Finally, the White Paper outlined the need to form a Finance Committee in order to better plan yearly budgets, increase sponsorships and donations to eventually increase CAPS-sponsored research and other initiatives. The first official meeting of this committee will occur just before Council meeting, and you will hear more about it during and after the business meeting.

As you can appreciate, "We Can Do More", but let us look back to our own Annual Meeting, where one of the highlights should be our 2010 JPS/Fred MacLeod lecturer, Professor Hugo Heij from The Netherlands, who fits in well with many of our goals. Not only will he talk to us about quality indicators in paediatric surgery, a good example of advocacy, partnership and education, but his own career is a demonstration of international collaboration which will undoubtedly inspire all of us who will hear his presentation. Let us focus on the excellent scientific program put together by Dr. Bouchard and her committee, and enjoy the social program organized by Dr. Miller and the local arrangements team. We also need to thank Dr. Bass, our secretary-treasurer, and Arlene Ein, our meeting coordinator, without whom none of this would be possible!

Have fun while you work! That is what CAPS meetings are about and that is what we should do every day when we go to work.

Jean-Martin Laberge,
President
Canadian Association of Paediatric Surgeons

MOT DE BIENVENUE DU PRÉSIDENT

Chers collègues,

Je suis heureux de vous souhaiter la bienvenue à Saskatoon pour la quarante-deuxième réunion annuelle de notre association. Non seulement est-ce la première fois que l'ACCP se réunit en Saskatchewan, c'est aussi une première que cette réunion soit tenue conjointement avec celle de nos collègues de la Société canadienne d'anesthésie pédiatrique.

Forte de ses 141 membres actifs et associés et guidée par la sagesse de ses 29 membres seniors, notre association a pris de la vigueur en 2009 suite à l'adoption du Livre Blanc qui découla des discussions du « WinterCAPS » (j'encourage tous à le lire au www.caps.ca sous la rubrique « What's New »). Nous étions reconnus pour nos réunions annuelles sympathiques, mais nous avons décidé « Nous pouvons faire plus – We can do more ». Nous nous sommes fixés plusieurs objectifs, dont l'augmentation des efforts en recherche et en éducation, et le développement de partenariats. Ces objectifs seront au centre de notre réunion annuelle tant lors des présentations scientifiques que des rencontres sociales, qui permettront de développer ou renforcer les collaborations entre chercheurs, et de discuter avec nos collègues anesthésistes dans un décor différent de celui de la salle d'opération.

Un autre objectif du livre blanc était de développer le volet international. L'occasion s'est présentée et nous avons soumis notre candidature pour être les hôtes du Congrès Mondial de chirurgie pédiatrique en 2013. Nous discutons aussi de moyens permettant de faciliter l'accès à nos réunions annuelles pour les chirurgiens pédiatriques de pays en développement. De plus, nous soutenons activement le « Global Paediatric Surgery Network », lancé officiellement en mai 2010, et plusieurs de nos membres se sont portés volontaires pour aider à Haïti.

Enfin, le livre blanc a identifié le besoin de créer un comité des finances pour mieux prévoir les dépenses et augmenter les dons et commandites afin d'augmenter le support de notre association pour la recherche et d'autres initiatives. La première réunion de ce comité se déroule juste avant la réunion du conseil et vous en entendrez parler pendant et après la réunion d'affaires.

Comme vous pouvez le constater, « Nous pouvons faire plus », mais revenons à notre congrès, où l'un des faits saillants sera sans doute la conférence JPS/Fred MacLeod donnée par le professeur Hugo Heij des Pays-Bas, dont les centres d'intérêt correspondent aux objectifs du Livre Blanc. Non seulement il nous parlera des indicateurs de qualité en chirurgie néonatale, un bon exemple de partenariat et d'éducation, mais toute sa carrière de collaboration internationale saura inspirer tous ceux qui assisteront à sa présentation. Revenons aussi à l'excellent programme scientifique élaboré par la Dr Bouchard et son comité, et profitons des activités sociales organisées par Dr Miller et l'équipe locale. Nous ne pouvons oublier de remercier le Dr Bass, notre secrétaire-trésorier, et Arlene Ein, notre coordonnatrice, sans lesquels rien de tout cela ne serait possible!

Ayons du plaisir tout en travaillant! C'est l'essence de nos congrès, et c'est ce que nous devrions faire chaque jour lorsque nous allons à l'hôpital.

Jean-Martin Laberge
Président,
Association Canadienne de Chirurgie Pédiatrique

ABOUT THE CANADIAN ASSOCIATION OF PAEDIATRIC SURGEONS

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

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

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

Contributions to educational fund can be made online at www.caps.ca or send cheque to:

Juan Bass
CAPS Secretary-Treasurer
Children's Hospital of Eastern Ontario
401 Smyth Rd
Ottawa, Ontario. K1H 8L1
Email: bass.caps@gmail.com
Telephone: (613) 737-7600 ext 2799
Fax: (613) 738-4849

AU SUJET DE L'ASSOCIATION CANADIENNE DE CHIRURGIE PÉDIATRIQUE

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

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

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

Les dons pour le fonds d' éducation peuvent être envoyés par courriel à www.caps.ca
ou adressés par chèque à :

Juan Bass
Secrétaire-trésorier de l'ACCP
Children's Hospital of Eastern Ontario
401 Smyth Rd
Ottawa, Ontario. K1H 8L1
Email: bass.caps@gmail.com
Telephone: (613) 737-7600 ext 2799
Fax: (613) 738-4849

PRESIDENTS - PRÉSIDENTS

1967-1973	Harvey Beardmore*	Montreal
1973-1975	Colin Ferguson*	Winnipeg
1975-1977	Jim Simpson*	Toronto
1977-1979	Sam Kling*	Edmonton
1979-1981	Pierre-Paul Collin	Montreal
1981-1983	Barry Shandling	Toronto
1983-1985	Gordon Cameron	Hamilton
1985-1987	Stanley Mercer	Ottawa
1987-1989	Alex Gillis	Halifax
1989-1991	Jacques C. Ducharme	Montreal
1991-1993	Sigmund H. Ein	Toronto
1993-1995	Angus Juckes	Regina
1995-1997	Jean G. Desjardins	Montreal
1997-1999	David P. Girvan	London
1999-2001	Ray Postuma	Winnipeg
2001-2003	Mike Giacomantonio	Halifax
2003-2005	Salam Yazbeck	Montreal
2005-2007	Nathan Wiseman	Winnipeg
2007-2009	Geoffrey Blair	Vancouver
2009-	Jean-Martin Laberge	Montreal

* deceased/ décédé

SECRETARY-TREASURERS
SECRÉTAIRES -TRÉSORIERS

1967-1974	Barry Shandling	Toronto
1974-1978	Gordon Cameron	Hamilton
1978-1983	Frank M. Guttman	Montreal
1983-1989	David Girvan	London
1989-1995	Ray Postuma	Winnipeg
1995-2002	Salam Yazbeck	Montreal
2002-2006	Peter G. Fitzgerald	Hamilton
2006-	Juan Bass	Ottawa

FOUNDING MEMBERS
MEMBRES FONDATEURS

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

* deceased / décédé

1st ANNUAL MEETING was held January 22, 1969 in VANCOUVER

Le premier CONGRÈS ANNUEL eut lieu le 22 janvier, 1969 à VANCOUVER

THE COAT OF ARMS OF

THE CANADIAN ASSOCIATION OF

PAEDIATRIC SURGEONS

LES ARMOIRIES DE

L'ASSOCIATION CANADIENNE DE

CHIRURGIE PÉDIATRIQUE

Heraldic Blazon

Per pale gules and purpure, dexter a scalpel erect entwined by a serpent, sinster a child standing, all argent.
Crest: On the three maple leaves slipped gules and blacked purpure, the date 1967.
Motto: "Je le pensay, Dieu le guérit".

Description

The red and purple of the arms are also the colours of the Royal College of Physicians and Surgeons of Canada and represent the blood met in surgery - arterial and venous. The scalpel with the healing serpent of Aesculapius, and the figure of a well child combine to symbolize the practice of Paediatric Surgery.
The crest is the Canadian maple leaf and the founding date of the Association (1967).
The Motto is a quotation from Ambroise Pare, a father of modern surgery. The sixteenth-century French translates, "I treated him, God cured him".

Le Blason

Au gauche, un bistouri droit entouré d'un serpent alors qu'à droite se tient un enfant, tout argent.
Au sommet se trouvent trois feuilles d'érable ainsi que la date 1967.
Devise: "Je le pensay, Dieu le guérit".

Description

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

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

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

Visiting Lecturers :

1969	Vancouver	Davenport/Segal
1970	Montreal	F. Wiglesworth
1971	Ottawa	A. Sass-Kortsak
1972	Toronto	MacIntyre
1973	Edmonton	L. Stern
1974	Montreal	J. Folkman

Fred MacLeod Lecturers :

1975	Winnipeg	D. J. Waterston
1976	Quebec City	D. Pellerin
1977	Toronto	F.D.Stephens
1978	Vancouver	J.H.Louw
1979	Montreal	O. Swenson
1980	Ottawa	D.Cohen
1981	Toronto	H.W.Clatworthy
1982	Quebec	P.Mollard
1983	Calgary	K. Kimura
1984	Montreal	M. M. Ravitch
1985	Vancouver	P. Jones
1986	Halifax	A. F. Schärli
1987	Winnipeg	S. L. Gans
1988	Ottawa	J. G. Raffensperger
1989	Edmonton	J.C. Molenaar
1990	St-John's	K. D. Anderson
1991	Quebec City	J. L. Grossfeld
1992	Ottawa	A. G. Coran
1993	Victoria	K. W. Ashcraft
1994	Toronto	J. A. Haller Jr.
1995	Cheribbourg Magog, Quebec	J. A. Tovar
1996	Halifax	N. P. Kenny
1997	Banff	R. Satava
1998	Toronto	P. K. Donahoe
2000	Montebello	J. A. O'Neill, Jr
2001	9 / 11	
2002	Vancouver	Birabwe-Male

JPS/Fred MacLeod Lecturers :

2003	Niagara-on-the –Lake	S. Adzick
2004	Winnipeg	K. Georgeson
2005	Quebec City	A. Al-Rabeeah
2006	Calgary	
2007	St- John's	C. J. H Stolar
2008	Toronto	Jose Boix-Ochoa
2009	Halifax	M. Gauderer
2010	Saskatoon	H. A. Heij

GUEST LECTURER
CONFERENCIER INVITE

The Canadian Association of Paediatric Surgeons
L'Association canadienne de chirurgie pédiatrique

is pleased to invite est fière d'inviter

Dr. Hugo A Heij

To give the JPS / Fred MacLeod Annual Lecture.
À donner la conférence annuelle JPS/ Fred MacLeod

'Noblesse oblige: The Pediatric Surgeon as the Key to Quality Improvement'

The visit by Dr. Heij La visite du Dr. Heij
is made possible with the financial support of
est rendue possible grâce à la générosité de

Elsevier

Dr. Hujo A. Heij

Professor Hugo A. Heij was born and raised in the Netherlands and graduated from Medical School at Erasmus University in Rotterdam. He started his surgical residency in 1974 in Kerkrade, completed a one-year course in tropical medicine in Amsterdam and then spent three years in Zambia before returning to Rotterdam in 1979 to complete his general surgery residency and a Ph.D. Dr. Heij continued with a one year fellowship in paediatric surgery in Rotterdam under Dr. Jan Molenaar, and two more years in Amsterdam under Dr. A. Vos. In 1988 he started on staff at Emma Children's Hospital in Amsterdam, where he has been head of Paediatric Surgery since 1999. However, from 1995 to 1999, he worked in Zambia full time as a consultant general and paediatric surgeon. He has held multiple roles in academic organizations such as the Netherlands Association of Paediatric Surgery (President 2005-2009), the Netherlands Society for Tropical Medicine, BAPS, SIOP, the European Board of Paediatric Surgery, and the European Union of Paediatric Surgical Associations.

Having worked in Zambia for seven years, Dr. Heij returns for several weeks annually to East and Central Africa to operate, teach surgeons and examine candidates for specialty examination. Other than his Third World commitments, our guest's career focuses on evidence-based medicine and quality of care. He chaired a working party of the Association of Surgeons of the Netherlands to develop guidelines for the diagnosis and treatment of acute appendicitis in children and adults. He is involved in the process of certification of general hospitals for surgery in children, so that paediatric centers can concentrate on tertiary surgical cases. Most importantly, he was instrumental in the development and implementation of performance indicators in neonatal surgery (for "index cases" such as oesophageal atresia, biliary atresia) across all 6 paediatric surgery centres in the Netherlands.

Please join us in welcoming Professor Heij and his wife to Saskatoon, and showing them the true meaning of Western Canadian hospitality.

RESIDENTS' PAPERS

A panel of members from the Publication Committee adjudicates the oral presentations presented by medical students or residents. A panel of members from the Program Committee adjudicates the posters presented by medical students or residents.

PRÉSENTATIONS DES RÉSIDENTS

Les présentations orales faites par les étudiants ou les résidents sont jugées par un jury constitué des membres du Comité de Publication Les présentations d'affiches faites par les étudiants ou les résidents sont jugées par un jury constitué des membres du Comité de Programme.

WINNERS OF THE 2009 RESIDENT BEST PAPER AND POSTER AWARDS
PRIX POUR LES MEILLEURES COMMUNICATIONS DES RÉSIDENTS 2009

Dr. MARIA DI LORENZO
BEST BASIC SCIENCE RESEARCH PAPER
MEILLEUR TRAVAIL EXPÉRIMENTAL, PRIX MARIA DI LORENZO

Dr. Esmaeel Taqi: "Influence of nutrients, biliary-pancreatic secretions and systemic trophic hormones on intestinal adaptation" *G*rosfeld 2-volume Pediatric Surgery textbook

BEST CLINICAL RESEARCH PAPER
MEILLEUR TRAVAIL CLINIQUE

1st prize: Dr. Ivan Diamond. " Does the colon play a role in intestinal adaptation in infants with short bowel syndrome?" Grosfeld 2-volume Pediatric Surgery textbook.

2nd prize: Dr. Gareth Eason. "Adhesive small bowel obstruction in children: Markers of outcome". Subscription to Journal of Pediatric Surgery.

BEST POSTER- MEILLEURE AFFICHE

1st prize: Dr. Ahmed Nasr. “Is routine preoperative 2D echocardiogram necessary for infants with esophageal atresia, omphalocele, and anorectal malformations” Grosfeld 2-volume Pediatric Surgery textbook.

2nd prize Dr. Whitney McBride. “Correlation of complex ascites with intestinal gangrene and perforation in neonates with NEC”. Subscription to *Seminars in Pediatric Surgery*

PRESIDENT’S PRIZE
FOR OUTSTANDING PRESENTATION BY A STUDENT

Ms. Sarah Tracy. “Abnormal neuroimaging and neurodevelopmental findings in a cohort of antenatally diagnosed congenital diaphragmatic hernia survivors” Monetary award

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PROGRAM SCHEDULE

PROGRAMME DÉTAILLÉ

ABBREVIATIONS

O	oral presentation- présentation orale
R	resident paper- présentation par résident
C/T	case/technique report- présentation de cas ou de technique
P	poster presentation- présentation d'affiche

O,R, P O,R, P Adjudicated- éligible pour les prix

C/T Not adjudicated- non-éligible

THURSDAY, SEPTEMBER 23

12 :00-12 :10	Presidents' Welcome	Jean-Martin Laberge

12:10-13:46		Scientific Session # 1 Oral Presentations Moderators : Geoffrey Blair and Baird Mallory	
1	O R	12:10-12 :17	Imflammatory Bowel Disease Manifesting after Surgical Treatment for Hirschsprung Disease David Levin [1], Margaret Marcon [1], Risto Rintala [2], Jacob Langer [1] [1] Hospital for Sick Children, Toronto, Ontario, Canada [2] Hospital for Children and Adolescents, University of Helsinki, Helsinki, Finland
2	O R	12 :22-12 :29	Hirschsprung's Associated Enterocolitis: Who is Really at Risk? Schall K, Cusick R, Abdessalam S, Raynor S, Azarow K. Children's Hospital and Medical Center, Omaha.University of Nebraska
3	O R	12 :34-12 :41	The Role of Tissue Plasminogen Activator in the Management of Complex Intra-Abdominal Abscesses in Children Anna Shawyer [1], Jacob C. Langer [2] [1] Department of Surgery, University of Toronto, Division of General Surgery, Toronto, Canada, [2] Department of Paediatric Surgery The Hospital for Sick Children, Toronto, Canada
4	O R	12 :46-12 :53	Ex Utero Intrapartum Treatment (EXIT) Procedure for Giant Neck Masses – A Single Institution Experience David A. Lazar [1,2], Oluyinka O. Olutoye [1,2], Manuel A. Rodriguez [1,2], Todd Ivey [1,3], Kenneth Moise [1,3], Anthony Johnson [1,3], Darrell L. Cass [1,2] [1] Texas Children's Fetal Center, Baylor College of Medicine, Houston, TX [2] Division of Pediatric Surgery, Department of Surgery, Baylor College of Medicine, Houston, TX [3] Department of Obstetrics & Gynecology, Baylor College of Medicine, Houston, TX
5	O R	12 :58-13 :05	National Trends in the Surgical Treatment of Meckel's Diverticulum Kimberly A. Ruscher, James N. Fisher, Christopher Hughes, Stephen Neff, Trudy Lerer, Donald W. Hight, Michael D. Bourque, Brendan T. Campbell Connecticut Children's Medical Center and the University of Connecticut School of Medicine, Hartford, CT USA
6	O R	13 :10- 13 :17	Implications in Missed Anorectal Malformations on Patient's Outcome Casadiego,G.[1], Nasr A.[1], Wales P.[1], Tomlinson C.[2], Fecteau A.[1] [1] Division of General Surgery, [2] Division of Neonatology The Hospital for Sick Children, Toronto, Canada
7	O R	13 :22- 13 :29	Does Irrigation have a Role in Laparoscopic Appendectomy: A Randomised Controlled Study Catherine Paris, Jessika Hétu, Chad Wiesenauer, Mélanie Morris, Sarah Bouchard Division of Pediatric Surgery, Centre Hospitalier Universitaire Ste-Justine, Montreal, Quebec, Canada
8	0 R	13 :34-13 :41	A Contemporary Evaluation of Pulmonary Function in Children Undergoing Lung Resection in Infancy Alana Beres [1], Ann Aspirot [2], Catherine Paris [2], Denis Berube [2], Sarah Bouchard [2], Jean-Martin Laberge [1], Larry Lands [1], Pramod Puligandla [1] [1] Montreal Children's Hospital, McGill University Health Centre [2] Centre hospitalier universitaire Sainte-Justine, Universite de Montreal

13:46-14:00		CAPSNet update – Pramod Puligandla

14:00-14 :30		Coffee Break

14 :30-15 :54		Scientific Session # 2 Oral Presentations Moderators : Michel Lallier and Dan Poenaru	
9	O R	14 :30-14 :37	Pathologic Changes in Biliary Dyskinesia Evan R. Brownie[1], Robert A. Cusick [2], Deborah Perry [3], Sandra Alberry [4], Kenneth S. Azarow [5] [1] Wayne State University School of Medicine [2] Department of Surgery, [3] Department of Pathology, [4] Department of Radiology, [5] Department of Surgery, University of Nebraska Children's Hospital and Medical Center
10	O	14:42-14:49	Significant Ultrasonographic Findings to Differentiate Biliary Atresia from other Cholestatic Diseases Shinichi Shimadera, Osamu Kimura, Taizou Furukawa, Shigeru Ono, Eiichi Deguchi, Naomi Iwai Department of Pediatric Surgery, Graduate School of Medical Science, Kyoto Prefectural University of Medicine
11	O R	14:54-15:01	Single Incision Laparoscopic Surgery in Children: One Institution's Experience Carissa L. Garey, Carrie A. Laituri, Daniel J. Ostlie, Charles L. Snyder, Walter S. Andrews, George W. Holcomb III, Shawn D. St. Peter The Children's Mercy Hospital, Kansas City, MO, USA
12	O R	15:06-15:13	Outcomes in Children with Hypoplastic Left Heart Syndrome Undergoing Open Fundoplication Carissa L. Garey, Carrie A. Laituri, Pablo Aguayo, James O'Brien, Ronald J. Sharp, Shawn D. St. Peter, Daniel J. Ostlie The Children's Mercy Hospital, Kansas City, MO, USA
13	O R	15:18-15:25	Delayed Gastric Emptying and Typical Scintigraphic Gastric Curves in Children with Gastro-Esopagheal Reflux Disease: Could Pyloromyotomy Improve this Condition? T. Caldaro [1], MC. Garganese [2], F. Torroni [1], P. De Angelis [1], F. Foschia [1], E. Romeo [1], G. Federici di Abriola [1], G. Ciofetta [2], L. Dall'Oglio [1] [1] Digestive Surgery and Endoscopy Unit, [2] Nuclear Medicine Unit, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy
14	O	15:30-15:37	Hepatobiliary Anomalies in Conjoined Twins Mohammed Zamakhshary, Mohammad Al-Namshan, Saud Al-Jadaan, Ayed Al-Qahtani, Abdullah Al-Rabeeah Consultant Pediatric Surgery, Department of PediatricSurgery, King Abdulaziz Medical City, Riyadh, Saudi Arabia.
15	O R	15:42-15:49	Parenteral Aluminum Induces Liver Injury Abdulla Alemmari [1], Grant G. Miller [2], Gordon A. Zello [1], Chris Arnold [3] [1] College of Pharmacy & Nutrition, University of Saskatchewan [2] College of Medicine, University of Saskatchewan [3] Saskatoon Health Region

18:30-23:00	Welcome Reception

FRIDAY, SEPTEMBER 24			
08:00-09:52		Scientific Session # 3 Oral Presentations Moderators : Paul Beaudry and Brian Cameron	
16	O R	08:00-08:07	The Management of Pediatric Anterior Mediastinal Masses Carissa L. Garey, Carrie A. Laituri, Patricia A. Valusek, Shawn D. St. Peter, Charles L. Snyder The Children's Mercy Hospital, Kansas City, MO, USA
17	O	08:12-08:19	Custom Dynamic Stent for Esophageal Stenosis In Children F. Foschia, E. Romeo, F. Torroni, P. De Angelis, T. Caldaro, G. Federici di Abriola, A. Pane, F. Rea, L. Dall'Oglio Digestive Surgery and Endoscopy Unit, Bambino Gesù Hospital, Rome, Italy
18	O R	08:24-08:31	Endoscopic Management of Congenital Esophageal Stenosis E. Romeo, F. Foschia, P. De Angelis, T. Caldaro, G. Federici di Abriola, F. Torroni, V. Pardi, L. Dall'Oglio Digestive Surgery and Endoscopy Unit, Bambino Gesù Hospital, Rome, Italy
19	O R	08:36-08:43	Esophageal Stenosis in Epidermolysis Bullosa: A Challenge for the Endoscopist T. Caldaro [1], E. Romeo [1], F. Foschia [1], P. De Angelis [1], F. Torroni [1], G. Federici di Abriola [1], El Hachem[2], A. Ciasulli[2], C. Angelo[3], L. Dall'Oglio[1] [1] Digestive Surgery and Endoscopy Unit [2] Dermatology Unit Bambino Gesù Children's Hospital, IRCCS, Rome, Italy [3] Dermopatic Institute Immacolata-IRCCS Roma
20	C	08:48-08:52	Secondary Esophageal Diverticulum Following Repair of Esophageal Atresia with Distal Tracheoesophageal Fistula: A Multifaceted Problem Melanie Morris, Cristina Diana Ghinda, Catherine Paris, Kaveh Vali, Dickens St.Vil, Ann Aspirot Ste-Justine Hospital, Montreal, Quebec, Canada
21	O R	08:55-9:02	Short-Term Emergency Department Observation after Successful Enema Reduction of Ileocolic Intussusception: A Safe Alternative to Hospital Admission Melanie Morris, Isabelle Malhamme, Catherine Paris, Kaveh Vali, Dickens St. Vil Ste-Justine Hospital, Montreal, Quebec, Canada
22	T	09:07-09:11	Lung Nodules in Children: Video-Assisted Thoracoscopic Resection after Computed Tomography-Guided Localization Using a Microcoil Manraj K.S. Heran[1], Bippan S Sangha[1], John R. Mayo[1], Geoffrey K. Blair[2], Erik D. Skarsgard[2] 1 Department of Radiology, University of British Columbia 2 Division of Pediatric General Surgery, University of British Columbia
23	T	09:14-9:18	The Bronchial Blocker: Why Won't It Come Out? Andre Hodder, Gillian Lauder, James J. Murphy Departments of Pediatric Surgery and Anesthesia, BC Children's Hospital, Vancouver, BC
24	O R	09:21-09:28	Improved Outcomes Associated with Delayed Surgical Repair for Congenital Tracheal Stenosis Infants Less Than One Year of Age. Ahmed Nasr, Peter CW Kim, Priscilla PL Chui The Hospital for Sick Children, Division of General Surgery, Toronto, Ontario, Canada
25	O	09:33-09:40	Congenital Diaphragmatic Hernia; To Repair On or Off ECMO: That is the Question E.D. Wilschut [1], R.Keijzer [1], R.J. Houmes [1], C.P. van de Ven [1], L. van den Hout [1], I. Sluijter [1], P. Rycus [2], D. Tibboel [1], N.M.A. Bax [1] [1] Department of Pediatric Surgery and Pediatric Intensive Care, ErasmusMC-Sophia, Rotterdam, the Netherlands [2] Extracorporeal Life Support Organization (ELSO), University of Michigan,Ann Arbor MI, USA

26	T	09:45-09:49	Unique Surgical Management Of A Patient With Flat Back Syndrome Kaveh Vali, Nelson Piché, Melanie Morris, Stefan Parent, Jean-Guy LaPierre, Sarah Bouchard Sainte-Justine Hospital, Montreal, QC, Canada.

09:52-10:20		Coffee Break

10:20-10:30		Hyponatremia study - Dr. Pramod Puligandla

10:30-12:19		Scientific Session # 4 Oral Presentations Moderators : Dickens St-Vil and Jacob Langer	
27	O R	10:30-10:37	Lights, Camera, Surgery: A Novel Pilot Project to Engage Medical Students in the Development of Pediatric Surgical Learning Resources Kwan K, Wu C, Duffy D, Masterson J, Blair GK The University of British Columbia, Vancouver, BC, Canada
28	O R	10:43-10:50	Validation of a Pediatric Laparoscopic Surgery (PLS) Simulator Ahmed Nasr, J. Ted Gerstle, Jess Green, Allan Okrainec, Oscar Henao, Georges Azzie The Hospital for Sick Children. University of Toronto
29	O	11:07-11:14	A Pilot Study on the Use of Metabolomics in Neuroblastoma; In Vitro and Patient Metabolite Biomarker Profiles Martin Campbell [1], Jing Wen [2], Aru Narendran [2], Aalim Weljie [2], Paul Beaudry [1, 2] [1] Alberta Children's Hospital, Calgary, Canada. [2] University of Calgary, Calgary, Canada.
30	O	11:19-11:26	The Utility of Oncolytic Viruses Myxoma and VSV Against Neuroblastoma and Neuroblastoma Tumour Initiating Cells. Nicole Redding [1], Karen Blote [1], HongYuan Zhou [1], XueQuing Lun [1], Donna Senger [1], Loen Hansford [2], David Kaplan [2], Grant McFadden [3], John Bell [4], Peter Forsyth [1], Steve Robbins [1], Paul Beaudry [1, 4] [1] Southern Alberta Cancer Research Institute, University of Calgary, Calgary, Alberta, Canada. [2] Hospital For Sick Children, Cell Biology Program, Department of Molecular and Medical Genetics, University of Toronto, Toronto, Ontario, Canada [3] Department of Molecular Genetics and Microbiology, University of Florida, Gainesville, Florida, USA. [4] Ottawa Regional Cancer Center Research Laboratory, Departments of Biochemistry, Microbiology, and Immunology, University of Ottawa, Ottawa, Ontario. [4] Department of Surgery, Alberta Childrens Hospital, Calgary, Alberta, Canada
31	O R	11:31-11:38	Traumatic Pseudoaneurysms of the Spleen and Liver in Children: Is Routine Screening Warranted? James J. Murphy, Paul Beaudry, Arash Safavi, Douglas Jamieson Departments of Pediatric Surgery and Radiology, British Columbia Children's Hospital, Vancouver, B.C.
32	O R	11:43-11:50	The Significance of Pseudoaneurysms in the Non-Operative Management of Pediatric Splenic Trauma Kathryn Martin [1], Lisa VanHouwelingen [1], Andreana Bütter [1] Division of Pediatric Surgery, Children's Hospital of Western Ontario, London, Ontario, Canada
33	O R	11:55-12:02	The Utility of Computed Tomography in the Management of Patients with Spontaneous Pneumothorax Carrie A. Laituri MD, Trish A. Valusek MD, Carissa L. Garey MD, Daniel J. Ostlie MD, Shawn D. St. Peter MD Children's Mercy Hospital and Clinics, Kansas City, Kansas
34	O R	12:07-12:14	Utility of Amylase and Lipase as Predictors Of Grade Of Injury or Outcomes in Patients with Pancreatic Trauma Richard Herman [1], Ken Gure [1], Randal Burd [2], David Mooney[3], Peter Ehrlich [1]

			[1] University of Michigan [2] Children's National Medical Center [3] Boston Children's Hospital

12:19-12:45			Box Lunch

12:45-13:00			CAPS President - Jean-Martin Laberge

13:00-13:35		2 minutes – 2 slides Moderators : Pramod Puligandla and Sigmund Ein	
35	C R	13:00-13:02	Serious Sequelae of Being Constipated J. Ouahed[1], Y. Yousef [2], M. Walton [3], H. Flageole [3] [1] Department of Pediatrics, McMaster Children's Hospital, Hamilton, Ontario Canada [2] Department of Pediatric Surgery, KAMC-WR, Jeddah, Saudi-Arabia [3] Department of Pedaitric Surgery McMaster Children's Hospital, Hamilton, Ontario Canada
36	C R	13:04-13:06	Human Milk Fortifier Lactobezoar Causing Bowel Obstruction: A Report of 2 Cases Kelley Zwicker, James J. Murphy Departments of Pediatric Surgery and Radiology, BC Children's Hospital, Vancouver, B.C.
37	C	13:08-13:10	Small Bowel Volvulus in a 15-Year-Old Boy Caused by an IVC Filter Strut with Chronic Caval Perforation Robin M. Cisco, Christopher Hemond, William T Kuo, Claudia M. Mueller, Department of Surgery, Lucile Packard Children's Hospital. Stanford, CA, USA
38	C R	13:12-13:14	Arterio-esophageal Fistula from an Aberrant Right Subclavian Artery after Stenting for Refractory Stenosis after Esophageal Atresia Repair Andrea Lo [1], Robert Baird [1], Dominique Lévesque [2], Véronique Morinville [2], Jean-Martin Laberge [1] [1] Department of Pediatric Surgery, Montreal Children's Hospital, McGill University Health Centre [2] Department of Pediatric Gastroenterology, Montreal Children's Hospital, McGill University Health Centre
39	C R	13:16-13:18	Multiple Ganglioneuromas in a 10 Year-old Girl: Result of Spontaneous Maturation of a Stage IV-S Neuroblastoma? Monica Langer, Jacob Rozmus, David Dix, Douglas Jamieson, James J. Murphy Departments of Pediatric Surgery, Oncology and Radiology, BC Children's Hospital, Vancouver, BC
40	C R	13:20-13:22	Hydrostatic Rectosigmoid Perforation: A Rare Personal Watercraft Injury Richdeep S. Gill [1], Harsh Mangat [2], David Al-Adra [1], Mark Evans [1] [1] Department of Surgery, University of Alberta, Edmonton, Alberta [2] Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta
41	C R	13:24-13:26	Metastatic Pediatric Sacrococcygeal Chordoma Treated with Surgery and Imatinib Mesylate David Al-Adra , Athena Bennett, Richdeep Gill, Gordon Lees Department of Surgery, University of Alberta, Edmonton, Alberta

13:35-13:45			CIGITI presentation - Peter Kim

13:45-14:15			Coffee Break

14:15-16:00		Scientific Session # 5 Poster display with Walkabout Presentations Moderators : Ted Gerstle and Andreana Butter	
42	P R	14:15-14:17	Complete Vs Partial Fundoplication in Children with Esophageal Atresia David Levin, Ivan Diamond, Jacob Langer

			The Hospital for Sick Children, Toronto, Ontario, Canada
43	P	14:20-14:22	Incidence and Predictors of Gastrocutaneous Fistula (GCF) in the Pediatric Patient Aamir Bharmal, Ioana Bratu Department of Surgery, University of Alberta, Edmonton, Alberta
44	P	14:25-14:27	Life Saving Amputation in a Neonate with Kaposiform Hemangioendothelioma Roshni Dasgupta, Denise M Adams, Richard Azizkhan Hemangioma and Vascular Malformations Center, Cincinnati Childrens Hospital Medical Center
45	P R	14:30-14:32	Sclerotherapy for Lymphangioma in Children: A Scoping Review Abdullah Ali [1] , Paige Churchill [1] , Julia Pemberton [2,3] , Helene Flageole [1,3] [1] McMaster Children's Hospital, Department of Surgery [2] McMaster University, Department of Surgery [3] McMaster Pediatric Surgery Research Collaborative
46	P R	14:35-14:37	Practice and Outcome Variation in CDH in Canada Gareth Eeson, Arash Safavi, Erik Skarsgard and The Canadian Pediatric Surgery Network Division of Pediatric General Surgery, BC Children's Hospital, Vancouver, BC, Canada
47	P R	14 :40-14:42	Surgery or Endoscopy in the Treatment of Duodenal Duplications in Children? P. De Angelis [1], E. Romeo [1], F. Foschia [1], T. Caldaro [1], G. Federici di Abriola [1], F. Torroni [1], L. Monti [2], L. Dall'Oglio [1] [1] Digestive Surgery and Endoscopy Unit, [2] Department of Imaging Bambino Gesù Hospital, Rome, Italy
48	P R	14:45-14:47	Success in the Pediatric Surgery Match: A Survey of the 2010 Applicant Pool Alana Beres, Robert Baird, Pramod S. Puligandla Montreal Children's Hospital, McGill University Health Centre
49	P R	14:50-14:52	Influence of Location of Delivery on Outcome in Neonates with Congenital Diaphragmatic Hernia. Ahmed Nasr, Jacob C. Langer, The Canadian Pediatric Surgery Network The Hospital For Sick Children. University of Toronto
50	P R	14:55-14:57	Pediatric Firearm Injuries: A 10 Year Single-Center Experience of 194 Patients Carolin Senger, Richard Keijzer, Geni Smith, Oliver J. Muensterer, Division of Pediatric Surgery, Children's Hospital of Alabama, University of Alabama, Birmingham, Alabama
51	P R	15:00-15:02	Prematurity, not Age at Operation or Incarceration, Impacts Complication Rates of Inguinal Hernia Repair Robert Baird, Suad Gholoum, Jean-Martin Laberge, Pramod Puligandla Division of Pediatric General Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada
52	P R	15:05-15:07	Practice and Outcome Variation in Gastroschisis in Canada Robert Baird, Pramod Puligandla, Jean-Martin Laberge and The Canadian Pediatric Surgery Network Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada
53	P R	15:10-15:12	Disorder of Sexual Differentiation (DSD): Culturally-Sensitive Management for Resource-Poor Settings Robert Baird [1], Catherine Mung'ong'o [2], Dan Poenaru [2] [1] Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada [2] Bethany Kids at Kijabe Hospital, Kijabe, Kenya
54	P R	15:15-15:17	A Tale of Two Fellowships: A Comparative Analysis of a Canadian and an East-African Pediatric Surgery Training Experience Robert Baird [1], Pramod Puligandla [1], Sherif Emil [1], Dan Poenaru [2] [1] Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada [2] Bethany Kids at Kijabe Hospital, Kijabe, Kenya
55	P R	15:20-15:22	Pediatric Thyroidectomy: A Collaborative Approach James H. Wood [1], David A. Partrick [1], Henry P. Barham [2], Sharon H. Travers [3], Dennis D

			Bensard [1] Robert C. McIntyre, Jr. [4] [1] Department of Pediatric Surgery, The Children's Hospital, University of Colorado, Denver, USA [2] Department of Otolaryngology, University of Colorado, Denver, USA [3] Department of Pediatrics, Division of Endocrinology, The Children's Hospital, University of Colorado ,Denver, USA [4] Department of Surgery, Division of GI, Tumor, and Endocrine Surgery, University of Colorado, Denver, USA
56	P	15:25-15:27	Parenteral Aluminum Induces Hyperbilirubinemia in a Newborn Piglet Model Grant G. Miller [1], Mei Li [2], Chris J. Arnold [2], Andrew Mitchell [3], Gordon A. Zello [2] [1] Dept of Surgery, University of Saskatchewan [2] College of Pharmacy & Nutrition, University of Saskatchewan [3] Department of Pathology, Maisonneuve-Rosemont Hospital
57	P R	15:30-15:32	Open Transumbilical Pyloromyotomy: Is it More Painful Than the Laparoscopic Approach? Caroline Lemoine, Catherine Paris, Mélanie Morris, Kaveh Vali, Mona Beaunoyer, Ann Aspirot Division of Pediatric Surgery, Centre Hospitalier Universitaire Ste-Justine, Montreal, Quebec
58	P	15:35-15:37	Ultrasonography(US) is Useful in Predicting Thyroid Cancer in Children with Thyroid Nodules and Apparently Benign Cytopathologic Features Dickens Saint-Vil [3], Jannette Saavedra [1], Celine Huot [1], Yvan Boivin [2] Guy Van Vliet [1], Cheri Deal [1], Nathalie Alos [1], Johnny Deladoey [1, 3] [1] Department of Pediatrics, CHU Sainte-Justine [2] CHUM [3] Department of Surgery, University of Montreal, Montreal, Canada
59	P	15:40-15:42	A Prediction Rule for Lung Nodules: When to Biopsy Belinda Dickie, Roshni Dasgupta Cincinnati Children's Medical Center, Cincinnati, Ohio, USA
60	P R	15:45-15:47	Impact of Prenatal Evaluation and Protocol-based Perinatal Management on Congenital Diaphragmatic Hernia Outcomes David A. Lazar [1,2], Darrell L. Cass [1,2], Manuel A. Rodriguez [1,2], Saif F. Hassan [1,2], Chris Cassady [1,3], Yvette Johnson [4], Karen Johnson [4], Bella Belleza-Bascon [1,2], Oluyinka O. Olutoye [1,2] [1] Texas Children's Fetal Center, Baylor College of Medicine, [2] Division of Pediatric Surgery, Department of Surgery, [3] Department of Diagnostic Imaging, Texas Children's Hospital, [4] Section of Neonatology, Department of Pediatrics Baylor College of Medicine, Houston,TX
61	P	15:50-15:52	Challenges to Conducting Randomized Controlled Trials in Paediatric Surgery: A CAPS Members Survey Khalid Al-Harbi [3], Julia Pemberton [1], Peter Fitzgerald [1, 2, 3] [1] Department of Surgery, McMaster University [2] McMaster Children's Hospital [3] McMaster Pediatric Surgery Research Collaborative
62	P	15:55-16 :00	The Use of Thoracoscopic Thoracic Duct Ligation and Pleurodesis for Recalcitrant Pleural Effusions in Gorham's Disease Roshni Dasgupta, Thomas H Inge, Alan Mortell Cincinnati Childrens Hospital Medical Center, Cincinnati, Ohio, USA

SATURDAY, SEPTEMBER 25	
09:00-10:30	Combined CAPS – CPAS session Moderators : Sarah Bouchard and
09:00-10:30	WHAT and WHERE Panel Discussion:

	1.Where should infants be operated on?: Surgical and anesthesitic considerations for location Discussion (45min) Speakers:Pediatric Surgeon - Adbulrahman Albassam Anesthesiologist - Allison Gray 2. After Hours Surgery What is a surgical emergency/What needs to be done at night- Surgeon Impact of after Hours Surgery on Mortality and Morbidity- Anesthesia Speakers: Pediatric Surgeon – Sherif Emil Anesthesiologist - Cathy Tang Discussion (45min)

10:30-11:00	Coffee Break

11:00-12:00	Mediastinal Mass Case Discussion Pediatric surgeon – Roshni Dasgupta Anesthesiologist John Gamble Pediatric Oncologist: Dr Kaiser Ali Interventional Radiologist: Stefan Kriegler

12:00-13:00	JPS/Fred MacLeod Lecture Professor Hugo A Heij Amsterdam, Netherlands Noblesse Oblige: The Pediatric Surgeon As The Key To Quality Improvement

13:00-14:00	Lunch Break

14:00-15:19		Scientific Session # 6 Oral Presentations Moderators : Sherif Emil and Hélène Flageole	
63	O	14:00-14:07	Central Line Database: An Important Issue in Quality Assurance Juan Bass [1] , Jacqueline Halton [2], Youenn Drouet [3], Andy Ni [3], Nick Barrowman [2, 3] Children's Hospital of Eastern Ontario, Ottawa, Canada [1] Department of Surgery [2] Department of Pediatrics [3] Clinical Research Unit, Research Institute
64	O R	14:12-14:19	Ethanol Lock Therapy to Reduce the Incidence of Catheter-Related Bloodstream Infections (CRBSI) in Home TPN Patients with Intestinal Failure: Preliminary Experience Wales PW, Kosar C, Carricato M, Nicole de Silva, Lang K, Avitzur Y The Group for Improvement of Intestinal Function and Treatment (GIFT) The Hospital for Sick Children, Toronto, Canada
65	O R	14:24-14:31	Outcome of Peripherally Inserted Central Venous Catheters in Surgical and Medical Neonates Njere I [1], Islam S [1], Parish D [1], Kuna J [1], Keshtgar AS [1,2] [1] University Hospital Lewisham, NHS Trust, London, United Kingdom [2] Evelina Children Hospital, Guy's and St Thomas' NHS Foundation Trust London, United Kingdom
66	T	14:36-14:40	Primary Sutureless Closure of Gastroschisis Using Negative Pressure Dressing (Wound Vacuum). Ashwin Pimpalwar , Saif F. Hassan Baylor College of Medicine, Texas Children's Hospital, Hosuton, TX
67	O R	14:43-14:50	The Management of Bladder Exstrophy in a Resource-Poor Setting – A Role for Urinary Diversion? Robert Baird MD [1], Frehun Ayele MD [2], Safwat Andrawes MD [3], Dan Poenaru MD [2] [1] Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada [2] Bethany Kids at Kijabe Hospital, Kijabe, Kenya [3] Coptic Hospital, Nairobi, Kenya

68	O	14:55-15:02	Percutaneous Drainage or Immediate Operation for Perforated Appendicitis: A Decision Analysis Roshni Dasgupta [1], Myriam Hunink [2] [1] Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA [2] Erasmus University, Rotterdam, Netherlands
69	O R	15:07-15:14	Ketorolac Use in Post Operative Neonates Under 3 Months of Age Kartik A. Pandya, B. Stephen Prato, Baird Mallory Maine Medical Center, Portland , Maine

15:11-15:30		CAPS Travelling Resident Talk – Robert Baird

15:34-15:45	President's Closing Remarks – Jean-Martin Laberge

18:00 – 23:00	Presidential Reception and Dinner

Inflammatory Bowel Disease Manifesting After Surgical Treatment For Hirschsprung Disease

David Levin [1], Margaret Marcon [1], Risto Rintala [2], Jacob Langer [1]
[1] Hospital for Sick Children, Toronto, Ontario, Canada
[2]Hospital for Children and Adolescents, University of Helsinki, Helsinki, Finland

Background/Purpose: Although enterocolitis can complicate the course of children with Hirschsprung disease (HD), an association between HD and the late appearance of chronic inflammatory bowel disease (IBD) has not been previously recognized.

Methods: Retrospective chart review of patients with HD from two tertiary care pediatric hospitals.

Results: Eight cases (6 male) were found in which chronic IBD developed after a previous diagnosis of HD. Three had Trisomy 21. All patients underwent pull-through (3 Duhamel; 2 Soave; 2 Swenson; 1 modified Martin). Three patients suffered early postoperative complications including rectovaginal and perianal fistulas, small bowel obstruction, and leak causing pelvic sepsis. Six patients suffered chronic or recurrent enterocolitis postoperatively. Age of IBD diagnosis ranged from 4 to 21 years (4 non-specific IBD; 2 Crohn's; 1 indeterminate colitis; 1 eosinophilic colitis). Clinical presentation included chronic diarrhea, hematochezia, abscess, and fistula formation. Four patients had a positive family history. Three patients required surgery for IBD complications that included fistula, stricture, and small bowel obstruction. The other five were managed with medication: two with good symptom control and three with ongoing diarrhea and fatigue.

Conclusions: A small number of children with HD may develop a condition that resembles chronic IBD. It is unclear whether this represents a chronic form of Hirschsprung-associated enterocolitis, or is a different entity. Recognition of this condition may be important in the long-term follow-up of these children, and patients with HD who have carried a diagnosis of chronic enterocolitis may warrant further investigation looking for evidence of IBD.

Original Paper
Trainee Presentation

Senior Author: Jacob Langer

Corresponding to:
David Levin
1208-887 Bay Street
Toronto, Ontario
Canada
M5S3K4
tel: (647) 808-8129
e-mail: dlevin3@gmail.com

Hirschsprung's Associated Enterocolitis: who is really at risk?

Schall K[1], Cusick R[1], Abdessalam S[1], Raynor S[1], Azarow K[1].
[1]Children's Hospital and Medical Center, Omaha/University of Nebraska

Background/Purpose: Hirschsprung's Associated Enterocolitis (HAEC) can be a debilitating disease long after anatomical correction of the disease. To date, attempts at characterizing at risk populations or risk factors have failed.

Methods: A 10 year registry of Hirschsprung patients was reviewed with the following factors being considered: Sex; Age at Diagnosis; Trisomy 21; Age at Surgery; Procedure; Laparoscopic vs. Open vs. Transanal; Pre-op Colostomy; Pre-op Enterocolitis; Post-op Enterocolitis; Number of Post-op Enterocolitis Episodes; and Anatomical level of Disease.

Results: The records of 92 consecutive patients with Hirschsprung's were reviewed. 49 had enterocolitis (53%). While not statistically significant, there was an inverse relationship between age at diagnosis and surgery with the incidence of postoperative enterocolitis (p=0.1). The Duhamel and Soave procedures had postoperative enterocolitis rates of 45% and 47% respectively with comparable numbers of patients. The level of disease was a statistically significant risk factor for postoperative enterocolitis only in patients with total colonic or small bowel Hirschsprung's: postoperative enterocolitis was identified in 75% of this group. A pre-op colostomy vs. no colostomy showed no differences in rates of enterocolitis.

Conclusions: Our data demonstrates trends which in the future may be useful for distinguishing at risk patients. The level of disease, the creation of an ostomy and the type of surgery had no apparent impact on the development of postoperative enterocolitis. A lower incidence in enterocolitis is suggested in patients diagnosed at an older age.

Original Paper
Trainee Presentation

Senior Author: Kenneth Azarow, M.D.

Corresponding to:
Kenneth Azarow, M.D.
Children's Hospital and Medical Center
8200 Dodge Street
Omaha, Nebraska
United States
68114-4113
tel: (402)955-7400
fax: (402)955-7405
e-mail: kazarow@childrensomaha.org

The Role Of Tissue Plasminogen Activator In The Management Of Complex Intra-Abdominal Abscesses In Children

Anna Shawyer [1], Jacob C. Langer [2]
[1] Department of Surgery, University of Toronto, Division of General Surgery, Toronto, Canada, [2] Department of Paediatric Surgery, The Hospital for Sick Children, Toronto, Canada

Background/Purpose: Intra-abdominal abscesses are common in children. Antibiotics and percutaneous drainage are the mainstays of treatment, but drainage may be less effective when the fluid is thick or septated. Fibrinolytic therapy using tissue plasminogen activator (tPA) is effective in a rat model of intra-abdominal abscesses, has recently been reported for the treatment of intra-abdominal abscesses in adults, and is commonly used in the treatment of empyema in children. The aim of our study was to determine if tPA is safe for the treatment of intra-abdominal abscesses in children.

Methods: Retrospective review of all patients over a 10 year period who had intra-abdominal collections managed with tPA through interventional radiology-placed drainage catheters.

Results: Sixty-four children had a total of 67 drains and 92 doses of tPA. Appendicitis was the cause of the abscesses in 52/64 children. Mean length of stay pre-tPA administration was 11.7 +/- 7.63 days, mean time from drain insertion to tPA administration was 4.3 +/- 3.78 days, and mean time from tPA administration to discharge was 8.6 +/- 8.85 days. Thirty patients underwent an operation prior to tPA administration. No patients experienced bleeding complications, anastomotic or appendiceal stump leak, or wound dehiscence after the administration of tPA, and no patients had abnormalities in coagulation studies related to tPA administration. One child died from sepsis.

Conclusions: Our data suggest that tPA is safe for the management of thick or septated intra-abdominal abscesses in children. A prospective controlled study will be needed to evaluate the efficacy of this technique.

Original Paper
Trainee Presentation

Senior Author: Dr. Jacob C. Langer

Corresponding to:
Dr. Jacob C. Langer
The Hospital for Sick Children
Department of Paediatric Surgery
555 University Avenue
Toronto, Ontario
Canada
M5G 1X8
tel: (416)-813-7500
fax: (416)-813-7477
e-mail: jacob.langer@sickkids.ca

Ex Utero Intrapartum Treatment (EXIT) Procedure For Giant Neck Masses – A Single Institution Experience

David A. Lazar [1,2], Oluyinka O. Olutoye [1,2], Manuel A. Rodriguez [1,2], Todd Ivey [1,3], Kenneth Moise [1,3], Anthony Johnson [1,3], Darrell L. Cass [1,2]
[1] Texas Children's Fetal Center, Baylor College of Medicine, Houston, TX
[2] Division of Pediatric Surgery, Department of Surgery, Baylor College of Medicine, Houston, TX
[3] Department of Obstetrics & Gynecology, Baylor College of Medicine, Houston, TX

Background/Purpose: For fetuses with giant neck masses that compress or displace the trachea, an EXIT procedure allows for safe, non-emergent airway management while the fetus has preserved placental gas-exchange. A single-institution experience with EXIT for giant neck masses is reviewed.

Methods: The medical records of all patients referred to a comprehensive fetal center for a giant neck mass between 2001-2010 were reviewed.

Results: Thirty-one patients were referred for giant neck mass. An EXIT procedure was not performed in 19 cases due to minimal tracheal involvement (n=8), multiple congenital anomalies (n=3), elective abortion(n=3), or fetal demise(n=2), and in 3 cases the outcome is unknown. Twelve fetal patients with a giant neck mass and tracheal displacement underwent an EXIT procedure at an average gestational age of 35.6±0.9 weeks. Utero-placental bypass time averaged 24.4±3.8 minutes (operative time 126±8 minutes). In all fetuses the airway was successfully secured; tracheal intubation was achieved with rigid bronchoscopy (n=10), direct laryngoscopy (n=1), and tracheostomy (n=1). Mean maternal blood loss equaled 865±136 mL. Mass size averaged 11.2±0.9 cm in the greatest dimension, and pathological diagnoses included lymphovenous malformation (n=6), teratoma (n=5), and hemangioendothelioma (n=1). Median time to extubation was 15 days. Eleven patients survived to discharge, while 1 patient with prematurity and significant pulmonary hypoplasia died 8 days after emergency EXIT procedure.

Conclusions: The EXIT procedure for giant neck mass can be performed safely for both mother and child. Utero-placental bypass time is minimal, and the majority of fetuses can be orotracheally intubated.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: David E. Wesson

Senior Author: Darrell L. Cass

Corresponding to:
Darrell L. Cass
Division of Pediatric Surgery, CCC 650
6621 Fannin St
Houston, Texas
United States
77030
tel: (832) 822-3135
fax: (832) 825-3141
e-mail: DLCass@texaschildrens.org

National Trends in the Surgical Treatment of Meckel's Diverticulum

Kimberly A. Ruscher, James N. Fisher, Christopher Hughes, Stephen Neff, Trudy Lerer, Donald W. Hight, Michael D. Bourque, Brendan T. Campbell
Connecticut Children's Medical Center and the University of Connecticut School of Medicine, Hartford, CT USA

Background/Purpose:
Treatment recommendations for Meckel's diverticulum (MD) come mostly from single institution case series. The objective of this study is to review the surgical management and outcomes of children undergoing Meckel's diverticulectomy using contemporary data from a national database.

Methods:
We queried 2007-2008 data from the Pediatric Health Information System (PHIS) database, and analyzed demographic and outcome variables for patients undergoing surgical resection of MD. Cases were classified as primary (surgery for symptomatic MD) or secondary (incidental Meckel's diverticulectomy at laparotomy for other indications). Outcomes in primary cases were compared between open and laparoscopic approach. Statistical analyses were performed using SPSS.

Results:
815 children underwent Meckel's diverticulectomy during the study period. Incidence of Meckel's diverticulectomy was more common in boys (male:female, 2.3:1), and half of children (53%) required surgery before their fourth birthday. More cases (n=485, 60%) were classified as primary, and most children were approached by laparotomy (75%). The most common presentations for primary cases were obstruction (30%), bleeding (27%) and intussusception (19%). For secondary cases incidental Meckel's diverticulectomy was performed most often in the clinical setting of neonatal laparotomy (42%), acute appendicitis (24%), and malrotation (9%). In the primary group, patients treated with the laparoscopic approach had a shorter length of stay (OPEN=5.7±5.2, LAP=4.3±2.7 days, $p<.002$). Overall, half (48%) of patients had concurrent incidental appendectomies.

Conclusions:
These data describe current trends in the surgical treatment of MD in the United States. Laparoscopic Meckel's diverticulectomy appears to shorten length of stay, but is used much less frequently than the traditional open approach.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Michael D. Bourque

Senior Author: Brendan T. Campbell

Corresponding to:
Brendan T. Campbell
Connecticut Children's Medical Center
282 Washington St. #2G
Hartford, Connecticut
United States
06106
tel: (860) 545-9654
fax: (860) 545-8050
e-mail: bcampbell@ccmckids.org

Implications in Missed Anorectal Malformations on Patient's Outcome

Casadiego G.[1], Nasr A.[1], Wales P [1], Tomlinson C [2], Fecteau A.[1]
[1] Division of General Surgery, [2] Division of Neonatology. The Hospital for Sick Children

Background/Purpose:
Routine perinatal exam should detect all anorectal malformations (ARM). We hypothesized that missed ARM impact significantly on the outcome of patients.

Methods:
We performed an REB approved retrospective chart review of ARM patients admitted to our center between 2001-2009. Missed cases were defined as undetected on the first perinatal exam. Patients were divided into group A:Controls, group B:Missed cases. T-test was used to analyze continuous data and chi-square/fisher exact test was used for categorical data.

Results:

A total of 109 patients were included in the study. ARM were missed in 49% of this cohort.

	Group A (n=55)	Group B (n=54)	P Value
Birth Weight (gms)	2843 +740	3066 ±678	0.1
Gestational Age (weeks)	37.5 ±2.7	38.3 ±1.9	0.08
Place of Birth (Community)	37 (67%)	43 (79%)	0.04
Comorbidities	27 (49%)	14 (26%)	0.04
Days to OR	2.1 ±0.3	5.3 ±0.4	0.0009
Time to PO intake (Hours)(w	93 (IQR 40-95)	70 (IQR 35-92)	0.1
Time to Full Feeds (Hours)	198 (IQR 81-226)	160 (IQR 58-224)	0.1
Surgical Complications	1 (2%)	8 (15%)	0.03
Hospitalization (days)	16.1 (IQR 6-19)	9.3 (IQR 5-13)	0.008

In girls, there was a trend towards delayed diagnosis with perineal fistulas and cloacas. There was no difference between ARM types in boys. Delayed ARM diagnosis was not associated with prolonged hospitalization after adjusting for comorbidities and gestational age in a linear regression model.

Conclusions:
Almost 50% of newborns with ARM have a delayed diagnosis. This is most commonly seen in babies born in the community setting. Delayed in diagnosis is associated with a significant higher rate of surgical complications. Careful screening for ARM should be emphasized in pediatric training.

Original Paper
Trainee Presentation

Senior Author: Annie Fecteau

Corresponding to:
Annie Fecteau
The Hospital for Sick Children. Room 1526
Toronto, Ontario
Canada
M5G 1X8
tel: 416-813-6401
fax: 416-813-7477
e-mail: annie.fecteau@sickkids.ca

Does Irrigation Have A Role In Laparoscopic Appendectomy: A Randomised Controlled Study

Catherine Paris, Jessika Hétu, Chad Wiesenauer, Mélanie Morris, Sarah Bouchard
Division of Pediatric Surgery, Centre Hospitalier Universitaire Ste-Justine, Montreal, Quebec, Canada

Background/Purpose:
Acute appendicitis complicated by abscess formation is an important pediatric problem. There is great equipoise over the use of irrigation during laparoscopic appendectomy among the community of pediatric surgeons. We designed a randomised controlled study to assess the impact of irrigation use during laparoscopic appendectomy.

Methods:
Children presenting with appendicitis from June 2007 to January 2010 were randomised to receive either suction/irrigation or suction alone during laparoscopic appendectomy. Children with diffuse peritonitis were excluded. Data on demographics, clinical presentation, surgery, pathology, antibiotics and complications were collected. The groups were compared regarding complications incidence.

Results:
From 629 laparoscopic appendectomy performed during the study period, 237 children were included in the study: 172 with simple appendicitis and 65 with perforated appendicitis. Overall, 18 patients (7,6%) had a complicated post-operative course. There was no difference in the incidence of complications among the two groups of simple appendicitis: 4/100(4,0%) developed an abscess/phlegmon in the irrigation group versus 3/72(4,2%) in the suction only group (p=1,00). During the study, there were organisational issues that cause difficulties with acquisition of data from patients with perforated appendicitis.

Conclusions:
Our study shows that the use of irrigation during laparoscopic appendectomy for simple appendicitis doesn't impact the abscess formation rate. We do not recommend the use of irrigation during laparoscopic appendectomy for simple appendicitis. A larger study should be performed to better access the effectiveness of irrigation in perforated appendicitis.

Original Paper
Trainee Presentation

Senior Author: Sarah Bouchard

Corresponding to:
Sarah Bouchard
3175 Chemin de la Côte-Sainte-Catherine
Montréal, Quebec
Canada
H3T 1C5
tel: (514) 345-3931
e-mail: sarah.bouchard.hsj@ssss.gouv.qc.ca

A Contemporary Evaluation of Pulmonary Function in Children Undergoing Lung Resection in Infancy

Alana Beres [1], Ann Aspirot [2], Catherine Paris [2], Denis Berube [2], Sarah Bouchard [2], Jean-Martin Laberge [1], Larry Lands [1], Pramod Puligandla [1]
[1] Montreal Children's Hospital, McGill University Health Centre
[2] Centre Hospitalier Universitaire Sainte-Justine, Universite de Montreal

Background/Purpose: The management of asymptomatic congenital lung lesions is controversial. While some centers recommend early, elective resection in infancy, others prefer observation. Our objective was to evaluate the pulmonary function of children who underwent lung resection

Methods: All patients at 2 tertiary-care children's hospitals who underwent lung resection at < 12 months of age and are currently >5 years old were identified. Patients who agreed to participate were prospectively recruited. Pulmonary function testing (PFT) was standardized in all recruited patients.

Results: Fourteen children (ages 5-14) were tested prospectively while results were already available for another 5 children. The majority (12/19) had a CCAM. Four children were excluded for inability to perform PFT(2) or for pre-existing pulmonary hypoplasia/syndrome(2). Results are shown in Table 1:

Test (normal)	Number Tested	Normal (%)	Abnormal (#)
FVC (>80% predicted)	15	14 (93)	1
FEV1 (> 80% predicted)	15	13 (86)	2 (both asthmatic)
FEV1/FVC (>0.80)	15	11 (73)	4 (2 known asthmatics)
DLCO	8	8 (100)	0
PEmax, PImax	4	4 (100)	0

Two children were known asthmatics on therapy. One child was newly diagnosed with asthma during our testing.

Conclusions: Most children undergoing lung resection in infancy will have normal pulmonary function tests later in childhood. These comprehensive PFT results support our current philosophy that early, elective resection of congenital lung lesions in asymptomatic infants is safe. A larger, longitudinal study is needed to evaluate the consequences of observation.

Original Paper
Trainee Presentation

Senior Author: Pramod Puligandla

Corresponding to:
Pramod Puligandla
Montreal Children's Hospital
2300 Tupper, rm C-811
Montreal, Quebec
Canada
H3H 1P3
tel: (514) 412-4438
fax: (514) 412-4289
e-mail: pramod.puligandla@mcgill.ca

Pathologic Changes in Biliary Dyskinesia

Evan R. Brownie [1], Robert A. Cusick,[2], Deborah Perry [3], Sandra Alberry [4], Kenneth S. Azarow [5]
[1] Wayne State University School of Medicine, [2-5] Department of Surgery, [3] Department of Pathology, [4] Department of Radiology, University of Nebraska Children's Hospital and Medical Center

Background/Purpose: For children with upper abdominal pain and evaluation for acalculous biliary disease, including scinitigraphy, laparoscopic cholecystectomy is an accepted treatment; however with inconsistent outcomes. The purpose of this study is to identify predictors of outcomes.

Methods: A cohort of 167 children underwent laparoscopic cholecystectomy at a single children's hospital. Radiographic findings, histopathology, family history, and demographics (sex, age, height, weight, BMI-for-age percentile) were evaluated as predictors of postoperative symptomatic resolution using logistic regression. The data for radiologic studies and pathologic specimens were obtained via re-review in a blinded fashion.

Results: Of 167 children, 43 (25.7%) had a preoperative diagnosis of biliary dyskinesia and 41 (95.3%) had documented follow-up. Mean follow-up was 8.4 months. Twenty-eight patients (68.3%) had symptom resolution. Ejection fraction 85th percentile) were not predictors of symptomatic resolution. Non-obese patients (BMI-for-age

Conclusions: The majority of gallbladders removed for biliary dyskinesia are pathologic. Significant obesity can be considered a relative contraindication to cholecystectomy for biliary dyskinesia.

Original Paper
Trainee Presentation

Senior Author: Kenneth S. Azarow, MD

Corresponding to:
Kenneth S. Azarow, MD
8200 Dodge Street
Omaha, Nebraska
United States
68114-4113
tel: (402) 955-7400
fax: (402) 955-7405
e-mail: kazarow@childrensomaha.org

Significant Ultrasonographic Findings To Differentiate Biliary Atresia From Other Cholestatic Diseases

Shinichi Shimadera [1], Osamu Kimura [1], Taizou Furukawa [1], Shigeru Ono [1], Eiichi Deguchi [1], Naomi Iwai [1]
[1] Department of Pediatric Surgery, Graduate School of Medical Science, Kyoto Prefectural University of Medicine

Background/Purpose: Triangular cord (TC) sign and atrophic gallbladder (GB) on ultrasonography are known as characteristic findings of biliary atresia (BA). This study evaluated ultrasonographic (US) findings that can definitely differentiate BA preoperatively from other cholestatic diseases (non-BA).

Methods: In 28 infants with obstructive jaundice treated between 2003 and 2009, this retrospective study compared serum biochemical characteristics, US findings of TC sign, GB length, shape, and wall irregularity between infants definitive diagnosis of BA and non-BA. US study was performed with a 12MHz linear array transducer. TC sign was determined by high echogenic homogenous focal area anterior to the bifurcation of the portal vein.

Results: BA was diagnosed in 17 infants surgically, and non-BA was diagnosed in the remaining 11, including Alagille syndrome, cytomegalovirus hepatitis, hypopituitarism, and idiopathic neonatal hepatitis. There were no differences in serum biochemical characteristics between the two groups. On US, atrophic GB(length

Conclusions: Irregular GB wall and TC sign on US might be significant findings to facilitate a diagnosis of BA in patients with obstructive jaundice.

Original Paper

Sponsoring CAPS Member: Sarah Bouchard

Senior Author: Naomi Iwai

Corresponding to:
Shinichi Shimadera
2-7-26-405, Heso,
Ritto, Other
Japan
520-3031
tel: +81-(0)77-563-8866
fax: +81-(0)77-565-9313
e-mail: sshima@koto.kpu-m.ac.jp

Single Incision Laparoscopic Surgery In Children: One Institution's Experience

Carissa L. Garey , Carrie A. Laituri , Daniel J. Ostlie, Charles L. Snyder , Walter S. Andrews,
George W. Holcomb III, Shawn D. St. Peter
The Children's Mercy Hospital, Kansas City, MO, USA

Background/Purpose: In continued efforts to further improve the advantages of minimally invasive surgery to patients, surgeons have innovated single incision laparoscopic surgery.

Methods: A retrospective chart review was performed on patients who underwent a single site procedure from April 2009 to April 2010.

Results: There were 142 consecutive procedures: 24 cholecystectomies, 103 appendectomies for non-perforated appendicitis, 2 splenectomies, 1 combined splenectomy/cholecystectomy, 8 ileocecectomies, 2 Meckel's diverticulectomies, 1 small bowel duplication resection, and 1 jejunal stricture resection. There were twelve conversions to conventional laparoscopy; one in perforated appendicitis, eight due to inability to mobilize appendix, one due to appendicial artery bleeding, and two cholecystectomies due to body habitus and omental adhesions. Mean operative time was 34 minutes for appendectomy, 73 minutes for cholecystectomy, 90 minutes for splenectomy, 116 minutes for combined splenectomy/cholecystectomy, 86 minutes for ileocecectomy, and 43 minutes for the small bowel procedures. Mean length of stay was 1 day for appendectomy, 1.5 day for cholecystectomy, 1.5 days for splenectomy, 5 days for ileocecectomy, and 3 days for the small bowel procedures. The only complications were umbilical surgical site infections after appendectomy in 6 patients.

Conclusions: This institution's preliminary experience suggests single incision laparoscopic surgery in children has at least comparable outcomes to conventional laparoscopic surgery. However, prospective data is needed to prove that single incision laparoscopic surgery is superior to conventional laparoscopy.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Kenneth Pippus

Senior Author: Shawn D. St. Peter, MD

Corresponding to:
Shawn D. St. Peter, MD
The Children's Mercy Hospital
2401 Gillham Road
Kansas City, Missouri
United States
64108
tel: (816) 234-6465
fax: (816) 983-6885
e-mail: sspeter@cmh.edu

Outcomes In Children With Hypoplastic Left Heart Syndrome Undergoing Open Fundoplication

Carissa L. Garey, Carrie A. Laituri, Pablo Aguayo, James O'Brien, Ronald J. Sharp, Shawn D. St. Peter, Daniel J. Ostlie
The Children's Mercy Hospital, Kansas City, MO, USA

Background/Purpose: Some institutions recommend early fundoplication in patients with hypoplastic left heart syndrome (HLHS) with signs of gastroesophageal reflux disease due to the risk of reflux related code events. However, their unstable physiology may impose prohibitively high peri-operative morbidity and mortality. Therefore, we reviewed our experience with fundoplications in this population to allow for assessment of the risk/benefit ratio.

Methods: We performed a retrospective review of patients with a diagnosis of HLHS who underwent a fundoplication between January 1990 to July 2009. All patients underwent open fundoplication between first and second stages of cardiac repair.

Results: We identified 39 patients with a mean age of 50 days. Concomitant procedures included gastrostomy tube placement in all patients, circumcision in 2 patients, and Ladd's procedure in 1 patient. There were 3 intra-operative complications: 2 patients with hemodynamic instability, and 1 patient with pulmonary hypertensive crisis upon skin incision requiring ECMO and termination of the procedure. There were 27 post-operative complications in 16 patients: prolonged intubation (7), sepsis (4), necrotizing enterocolitis (4), bowel ischemia (2), cardiac failure requiring ECMO (2), deep venous thrombosis (2), cerebral infarction (1), pneumonia (1), and 4 had persistent reflux. There were 2 deaths (4%) within the 30 days, and there were 9 deaths (23%) in patients between their first and second stage of cardiac repair during the study period.

Conclusions: Non-cardiac surgical procedures in patients palliated for HLHS has a high morbidity and mortality. Routine fundoplications should only be done under prospective protocols until the relative risk of operation versus risk of reflux is delineated.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Kenneth Pippus

Senior Author: Daniel J. Ostlie, MD

Corresponding to:
Daniel J. Ostlie, MD
The Children's Mercy Hospital
2401 Gillham Road
Kansas City, Missouri
United States
64108
tel: (816) 234-3884
fax: (816) 983-6885
e-mail: dostlie@cmh.edu

Delayed Gastric Emptying And Typical Scintigraphic Gastric Curves In Children With Gastro-Esopagheal Reflux Disease: Could Pyloromyotomy Improve This Condition?

T. Caldaro[1], MC. Garganese[2], F. Torroni[1], P. De Angelis[1], F. Foschia[1], E. Romeo[1], G. Federici di Abriola[1], G. Ciofetta [2], L. Dall'Oglio[1],
[1]Digestive Surgery and Endoscopy Unit, [2]Nuclear Medicine Unit, Bambino Gesù Children's Hospital, IRCCS, Rome, Italy

Background/Purpose: Delayed gastric emptying (DGE) is a co-factor in etiopathogenesis of gastro-esophageal reflux disease (GERD). Its treatment is debated. Scintigraphy is the gold standard to study gastric emptying (GE).We sought to define typical scintigraphic gastric activity/time (A/T) curves related to pathological conditions (DGE/esophageal atresia-EA) and demonstrating pyloromyotomy (P) effectiveness in improving GE in a long-term follow-up.

Methods: From 2002, 83 patients (M:F=55:28; mean age: 6.03 years; range: 0.28-23) with severe GERD, without neurological disorders, underwent surgery. 59 patients had only GERD (group I), 24 patients GERD secondary to EA (group II). On the basis of preoperative scintigraphy (normal or DGE), each group was subdivided into two subgroups. Before Nissen fundoplication (NF) and one year after endoscopy and GE scintigraphy were performed. In presence of DGE, P was performed with NF (open:laparoscopically=56:27). GE differences at baseline and at follow-up were estimated by the Student's t-test. Pre-post A/T curves were evaluated by the X2 test.

Results: No intra/post-operative complications occurred. In the follow-up, GE improved in all groups; in sub-groups Ib (GERD+DGE) and IIb(GERD+EA+DGE) that underwent NF+P, GE completely normalized($p<0.001$).

Conclusions: DGE is frequent in EA and the scintigraphic A/T curves are typical (rectilinear fitting). P is a safe and useful technique to normalize GE as our scintigraphic analysis demonstrated.

Original Paper

Sponsoring CAPS Member: Geoffrey Blair

Senior Author: L. Dall'Oglio

Corresponding to:
L. Dall'Oglio c/o Dr Geoffrey Blair
BC Children's Hospital
Room K0-110
4480 Oak St.
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604)875-2706
fax: (604)266-4851
e-mail: gblair@cw.bc.ca

Hepatobiliary Anomalies in Conjoined Twins

Mohammed Zamakhshary, Mohammad Al-Namshan, Saud Al-Jadaan, Ayed Al-Qahtani,
Dr.Abdullah Al-Rabeeah
Department of Pediatric Surgery, King Abdulaziz Medical City, Riyadh, Saudi Arabia.

Background/Purpose:
Conjoined twining is an extremely rare anomaly. Little diagrammatic descriptions are provided of the various hepatobiliary anomalies seen in these twins. We aimed to review our experience with regards to the various subtypes of hepatobiliary anomalies, their association with inability to separate and to provide detailed diagrammatic descriptions of these anomalies.

Methods:
We retrospectively reviewed our experience in separating twins. We reviewed the patterns of hepatobiliary anomalies, the required investigations and intra-operative workup.

Results:
Of the 58 cases we evaluated 26 were successfully separated. The reasons for non separation were: single heart, major communicating hearts and major chromosomal anomalies. In the non-operative group: 11 were Thoracopagus, 13 were Thoarco-omphalopagus, 1 Diprosopus, 5 thraco-omphalo-ischiopagus and 2 were cephalo-thoraco-omphaloischiopagus. Conversely, in the operative group, 15 were Thoarco-omphalopagus, 8 were ischiopagus, 1 was craniopagus and others 2 cases. The liver was involved in 16 (61.5%) in the operative group vs. 23 (71.8%) in the non-operative group. All cases had a CT scan and US as pre-operative workup. Only 2 cases needed a MRCP for pre-operative evaluation. NO intra-operative US was used and only 3 cases had an intra-operative cholangiogram. Diagrammatic depictions of the various categories of anomalies are being presented.

Conclusions:
In our experience we did not find the hepatobiliary anomalies to be the sole reason for inseparability in any of the sets. Hepatobiliary anomalies seem to be more frequent in the non-separable group. The intra-operative US was not needed in our series. Careful planning and pre-operative workup is required to deal with these challenging cases.

Original Paper

Senior Author: Mohammed Zamakhshary

Corresponding to:
Mohammad Zamakhshary
Mail code 1515
P.O. Box 22490
Riyadh 11426, Saudi Arabia
Riaydh, Other
Saudi Arabia
11426
tel: 00966 543 427 669
fax: 00966 1 252 0051
e-mail: zamakhshary@gmail.com

Parenteral Aluminum Induces Liver Injury

Abdulla Alemmari[1], Grant G. Miller[2], Gordon A. Zello[1], Chris Arnold[3]
[1] College of Pharmacy & Nutrition, University of Saskatchewan
[2] College of Medicine, University of Saskatchewan, [3]Saskatoon Health Region

Background/Purpose: Parenteral nutrition associated cholestasis remains a significant problem especially for the surgical neonate. Aluminum is a toxic element known to contaminate parenteral nutrition. We hypothesize that parenterally administered aluminum causes liver injury similar to that seen in parenteral nutrition associated cholestasis.

Methods: Twenty 1-3 day old domestic pigs were divided into 5 equal groups. A control group received daily intravenous 0.9% NaCl. Each subject in experimental groups received intravenous aluminum chloride hexahydrate at 1500 µg/kg/day for either 1, 2, 3, or 4 weeks. At the end of the study blood was sampled for direct bilirubin and total bile acid levels. Liver, bile, and urine were sampled for determination of the aluminum content. An additional liver sample was evaluated for ultrastructural changes using transmission electron microscopy – energy dispersive x-ray microanalysis (TEM-EDX).

Results: The level of serum total bile acids correlated with the duration of aluminum exposure (fig 1). The hepatic aluminum concentration correlated with the duration of aluminum exposure (table 1). TEM-EDX revealed that aluminum was deposited in the hepatocyte lysosomes of the experimental subjects (fig. 2a) but not the control subjects (fig. 2b). The experimental subjects had blunting of the microvilli of bile canaliculi and condensation of the mitrochondria that was not seen in the control group (fig 3).

Conclusions: Parenterally infused aluminum resulted in liver injury as demonstrated by elevated bile acids and by blunting of the bile canaliculi microvilli. These findings are similar to those reported in early parenteral nutrition associated cholestasis.

Original Paper
Trainee Presentation

Senior Author: Grant G. Miller

Corresponding to:
Grant G. Miller
Dept Surgery
Unviersity of Saskatchewan
Royal University Hospital
Saskatoon, Saskatchewan
Canada
S7N 0W8
tel: (306) 966-8141
fax: (306) 966-7988
e-mail: grant.miller@usask.ca

The Management Of Pediatric Anterior Mediastinal Masses

Carissa L. Garey, Carrie A. Laituri, Patricia A. Valusek , Shawn D. St. Peter, Charles L. Snyder
The Children's Mercy Hospital, Kansas City, MO 64108, USA

Background/Purpose: Children with anterior mediastinal masses are at risk for life-threatening airway compromise during anesthesia, and present a diagnostic challenge for pediatric surgeons.

Methods: We performed a 15 year review of all children with an anterior mediastinal mass. Parameters reviewed included demographics, signs and symptoms, radiographic studies, diagnostic approach, histology, and complications.

Results: There were 27 patients (mean age of 10 years). The diagnoses were lymphoma (16 patients), leukemia (5) , and other (6). Diagnosis was made by CBC in leukemia (n=3), bone marrow biopsy in 2 patients with leukemia, thoracentesis in lymphoblastic lymphoma (n=3), lymph node biopsies in lymphoma (n=6), and biopsy of a mediastinal mass in lymphoma (n=7) and other diagnoses (n=6).

Four patients had anesthesia-related complications; 1 with cardiorespiratory arrest, 2 with desaturation and bradycardia, and 1 with prolonged mechanical ventilation. Two of these patients had a tracheal cross-sectional area (TCA) < 50%, and one patient had symptoms of respiratory compromise. There were no anesthesia-related deaths, and overall survival was 81%.

Conclusions: These children should be approached in a step-wise fashion with multi-disciplinary involvement, starting with the least-invasive techniques. CBC, thoracocentesis, bone marrow biopsy, extra-thoracic open, or image-guided needle biopsy are safe first-line techniques. Factors suggesting a higher risk for general anesthesia include orthopnea or SVC occlusion, TCA less than 50%, significant mainstem bronchial occlusion, and peak expiratory rates (PEFR) less than 50%. The surgeon should have a well-defined and pre-operatively established contingency plan in all of these children who require general anesthesia for diagnosis.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Kenneth Pippus

Senior Author: Charles L. Snyder, MD

Corresponding to:
Charles L. Snyder, MD
The Children's Mercy Hospital
2401 Gillham Road
Kansas City, Missouri
United States
64108
tel: (816) 234-3576
fax: (816) 983-6885
e-mail: csnyder@cmh.edu

Custom Dynamic Stent For Esophageal Stenosis In Children

F. Foschia, E. Romeo, F. Torroni, P. De Angelis, T. Caldaro, G. Federici di Abriola, A. Pane, F. Rea, L. Dall'Oglio
Digestive Surgery and Endoscopy Unit, Bambino Gesù Hospital, Rome, Italy

Background/Purpose: The treatment of esophageal strictures (ES) includes esophageal dilations and pharmacological therapy. Esophageal stenting represents a new strategy to avoid multiple dilations due to ES relapse. The dynamic action of our custom silicon stent we believe has a role in improving esophageal motility, as opposed to the self-expanding plastic esophageal stents. The aim of this study is to confirm the efficacy of treatment with silicon stents on ES in pediatric patients.

Methods: From 1988 to 2010, 78 patients with ES, mean age 35.4 months (3-125), underwent esophageal dilations and custom stent placement. Fifty-five patients had caustic ES, 20 post-surgical ES and 3 actinic ES. All patients were administered dexamethazone (2mg/Kg/d) for 3 days. The silicone stents were customized according to the patient age and the stricture length, with 5, 9 or 12.7 mm sizes. The ends are tailored to allow food to pass between stent and esophageal wall with dynamic effect. Stents were left in place for 40 days. Patients were allowed to eat normal/soft food.

Results: The stents were effective in 70/78 patients (90%); 51/55 (93%) with caustic stenosis, 17/20 (85%) post-surgical stenosis and 2/3 (66.6%) actinic stenosis. Fifty percent received only one dilation for stent placement and no dilations after removal. Fourteen were stented multiple times with success. There were no stent-related complications.

Conclusions: The custom stent acts allows motility of the fibrotic wall. It is effective in the treatment of ES. In caustic ES, stenting represents our first option and in post-surgical ES we stent after at least 5-dilations.

Original Paper

Sponsoring CAPS Member: Geoffrey Blair

Senior Author: L. Dall'Oglio

Corresponding to:
L. Dall'Oglio c/o Dr Geoffrey Blair
Room K0-110
BC Children's Hospital,
4480 Oak St.
Vancouver, British Columbia
Canada
V6H 3V4
tel: 604-875-2706
fax: 604-266-4851
e-mail: gblair@cw.bc.ca

Endoscopic Management Of Congenital Esophageal Stenosis

E. Romeo, F. Foschia, P. De Angelis, T. Caldaro, G. Federici di Abriola, F. Torroni, V. Pardi, L. Dall'Oglio

Digestive Surgery and Endoscopy Unit, Bambino Gesù Hospital, Rome, Italy

Background/Purpose: Congenital esophageal stenosis (CES) is a rare malformation. Endoscopic dilations represent the commonest therapeutic option. Surgery is the first choice in tracheo-bronchial remnants (TBR)-CES. Oesophageal perforation is the most frequent complication of dilations in relation to the type of dilators. We undertook a retrospective evaluation of efficacy and safety of conservative treatment of CES.

Methods: Forty-seven patients with CES diagnosed by barium study or endoscopy were reviewed; Endoscopic Ultra-Sonography (EUS) has been available from 2001 for the diagnosis of TBR-CES differentiated from fibromuscular(FMR) CES. All children underwent conservative treatment by endoscopic dilations (Savary or hydrostatic) under general anaesthesia.

Results: From 1980, 47 patients (20 male) presented with CES, 15 in association with esophageal atresia and 8 with Down Syndrome. Mean age at diagnosis was 28.26 months (one day-146 months). Clinical presentation included solid food refusal, regurgitation, vomiting and dysphagia. CES were generally at the distal esophagus. EUS demonstrated TBR in 6 patients and FMR in 6. One hundred and forty-eight dilations in 47 patients were performed. Stricture resolution occurred in 45 (95.7%), with a mean of 3.14 dilatations. Complications: 5 patients (10.6%) oesophageal perforation, hydrostatic 3/32 (9.3%) one requiring surgery, Savary 2/116 (1.7%). In follow-up, 1 FMR-CES and 1 TBR-CES were operated for persistent dysphagia and 3 more for severe GERD.

Conclusions: We observed a good outcome with conservative treatment in both TBR and FMR-CES. Savary dilators appeared safer than hydrostatic methods. EUS allows a correct diagnosis of TBR/FMR-CES. Surgical approach must be reserved for CES not responsive to dilations.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Geoffrey Blair

Senior Author: L. Dall'Oglio

Corresponding to:
L. Dall'Oglio c/o Dr Geoffrey Blair
BC Children's Hospital
Room K0-110
4480 Oak St.
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604)875-2706
fax: (604)266-4851
e-mail: gblair@cw.bc.ca

Esophageal Stenosis In Epidermolysis Bullosa: A Challenge For The Endoscopist

T. Caldaro [1], E. Romeo [1], F. Foschia [1], P. De Angelis [1], F. Torroni [1], G. Federici di Abriola [1], El Hachem [2], A. Ciasulli [2], C. Angelo [3], L. Dall'Oglio [1]

[1]Digestive Surgery and Endoscopy Unit, [2] Dermatology Unit Bambino Gesù Children's Hospital, IRCCS, Rome, Italy
[3]Dermopatic Institute Immacolata-IRCCS Roma

Background/Purpose: Esophageal stenosis is a severe complication in dystrophic epidermolysis bullosa [EB], rare and inherited genodermatosis. Endoscopic dilation treatment is controversial because it is believed to possibly cause mucosal injury with subsequent stricture recurrence. The aim of this study is to describe our referral EB-Centre experience on the safety and long-term efficacy of fluoroscopically guided balloon dilation without endoscopy.

Methods: From 1996, 34 [M:F=18:16] patients have been evaluated with barium esophagography for dysphagia [32 patients: recessive dystrophic EB; 1 patient: simplex EB; 1 patient: Kindler syndrome]. Orotracheal intubation was avoided. Under fluoroscopic control, a guide-wire was introduced via a nostril into the stomach, then over that a 12mm pneumatic balloon was inserted and positioned at the stricture. The balloon was progressively inflated with water-soluble radio-contrast material dilating the stricture. Antibiotics, dexamathasone and a proton-pump inhibitor were administered routinely.

Results: A total of 93 dilations were performed [average: 3.3 per patient; range: 1-11]. Seventeen [52%] had a single stenosis [10 in mid esophagus]; 15 [47%] had multiple strictures.The onset mean age was 18 years [range: 3-47]. Thirteen patients underwent only 1 dilation. In 6 cases, endoscopy was necessary to visualize esophageal lumen. Two patients required a gastrostomy. Complications included: cervical subcutaneous emphysema [1], slight and transitory dysphagia [10]. Thirty patients were feeding per os within 24-hours. Two patientsrequired a fundoplication for gastro-esophageal reflux disease.

Conclusions: Fluoroscopic-guided balloon dilation in EB is a safe and well-tolerated procedure that affords good results. An experienced endoscopy team is necessary in certain cases.

Original Paper

Sponsoring CAPS Member: Geoffrey Blair

Senior Author: L. Dall'Oglio

Corresponding to:
L. Dall'Oglio c/o Dr. Geoffrey Blair
BC Children's Hospital,
Room K0-110
4480 Oak St
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604)875-2706
fax: (604)266-4851
e-mail: gblair@cw.bc.ca

Secondary Esophageal Diverticulum Following Repair Of Esophageal Atresia With Distal Tracheoesophageal Fistula: A Multifaceted Problem

Melanie Morris, Cristina Diana Ghinda, Catherine Paris, Kaveh Vali, Dickens St.Vil, Ann Aspirot
Ste-Justine Hospital, Montreal

Background: There is a paucity of literature regarding esophageal diverticulum (ED) following esophageal atresia (EA) repair without myotomy and its respiratory complications.

Methods: Review of two patients with secondary ED following EA repair and review of the literature.

Results: A premature male infant was born with long gap EA. A Foker procedure was performed and delayed anastomosis was complicated by anastomotic leak. He was readmitted with recurrent pneumonia, esophageal stenosis and ED. Esophageal dilatation via gastroscopy and diverticulectomy was performed via thoracotomy at 13 months. The ED subsequently recurred. He underwent gastroplasty and fundoplication, but eventually required an esophagojejunostomy. He is currently stable. The second patient was a female infant severely neurologically impaired with EA and tracheoesophageal fistula (TEF). She underwent gastrostomy at birth and ligation of fistula. Esophageal anastomosis was performed at 2 months. She had gastroparesis that required feeding jejunostomy. This was closed at the time of fundoplication. She required multiple hospital admissions for recurrent pulmonary infections and barium swallow revealed ED at 3 years old. A diverticulectomy was performed at the age of 5 years when the patient developed a TEF. Several years later imaging revealed recurrence of the ED, which remained stable. The patient unfortunately developed severe pulmonary infection secondary to H1N1 virus and died at the age of 10.

Conclusions: These cases highlight the complexity of managing the postoperative complication of ED following the repair of EA. To our knowledge these are the first reports of ED following repair of EA without myotomy.

Case Report
Trainee Presentation

Senior Author: Ann Aspirot

Corresponding to:
Melanie Morris
5369 Blvd St. Laurent
apt 230
Montreal, Quebec
Canada
H2T 1S5
tel: (514) 945-3526
fax: (514) 345-4964
e-mail: melaniemorris.i@gmail.com

Short-Term Emergency Department Observation After Successful Enema Reduction Of Ileocolic Intussusception: A Safe Alternative To Hospital Admission

Melanie Morris, Isabelle Malhamme, Catherine Paris, Kaveh Vali, Dickens St. Vil
Ste-Justine Hospital, Montreal

Background/Purpose: Following successful pneumatic reduction traditionally admission to the hospital with observation, bowel rest and intravenous fluids has been the standard treatment. Short-term emergency department (ED) observation was implemented at our institution in 2006. Patients that had undergone successful pneumatic reduction were observed in the emergency department for 6 hours then re-evaluated. The patient was discharged home in the absence of symptoms and if tolerating a po diet.

Methods: A retrospective review of all patients treated for intussusception between the years 2006-2009 to evaluate the safety of observation in the emergency department.

Results: We identified143 patients that were treated for intussusception. 77 (54%) patients were observed in the ED after successful pneumatic reduction. The mean time of observation was 7 hours. 3 (0.04%) of patients had a recurrence that was managed by pneumatic reduction and short-term ED observation. The average hospital stay for the remaining 66 patients, that were admitted, was 2.7 days. Of these patients, 9 (14%) patients had a recurrence and 19 (29%) patients required a surgical intervention.

Conclusions: Short-term emergency department observation after successful pneumatic enema reduction is a safe alternative to hospital admission in greater than 50% cases. An evaluation of patients after 5-8 hours is essential to identify patients who might require hospital admission.

Original Paper
Trainee Presentation

Senior Author: Dickens St. Vil

Corresponding to:
Melanie Morris
5369 Blvd St. Laurent
apt 230
Montreal, Quebec
Canada
H2T 1S5
tel: (514) 945-3526
fax: (514) 345-4964
e-mail: melaniemorris.i@gmail.com

Lung Nodules in Children: Video-Assisted Thoracoscopic Resection After Computed Tomography-Guided Localization Using a Microcoil

Manraj K.S. Heran [1], Bippan S Sangha [2], Eric D. Skarsgard [3]
[1] Division of Pediatric Radiology, [2] Faculty of Medicine, [3] Division of Pediatric General Surgery,
University of British Columbia

Abstract: Background

Lung nodules that develop in children with cancer may represent metastatic disease. The standard approach for resection of pulmonary nodules is open thoracotomy. Thoracoscopic methods have been used for nodule resection; however, lesions deep in the lung parenchyma can be difficult to visualize. Fluoroscopic video-assisted thoracoscopic resection (VATS) after computed tomography (CT)-guided localization using microcoils may be used to guide resection of deep pulmonary nodules.

Discussion

Five patients were treated with a combined CT-guided microcoil localization/VATS technique. Under CT guidance, the tip of a Chiba needle loaded with a platinum embolization coil was placed adjacent to the pulmonary nodule. A guide wire was introduced into the Chiba needle and advanced, expelling the first part of the coil and allowing it to form a coiled helical shape within the lung parenchyma. The Chiba needed was then withdrawn from the lung parenchyma to allow the second part of the coil to form a straight segment along the parenchymal tract. Finally, by fully advancing the guide wire with the needle tip in the pleural space, the coil was expelled, forming a helical shape on the lung surface. The patient was then transferred to the operating room where thoracoscopy allowed direct visualization of the coil in the pleural surface. Fluoroscopy allowed visualization of the deep component of the coil, thereby guiding positioning of endoscopic staplers. The part of the lung parenchyma containing the microcoil and lung nodule was resected and removed.

Conclusion

We describe a novel technique of VATS after CT-guided microcoil localization of pulmonary nodules in pediatric patients.

Technique Report
Trainee Presentation

Senior Author: Eric D Skarsgard

Corresponding to:
Erik D Skarsgard
K0-123 ACB - 4480 Oak Street
BC Children's Hospital
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604) 875-3744
fax: (604) 875-2721
e-mail: eskarsgard@cw.bc.ca

The Bronchial Blocker: Why Won't It Come Out ?

Andre Hodder, Gillian Lauder, and James J. Murphy
Departments of Pediatric Surgery and Anesthesia, B. C. Children's Hospital, Vancouver, B.C.

Bronchial blockers are used routinely in pediatric lung surgery. These devices are valuable as they optimize exposure of the pulmonary vascular anatomy to facilitate safe dissection. The Cook Arndt Endobronchial Blocker set (5 Fr/50 cm) device was utilized in a 6 month-old female undergoing a right lower lobectomy for a very large congenital cystic adenomatoid malformation. The device worked effectively during the case, but could not be removed after the chest was closed.

Bronchoscopy demonstrated that the bronchial blocker balloon was completely decompressed. The cause of the tethering could not be determined. On inspection of an unused bronchial blocker, the guide loop used to attach the bronchial blocker to the bronchoscope during insertion was thought to be the culprit. This loop had not been pulled back after insertion and was caught by one of the bronchial closure sutures. The guide loop was cut external to the patient and the catheter then successfully removed using the bronchoscopic forceps. The patient recovered uneventfully without sequellae related to this complication. Both the surgeon and anesthetist should ensure that the guide loop is pulled back after insertion of a bronchial blocker, especially in young children.

Technique Report
Trainee Presentation

Senior Author: James J. Murphy

Corresponding to:
James J. Murphy
B.C. Children's Hospital
4480 Oak Street - Room KO - 134
Vancouver, B.C. V6H 3V4
Vancouver, British Columbia
Canada
V6M 3G2
tel: 604-875-2667
fax: 604-875-2721
e-mail: jmurphy@cw.bc.ca

Improved Outcomes Associated with Delayed Surgical Repair for Congenital Tracheal Stenosis Infants Less Than One Year of Age.

Ahmed Nasr, Peter CW Kim, Priscilla PL Chiu,
The Hospital for Sick Children, Department of Surgery, University of Toronto, Canada.

Background/Purpose: Congenital tracheal stenosis (CTS) is a life-threatening condition. We previously reported that emergent CTS repair in infants with co-morbidities was associated with a high mortality rate. We changed our practice in 2006 by delaying CTS repair until after 1 month of age if possible even if patients presented in the neonatal period with symptomatic CTS.
Methods: Our objective was to review and determine the effect of changing practice on outcomes of surgically-treated CTS infants.
A retrospective review of all CTS infants less than one year treated surgically in our institution from Jan. 1, 2003 to Dec. 31, 2009.
Results: A total of 17 infants underwent CTS repair during this period.

	2003-2005 (N=13)	2006-2009 (N=4)	P-value
Gestational age (weeks)	36.4 ±4.3	35± 2.6	0.6
Birth weight (kg)	2.6± 0.8	2.5± 0.6	0.8
Age at OR (days)	25± 17	221 ±80	0.09
Type of CTS	Distal tracheal stenosis (9) Distal stenosis with bronchial obstruction/malacia (3) Complete tracheal stenosis (1)	Distal tracheal stenosis (3) Distal stenosis with bronchial bstruction/malacia (3)	
Mortality	6/13* (45%)	0/6	0.04
Associated co-morbidities of survivors	2	3	0.1

*Timing of death post surgery was 139 (median 72) days.
Conclusions: Management of CTS represents an evolving paradigm. Our recent change regarding operative timing from acute and emergent treatment to deferred elective repairs was associated with a beneficial effect in overall survival even for complex patients with significant associated anomalies. Further evaluations of our management paradigm will be required to further improve patient outcomes.

Original Paper
Trainee Presentation

Senior Author
Dr Priscilla Chiu
Corresponding to:
Dr Priscilla Chiu
555 university avenue. Department of general surgery
toronto, Ontario Canada
M5G1X8
tel: (416) 813-7280
e-mail: priscilla.chiu@sickkids.ca

Congenital Diaphragmatic Hernia; To Repair On Or Off ECMO: That Is The Question

E.D. Wilschut [1], R.Keijzer [1], R.J. Houmes [1], C.P. van de Ven [1], L. van den Hout [1], I. Sluijter [1], P. Rycus [2], D. Tibboel [1], N.M.A. Bax [1]
[1] Department of Pediatric Surgery and Pediatric Intensive Care, Erasmus MC-Sophia, Rotterdam, the Netherlands
[2] Extracorporeal Life Support Organization (ELSO), University of Michigan,Ann Arbor MI, USA

Background/Purpose: Congenital diaphragmatic hernia (CDH) can be repaired on or off ECMO (extracorporeal membrane oxygenation).In many centers, operating off ECMO is advocated to prevent bleeding complications. We aimed to compare surgery-related bleeding complications between repair on or off ECMO.

Methods: All patients with CDH repair and ECMO treatment between January 1st 1995 and May 31st 2008 were retrospectively reviewed. Tranexamic acid was routinely given to all patients repaired on ECMO for 24 hours peri-operative. Extra fluid expansion, transfusion or re-laparotomy due to post-operative bleeding were scored as surgery-related bleeding complications and were related to the Extracorporeal Life Support Organization (ELSO) registry. We used Chi square test and t-test for statistics.

Results: Bleeding complication in our institute:
On ECMO: Yes: 4 No: 28 Total: 32
Off ECMO: Yes: 1 No: 15 Total: 16

Bleeding complication ELSO registry:
On ECMO: Yes: 616 No: 1614 Total: 2230
Off ECMO: Yes: 34 No: 1075 Total: 1109

Demographic data and surgery-related bleeding complications in the on ECMO group were not higher (p= 0,331) in our institute. In contrast, more surgery-related bleeding complications were reported by ELSO in the on ECMO group (p<0,0001).

Conclusions: In contrast to data from the ELSO registry, we did not observe more surgery-related bleeding complications after CDH repair on ECMO. Differences in peri-operative bleeding protocols are most likely responsible for this and the use of these protocols makes CDH repair on ECMO possible, thereby taking advantage of having the physiologic benefits of ECMO available peri-operatively.

Original Paper

Sponsoring CAPS Member: B.J. Hancock

Senior Author: N.M.A. Bax

Corresponding to:
R. Keijzer
318 Gran Avenue
Homewood, Alabama
United States
35209
tel: +1 205 639 8101
e-mail: richardkeijzer@gmail.com

Unique Surgical Management Of A Patient With Flat Back Syndrome

Kaveh Vali, MD, Nelson Piché, Melanie Morris, MD, Stefan Parent, MD,Jean-Guy LaPierre, MD, Sarah Bouchard, MD
Sainte-Justine Hospital, Montreal, QC, Canada.

Flatback syndrome is characterized by loss of lordosis or kyphosis of the spine. We present the case of an 18 year old man who underwent esophageal atresia repair soon after birth. After his growth spurt he developped a hypokyphosis of the cervico-thorcacic spine simulating Flatback syndrome. He suffered tracheal compression due to a severely diminished thoracic sterno-vertebral space. The patient would become dyspneic upon the slightest effort. His symptoms worsened over time and severely impaired his quality of life and ability to study.
We describe a unique surgical management of this case. Pre-operative work-up, including dynamic thoracic CT scan, Pulmonary function tests, and bronchoscopy demonstrated extrinsic tracheal narrowing at the mid thoracic trachea. To alleviate his symptoms it was deemed necessary to enlarge the anterior-posterior thoracic space and thereby decompress the trachea. Pre-op bronchoscopy was performed and the degree and location of the narrowing was determined. Following midline sternotomy, a human femur bone allograft was interposed between the split sternum and fixed into place with sternal wires. This newly widened sternum allowed expansion of the anterio-posterior thoracic space which was verified with a repeat bronchoscopy. The patient at one year follow up is doing well with greatly improved exercise tolerance. To our knowledge this is the first use of femur allograft to augment the thoracic space for symptomatic thoracic flatback syndrome.

Technique Report
Trainee Presentation

Senior Author: Sarah Bouchard

Corresponding to:
Sarah Bouchard
Sainte-Justien Hospital
3175 Ch. Cote-Sainte-Catherine
Montreal, Quebec
Canada
H3T 1C5
tel: 514-345-4915
fax: 514-345-4964
e-mail: sarah.bouchard.hsj@ssss.gouv.qc.ca

Lights, Camera, Surgery: A Novel Pilot Project To Engage Medical Students In The Development Of Pediatric Surgical Learning Resources

Kwan K, Wu C, Duffy D, Masterson J, Blair GK
University of British Columbia, Vancouver, BC, Canada

Background/Purpose: Our Department of Pediatric Surgery implemented a novel pilot project entitled "Lights, Camera, Surgery" for medical students to participate in the design and production of instructional videos for teaching basic surgical procedures. One key objective was to engage junior medical students in the pediatric surgical environment to showcase possible future career choices. Our aim was to assess how the students valued their experience in the realm of clinical learning, exposure to surgical careers, and development of skill sets necessary for creating learning resources.

Methods: Thirteen medical students in this summer project were given leadership roles in filming procedures within the operating room. Surgical faculty mentored them through all phases of production. An electronic survey questionnaire allowed the students to provide formal feedback on the project outcomes.

Results: 87.5% of the students who responded expressed appreciation of the enhanced clinical experience. 100% of the students either agreed or strongly agreed that the project afforded them valuable leadership experience, practical skills in creating educational learning resources, and opportunities to explore careers in surgery. 100% of the students either agreed or strongly agreed that the project allowed them to gain valuable skills in educational video production. The project videos are now available as educational tools.

Conclusions:
The project "Lights, Camera, Surgery" was a valuable learning experience for the students and improved their skills in creating and promoting the use of educational resources. This novel approach to generate educational tools through student participation was enthusiastically received. Competitive grant funding has recently been received for our project's continuance.

Original Paper
Trainee Presentation

Senior Author: Blair GK

Corresponding to:
Blair GK
Room K0-110
BC Children's Hospital
4480 Oak St
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604)875-2706
fax: (604)266-4851
e-mail: gblair@cw.bc.ca

Validation of a Pediatric Laparoscopic Surgery (PLS) simulator

Ahmed Nasr, J. Ted Gerstle, Jess Green, Allan Okrainec, Oscar Henao, Georges Azzie
The Hospital for Sick Children. University of Toronto

Background/Purpose: Although a validated simulator exists for adult laparoscopy, there is no pediatric counterpart. Based on the adult Fundamentals of Laparoscopic Surgery (FLS) simulator, we developed a Pediatric Laparoscopic Surgery (PLS) simulator and began preliminary validation. In our previous study, performance on the PLS simulator discriminated between the novice (<10 adult or pediatric laparoscopic procedures/year) and the intermediate (10-50 pediatric laparoscopic procedures/year) as well as between the novice and the expert (>50 pediatric laparoscopic procedures/year), but not between the intermediate and the expert. The purpose of this study was to provide further evidence for the construct validity of the PLS simulator.

Methods: Experts in pediatric laparoscopic surgery performed 5 tasks on the PLS simulator (5 tasks); they were compared to the intermediate group as defined in our previous study.

Results:

	Expert N=45 (mean ± SD)	Intermediate N=19 (mean ± SD)	p-value
Peg Transfer	84.9± 12	78 ± 10	0.03
Pattern Cutting	71.7 ±11.8	68 ± 11	0.2
Ligating Loop	80.9± 23	76 ± 22	0.3
Extracorporeal Suturing	95.8 ±16	84 ± 25	0.02
Intracorporeal Suturing	83.2± 14.6	70 ± 21	0.005
Total PLS Score	83.2±10.6	75 ± 10	0.005

Conclusions: The PLS simulator was able to discriminate between the expert and intermediate pediatric surgeon using the total PLS score and 3 of the 5 individual tasks, thus providing evidence for construct validity. The ligating loop and the pattern cutting tasks or the metrics used in their scoring will need to be modified in order establish their independent construct validity.

Original Paper
Trainee Presentation

Senior Author: Dr Georges Azzie

Corresponding to:
Dr Georges Azzie
555 university avenue. Department of General Surgery
Toronto, Ontario
Canada
M5G1X8
tel: (416) 813-5220
e-mail: georges.azzie@sickkids.ca

A Pilot Study On The Use Of Metabolomics In Neuroblastoma; In Vitro And Patient Metabolite Biomarker Profiles

Martin Campbell [1],Jing Wen [2] ,Aru Narendran [2],Aalim Weljie [2],Paul Beaudry [1,2]
[1] Alberta Children's Hospital, Calgary, Canada.
[2] University of Calgary, Calgary, Canada.

Background/Purpose: Our aim is to determine the utility of metabolomics for detecting and characterizing neuroblastoma. Metabolomics measures thousands of small-molecule metabolites. We hypothesize that 1) NB cells have a unique metabolic profile; 2) MYCN amplification is reflected in metabolites; and 3) metabolites from NB patient serum will differ with therapeutic response.

Methods: Supernatents from six NB cell lines (3 MYCN amplified) were analysed. Two were also compared to leukemia and brain tumor cell lines.
We evaluated 5 children with NB. Sera were obtained at time of bulk disease and compared directly to minimal disease (CR/VGPR) of the same patient. Sera were analyzed using gas chromatography mass spectrometry (GC-MS). Multivariate data analysis was conducted using SIMCA-P (Umetrics).

Results: Supernatent from NB cells showed a specific metabolic response easily distinguished from other cancers. MYCN status was also distinguishable. Sera from patients with bulk disease showed a remarkably unique profile compared with the same patient sera with CR/VGPR. ANOVA indicates statistical significance of the multivariate model(p=0.003). Identified metabolites are indicative of perturbations in nitrogen, amino acid, and carbohydrate metabolism, as well as ketosis.

Conclusions: NB and MYC amplification has a characteristic metabolite profile. In a pilot study of NB patients , we detected with high sensitivity a significant alteration in their metabolite profile after treatment Formal categorization of a metabolite profile for NB may be possible with a larger patient size and comparison with normal age-matched controls. Prospective use of metabolomics could be a new way of profiling neuroblastoma and may produce a novel method of monitoring for minimal residual disease.

Original Paper

Senior Author: Paul Beaudry

Corresponding to:
Paul Beaudry
Alberta Childrens Hospital
2888 Shaganappi Trail NW
Calgary, Alberta
Canada
T3B6A8
tel: 403-955-2850
fax: 403-955-7634
e-mail: paul.beaudry@albertahealthservices.ca

The Utility Of Oncolytic Viruses Myxoma And VSV Against Neuroblastoma And Neuroblastoma Tumour Initiating Cells.

Nicole Redding [1], Karen Blote [1], HongYuan Zhou [1], XueQuing Lun [1], Donna Senger [1], Loen Hansford [2], David Kaplan [2], Grant McFadden [3], John Bell [4], Peter Forsyth [1], Steve Robbins [1], Paul Beaudry [1,4]

[1] Southern Alberta Cancer Research Institute, University of Calgary, Calgary, Alberta, Canada.
[2] Hospital For Sick Children, Cell Biology Program, Department of Molecular and Medical Genetics, University of Toronto, Toronto, Ontario, Canada
[3] Department of Molecular Genetics and Microbiology, University of Florida, Gainesville, Florida, USA.
[4] Ottawa Regional Cancer Center Research Laboratory, Departments of Biochemistry, Microbiology, and Immunology, University of Ottawa, Ottawa, Ontario.
[4] Department of Surgery, Alberta Childrens Hospital, Calgary, Alberta, Canada

Background/Purpose: Little progress has been made in improving the outcome for high-risk neuroblastoma patients . Tumor Initiating Cells (TICs) may drive aggressive tumor behavior and treatment resistance. A neuroblastoma TIC has been identified, but its role in tumor behavior and the susceptibility of these cells to cancer treatment is unknown. Myxoma virus (MYXV) and Vesicular Stomatitis Virus (VSV) are two oncolytic viruses that effectively destroy brain tumor cells, which likeneuroblastoma, are derived from neural crest cells. It is unknown if these oncolytic viruses can effectively eliminate neuroblastoma cells or neuroblastoma TICs.
Purpose: Characterize the ability of VSV and MYXV to target and eliminate 1) neuroblastoma cells; and 2) neuroblastoma TICs, in vitro and in vivo.

Methods: In vitro viability assays on infected human neuroblastoma and neuroblastoma TIC lines were performed. Infection and viral reproduction was assessed . Following IACUC approval, in vivo viral oncolytic activity was measured using intratumoral injection in an established human neuroblastoma mouse xenograft model.

Results: Both myxoma and VSV infect and kill human neuroblastoma cells in vitro. Infection of neuroblastoma cells was further confirmed by Western blot detection of MYXV and VSV viral protein expression. Neuroblastoma TIC lines are also infected and killed by MYXV but appear resistant to VSV. Finally, both MYXV and VSV were found to effectively inhibit the growth of neuroblastoma in subcutaneous xenografts.

Conclusions: MYXV and VSV selectively infect several neuroblastoma cell lines while MYXV is able to also target neuroblastoma TICs. Oncolytic viruses may offer a novel approach to treatment of high-risk neuroblastoma.

Original Paper

Senior Author: Paul Beaudry
Corresponding to:
Paul Beaudry
Alberta Childrens Hospital
2888 Shaganappi Trail NW
Calgary, Alberta
Canada
T3B6A8
tel: 403-955-2850
fax: 403-955-7634
e-mail: paul.beaudry@albertahealthservices.ca

Traumatic Pseudoaneurysms Of The Spleen And Liver In Children: Is Routine Screening Warranted ?

James J. Murphy, Paul Beaudry, Arash Safavi, Douglas Jamieson
Departments of Pediatric Surgery and Radiology, British Columbia Children's Hospital, Vancouver, B.C.

Background/Purpose: It is clearly documented that blunt injuries to solid organs can lead to pseudoaneurysm formation. Current surgical guidelines do not include routine follow-up imaging to rule out pseudoaneurysm development. Controversy exists regarding the clinical implications of these pseudoaneurysms and their management.

Methods: All children with blunt traumatic liver and spleen injuries between 1991 and 2008 were reviewed retrospectively. Demographics, grade of injury and follow-up Doppler ultrasound (FDU) results were extracted. Outcomes of interest were pseudo-aneurysm development and subsequent clinical course and treatment.

Results: We identified 372 patients sustaining blunt abdominal injuries, 233 of whom underwent FDU prior to discharge. A total of 176 children with isolated liver injuries were identified, of which 89 had FDU. Three hepatic artery pseudo-aneurysms were detected and were all associated with grade IV injuries (3/11(27.2%)). One patient underwent early embolization and two developed delayed hemorrhage requiring emergent embolization in one and laparotomy in the other. Isolated splenic injuries were identified in 196 patients, of which 186 were treated non-operatively. FDU was performed in 135 of these children.. Splenic artery pseudo-aneurysm identified in ten patients (10/186, (5.4%)). They were associated with grade III (3/40, (7.5%)) and grade IV (7/42, (16.6%)) injuries. In seven patients, the pseudo-aneurysm thrombosed spontaneously. Angiographic embolization was required in 2 children and one underwent emergency splenectomy for delayed hemorrhage.

Conclusions: Pseudo-aneurysm development after blunt abdominal trauma is associated with higher grade (III, IV) Liver and splenic injuries. This may warrant routine screening Doppler ultrasound in this group of patients prior to discharge from hospital.

Original Paper
Trainee Presentation

Senior Author: James J. Murphy

Corresponding to:
James J. Murphy
B. C. Children's Hospital
4480 Oak Street, Room KO - 134
Vancouver, B.C. V6H 3V4
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604) 875-2667
fax: (604) 875-2721
e-mail: jmurphy@cw.bc.ca

The Significance Of Pseudoaneurysms In The Non-Operative Management Of Pediatric Splenic Trauma

Kathryn Martin [1], Lisa VanHouwelingen [1], Andreana Bütter [1]
Division of Pediatric Surgery, Children's Hospital of Western Ontario, London, Ontario, Canada

Background/Purpose: Non-operative management is the standard of care for hemodynamically stable pediatric and adult blunt splenic injuries. In adults, most centers follow a well-defined protocol involving repeat imaging at 24-48 hrs, with angiographic embolization of any splenic pseudoaneurysms (SAP). However, in children, the significance of radiologically detected SAP has yet to be clarified.

Methods: A systematic review of the available medical literature was conducted to analyze the outcomes of documented posttraumatic SAP in the pediatric population.

Results: Sixteen articles including 1 prospective study, 4 retrospective reviews and 11 case reports were reviewed. Forty-five splenic pseudoaneurysms were reported. Ninety-six percent of children were reported as stable; yet, 85% underwent splenectomy, splenorrhaphy, or embolization. The fear of delayed complications due to the presence of SAP was often cited as the reason for intervention in otherwise stable children. Only one child with a documented pseudoaneurysm experienced a delayed splenic rupture while under observation. No deaths were reported.

Conclusions: There is no evidence to support or dispute the routine use of follow-up imaging and embolization of SAP in the pediatric population. At present, the decision to treat SAP in stable children is at the discretion of the treating physician. A randomized control trial is needed to further clarify this issue.

Original Paper
Trainee Presentation

Senior Author: Andreana Bütter

Corresponding to:
Andreana Bütter
Children's Hospital of Western Ontario
800 Commissioners Rd East, Rm E6-208
London, Ontario
Canada
N6A 4G5
tel: 519-685-8401
fax: 519-685-8421
e-mail: andreana.butter@lhsc.on.ca

The Utility of Computed Tomography in the Management of Patients with Spontaneous Pneumothorax

Carrie A. Laituri, Trish A. Valusek, Carissa L. Garey, Daniel J. Ostlie, Shawn D. St. Peter
Children's Mercy Hospital and Clinics, Kansas City, USA

Background/Purpose: Spontaneous pneumothorax may result from rupture of subpleural blebs. Computed tomography (CT) has been used to identify blebs which become an indication for thoracoscopic bleb resection with or without pleurodesis. We reviewed our experience with spontaneous pneumothorax to assess the utility of CT in these patients.

Methods: A retrospective review was conducted on all patients who underwent an operation for spontaneous pneumothorax from January, 1994 to October, 2009. All operations were performed thoracoscopically.

Results: Thirty-eight procedures were performed for spontaneous pneumothorax. Mean age was 16.1 (range 10-23), with an average of 1.7 spontaneous pneumothoraces prior to operation (range 1- 4).

Preoperative chest CT scans were obtained in 26 patients. Blebs were demonstrated in 9 patients. All 9 were confirmed at thoracoscopy. Of the 17 negative scans, 13 (76.5%) were found to have blebs intraoperatively. The sensitivity of CT for identifying blebs was 41%.

Bleb resection was performed in all 34 patients with blebs identified, 26 were combined with pleurodesis. Eight underwent resection alone. Pleurodesis only was done in the 4 patients with no evidence of bullous disease. Recurrence occurred in 5 patients (13%). Three (11.5%) occurred following combined pleurodesis and blebectomy, of which 2 were successfully treated with a chest tube. The other 2 recurrences (25%) occurred following isolated endoscopic stapling, both required subsequent repeat thoracoscopy.

Conclusions: Chest CT demonstrates extremely poor sensitivity for the identification of pleural blebs such that a negative exam is not clinically helpful. Therefore, operative decisions should be made on clinical grounds without the use of preoperative CT.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Kenneth Pippus

Senior Author: Shawn D. St. Peter, MD

Corresponding to:
Shawn D. St. Peter, MD
Department of Pediatric Surgery
Children's Mercy Hospital and Clinics
2401 Gillham Road
Kansas City, Kansas
United States
64108
tel: (816) 983-6465
fax: (816) 983-6885
e-mail: sspeter@cmh.edu

Utility Of Amylase And Lipase As Predictors Of Grade Of Injury Or Outcomes In Patients With Pancreatic Trauma

Richard Herman [1], Ken Gure [1],Randal Burd [2],David Mooney [3],Peter Ehrlich [1]
[1] University of Michigan,[2] Children's National Medical Center,[3] Boston Children's Hospital

Background/Purpose: Radiological grade of injury and serum amylase and lipase are markers used to assess, classify and monitor the severity of pancreatic injury. It is unclear however how amylase and lipase relate to grade of injury, or whether they direct therapy or predict outcome We hypothesize that serum amylase and lipase are good predictors of grade of injury or outcomes in patients with pancreatic trauma ?

Methods: A multi-center review from 9 pediatric trauma centers of all children admitted to their institution over 5 years with a pancreatic injury. Data were submitted to a central site and collated.Initial as well as peak amylase and lipase values were analyzed with relation to pancreatic grade, length of stay and outcomes.

Results: 131 records were analyzed. There were 44 girls and 85 boys (2 gender not recorded.) with an average age of 9.0+/-0.4 years. The mean ISS score was 15.5+/- 1.2SE. Motor vehicle collisions and bicycle crashes were the most common injury mechanisms. In our study the average length of stay (days) by grade 0 was 3.93, for grade 1: 7.73, grade 2: 13.4 Grade 3: 18.4, grade 4: 31, and for grade 5: 13.5. Neither initial nor peak amylase/lipase correlated with grade of injury – correlation coefficients (initial amylase 0.678; initial lipase 0.969; peak amylase 0 .176; peak lipase 0.512). Amylase nor lipase predicted length of stay or risk of complications.

Conclusions: Initial and peak amylase/lipase levels have limited utility in predicting grade of injury, length of stay or risk of complications.

Original Paper
Trainee Presentation

Senior Author: Peter Ehrlich

Corresponding to:
Peter Ehrlich
F7822 CS Mott 1500
East Medical Center Drive
Ann Arbor, Michigan
United States
48109
tel: 734 615 3303
fax: 734 647 8111
e-mail: pehrlich@med.umich.edu

Serious Sequelae Of Being Constipated

J. Ouahed [1], Y. Yousef [2], M. Walton [3], H. Flageole [3]
[1] Department of Pediatrics, McMaster Children's Hospital, Hamilton, Ontario Canada
[2] Department of Pediatric Surgery, KAMC-WR, Jeddah, Saudi-Arabia
[3] Department of Pedaitric Surgery McMaster Children's Hospital, Hamilton, Ontario Canada

Abstract: Abdominal compartment syndrome (ACS) is defined as an elevated intra-abdominal pressure with evidence of organ dysfunction. The vast majority of published reports of ACS is in neonates with abdominal wall defects and in adults following trauma or burns, but it is poorly described in children.

Herein, we describe the unusual presentation of an 11 year old boy with a long history of chronic constipation who developed acute ACS requiring resuscitative measures and emergent disimpaction. On initial presentation he described a 2 week history of increasing abdominal pain, nausea, and diminished appetite. He also reported a longstanding history of encopresis and intermittent passage of hard stool pellets despite taking PEG 3350 daily and Fleet enemas biweekly. On exam he was emaciated with a hugely distended abdomen filled with palpable fecaloma. Abdominal XR confirmed these findings. We planned for admission the following day but he returned earlier with worsening abdominal pain and new emesis. At this point he was afebrile, tachycardic, oliguric with orthostatic hypotension. Following two rectal washes he acutely deteriorated with severe hypotension, marked tachycardia, acute respiratory distress, and a declining mental status. Endotracheal intubation, fluid boluses, and vasopressors were commenced and urgently followed by surgical fecal desimpaction, ensuing rapid improvement. Although results of some investigations are pending, no pathology has been identified to explain his profound constipation.

This case illustrates the potential for ACS from constipation in an otherwise healthy child. Although rare, its early recognition in children is critical to institute appropriate therapy and prevent morbidity and mortality.

Case Report
Trainee Presentation

Senior Author: Dr. Helene Flageole

Corresponding to:
Dr. Helene Flageole
McMaster Children's Hospital
1200 Main Street West, HSC-Room 4EB
Hamilton, Ontario
Canada
L8N 3Z5
tel: 905-521-5094
fax: 905-510-5056
e-mail: flageol@mcmaster.ca

Human Milk Fortifier Lactobezoar Causing Bowel Obstruction: A Report of 2 Cases

Kelley Zwicker and James J. Murphy
Departments of Pediatric Surgery and Radiology, British Columbia Children's Hospital, Vancouver, B.C.

Abstract: Human Milk Fortifier (HMF) has been widely accepted as a means to facilitate the growth of preterm infants. According to a recent Cochrane review, it has no significant gastro-intestinal side effects nor does it increase the risk of necrotizing enterocolitis. Over the past year we have encountered two cases of HMF lactobezoars causing small bowel obstruction, one of which developed secondary bowel necrosis and perforation. Both babies were critically ill and had complicated post-operative courses due to the effects of sepsis and systemic inflammatory response. The first case was a 26 week gestation male ex-premie who developed abdominal distension, increased oxygen requirements, metabolic acidosis, and gasless loops of bowel on abdominal X-ray four days after the addition of HMF to the feeds. Laparotomy demonstrated an intraluminal mechanical bowel obstruction secondary to a dense, sticky conglomeration of milk curds in the terminal ileum with bowel necrosis and perforation proximal to the obstruction. The second baby was a 25 week gestation male ex-premie. Forty-eight hours after the addition of HMF to the feeds, the baby developed apneas, bradycardias, and desaturations as well as progressive abdominal distension. Abdominal radiographs showed a high grade small bowel obstruction as well as an unexplained central radiopacity (HMF lactobezoar). Laparotomy findings were multiple adhesions causing some narrowing of the bowel lumen and thick, inspissated, calcified debris proximal to the obstruction. Adhesiolysis allowed milking of the intraluminal debris into the distal colon to relieve the obstruction.

Case Report
Trainee Presentation

Senior Author: James J. Murphy

Corresponding to:
James J. Murphy
B.C. Children's Hospital
4480 Oak Street - Room KO-134
Vancouver, BC V6H 3V4
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604) 875-2667
fax: (604) 875-2721
e-mail: jmurphy@cw.bc.ca

Small Bowel Volvulus In A 15-Year-Old Boy Caused By An IVC Filter Strut With Chronic Caval Perforation

Robin M. Cisco, Christopher Hemond, William T Kuo, Claudia M. Mueller
Department of Surgery, Lucile Packard Children's Hospital. Stanford, CA, USA

A 15-year-old boy with a history of IVC filter placement after spinal surgery for traumatic injury presented with severe abdominal pain and vomiting. CT of the abdomen and pelvis revealed a volvulus of the small bowel. Laparoscopic reduction of the volvulus was performed. Intraoperatively, a strut of the filter was noted to penetrate through the wall of the IVC into the small bowel mesentery. A bowel volvulus was noted to be around this strut. The bowel was initially dusky but improved after detorsion and did not require resection. Postoperatively, the patient underwent successful endovascular retrieval of the intact IVC filter and was discharged on prophylactic low-dose heparin.

Perforation of the vena cava by IVC filter struts is a surprisingly common phenomenon in adults with estimated prevalence of 38-70% among all patients undergoing filter placement. Reported gastrointestinal complications of these perforating struts include duodenal perforation, upper GI bleeding, adhesive small bowel obstruction and volvulus. To our knowledge, this is the first report of a small bowel obstruction secondary to IVC filter strut perforation in a pediatric patient. Although removal of such filters presents a challenge, endovascular retrieval may be performed by an experienced team of vascular specialists.

Case Report

Senior Author: Claudia M. Mueller, MD, PhD

Corresponding to:
Robin M. Cisco, MD
300 Pasteur Dr
Stanford, California
United States
94305
tel: 650-804-4082
e-mail: rcisco@stanford.edu

Arterio-esophageal Fistula from an Aberrant Right Subclavian Artery after Stenting for Refractory Stenosis after Esophageal Atresia Repair

Andrea Lo [1], Robert Baird [1], Dominique Lévesque [2], Véronique Morinville [2], Jean-Martin Laberge [1]
[1] Department of Pediatric Surgery, Montreal Children's Hospital, McGill University Health Centre
[2] Department of Pediatric Gastroenterology, Montreal Children's Hospital, McGill University Health Centre

Background/Purpose:
Post-operative management of long-gap esophageal atresia frequently includes dilations and application of local agents to control recalcitrant anastomotic strictures. Recently, temporary esophageal stenting has been employed to maintain patency. We report a lethal complication from stent erosion into an aberrant right subclavian artery.
Case Presentation:
A child delivered at 33 weeks, weighing 1.3 kg, was diagnosed with long-gap EA with distal TEF, and initially underwent gastrostomy and fistula division, followed by delayed anastomosis two months later. A small leak sealed spontaneously but anastomotic stenosis developed. The child underwent multiple esophageal dilatations (13), including seven with Triamcinolone injection and three with MitomycinC application, until at one year of age an esophageal stent was placed, and gradually upsized from 8 to 14 mm over two months.
The child then developed massive upper GI haemorrhage with cardiorespiratory arrest. CT angiography after stabilization demonstrated an aberrant right subclavian artery coursing behind the esophagus at the upper edge of the stent. Rebleeding required urgent tamponade via antegrade and retrograde bougienage, and emergent angiography confirmed bleeding from the aberrant vessel. After successful embolization, the stent was removed. While haemostasis was maintained, the child manifested devastating neurologic injuries and expired three days after presentation.
Discussion:
Aberrancy of the right subclavian artery is the most frequent vascular abnormality of the great vessels (0.5% to 1.8%). Based on this experience, we advocate mandatory CT or MR angiography to exclude vascular abnormality should esophageal stenting be considered.

Case Report
Trainee Presentation

Senior Author: Jean-Martin Laberge

Corresponding to:
Jean-Martin Laberge
Montreal Children's Hospital
2300 Tupper St.
C820
Montreal, Quebec
Canada
H3H 1P3
tel: (514) 412-4498
fax: (514) 412-4289
e-mail: jean-martin.laberge@muhc.mcgill.ca

Multiple Ganglioneuromas in a 10 Year-old Girl: Result of Spontaneous Maturation of a Stage IV-S Neuroblastoma?

Monica Langer, Jacob Rozmus, David Dix, Douglas Jamieson and James J. Murphy
Departments of Pediatric Surgery, Oncology and Radiology, B.C. Children's Hospital, Vancouver BC

We describe a 10-year old girl with a left supra-renal mass and several soft tissue lesions in her buttocks and legs. She initially presented as a 3 month-old with a soft tissue mass in the subcutaneous tissues of her abdominal wall. Ultrasound characterized the lesion as a hemangioma, so it was initially observed. Over the subsequent four months she developed several other lesions on her trunk and limbs, at one time having nine distinct lesions. Ultrasound at 11 months of age demonstrated interval growth of a subcutaneous lesion and as well as bilateral suprarenal lesions. Biopsy was strongly recommended but parents refused. Over the next 18 months the tumors regressed or remained static. Excisional biopsy of the original lesion was finally performed when she was 2.5 years old. Pathology revealed it to be a ganglioneuroblastoma. Oncology work-up demonstrated elevated urinary catecholamines. The family again refused any further surgical therapy, so she was followed. Symptomatic back and extremity soft tissue masses have subsequently been excised. Sequential pathology has demonstrated maturation of the ganglioneuroblastoma to ganglioneuroma and urinary catecholamines have normalized as well. The right adrenal lesion completely regressed, but the left remains and is growing in proportion to the patient's growth. Although this case could represent the development of synchronous and metachronous ganglioneuromas, but we think it is more likely this is the first reported case of multiple residual ganglioneuromas secondary to the spontaneous maturation of a Stage IV-S neuroblastoma.

Case Report
Trainee Presentation

Senior Author: James J. Murphy

Corresponding to:
James J. Murphy
B.C. Children's Hospital
4480 Oak Street, Room KO-134
Vancouver, B.C, V6H 3V4
Vancouver, British Columbia
Canada
V6H 3V4
tel: 604-875-2667
fax: 604-875-2721
e-mail: jmurphy@cw.bc.ca

Hydrostatic Rectosigmoid Perforation: A Rare Personal Watercraft Injury

Richdeep S. Gill [1], Harsh Mangat [2], David Al-Adra [1], Mark Evans [1]
[1] Department of Surgery, University of Alberta, Edmonton, Alberta
[2] Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta

Personal watercrafts (PWC) also known as jet skis, seadoos and waverunners have risen in popularity since their introduction in the 1970s. Hydrostatic rectal injury is a rare presentation of passengers thrown off PWC. It involves perforation of the rectum due to hydrostatic force of water exerted through the anal canal. We present the first case of rectosigmoid perforation secondary to PWC hydrostatic enema in Canada. A14-year-old female passenger presented to the pediatric trauma centre with severe abdominal pain and blood per rectum following a fall off the back of a PWC at a local lake. Computed tomographic (CT) scan of the abdomen and pelvis demonstrated a laceration to the anterolateral rectal wall at the rectosigmoid junction with associated free intra-peritoneal air and profuse free fluid. At the exploratory laparotomy, a full thickness perforation was identified at the rectosigmoid junction, which was oversewn and a Hartmans end colostomy was created proximally to divert the fecal stream. Management of traumatic pediatric rectal injuries involves detailed perineal examination with rectoscopy and if warranted, exploratory laparotomy. Despite the rare occurrence of hydrostatic rectal perforations in Canada, it is a serious and potentially devastating injury. In the United States, the National Transportation safety board recommends wet suit bottoms for all pediatric PWC operators and passengers. In Canada, similar recommendations have not been made. The use of PWC in Canada is less common than the US, however is steadily increasing, especially on local lakes. Education of potential injuries and prevention is recommended.

Case Report
Trainee Presentation

Sponsoring CAPS Member: Sarah Bouchard

Senior Author: Dr. Mark Evans

Corresponding to:
Richdeep Gill
1684 Melrose Place SW Edmonton, Alberta
T6W-1X6
Edmonton, Alberta
Canada
T6W-1X6
tel: (780) 709-7473
fax: (780) 407-3283
e-mail: richdeep@ualberta.ca

Metastatic Pediatric Sacrococcygeal Chordoma Treated with Surgery and Imatinib Mesylate

David Al-Adra, Athena Bennett, Richdeep Gill ,Gordon Lees
Department of Surgery, University of Alberta

Pediatric sacrococcygeal chordomas are rare neoplasms and metastatic disease is extremely uncommon. Diagnosis and therapy pose a difficult challenge for sacrococcygeal chordomas due to their rarity and scant appearance within the literature. Our goal is to increase awareness of this uncommon disease through a review of the available literature and add our single case experience. We describe a case report of a 12 year old boy who presented with a large locally advanced sacrococcygeal chordoma with pulmonary metastases. A multidisciplinary treatment approach was preformed, and he underwent an extensive *en bloc* surgical resection of the primary tumour, subsequent treatment with Imatinib Mesylate and metastatectomy. A review of the literature, the natural history, diagnosis and treatment of sacrococcygeal chordomas is presented. Surgical options for sacrococcygeal chordomas involve extensive resections with high morbidity. However, given the poor response of chordomas to chemotherapy and radiotherapy, radical surgery to achieve negative margins may be the only option for cure or palliation. Due to its rarity, the optimal treatment of the patient with metastatic disease is especially unknown. The role of local control or tumor debulking has not been elucidated. Similarily, the role of metastatecomy is unknown. In order to determine the best treatment for this rare neoplasm we encourage other centers that have treated pediatric sacrococcygeal chordomas to publish their experiences and outcomes in a standardized fashion.

Case Report
Trainee Presentation

Senior Author: Dr. Gordon Lees

Corresponding to:
David Al-Adra
Alberta Diabetes Institute
5-040 Li Ka Shing Health Centre for Research Innovation
University of Alberta
Edmonton, Alberta
Canada
T6G 2E1
tel: (780) 893 5980
fax: (780) 492 5348
e-mail: daladra@ualberta.ca

Complete Vs Partial Fundoplication In Children With Esophageal Atresia

David Levin , Ivan Diamond , Jacob Langer
The Hospital for Sick Children, Toronto, Ontario, Canada

Background/Purpose: Gastroesophageal reflux (GER) is common following esophageal atresia (EA) repair, and many children ultimately require fundoplication. Because EA is usually associated with abnormal esophageal motility, some authors have advocated partial fundoplication to avoid postoperative dysphagia. The aim of this study was to compare outcomes after complete or partial fundoplication in patients with EA.

Methods: All patients undergoing fundoplication following EA repair from 1987-2006 were retrospectively reviewed. All had at least one year followup post-fundoplication. Student's t-test was used for continuous, and Fisher's Exact Test for binomial variables, with p

Results: Of 47 children, 16 (34%) had complete fundoplication (Nissen) and 31 (66%) had partial wrap (18 Toupet, 5 Thal, 8 other). Demographics, presence of tracheoesophageal fistula, early complications of EA repair, GER symptoms prior to fundoplication, and operative details of fundoplication were similar between groups, except for recurrent pneumonia before fundoplication (69% vs 35%, p=.037), and hiatal repair (69% vs 23%, p=.004). Patients were followed for a median of 4.98 years (range 1-17.8 years). Analyses controlling for pre-operative symptomatology revealed no statistically significant associations between operation type and frequency of dysphagia, retching, vomiting, abnormal barium swallow or esophagoscopy, and reoperation. However, a greater proportion of children undergoing partial fundoplication achieved long-term symptom-free and medication-free recovery (13% vs 52%, p=.012).

Conclusions: Our data suggest that partial fundoplication is associated with a greater likelihood of symptom-free and medication-free recovery than complete fundoplication in children with previously repaired esophageal atresia.

Original Paper
Trainee Presentation

Senior Author: Jacob Langer

Corresponding to:
David Levin
1208-887 Bay Street
Toronto, Ontario
Canada
M5S3K4
tel: (647) 808-8129
e-mail: dlevin3@gmail.com

Incidence and Predictors of Gastrocutaneous Fistula (GCF) in the Pediatric Patient

Aamir Bharmal, Ioana Bratu
Department of Surgery, University of Alberta, Edmonton, Alberta

Background/Purpose: To determine the incidence, predictors, and outcomes of repair of gastrocutaneous fistula (GCF) in pediatric patients.

Methods: Patients were identified through a medical records search of all gastrostomy insertions performed from 1997-2007. Patient factors, gastrostomy type, Gtube size and use duration, GCF persistence, and complications were collected from patient charts. Data was analyzed using Excel and SPSS.

Results: Of 1083 gastrostomies, 49 (4.5%) had GCF closure. Gastrostomy indications were reflux/aspiration (30/43 [70%]) and feeding intolerance/failure to thrive (7/43 [16%]). Gastrostomies were performed as open surgical procedures (84%) with fundoplication (66% of all cases) at an age of 1.01.7 (mean standard deviation) years. 48% of patients were in the

Conclusions: From collected data, GCF occur at a frequency of 4.5% and persist for 2.93.4 months until closed. Given the complicated medical histories of patients and relatively high rate of post-operative infection/reaction (12.2%), GCF closure is not a benign, 'uncomplicated' procedure. Further information describing factors determining which patients develop GCF requiring closure is needed.

Original Paper
Trainee Presentation

Senior Author: Ioana Bratu

Corresponding to:
Ioana Bratu
Pediatric General Surgery, Dept of Surgery
2C3.56 WMC, 8440 - 112 Street
Edmonton, Alberta T6G 2B7
Edmonton, Alberta
Canada
T6G2B7
tel: (780) 407-1162
fax: (780) 407-2004
e-mail: Ioana.Bratu@albertahealthservices.ca

Life Saving Amputation in a neonate with Kaposiform Hemangioendothelioma

Roshni Dasgupta, Denise M Adams, Richard Azizkhan
Hemangioma and Vascular Malformations Center, Cincinnati Children's Hospital Medical Center
Cincinnati, Ohio

Kaposiform Hemangioendothelioma (KHE) in neonates can present with high output cardiac failure as well as a consumptive coagulopathy. We present a case of a 34-week gestational age male neonate who had antenatal studies showed with fetal hydrops with evidence of ascites and pleural effusions. At birth, the patient was noted to have the stigmata of a KHE on the right upper arm. He was in oliguric renal and hepatic failure and had significant pulmonary hypertension. The patient required multiple transfusions, ventilatory support and was transferred to our tertiary care institution. Echocardiogram subsequently revealed a large dilated heart with mitral and tricuspid regurgitation with ejection fraction of 18 %. The patient presented with Kassabach- Merritt syndrome with platelet counts as low as 20 requiring multiple transfusions. He was initially treated with intravenous steroids however due to worsening cardiac function and failure to respond to medical management, the patient was taken to the operating room for a right upper extremity amputation with shoulder disarticulation. Post-operatively the patient stabilized and his high output cardiac failure resolved, his steroids were able to be weaned off and he no longer had a transfusion requirement. In the post-operative period, he developed necrotizing enterocolitis, hypertension and hyperbilirubinemia. Follow-up 7 months post discharge noted normalization of cardiac function, normalization of liver enzymes and hematologic profile. Repeat MRI revealed no further residual lesions. This case illustrates that aggressive surgical resection is required in patients with life-threatening Kaposiform Hemangioendothelioma.

Case Report

Senior Author: Roshni Dasgupta MD MPH

Corresponding to:
Roshni Dasgupta MD MPH
3333 Burnet Avenue
Cincinnati, Ohio
United States
45229
tel: 5136364371
fax: 5136367657
e-mail: roshni.dasgupta@cchmc.org

Sclerotherapy for Lymphangioma in Children: A Scoping Review

Abdullah Ali [1],Paige Churchill [1],Julia Pemberton [2,3],Helene Flageole [1,3]
[1] McMaster Children's Hospital, Department of Surgery
[2] McMaster University, Department of Surgery
[3] McMaster Pediatric Surgery Research Collaborative

Background/Purpose: The primary objective of our scoping review is to identify the optimal agent for sclerotherapy treatment of lymphangioma. Secondary objectives include identifying the gaps in the literature by examining extent of research activity, determine the type of evidence, and present recommendations for the future.

Methods: A comprehensive search was conducted of MEDLINE, EMBASE, CINHAL, CENTRAL, Cochrane Systematic Review Database, conference abstracts, thesis and dissertation databases, using the SIGN search filters and MeSH headings and reference lists of prominent studies. Title and abstract, and full text screening was conducted by two independent clinicians, and all discrepancies were resolved during consensus meetings. English and non-English articles were included. Due to a high level of heterogeneity amongst studies, all results are presented descriptively.

Results: A total of 182 articles were retrieved. Forty-five articles were removed as duplicates and 7 articles were added after reviewing prominent studies. After full text abstraction, 42 articles and 3 conference proceedings (N=834 pts) were included in the final results. OK-432 was used in 56% of included studies. Although measurement of outcome varied tremendously, OK-432 was more effective than Bleomycin or Ethiblock. Sclerotherapy was more effective in lesions not previously treated surgically. Post-injection symptoms with OK-432 were primarily fever, swelling and erythema at the site. Life threatening complications were uncommon and involved post-injection swelling of cervical lesions causing airway compromise.

Conclusions: OK-432 currently is the predominant sclerosing agent for treating lymphangiomas. However, it is not readily available in Canada. Further prospective trials with uniform outcome measures are needed to develop treatment guidelines.

Original Paper
Trainee Presentation

Senior Author: Helene Flageole

Corresponding to:
Helene Flageole
flageol@mcmaster.ca
Hamilton, Ontario
Canada
L8N 3Z5
tel: (905) 521-2100
fax: (905) 521-9992
e-mail: flageol@mcmaster.ca

Practice and Outcome Variation in CDH in Canada

Gareth Eeson, Arash Safavi, Erik Skarsgard and The Canadian Pediatric Surgery Network
Division of Pediatric General Surgery, BC Children's Hospital, Vancouver, BC, Canada

Background/Purpose: Perinatal management of CDH remains non-standardized. The purpose of this study was to describe practice and outcome variation across a national network.

Methods: Data was abstracted from a prospective national database (2005-2009). Practice and outcome variation were evaluated between individual centers and risk-matched groups (designated low- (LVC) or high- (HVC) volume centers relative to network median).

Results: 215 liveborn CDH cases were identified (mean 14.3 cases/centre; range 2-62), across 8 LVCs (mean 4.9; n=39) and 7 HVCs (mean 25.1; n=176).

Pre-natal: Rates of pre-natal ultrasound diagnosis and karyotype analysis were comparable between HVC and LVC; karyotyping varied considerably among centres (0-100%).

Obstetrical: Caesarean-section rates varied between 0-61% across centers. Overnight delivery was more likely at LVCs (36.3% vs 18.8%; p=0.008).

Post-natal: Mode of ventilation , pre-operative FiO2 and PCO2 were comparable between groups. Routine use of paralytics (0-89%) and pulmonary vasodilators (0-67%) varied widely. There was no difference between groups in the timing of surgery (5.6 vs. 5.8 days; p=0.87; range 0-77), rates of primary (68% vs. 64%;p=0.41) and patch (22% vs. 31%;p=0.94) closure.

Outcomes: Overall survival rate was 81.4% (LVC -76.9%, HVC -82.4%; p=0.43; 37.5% of ECMO patients). There were no differences in duration on ventilator, length of stay, or need for respiratory support at day 28 between groups. Use of anti-reflux medications at discharge (30% vs. 5%; p=0.001) and overall complication rates (70.4% vs. 51.3%; p=0.02) were higher at HVCs.

Conclusions: The existence of perinatal practice and outcome variation for CDH justifies efforts to standardize care on a national basis.

Original Paper
Trainee Presentation

Senior Author: Erik Skarsgard

Corresponding to:
Gareth Eeson
2002-1225 Richards Street
Vancouver, British Columbia
Canada
V6B1E6
tel: 604-688-2526
e-mail: gareth.eeson@gmail.com

Surgery Or Endoscopy In The Treatment Of Duodenal Duplications In Children?

P. De Angelis[1], E. Romeo[1], F. Foschia[1], T. Caldaro[1], G. Federici di Abriola[1], F. Torroni[1], L. Monti [2], L. Dall'Oglio[1]
[1]Digestive Surgery and Endoscopy Unit, [2]Department of Imaging,Bambino Gesù Hospital, Rome, Italy

Background/Purpose: Gastrointestinal duplications are seen in 1 of every 4500 autopsies and the duodenal duplication [DD] are the rarest, generally located in or adjacent to the medial border of the duodenal wall. The goal of therapy is to surgically excise the malformation, but the proximity to the biliary and pancreatic ducts is threatening. A perhaps safer treatment is to allow drainage of the cyst into the duodenum or in a jejunal limb. Endoscopic conservative management represents an alternative option. Our aim was to study the role of endoscopic ultrasound [EUS] in guiding endoscopic or surgical treatment in duodenal duplication.

Methods: Between 2002-2010, 6 patients, 2 male; mean age 7.83 years, [2-18 years] with recurrent acute pancreatitis had diagnosis of DD with ultrasound and MR. Endoscopy was performed together with miniprobe EUS. An endoscopic sectioning of the duodenal-DD common wall, through pre-cut needle or sphincterotome was chosen when EUS showed the biliary tree was not involved in the DD; otherwise an operative duodenotomy and complete opening of the common wall was performed.

Results: After EUS evaluation, endoscopic treatment was successfully performed in 4 patients, 2 patients needed surgical approach. Bleeding occurred in 1 patient after endoscopic section and this was treated endoscopically. One patient bled after surgery needing re-intervention. Mean follow up without pathologic signs was 3.3 years [range: 0,25-8].

Conclusions: Miniprobe EUS can help choose either a surgical or endoscopic approach to DD. Endoscopic or surgical sectioning of the common wall effectively treats DD and avoids post-treatment pancreatitis. Post-treatment bleeding may occur.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Geoffrey Blair

Senior Author: L. Dall'Oglio

Corresponding to:
L. Dall'Oglio c/o Dr Geoffrey Blair
BC Children's Hospital
Room K0-110
4480 Oak St.
Vancouver, British Columbia
Canada
V6H 3V4
tel: (604)875-2706
fax: (604)266-4851
e-mail: gblair@cw.bc.ca

Success in the Pediatric Surgery Match: A Survey of the 2010 Applicant Pool

Alana Beres,Robert Baird, ,Pramod S. Puligandla
Montreal Children's Hospital, McGill University Health Centre

Background/Purpose: Traditionally, basic science research and publication record have led to a successful pediatric surgery fellowship match. With changing applicant demographics, we sought to evaluate if these or other factors led to a successful match.

Methods: A SurveyMonkey™ questionnaire was distributed to fifty-seven applicants with known contact information to retrieve demographic/financial data, application details and match results. We assessed research experience, publications, presence of a Pediatric Surgery fellowship at their home program, and ranking criteria used by applicants.

Results: Forty-three (75%) responses were received. Twenty-five candidates matched, 12(48%) to their first three choices. The median number of programs applied to were similar for matched and unmatched candidates (30) but matched candidates attended more interviews (21 vs 14.5;p=0.03). Matched and unmatched applicants with formal(20/25 vs 14/16;p=0.68) or 2+ years of research (16 vs 8;p=0.25) did not differ. Research focus for matched vs. total applicants included: basic science(5 vs 12), clinical (4vs.6) and both (11vs16). Five candidates matched without research experience. Matched applicants had more publications than unmatched applicants(9.5 vs 5.1;p=0.03). Seventeen(40%) applicants matched to home institutions or where they completed research/fellowship training. Twenty-one(49%) applicants matched from programs without a home fellowship program. Applicants valued case variety and volume most. Average cost for interviews was $8800/applicant, and significantly higher in the matched group($10,320 vs $6520;p=0.03).

Conclusions: While a strong publication records remains important, clinical research is being valued more. Many applicants match to home programs, although those from non-fellowship programs can also be successful. This information may be useful to mentor future applicants.

Original Paper
Trainee Presentation

Senior Author: Pramod Puligandla

Corresponding to:
Pramod Puligandla
Montreal Children's Hospital
2300 rue Tupper
rm C-811
Montreal, Quebec
Canada
H3H 1P3
tel: (514) 412-4438
fax: (514) 412-4289
e-mail: pramod.puligandla@mcgill.ca

Influence Of Location Of Delivery On Outcome In Neonates With Congenital Diaphragmatic Hernia.

Ahmed Nasr, Jacob C. Langer, The Canadian Pediatric Surgery Network
The Hospital For Sick Children. University of Toronto.

Background/Purpose: Although it is often recommended that infants with antenatally diagnosed congenital diaphragmatic hernia (CDH) be delivered in a perinatal centre, this practice has not been scientifically validated, and in some geographical areas there is no perinatal centre available. Our goal was to determine the impact of delivery site on outcomes for neonates born with antenatally diagnosed CDH.

Methods: Data were obtained from The Canadian Pediatric Surgery Network (CAPSNet), covering 4 years (2005-2008) over 18 pediatric surgical centres. “Inborn” was defined as birth in a hospital with a NICU or connected to a NICU by a bridge or tunnel. “Outborn” was defined as requiring transfer by ambulance or flight. Primary outcome variable was mortality.

Results: Of 140 infants with antenatally diagnosed CDH, 75 were inborn and 65 were outborn. Univariate analysis demonstrated no significant difference between groups with respect to gestational age, birth weight, days to surgery, primary repair, need for ventilation, use of pressors or ECMO, or incidence of comorbidities. Severity of illness, as reflected by SNAP II score, was significantly higher among inborn infants (21, IQR 7-32 vs 5, IQR 9-12, p=0.0001). Logistic regression analysis, controlling for severity of illness, revealed that location of delivery was a significant independent predictor for mortality, with an odds ratio of dying when outborn of 2.8 (p=0.04).

Conclusions: Our data suggest that outborn delivery is a significant predictor of mortality for infants with antenatally diagnosed CDH. Whenever possible, these infants should be delivered in a perinatal centre.

Original Paper
Trainee Presentation

Senior Author: Dr Jacob Langer

Corresponding to:
Dr Jacob Langer
555 University Avenue.
Department of general surgery
Toronto, Ontario
Canada
M5G1X8
tel: (416) 813-7340
e-mail: jacob.langer@sickkids.ca

Pediatric Firearm Injuries: A 10 Year Single-Center Experience Of 194 Patients

Carolin Senger, Richard Keijzer, Geni Smith, Oliver J. Muensterer
Division of Pediatric Surgery, Children's Hospital of Alabama, University of Alabama at Birmingham

Background/Purpose: In our state, more than every second household owns a gun, and it ranks second regarding gun death rate per capita in the U.S. The objective of this study was to determine predictors influencing the incidence and outcome of pediatric firearm injuries in a major pediatric level I trauma center.

Methods: We performed a retrospective review of our hospital trauma register to identify pediatric firearm injuries between April 1999 and March 2010. We extracted age, gender, race, geographic and seasonal incidence, cause of injury, firearm type, length of stay, and outcome.

Results: We identified 194 firearm injuries. The incidence did not change over the past decade. Firearm injuries were more common during the second half of the year (61.4%). Median age was 13.6 years (range 0.4 to 19.2 years). The majority was male (77.8%) and African-American (70.1%). Accidental injuries accounted for 57.3% of firearm injuries, followed by assaults (26.3%), uninvolved bystanders (15.0%) and suicides (1.0%). Most children (82.5%) were shot with a powder-propelled firearm, which was associated with higher mortality at (8.8%) compared to air-propelled weapons (0.5%). Median Length of Stay was 1.0 days (range 0-69 days) and 16.5% required an operation. We identified certain geographic hot spots in our series.

Conclusions: In our patient population, the overwhelming majority of children were injured after a gun went off accidentally. Although less dangerous, shots from air-propelled guns can be lethal. We identified certain seasonal and geographic clusters. These data can be used to target gun injury prevention and make it more effective.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: BJ Hancock

Senior Author: Oliver J. Muensterer, MD, PhD

Corresponding to:
Oliver J. Muensterer, MD, PhD
Division of Pediatric Surgery
Children's Hospital of Alabama at Birmingham
1600 7th Avenue South, ACC 300
Birmingham, Alabama
United States
35233
tel: (205) 937-0910
fax: (205) 975 7768
e-mail: oliver.muensterer@ccc.uab.edu

Prematurity, Not Age At Operation Or Incarceration, Impacts Complication Rates Of Inguinal Hernia Repair

Robert Baird, Suad Gholoum, Jean-Martin Laberge, Pramod Puligandla
Division of Pediatric General Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada

Background/Purpose: Inguinal hernia repair (IHR) remains the most common procedure in pediatric surgery. While post-operative sequelae are well described, we examined if prematurity and age were important determinants of complications after IHR.

Methods: A retrospective review of children

Results: 268 patients were analyzed (98 premature), with fourteen major complications (5.2%) and twenty-six (9.7%) minor complications overall. Groups A+B accounted for more major (12/14) and minor complications (22/26) when compared to groups C+D ($p<0.005$; see Table). In patients <26 weeks of age (Groups A+B), premature infants had more complications than term infants (23[27.7%] vs. 11[12.1%], $p=0.01$). Complications were similar in term infants between groups A+B (11[12.1%] vs. C+D (6[7.5%], $p=0.44$). Of twenty-two patients with incarcerated hernias, 2 (9.1%) had major complications, and 5(22.7%) had minor complications, ($p<0.5$ vs. non-incarcerated patients).

Group	A (0-3 weeks) n=38 (18)	B (4-26 weeks) n=136 (65)	C (27-52 weeks) N=26 (7)	D (53-104 weeks) n=68 (7)	Total [%] n=268 (98)
Recurrent hernia	2 (1)	7 (2)	0	1	10 [3.7%]
Testicular atrophy	0	1 (1)	0	0	1 [0.4%]
Injury to Vas Deferens	0	2 (2)	0	1	3 [1.1%]
Hydrocele	4 (3)	11 (10)	1	2	18 [6.7%]
Wound infection	1	2	0	0	3 [1.1%]
"High" testicle	1 (1)	3 (3)	1	0	5 [1.9%]
Total [%]	8 [21.1%]	26 [19.1%]	2 [7.7%]	4 [5.9%]	40 [14.9%]

Table: (Parentheses) indicate number of premature patients. [%] indicates percentage of total.

Conclusions: Our study suggests that prematurity, rather than age at operation or incarceration, affects complication rates after IHR. This information should be used to frame the discussion of informed consent for this commonly performed procedure.

Original Paper
Trainee Presentation

Senior Author: Pramod Puligandla

Corresponding to:
Pramod Puligandla
2300 Tupper, room C-811
Montreal, Quebec
Canada
H3H1P3
tel: (514) 412-4498
fax: (514) 412 4289
e-mail: pramod.puligandla@muhc.mcgill.ca

Practice and Outcome Variation in Gastroschisis in Canada

Robert Baird, Pramod Puligandla, Jean-Martin Laberge and The Canadian Pediatric Surgery Network
Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada

Background/Purpose: Care of the neonate with gastroschisis has remained institution-specific. We sought to document the variability in the prenatal, obstetrical and postnatal management of gastroschisis across Canada. This analysis will inform knowledge translation and enable future practice change.

Methods: A national, prospective database was evaluated over 4 years with cases stratified by center. Centers were defined and evaluated as low (n≤25 cases, LVC) or high (n>25 cases, HVC) volume. Individual center variability was also described. Categorical and continuous data were analyzed using the Fischer's Exact test or the unpaired t-test, respectively.

Results: Ten centers were defined as LVC with a mean of 14.3 cases (6-25); there were 6 HVCs [mean=45.5 (28-72)].
Prenatal:
Mothers in LVCs were less likely to undergo a detailed ultrasound investigation (69.2%vs.92.7%, p
Obstetrical:
There were no differences in the rate of Caesarean section between LVCs and HVCs (36.0%vs.33.7%, p=0.66), although rates at individual centers ranged from 0–86%.
Post-natal:
There was no difference in the overall survival rate (94.3%vs.97.2%, p=0.17), mean length of stay (49.2 +/-52.8vs.48.3+/-38.3 days, p=0.16), or days on TPN (36.3+/-35.2vs.40.1+/-32.9, p=0.31) between LVCs and HVCs.
LVCs were more likely to close the defect within 6 hours, (77.2%vs.48.8%, p

Conclusions: Significant variability exists in the management of gastroschisis within Canada. Identification of differences between institutional practices suggests potential targets to improve health care delivery and outcome.

Original Paper
Trainee Presentation

Senior Author: Jean-Martin Laberge

Corresponding to:
Jean-Martin Laberge
2300 Tupper
C-820
Montreal, Quebec
Canada
H3H 1P3
tel: (514) 412-4498
fax: (514) 412-4289
e-mail: jean-martin.laberge@muhc.mcgill.ca

Disorder of Sexual Differentiation (DSD): Culturally-sensitive management for resource-poor settings

Robert Baird [1], Catherine Mung'ong'o [2],Dan Poenaru [2]
[1] Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada
[2] Bethany Kids at Kijabe Hospital, Kijabe, Kenya

Background/Purpose: Patients with Disorders of Sexual Differentiation (DSD) comprise a heterogeneous population and are poorly understood by care-givers and health professionals. This study investigated the management of patients with DSD in a resource-poor setting with particular emphasis on the impact of their socio-cultural context on gender assignment.

Methods: All patients diagnosed with DSD from March 2004 to March 2010 at a tertiary care hospital in East Africa were included for analysis. Variables investigated include age at presentation, ethnicity, gender of rearing and operative findings. In the absence of chromosomal analysis, Barr body buccal smears were performed in most cases. Categorical data was analyzed using Fischer's exact with

Results: Sixty-four procedures were performed on 27 patients during the study period. The mean age of first intervention was 8.3 years old (1 month – 34 years), and there were more gender-reared males (17:10) at presentation. Twenty-three diagnostic procedures were performed, including 16 mini-laparotomies. Of the ten patients presenting as females, 8 underwent feminizing procedures and 2 were gender reassigned (20%). Of the 17 male patients, 1 was re-assigned to the female gender (5.9%). This difference in gender reassignment was significant (P

Conclusions: The treatment of patients with DSD is complex and resource-dependant. Critical factors that influenced management and gender assignment in our series included gender-rearing, phenotype and ethnicity. The stigma of DSD within a patient's unique cultural context must be considered, often preferentially resulting in the retaining or reassigning to male gender.

Original Paper
Trainee Presentation

Senior Author: Dan Poenaru

Corresponding to:
Dan Poenaru
BethanyKids at Kijabe Hospital
Box 20
Kijabe, Other
Kenya
00220
tel: (254) 20-3246500
fax: (254) 721-726639
e-mail: dpoenaru@gmail.com

A Tale of Two Fellowships: A Comparative Analysis of a Canadian and an East-African Pediatric Surgery Training Experience

Robert Baird [1], Pramod Puligandla [1], Sherif Emil [1], Dan Poenaru [2]
[1] Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada
[2] Bethany Kids at Kijabe Hospital, Kijabe, Kenya

Background/Purpose: Profound differences exist in the practice of pediatric general surgery between developed and developing nations, including manpower, technology, infrastructure and access to care. Significant variability in the educational experience of trainees also likely exists. We sought to compare the training of senior fellows in a Canadian and an East-African pediatric surgery fellowship program and identify opportunities for educational partnerships.

Methods: The complete case-log of a senior fellow from a Canadian and an East-African institution was analyzed for volume and case distribution. These were categorized according to subspecialty. Additional variables investigated included length of training, sub-specialty rotations, work hours, and an estimate of service-to-education ratio.

Results: Canadian fellowship programs are 2 years after a complete general surgery residency; the East-African program ranges from 2-3 years after 2-5 years of training in general surgery. Although overall work-hours between trainees were similar (86 hrs/wk versus 77 hrs/wk), more time was devoted to educational activities and service (4 hours/day versus 1.5 hours/day) at the Canadian center. Significant differences in case distribution were appreciated:

Cases distribution	**CAN (2 years)**	**EA (3 years)**	
Neonatal (<1 month of age)	211	116	p<0.01
Plastic Surgery	2	161	p<0.01
Neurosurgery	4	606	p<0.01
Vascular Access	127	1	p<0.01
Minimally Invasive Surgery	245	1	p<0.01

Table: Case distribution of trainee at a Canadian (CAN) and an East-African (EA) center

Conclusions: Differences exist in the training experience of the Canadian versus East-African trainee, reflecting the difference in the spectrum of surgical practice on each continent. Electives abroad would enrich the training experience of fellows on both continents.

Original Paper
Trainee Presentation

Senior Author: Dan Poenaru

Corresponding to:
Pramod Puligandla
2300 Tupper
C-819
Montreal, Quebec
Canada
H3H 1P3
tel: (514) 412-4438
fax: (514) 412-4489
e-mail: pramod.puligandla@muhc.mcgill.ca

Pediatric Thyroidectomy: A Collaborative Approach

James H. Wood [1], David A. Partrick [1], Henry P. Barham [2], Sharon H. Travers [3], Dennis D Bensard [1] Robert C. McIntyre, Jr. [4]
[1] Department of Pediatric Surgery, The Children's Hospital, University of Colorado Denver, USA
[2] Department of Otolaryngology, University of Colorado Denver, USA
[3] Department of Pediatrics, Division of Endocrinology, The Children's Hospital, University of Colorado Denver, USA
[4] Department of Surgery, Division of GI, Tumor, and Endocrine Surgery, University of Colorado Denver, USA

Background/Purpose: Recent studies have suggested that pediatric thyroid surgery should be performed only by 'high-volume' endocrine surgeons, citing improved length of stay (LOS) and in-hospital complication rates for high-volume endocrine surgeons as compared with pediatric general surgeons performing cervical endocrine procedures on children (LOS 1.5 vs. 2.3 days; complications 8.7% vs. 13.4%). We have developed a collaborative approach to pediatric thyroid surgery, with operations performed at a children's hospital by a pediatric general surgeon (PGS) and an endocrine surgeon (ES). We hypothesize that this strategy minimizes specialist-specific limitations and optimizes care of children with surgical thyroid disease.

Methods: Data from all partial and total thyroidectomies performed by the PGS-ES team at a tertiary children's hospital between 1995 and 2009 were collected and analyzed retrospectively. Statistical analyses were performed with SPSS™ software.

Results: Forty-five children met inclusion criteria (69% female, median age 13.7 years, median follow-up 840 days). Nineteen children (42%) underwent thyroid lobectomy, and 26 children (58%) underwent total thyroidectomy. Indications for operation included benign nodule (44%), cancer (22%), genetic abnormality (22%), multinodular goiter (6.7%), and thyroiditis (4.4%). Overall median LOS (LOS) was 1 day (1d after lobectomy vs. 2d after total thyroidectomy,

Conclusions: For pediatric thyroidectomy and thyroid lobectomy, operative collaboration of high-volume endocrine and pediatric surgeons at a dedicated pediatric medical center provides optimal surgical outcomes.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Sarah Bouchard

Senior Author: Robert C. McIntyre, Jr.

Corresponding to:
David A Partrick
The Children's Hospital
Department of Pediatric Surgery
13123 E. 16th Ave., B-323
Aurora, Colorado
United States
80045
tel: (720) 777-6571
fax: (720) 777-7271
e-mail: partrick.david@tchden.org

Parenteral Aluminum Induces Hyperbilirubinemia In A Newborn Piglet Model

Grant G. Miller [1], Mei Li [2],Chris J. Arnold [2], Andrew Mitchell [3], Gordon A. Zello [2]
[1]Dept of Surgery, University of Saskatchewan, [2]College of Pharmacy & Nutrition, University of Saskatchewan,
[3]Department of Pathology, Maisonneuve-Rosemont Hospital

Background/Purpose: Parenteral nutrition (PN) associated liver disease is a well recognized problem especially for newborn infants with intestinal failure. The etiology of this problem is multifactorial and poorly understood. Aluminum is a contaminant of PN and we sought to investigate it as an etiological agent in parenteral nutrition associated liver disease.

Methods: Twenty-four newborn domestic pigs were divided into 3 treatment and 1 control group. The subjects were treated for 21 days. Group1 was infused aluminum 20 µg/kg/d; Group 2 1500 µg/kg/d; Group 3 received continuous parenteral nutrition. Blood was sampled weekly for serum bilirubin, alkaline phosphotase, gamma glutamyl transferase, and aluminum. At the study conclusion the aluminum content of urine, bile, and liver was measured. Liver tissue was evaluated by light microscopy and a morphologic portal inflammation index was calculated.

Results: The mean bilirubin level for Groups 2 & 3 was significantly higher then controls. The mean serum aluminum was significantly elevated in group 3 only. The mean liver aluminum content was significantly elevated in all 3 experimental groups. There was no significant portal inflammation in any group. Cholestasis was seen only in the parenteral nutrition group.

Conclusions: Parenteral aluminum causes significant hyperbilirubinemia and accumulation of hepatic aluminum but no significant histological changes to the liver.

Original Paper

Senior Author: Grant G. Miller

Corresponding to:
Grant G. Miller
Dept of Surgery
Royal University Hospital
103 Hospital Drive
Saskatoon, Saskatchewan
Canada
S7N 0W8
tel: (306)966-8141
fax: (306)966-7542
e-mail: grant.miller@usask.ca

Open Transumbilical Pyloromyotomy: Is It More Painful Than The Laparoscopic Approach?

Caroline Lemoine, Catherine Paris, Mélanie Morris, Kaveh Vali, Mona Beaunoyer, Ann Aspirot
Division of Pediatric Surgery, Centre Hospitalier Universitaire Ste-Justine, Montreal, Quebec

Background/Purpose: Open transumbilical pyloromyotomy(UMBP) offers the advantages of the traditional open approach with improved cosmesis when compared to laparoscopic pyloromyotomy(LAP). Increased postoperative pain with open approaches has been suggested but was never assessed as a primary endpoint. The aim of this study was to determine if UMBP patients require more postoperative analgesia and have longer length of stay(LOS) than LAP patients.

Methods: All infants with hypertrophic pyloric stenosis treated by UMBP in 2008-2009 were matched with infants treated by LAP during the same period. Infants with comorbid conditions were excluded. Demographics, analgesia administered according to a pain scale, and length of stay were recorded. Statistical analysis was performed using the Fisher's exact test.

Results: Nineteen patients were included in each group (n=38). The groups were comparable in terms of demographics and duration of symptoms. Bupivacaine was injected intraoperatively in all UMBP and 89% of LAP infants. There was a trend toward increased acetaminophen use between LAP and UMBP infants (74% vs 63%;P=0,73) in the recovery room. On the ward, acetaminophen was given to UMBP infants significantly more frequently (89 vs 53%;P=0,03). There was no difference in opiates use between the two groups (3 UMBP vs 1 LAP;P=0,60). Median LOS was 2 days in both groups.

Conclusions: Post-operative pain following pyloromyotomy rarely requires opiates administration. Our study suggests that UMBP infants receive more acetaminophen than the LAP infants with no impact on LOS. A prospective study with a larger sample size should be undertaken to verify these findings.

Original Paper
Trainee Presentation

Senior Author: Ann Aspirot

Corresponding to:
Catherine Paris
3893 avenue Van Horne
Montreal, Quebec
Canada
H3S1R9
tel: (514) 345-4931
e-mail: Catherine.Paris@USherbrooke.ca

Ultrasonography (US) Is Useful In Predicting Thyroid Cancer In Children With Thyroid Nodules And Apparently Benign Cytopathologic Features

Dickens Saint-Vil [3], Jannette Saavedra [1], Celine Huot [1], Yvan Boivin [2] Guy Van Vliet [1], Cheri Deal [1], Nathalie Alos [1], Johnny Deladoey [1, 3]
[1] Department of Pediatrics, [3] Department of Surgery CHU Sainte-Justine
[2] CHUM. University of Montreal, Montreal, Canada

Background/Purpose:
Thyroid nodules are more often malignant in childhood than in adulthood and Fine needle aspiration biopsy (FNAB) and US are the 2 most frequently used diagnostic tools.

PURPOSE: To evaluate the usefulness of US in patients with FNAB suggestive of apparently benign thyroid nodules.

Methods:
METHODOLOGY: The medical records of 35 patients from 2001 to 2007 who underwent resection after having FNAB and US were retrospectively reviewed. Criteria suggestive of malignancy on US were: solid lesion, hypoechogeneity, central vascularization, irregular borders, and microcalcifications.

Results:
35 patients (29 females) with a mean age of 13.9 years underwent thyroid surgery. 14 FNAB(40%) were diagnostic of malignant disease with one false positive(7%). 21 FNAB were considered benign but 5 cases(24%) were false negative results. Patients with benign FNAB but at least 2 malignancy criteria on US (11) were promptly referred to surgery and had a higher malignancy rate(4;36%) than patients(10)with only one malignancy criteria(1;10%).

Conclusions:

US complements cytopathology in the evaluation of thyroid nodules in children and patients with at least 2 or more malignancy criteria on US and benign FNAB should be promptly referred for resection.

Original Paper

Senior Author: DICKENS SAINT-VIL

Corresponding to:
DICKENS SAINT-VIL
Surgery Department, 7th Floor, Building 9
CHU Sainte-Justine
3175, Côte Sainte-Catherine
Montreal, Quebec
Canada
H3T 1C5
tel: 514-345-4688
fax: 514-345-4964
e-mail: florence.terrien.hsj@ssss.gouv.qc.ca

A Prediction Rule For Lung Nodules: When To Biopsy

Belinda Dickie, Roshni Dasgupta
Cincinnati Children's Medical Center
Cincinnati, Ohio, USA

Purpose: Pediatric surgeons are often asked to biopsy lung lesions in children with cancer. The accurate diagnosis of a lung nodule has important prognostic value and helps guide chemotherapy and overall management of the patient. This study aims to develop a prediction rule on which factors most accurately predict the diagnosis of a malignancy in a lung nodule.

Methods:
A retrospective review of all pediatric patients with a diagnosis of cancer that underwent either thoracotomy or thoracoscopy for lung nodule resection between 1998-2007. Multi-variable logistic model was used to create a prediction rule. The model was validated by bootstrap methodology and with the Hosmer-Lemeshow goodness of fit test.

Results: 50 patients underwent surgical resection for removal of a lung nodule. Patients presented with lung nodules during work-up for metastasis or for routine surveillance. Patients were excluded if the lesion was a chest wall lesion; mediastinal lesion; a lobectomy was performed; or random wedge lung biopsies were performed for no specific lesion. In total, 21 thoracotomies (5 VATS converted to open - conversion to an open procedure was because of the inability to identify the lesion via thoracoscopy in all cases), and 48 VATS were performed for discreet masses seen on pre-operative imaging CT scans. The average size of lesions was 10.43 ± 7.08 mm.

The resection of the nodule was confirmed by examination by the surgeon or by frozen section. The model created found the most significant predictors for lesions to be cancer were lesions that were peripheral (OR 9.1), between 5-10 mm (OR 2.78), located within the RLL (OR 2.43), or in patients with osteosarcoma (OR 10.8), neuroblastoma (OR 3.05) or hepatocellular carcinoma (HCC) (OR 2.38).

Conclusions:
Lesions that are between 5-10 mm in size and peripherally located in patients with neuroblastoma, osteosarcoma, HCC, are most likely to be malignant. Use of a prediction rule can help guide clinical practice by determining which patients should undergo surgical resection of lung nodules and which patients may be closely observed with continued radiologic studies.

Original Paper

Senior Author: Roshni Dasgupta MD MPH

Corresponding to:
Roshni Dasgupta MD MPH
3333 Burnet Avenue
Cincinnati, Ohio
United States
45229
tel: 5136364371
fax: 5136367657
e-mail: roshni.dasgupta@cchmc.org

Impact of Prenatal Evaluation and Protocol-based Perinatal Management on Congenital Diaphragmatic Hernia Outcomes

David A. Lazar [1,2], Darrell L. Cass [1,2], Manuel A. Rodriguez [1,2], Saif F. Hassan [1,2], Chris Cassady [1,3], Yvette Johnson [4], Karen Johnson [4], Bella Belleza-Bascon [1,2], Oluyinka O. Olutoye [1,2]
[1] Texas Children's Fetal Center, Baylor College of Medicine, Houston, TX
[2] Division of Pediatric Surgery, Department of Surgery, Baylor College of Medicine, Houston, TX
[3] Department of Diagnostic Imaging, Texas Children's Hospital, Houston, TX
[4] Section of Neonatology, Department of Pediatrics, Baylor College of Medicine, Houston, TX

Background/Purpose: Although intuitive, the benefit of prenatal evaluation, parental counseling, and multi-disciplinary perinatal management for fetuses with congenital diaphragmatic hernia (CDH) is unproven. We compared the outcome of prenatally diagnosed CDH patients whose perinatal management was by a pre-defined protocol (PRE) with those who were diagnosed postnatally and managed by the same team (POST). We hypothesized that the outcome will be improved in CDH patients undergoing prenatal evaluation with perinatal planning.

Methods: The medical records of all patients with CDH between 2004-2009 at a single institution were reviewed. Patients were stratified by history of perinatal management, and data analyzed by Fisher's exact test.

Results: Seventy-three fetuses with CDH presented in the prenatal period and delivered at our facility (PRE), while 35 infants were transferred to our facility postnatally (POST). There were more high risk patients in the PRE group compared to the POST group as indicated by higher rates of ECMO use (36% vs 14%,p

Conclusions: Prenatally diagnosed CDH patients are a higher risk group as reflected by the increased use of ECMO, liver position, and need for patch-repair. Prenatal evaluation of CDH with multi-disciplinary perinatal management allows for improved outcome in this higher risk group despite a patient population with more severe disease.

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Sponsoring CAPS Member: David E. Wesson

Senior Author: Oluyinka O. Olutoye

Corresponding to:
Oluyinka O. Olutoye
6701 Fannin Street
Clinical Care Center 8th floor, MC CC650
Houston, Texas
United States
77030
tel: (832) 822-3135
fax: (832) 825-3141
e-mail: ooolutoy@texaschildrens.org

Challenges To Conducting Randomized Controlled Trials In Paediatric Surgery: A CAPS Members Survey

Khalid Al-Harbi [3],Julia Pemberton [1,3],Peter Fitzgerald [1,2,3]
[1] Department of Surgery, McMaster University
[2] McMaster Children's Hospital
[3] McMaster Pediatric Surgery Research Collaborative

Background/Purpose: Background/Purpose: The purpose of this study was to assess the knowledge base of Canadian Association of Paediatric Surgeons (CAPS) members in study design methodology of and challenges to conducting randomized controlled trials (RCTs).

Methods: A SurveyMonkey questionnaire on RCTs was emailed to CAPS members. A reminder email was sent 4 weeks later. Survey subsections included demographics, research experience, multiple choice questions (MCQs) on study design methodology, and a questionnaire on perceived challenges to conducting RCTs in paediatric surgery. All responses were kept confidential. Descriptive statistics, means, standard deviations and percentages were calculated where appropriate.

Results: 57 out of 62 respondents identified themselves as active CAPS members and their results were the focus of this survey. In total, 96.5% respondents had participated in peer-reviewed funded research. The type of research experience of the respondents included retrospective cohort studies (98.2%), case reports (85.5%) and RCTs (38.2%). 39 out of 62 respondents completed the MCQs subsection with a mean score of 64.58% (SD= 16.65). The major identified challenges to conducting RCTs included recruiting sufficient sample size, rarity of pathologies in the paediatric population, obtaining funding, and having sufficient research support staff.

Conclusions: Survey results demonstrate significant research engagement among active CAPS members. Adequate knowledge of study design methodology was demonstrated amongst respondents who answered the related survey subsection. Many of the challenges to conducting RCTs in paediatric surgery identified in this survey could be addressed with a national multi-centre collaborative approach.

Original Paper

Senior Author: Khalid Al-Harbi

Corresponding to:
Khalid Al-Harbi
62 Anderson Court
Ancaster, Ontario
Canada
L9G 4Z7
tel: (289) 239-9140
fax: (289) 239-9140
e-mail: alharbik@hotmail.com

The use of Thoracoscopic Thoracic duct ligation and pleurodesis for recalcitrant pleural effusions in Gorham's Disease

Roshni Dasgupta, Thomas H Inge, Alan Mortell
Cincinnati Children's Hospital Medical Center
Cincinnati, Ohio

We present the case of a previously well 13-year-old female who presented with severe shortness of breath to the emergency room. Chest x-ray revealed complete opacification of left hemi-thorax and significant mediastinal shift. Magnetic resonance imaging (MRI) revealed bony lesions within the rib, clavicle, multiple vertebral levels as well as lymphatic lesions within the spleen. Patient was initially managed with a thoracostomy tube. Pleural fluid was consistent with a chylous effusion; the patient also underwent biopsy of one of the bony lesions, which revealed lymphangiomatosis consistent with Gorham's Disease. The patient failed multiple attempts to control the chylothorax with non-operative measures such as total parenteral nutrition (TPN) and medium chain triglyceride feeds. Patient was subsequently taken to the operating room for a left thoracoscopy and pleurodesis and thoracoscopic ligation of the thoracic duct within the right chest. The patient subsequently stabilized and had significantly decreased output from the left chest and was able to have the chest tube removed. She was also placed on Sirolimus to aid in stabilization of her bony lesions. The patient is now 14 months post discharge and continuing to do well without reaccumulation of the pleural effusion and continues on Sirolimus therapy. For patients with recalcitrant pleural effusions, minimally invasive surgery with ligation of the thoracic duct may be beneficial in controlling chylothorax i n these difficult to manage cases.

Case Report

Senior Author: Roshni Dasgupta MD MPH

Corresponding to:
Roshni Dasgupta MD MPH
3333 Burnet Avenue
Cincinnati, Ohio
Canada
45229
tel: 5136364371
fax: 5136367657
e-mail: roshni.dasgupta@cchmc.org

Central Line Database: An Important Issue In Quality Assurance

Juan Bass [1],Jacqueline Halton [2],Youenn Drouet [3], Andy Ni [3], Nick Barrowman [2,3]

[1] Department of Surgery,[2] Department of Pediatics,[3] Clinical Research Unit, Research Institute.
Children's Hospital of Eastern Ontario, Ottawa, Canada

Background/Purpose: Central line databases are important in reviewing factors that contribute to the longevity of implanted catheters and may lead to changes in surgical practice or medical management. The purpose of this study is to analyze the factors that affect the life of these devices.

Methods: In 1988, a central line database was created in our institution. Insertion and removal information of subcutaneous infusion ports (TID) and tunneled lines (TL) from October 1988 to January 2009 was analyzed. Comprehensive clinical data recorded during insertion included: age, indication for insertion, type and size of catheter, insertion site, port location, catheter tip location, and surgeon. Reason for removal was also recorded. Univariate and multivariate Cox's proportional hazard regression model was used to identify clinical factors that predict line survival

Results: Information was available for 1167 central line insertions in 858 patients 648 (TID) and 509 (TL). Univariate analysis detected longer survival in: TID longer than TL ($p<0.0001$) Shorter survival in lines used for TPN ($p<0.0001$). Multivariate model detected: Hazard of removal for TID is 0.31 that of TL ($p<0.0001$)

Conclusions: Multiple confounding factors were encountered, however, the single most important factor in line survival that is influenced by the surgeon is catheter tip location in the SVC/RA.

Original Paper

Senior Author: Juan Bass

Corresponding to:
Juan Bass
Dept of Surgery, CHEO, 401 Smyth Rd
Ottawa, Ontario
Canada
K1H 8L1
tel: (613) 737-7600
fax: (613) 738-4849
e-mail: bass@cheo.on.ca

Ethanol Lock Therapy To Reduce The Incidence Of Catheter-Related Bloodstream Infections (Crbsi) In Home TPN Patients With Intestinal Failure: Preliminary Experience

Wales PW, Kosar C, Carricato M, Nicole de Silva, Lang K, Avitzur Y
The Group for Improvement of Intestinal Function and Treatment (GIFT)
The Hospital for Sick Children, Toronto, Canada.

Background/Purpose:
Catheter-related bloodstream infections (CRBSI) cause morbidity and mortality in intestinal failure patients dependent on parenteral nutrition (PN). Recurrent sepsis is also a major cause of intestinal failure associated liver disease. Ethanol lock of central venous catheters (CVC) has been suggested to decrease CRBSI but limited paediatric data is available.

Methods:
Home PN patients managed by our intestinal rehabilitation program with a history of at least one CRBSI were initiated on an ethanol lock protocol. Ethanol (70%) was instilled into the catheter for a minimum of 4 hours. Infection rates (per 1000 catheter days) before and after initiation of the ethanol locks were compared using a Paired T-test.

Results:

10 patients [4 females; median age 44 months (range 31-129 mo)] began ethanol lock therapy after a total number of 82 CRBSIs (37 Gram positive, 30 gram negative and 24 fungal) with a mean of 10.2±6.2/1000 catheter days. To date, patients have received ethanol lock for an average of 227±64 days with only 3 CRBSI occurring [CRBSI rate of 0.9±1.8/1000 catheter days [p=0.005]. CVC replacements decreased from 5.6/1000 days to 0.3/1000 days post therapy (p=0.038). Ethanol lock therapy was discontinued in 2/10 patients due to catheter thrombosis.

Conclusions:

Preliminary results demonstrate a significant decrease in the number of catheter infections with implementation of a 70% ethanol lock protocol. Catheter thrombosis may be a limitation that needs to be addressed. With such a dramatic therapeutic effect and important clinical implications, a randomized trial is feasible and should be performed.

Original Paper
Trainee Presentation

Senior Author: Paul W. Wales

Corresponding to:
Paul W. Wales
The Hospital for Sick Children
Rm 1526, 555 University Avenue
Toronto, Ontario
Canada
M5G 1X8
tel: (416) 813-7340
fax: (416) 813-7477
e-mail: paul.wales@sickkids.ca

Outcome Of Peripherally Inserted Central Venous Catheters In Surgical And Medical Neonates

Njere I [1], Islam S[1], Parish D [1], Kuna J [1], Keshtgar AS [1,2]
[1] University Hospital Lewisham, NHS Trust, London, United Kingdom
[2]Evelina Children Hospital, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Background/Purpose: Introduction: Vascular access has become an important aspect of neonatal care. The use of peripherally inserted central venous catheters (PICC) has become common in recent years.

The aim of this study was to review PICC complication rates and possible predictors of PICC infection in a neonatal intensive care unit (NICU).

Methods: This was a prospective study of 218 surgical and medical neonates, who had 294 PICC lines for parenteral nutrition and venous access between January 2006 and June 2009. Criteria for catheter related sepsis were positive blood cultures (peripheral/central) and/or a positive catheter tip culture after removal in the presence of a clinical suspicion of line sepsis.

Results: 132(169 lines) were medical and 86(125 lines) were surgical neonates. Overall PICC line complication rate was 111(38%) including infection 62(21%) i.e. 17 infections per 1000 catheter days, extravasation 45(15%) and blockage 4(2%). Surgical neonates had an infection rate of 24.8% versus 18.3% for medical neonates, p

Conclusions: The majority of neonates do not have PICC complications, however there is a hidden morbidity related to PICC. The length of catheter stay is the only predictor of PICC infection. All PICC should be closely monitored and complications audited for comparison to other standard practices.

Original Paper
Trainee Presentation

Sponsoring CAPS Member: Sarah Bouchard

Senior Author: Alireza S. Keshtgar

Corresponding to:
A S. Keshtgar
Dept. of Paediatric Surgery
University Hospital, Lewisham, NHS Trust,
Lewisham High Street, London SE13 6LH, United Kingdom
London,
United Kingdom
SE13 6LH
tel: 0208333 3000
fax: 0208 690 1963
e-mail: ali.keshtgar@uhl.nhs.uk

Primary Sutureless Closure Of Gastroschisis Using Negative Pressure Dressing (Wound Vacuum).

Ashwin Pimpalwar, Saif F. Hassan
Baylor College of Medicine, Texas Children's Hospital
Houston, Texas. USA

Background/Purpose: This approach involves initial preformed Silo application with subsequent bedside sutureless closure of the defect using a negative pressure dressing. The advantages of this gentle approach are: simple bedside closure without intubation, paralysis, or ventilation. The risks of barotrauma, abdominal compartment syndrome, acidosis, bowel infarction and necrotizing enterocolitis are reduced.

Methods: Records of 15 newborns from March2008-Feb2010 who underwent primary gastroschisis repair using the above technique were retrospectively reviewed. Outcome criterion like time on ventilator, time to initiation of feeds, time to full feeds, time to discharge from NICU, complications were recorded.
Technique
An appropriate size silo is placed at the bedside soon after birth. The silo is reduced over 3-5 days. After reduction silo is removed at the bed side and the wound is approximated closed using steristrips. A small hole is cut in the center of the steristrips and a wound vaccum is placed. This dressing is removed after 14 days. Complete closure of gastroschisis is achieved.

Results: Time on ventilator: 8 patients no ventilation, 3 for 1 day, 2 for 2-5 days and 2 for > 5 days.
Time to initiate feed media(13 days)range(6-61 days)
Time to full feeds median(20 days)range(12-91 days)
Time to discharge median(24 days)range(21-131 days)
Complications: 3 patients had tiny and 1 patient had a 1.5 cm umbilical hernia at last follow up.
Follow up: Median (227days) range (0-528 days)

Conclusions: Above technique is easily reversible, does not need intubation/ventilation, avoids a trip to the OR, has minimal to no complications and provides excellent cosmetic results.

Original Paper

Sponsoring CAPS Member: David Wesson

Senior Author: Ashwin Pimpalwar

Corresponding to:
Ashwin Pimpalwar
3765 Drummond street
Houston, Texas
United States
77025
tel: (713) 444-5212
e-mail: ashwinpgi@hotmail.com

The Management Of Bladder Exstrophy In A Resource-Poor Setting – A Role For Urinary Diversion?

Robert Baird [1], Frehun Ayele [2], Safwat Andrawes [3], Dan Poenaru [2]
[1] Division of Pediatric Surgery, The Montreal Children's Hospital, McGill University, Montreal, Quebec, Canada
[2] Bethany Kids at Kijabe Hospital, Kijabe, Kenya,[3] Coptic Hospital, Nairobi, Kenya

Background/Purpose: The management of bladder exstrophy in a resource-poor setting affords unique challenges. We compare primary closure with complete urinary diversion, and hypothesize that the latter may be advantageous for patients with delayed presentation.

Methods: All patients treated for exstrophy from March 2004 to March 2010 at a tertiary care hospital in East Africa were included for analysis. Patients were grouped according to whether they received a primary repair or urinary diversion Variables investigated included continence rates and complications. Categorical data was analyzed using Chi square, with p

Results: Thirty-one patients were included for analysis (5 female, 26 male), see table. Of the twenty patients undergoing primary closure, only two progressed to bladder neck reconstruction, with one achieving continence. Eleven patients underwent complete urinary diversion via modified uretero-sigmoidostomy (Mainz I), with all achieving daytime continence.

	Age at time of operation (years, range)	Wound breakdown (#,%)	Other complications	Additional Procedures required (#,%)
Group 1 (n=20) Primary Closure	1.6 (0-11.2)	11 (55%)	1 (Death)	11 (55%)*
Group 2 (n=11) Urinary Diversion	8.6 (3.9-17.5)	3 (27.3%)	1 (Vas injury)	2 (18.2%)*

Comparison of primary closure and urinary diversion for the management of bladder extrophy
*p<0.05

Conclusions: The management of bladder exstrophy depends on the patients' potential to achieve urinary continence, which is jeopardized by delayed presentation. Our study demonstrates improved outcomes after urinary diversion as compared to primary closure for this population. Although concerns remain about the potential for the development of subsequent malignancy after diversion, this strategy may have applicability in a resource-poor setting

Original Paper
Trainee Presentation

Senior Author: Dan Poenaru

Corresponding to:
Dan Poenaru
BethanyKids at Kijabe Hospital
Box 20
Kijabe, Other
Kenya
00220
tel: (254) 20-3246500
fax: (254) 721-726639
e-mail: dpoenaru@gmail.com

Percutaneous Drainage Or Immediate Operation For Perforated Appendicitis: A Decision Analysis

Roshni Dasgupta[1], Myriam Hunink[2].
[1] Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA , [2]Erasmus University, Rotterdam, Netherlands

Background/Purpose:
Many children who present to the emergency room with perforated appendicitis and a clinical history greater than 72 hours are treated with initial non-operative management, which includes parenteral antibiotics and percutaneous drainage followed by interval appendectomy.

PURPOSE: To use decision analytic methods to determine the best option for pediatric patients with perforated appendicitis.

Methods:
A Bayesian decision tree was created to analyze the costs of competing strategies for treatment of children with perforated appendicitis. The model was designed from a societal perspective that included direct and indirect costs (lost wages) of parents

Base case cost data was determined from HCUP Kids database and probability estimates were derived from the literature. One-way and probabilistic
Monte Carlo sensitivity analysis was performed for all variables in the model.

Results:
The costs immediate surgery strategy for perforated appendicitis of $9930 ± 1934 and the costs of percutaneous drainage $20254 ±3976. The prediction of immediate surgery was robust to one way and probabilistic sensitivity analyses. A
Monte Carlo simulation model which incorporated parameter distribution and random chance of 100 000 simulations also showed that the strategy of immediate surgery was preferred

Conclusions:
The preferred strategy in this decision analysis was immediate surgery for all children with perforated appendicitis with a clinical history greater than 72 hours but less than one week. This represents a significant paradigm shift from current practice. If widely implemented it may represent hundreds of millions dollars saved from both a healthcare and societal cost perspective and should be studied further in a randomized controlled study.

Original Paper

Senior Author: Roshni Dasgupta MD

Corresponding to:
Roshni Dasgupta MD
3333 Burnet Avenue
Cincinnati, Ohio
United States
45229
tel: 5136364371
fax: 5136367657
e-mail: roshni.dasgupta@cchmc.org

Ketorolac Use In Post Operative Neonates Under 3 Months Of Age

Kartik A. Pandya ,B. Stephen Prato ,Baird Mallory
Maine Medical Center, Portland Maine

Background/Purpose: To assess the blood transfusion requirements and renal insufficiency in post-surgical neonates ≤3 months receiving ketorolac.

Narcotic analgesia in neonates is complicated by cardio-respiratory and central nervous system depression (Madadi P, 2008). Ketorolac, an intravenous non-steroidal anti-inflammatory drug which does not cause cardio-respiratory depression, is equianalgesic to opiates but associated with gastrointestinal hemorrhage and acute renal failure in some circumstances (Burd & Tobias, 2002) (Lieh-Lai, Kauffman, Uy, Danjin, & Simpson, 1999) (Kallanagowdar C, 2006), (Feldman, Kinman, & Berlin, 1997).

Methods: Using billing data and laboratory values we analyzed transfusion requirements and creatinine values in 493 neonates ≤ 3 months over 5 years following abdominal surgery, of which 100 received ketorolac.

Outcome differences were assessed using student's T-Test for continuous variables and Fisher's exact test for categorical data. Results are presented as mean creatinine level and transfusion rate, with 95% confidence intervals. P values

Results: The "baseline" transfusion rate was approximately 4.3% (CI95% 2.7%-6.9%, n = 393) in the non-ketorolac group. The post-operative ketorolac group's transfusion rate was 4.0% (CI95% 1.2%-10.2%, n = 100) with a p = 1.0.

In the group given ketorolac the average pre- and post-operative creatinine levels were 0.362 (SD ± 0.196) and 0.338 (SD ± 0.166) respectively with p = 0.107 and CI95% -0.006-0.054.

Conclusions: This is the first and largest study of its kind to show no significant increases in blood transfusions or creatinine in neonates ≤3 months of age after abdominal operations who received ketorolac.

Original Paper
Trainee Presentation

Senior Author: Baird Mallory

Corresponding to:
Kartik Pandya
Maine Medical Center
22 Bramhall St.
Dept. General Surgery
Portland, Maine
United States
04102
tel: 813-389-3004
fax: 207-662-6389
e-mail: pandyk@mmc.org