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MP-06.01
Dysfunctional Voiding Symptom Score Performance In Pediatric Patients with Dysfunctional Voiding Enrolled in Randomized Trial Investigating Biofeedback

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Introduction and Objectives: The Dysfunctional Voiding Symptom Scale (DVSS) has been increasingly utilized as an objective measurement tool for patients with dysfunctional voiding. Herein we evaluate the responsiveness of this scale compared to objective measures of uroflowmetry pattern and post-void residual urine volume (PVR) in children enrolled in a prospective randomized study

Methods: Data before and after biofeedback for 61 children diagnosed with dysfunctional voiding (strictly including patients with EMG activity during voiding phase of flow curve) was extracted. Enrolment, evaluation and intervention were conducted based on protocol and standardized to include DVSS score, uroflowmetry, and PVR before and after biofeedback

Results: Within the study there were 18 boys and 43 girls with a mean age of 10.5 years. Twenty five (40%) of patients had a history of urinary tract infections, and 33 patients (54%) complained of incontinence prior to therapy. In comparison with those patients that did not show improvement, patients following biofeedback that displayed a normal bell shaped uroflowmetry curve had a significant decrease in their DVSS (-3.45, p=0.001). Similarly, children with normal PVR (<20 mL, ICCS criteria) after biofeedback also displayed a significantly lower DVSS (-3.26, p=0.05).

Conclusions: Our results suggest that within a randomized trial the DVSS score is responsive to improvement as documented by objective measures of uroflowmetry and PVR parameters. These significant findings help validate the expanded use of this scale in this patient population, and provide further support of its value as a research tool for studies addressing children with dysfunctional voiding

MP-06.02
A Reliability Assessment of the International Vesicoureteric Reflux Grading System

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Background: The International Reflux Committee proposed a grading system for Vesicoureteric Reflux (VUR) in 1985, which has been used extensively in everyday practice and research studies. The grading system is based on subjective morphologic assessment of the collecting system appearance during voiding cysto-urethrogram (VCUG). In spite of wide spread use, based mainly upon face validity, inter and intra rater reliability of this tool are not known. A tool cannot be considered valid unless it is reliable.

Objectives: To estimate inter and intra rater reliability of the International Grading System for VUR.

Methods: A series of twenty-eight VCUG studies were selected. Electronic images were assembled in a file presentation in random fashion. Four pediatric radiologists, five pediatric urologists and four senior urology residents graded the studies. The images were then shuffled in a random fashion and re-rated 7 days later (total of 728 observations). Cohen weighted kappa statistics was used to determine inter and intra rater reliability. Subgroup analysis was then performed comparing the variability amongst the three groups of raters and different grades.

Results: The average inter rater reliability was 0.51 (+/- 0.01). Agreement in subgroups was 0.61 for Urologists, 0.56 for residents and 0.52 for Radiologists. The lowest agreement was shown in grade III (0.36) and the highest for Grade I (0.95). The Intra rater reliability was 0.86 (+/- 4.5).

Conclusions: The International Grading system for VUR possesses low inter rater reliability especially for moderate degrees of VUR. The intra rater reliability is high. Modification of this system may improve its reproducibility and clinical value.

MP-06.03
Pathological Analysis of Testicular Remants in Nonpalpable Undescended Testis

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Introduction and Objective: Approximately one fifth of undescended testes (UDT) are impalpable. Surgical exploration often reveals a small testicular remnant distal to the internal inguinal ring. There is controversy in the literature as to whether these remnants contain any viable testicular tissue and whether they should be excised. Furthermore, it is unclear whether inguinal exploration is warranted when the vas deferens and vessels are visualized exiting the internal inguinal ring during laparoscopy. We reviewed the pathology of testicular remnants found distal to the internal inguinal ring on surgical exploration to determine the incidence of viable testicular tissue.

Methods: Institutional review board approved our study. Between January 1st, 2000 and December 31st, 2009, 210 orchiectomy specimens were sent to pathology at our institution. We reviewed the histology and operative reports of 98 consecutive specimens that were excised during exploration for nonpalpable UDT. Nubbins were defined as remnants of tissue identified with a blind ending spermatic cord and consistent with vanishing testis syndrome. If laparoscopy was performed, the status of the vas, vessels, and internal inguinal ring were recorded.

Results: 69 nubbins and 29 atrophic testes were identified at the time of surgery for non-palpable undescended testis. All 69 nubbins were identified distal to the internal inguinal ring during inguinal/scrotal exploration. 7.2% (5/69) of nubbins identified contained seminiferous tubules while 2.9% (2/69) contained viable germ cells. In addition to nubbins, 29 atrophic testes were identified and removed. Of these 7 were intra-abdominal with all having seminiferous tubules and 6 having viable germ cells. The remaining 22 atrophic testes were identified distal to the internal inguinal ring. 36.4% (8/22) had seminiferous tubules and 27.3% (6/22) had viable germ cells. A subgroup analysis of all 41 cases with initial laparoscopy found that 8.8% (3/34) of cases with both vas deferens and vessels exiting the internal inguinal ring had viable germ cells and seminiferous tubules.

Conclusions: The incidence of viable testicular tissue in all remnants removed at the time of inguinal/scrotal exploration for non-palpable UDT is 15.4% in our series. This data supports inguinal/scrotal exploration despite an impalpable testis when the vas deferens and vessels are visualized exiting an internal inguinal ring during laparoscopy.

MP-06.04

Preputial Grafts Use during Staged Hypospadias Repair in Children With Proximal Hypospadias snd Severe Ventral Curvature

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Introduction and Objectives: Staged repair using preputial grafts has become a popular option for proximal hypospadias with severe curvature. Corporal ventral lengthening with dermal grafts or other materials are often utilized for correction of severe penile curvature but this precludes superposition of free grafts during the first stage urethroplasty. We report the preliminary results of a surgical strategy aiming to overcome this limitation that allows concurrent corporeal ventral lengthening to first stage graft urethroplasty

Methods: The medical records of patients who underwent staged preputial graft urethroplasty for primary proximal (perineal or penoscrotal) hypospadias with severe curvature were retrospectively reviewed. All patients received pre operative IM testosterone. The decision to divide the urethral plate was made after complete penile degloving and distal urethral mobilization. Multiple deep transverse incisions of the tunica albuginea (exposing the erectile tissue) from 3 to 9 o'clock position were performed, if intrinsec curvature persisted after division of the urethral plate. An inner preputial graft was then harvested and quilted directly over the incised albuginea and a tie over dressing applied. The second stage was done approximately 6 months later, when the graft was tubularized and covered with a second layer of tunica vaginalis or dartos flap. Prior to the tubularization an erection test was repeated and residual ventral curvature corrected with dorsal plication, if necessary. Age, need for plication in the second stage and complications were recorded.

Results: 30 patients completed the two stages from 2006 to 2010. Mean age at the first stage was 18 months (range 10m-11y) and mean interval between stages was 8 months (range 6-11) Mean follow up after the second stage was 16 months (range 6-36). All grafts took well and were suitable for tubularization. Dorsal plication was required for minor residual ventral curvature in the second stage for 14/30 patients. Relevant complications after the second stage included a long urethral stricture secondary to balanitis xerotica obliterans in one patient and severe ventral skin retraction after second stage in another. Other complications included: 2 small urethrocutaneous fistulas, 2 glans dehiscence and 2 recurrence of mild curvature. The remaining 22 cases have no ventral curvature and excelent cosmetic results, with a slitlike meatus placed in the glans. There were no cases of urethral diverticula.

Conclusion: Our initial results suggest that the use of deep ventral transverse corporeal incisions for correction of severe curvature allows first stage graft urethroplasty concurrent to ventral lengthening. The cosmetic and functional results with this approach are satisfactory with an acceptable complication rate.

MP-06.05

Urinary Tract Findings in Children with Recurrent Urinary Tract Infections and History of Hypospadias Surgery

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Introduction and Objectives: Hypospadias repair is a fairly common procedure but is associated with surgical (stenosis/fistula/diverticulum) and non surgical (UTI) complications. Little is known about the incidence of recurrent UTI and associated urinary tract abnormalities following hypospadias repair.

Methods: We retrospectively reviewed the records of patients who had 2 or more culture proven urinary tract infections following hypospadias repair conducted between 1998 and 2009. Age at time of repair, severity of hypospadias, surgical technique, postoperative complications and imaging studies were collected

Results: Our study population includes 43 boys diagnosed with recurrent UTI following hypospadias repair. The mean age at repair was 14 months (6-24). Median follow-up was 6.5 yrs (1.5-11). Initial technique was tubularized incised plate (TIP) (20), transverse island flap (TVIF) (15) and staged urethroplasty (8). Initial meatal location was proximal in all of the TVIF and stage repairs compared to only 1 proximal meatus in TIP group. A postoperative VCUG was performed in 58% (25/43) with various abnormalities being identified: suspected distal stenosis (17, 40%), reflux (9, 23%), urethral diverticulum (6, 16%), and enlarged utricle (5, 12%). Ultrasounds were performed in 90% of patients identifiying mild hydronephrosis (9, 23%) and post void residual greater than 20 mL (ICCS criteria; 10, 26%) identified. DMSA was performed in 8/43 patients identified focal defects in 5 patients. Urethral diverticulum (40%, 7/15, p=0.001)) and urethral fistulas (40%, 7/15, p=0.001) were significantly more common in patients undergoing an initial TVIF technique. Conversely, post operative elevated PVR (40%, 8/20, p=0.032) and vesicoureteral reflux (50%, 10/20, p=0.025) were significantly more common following TIP repair. No significant differences where found within the staged repair group.

Conclusions: Although the pathophysiology of recurrent UTI is multifactorial, its incidence in patients after hypospadias repair is higher than normal population. This incidence may vary on surgical technique, for instance patients who underwent TIP repair may potentially have partial obstruction leading to elevated PVR and VUR. On the contrary patients experiencing recurrent UTI following a complicated TVIF repairs likely had increased urethral colonization secondary to urethral diverticulum or fistulas. Therefore, recurrent post-hypospadias surgery UTI should prompt a specific assessment for potentially functionally relevant post-surgical anatomic abnormality.

MP-06.06

Determinants of Surgical Complications in Pediatric Renal Transplantation

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Objective: Surgical complications contribute significantly to the overall morbidity of pediatric renal transplantation. Our primary objective was to develop an explanatory model of the determinants of surgical complications following pediatric renal transplantation.

Methods: We performed a retrospective review of 92 pediatric renal transplants performed at BC Children's Hospital in Vancouver between 1996 and 2008. The incidence of surgical complications was correlated with several pre-transplant factors through univariate then multivariate analyses. Pearson product moment correlation coefficient was used to determine the level of association between all continuous variables.

Results: The overall incidence of surgical complications was 34.8%. Ureteric complications were seen in 8.7% of patients. The incidence of lymphocele was 4.3%. Vascular complications occurred in 8.7% of patients, and delayed graft function was seen in 8.7% of patients. Vascular anastamotic time was significantly associated with the incidence of complications in our univariate analysis (p<0.05). Recipient age, recipient sex, living versus cadaveric donor graft, duration of surgery, recipient body mass index, surgical start time of day or night and presence of a ureteric stent were not associated with the incidence of complications (p>0.05). Our multivariate logistic regression model demonstrated that vascular anastamotic time was the only variable significantly associated with complications (p<0.05).

Conclusions: In our series, the incidence of surgical complications is best predicted by vascular anastamotic time. Interestingly, several other variables of theoretical importance including living vs cadaveric graft, timing and duration of surgery did not affect the incidence of complications.

MP-06.07

Tubularized Incised Plate Urethroplasty: To Graft or Not to Graft?

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Introduction and Objectives: Dorsal inlay graft urethroplasty (DIGU) is a modification of the original tubularized incised plate (TIP) that entails placing a graft in the defect created in the urethral plate after the incision. Although (DIGU) is an accepted technique for urethroplasty, only few studies specifically report on the outcomes of this technique. Hereby we sought to review the first 50 cases at our institution.

Methods: DIGU was performed for primary and redo hypospadias repair. In primary cases the procedure is reserved for very unfavourable urethral plates characterized as flat, non supple or fibrotic, whereas in redo cases the technique is used a urethral plate is considered salvageable. Medical records of all children who underwent hypospadias surgery from January 2007 to January 2010 were reviewed to identify cases that a DIGU was performed. Demographic data, meatal position, graft type complications and reoperations were recorded.

Results: A total 860 hypospadias surgeries were identified including 53(6%) DIGU (32 primary and 21 redo cases) 3 cases were not included in the study due to lack of follow up. In the primary cases the average of age was 25 months (range 10-17) and the average follow up 19.2 months (range 3-44) and the meatal position was: distal 10, midshaft 10 and proximal 10. For the redo cases the average of age was 89 months (range 24-208) and the average follow up 17.2 months (range 3-36) and the meatal position was: distal 8, midshaft 4 and proximal 8. The tissue used for the graft in the redo cases were; 11 preputial skin, 8 buccal mucosa and in one the epithelium from a urethral diverticula. Six complications (20%) were identified in the primary group (2 meatal stenosis; 1 fistula and 3 dehiscence). The stenosis were corrected by dilation in one patient and meatoplasty in the other, the patient who developed a fistula is waiting for repair and the three dehiscence underwent one redo tip, one redo dorsal inlay and one staged buccal mucosa repair. In the redo group six complications were identified (30%) (2 fistulas, 1 dehiscence and 3 stenosis) and required 2 meatoplasty, 1 dilation, 2 fistulas repair and 1 redo operation.

Conclusion: DIGU is a viable technique for primary and redo hypospadias repair The relatively high complication rate identified is related to highly selected cohort of with unfavourable pates or redo operations.

MP-06.08

Association of Nutcracker Phenomenon in Patients who Underwent a Microsurgical Varicocelectomy in the Hospital for Sick Children

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Introduction: Varicocele, defined as abnormal dilatation of the pampiniform plexus and testicular veins, is noticed in a small percentage of adolescents and shows a predilection for the left side. Despite a growing body of data dealing with treatment, its aetiology remains poorly understood and under-investigated. Herein we present data on ultrasound evaluation of children scheduled to undergo varicocelectomy, addressing the potential association with entrapment of the left renal vein between the aorta and superior mesenteric artery –the so-called "nutcracker phenomenon" (NCP).

Methods: In a prospective fashion over a 3-year period (2007-2010), a total of 17 teenagers underwent microsurgical varicocelectomy, and systematically underwent preoperative Doppler evaluation of their abdominal vessels. Collected data included age, indication for surgery, weight, testicular volume discrepancy and varicocele grade. Patients were divided in two groups; those with NCP (group A), and without Doppler anomalies (group B).

Results: A total of 10 patients (58.8%) were found to have sonographic evidence of the NCP. Age at surgery was 13.8+/-1.92 years (range 11-17); similar in both groups (A: 13.6 and B: 14 years, $p>0.05$). Most patients (15/17, 88.2%) had grade III varicocele, the remainder had grade II (one patient in each group). The average weight in group A was lower (51 Kg) than group B (58.3 Kg), $p<0.05$. Indication for surgery was size discrepancy in all patients but one who presented with recurrence after embolization (group A). All procedures were done on the left side. Postoperatively, most (15/17) patients experienced post-surgical catch-up growth, with no statistical difference between the groups. There were no atrophy or complications in this series.

Conclusions: An important numbers of teenagers with clinically significant varicoceles have sonographic evidence of the NCP, preferentially seen in patients of lower weight. These findings provide further insight into possible differences in aetiology, which may be of clinical importance. Greater attention to the association and implications of the NCP seems warranted.

MP-06.09

Study Comparing Radiological Percutaneous Embolization and Subinguinal Surgery for the Treatment of Adolescent Varicocele

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Objectives: This retrospective study compared the success and complication rates of percutaneous embolization (PE) and subinguinal varicocelectomy (SV) to determine the best treatment option for adolescent varicocele.

Methods: We reviewed all cases of treated varicoceles between 2003 and 2010 at our center. Thirty-one patients were identified and the initial treatment was PE for 16 and SV for 15 patients. A total of 38 interventions were performed for these patients. We reviewed patient's age at diagnosis and at treatment, indications, varicocele grade, success of first and second interventions and related complications.

Results: Treatment indications were: significant testicular asymetry (65%), symptomatic varicocele (19%), high grade (6%) and unknown (10%). Mean follow-up was 12 months (range: 2-54 months) and was made by physical examination and/or Doppler ultrasound in 80% of the patients. The mean grade was 2.7/3 in the PE group and 3/3 for the SV group. Failure at first PE was 56% (9/16), including one immediate failure because of atypical varicocele drainage, but only 25% (4/16) were symptomatic. In the SV group, the recurrence rate was 20% (3/15) at first surgery and was 13% (2/15) for symptomatic recurrences. The mean interval to symptomatic recurrence after first intervention was 11 months with PE and 9.7 months for SV. When considering all interventions, PE group recurred more lately, with 4 recurrences after 2 years compared to none in SV group. Three patients who were initially treated by PE underwent a second PE and none recurred. The one with atypical varicocele drainage was cured by surgery. Two patients who recurred after SV underwent a second intervention (1 PE, 1 SV) and both recurred. No complication occurred in the PE group. Hydrocele rate was 17% after initial or redo SV and 2 were treated surgically. Other surgical complications (22%) were managed medically and included 1 testicular atrophy. Only 3/16 patients in PE group underwent a second intervention compared to 4/15 in the SV group when we included interventions for recurrences and complications.

Conclusion: Despite the fact that recurrence rate is more common with embolization we think it is a good alternative as initial treatment because of the high rate of surgical complications including the risk of hydrocele and the risk of testicular atrophy. However, the different options should be exposed to the patient and his parents including the risks and benefits of each.

MP-06.10

Surgical Management of Non-Palpable Testes

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Introduction and Objective: Our study aims at evaluating the outcome of surgical management of non-palpable testes in our institution.

Methods: Medical records of all patients who underwent laparoscopic exploration for the assessment of non-palpable testis between 1996 and 2009 were retrospectively reviewed. Overall, 95 records were examined yielding a sample of 108 non-palpable testes. Relevant data for each testis was collected, including age at surgery, presence of contralateral testicular hypertrophy, the initial location and size of the testis and type of surgical procedure. The post-operative status of the testis as determined at the last follow up was noted.

Results: The average age at surgery was 26 months. Bilateral cryptorchidism was seen in 19 (20%) patients of whom 13 had bilateral impalpable testes. Sixty-two (57%) of the undescended testes were on the left side. Contralateral hypertrophy was noted in 26 (27%) cases. Seventy testes (65%) were viable at exploration. Thirty-one nubbins (29%) were removed (7 scrotal, 17 inguinal and 7 abdominal). Seven testes (6%) were absent. Contralateral hypertrophy was significantly associated with absent testes or finding of a nubbin rather than a viable testis, 22/38 (58%) vs 4/70 (6%), (p<0.001). Open (n= 36) or laparoscopic (n= 14) orchidopexy with testicular artery preservation was possible in 50 testes (20 inguinal, 14 at the internal ring, and 16 abdominal) and single (n=10) or 2-stage (n=10) Fowler-Stephen procedure was performed in 20 testes (1 at the internal ring, 14 abdominal and 5 at the iliac vessels). There was a significant difference between the initial location of the testis and the surgical procedures selected (p<0.001). Mean follow up was 17 months. Of the 50 testes in whom the testicular artery was preserved, 7 were lost to follow up and 3 of the remaining 43 (7%) were atrophic. In contrast, one (5%) testis was atrophic after Fowler Stephen orchidopexy (p>0.83). The initial locations of the 4 atrophic testes in this series were 1 inguinal (1.6%) and 3 abdominal (4.8%), p>0.47.

Conclusions: The significant association between contralateral hypertrophy and absent testis or finding of a nubbin may be helpful in planning the operating room time. Testicular atrophy rate was similar in both artery sparing and Fowler-Stephens orchidopexies for non-palpable testes.

MP-06.11

Prospective Comparative Study of Polydimethylsiloxane vs Hyaluronic Acid Injection for Treatment of Vesicoureteral Reflux

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Introduction and Objectives: Treatment of vesicoureteral reflux (VUR) with endoscopic injection of a bulking agent is becoming the first line of treatment for low grade VUR. We prospectively compared the efficacy of two products commercialised in Canada.

Methods: Between January 2003 and May 2008, 180 patients (43 males, 137 females) with primary VUR were prospectively enrolled in a comparative study to be endoscopically treated with either polydimethylsiloxane (Macroplastique™) or hyaluronic acid (Deflux™). A total of 151 ureters were treated with Macroplastique™; their grade was I in 23 ureters, II in 39, III in 59, IV in 25 and V in 5. 133 ureters were injected with Deflux™; their grade was I in 8, II in 55, III in 46, IV in 21 and V in 3. Patients were followed with renal ultrasonography and voiding cystourethrography at 3 months.

Results: With Macroplastique™, VUR was fully corrected in 135 (89%) of 151 ureteral units. However, complete resolution of VUR was only recorded in 109 (82%) of 133 ureters treated with Deflux™. Obstruction was found in 3 ureters. Univariate and multivariate analyses did not allow the identification of any characteristics that could explain the significant difference in the success rate except the type of product used.

Conclusions: Endoscopic injection of polydimethylsiloxane gives in your hands a better success rate than hyaluronic acid. The rate of resolution obtained with Deflux™ was lower than the level recorded by other groups due to the inclusion of high grade VUR. The lower cost of polydimethylsiloxane makes it an interesting product.

MP-06.12

Native Nephrectomy in Preparation for Pediatric Kidney Transplantation

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Introduction and Objective: Native nephrectomy is performed to reduce risks to graft and recipient. The aims of this retrospective, single-center cohort study were to evaluate (1) indications, surgical approach and morbidity of peri-transplant native nephrectomy in children, and (2) effects of nephrectomy on clinical and biological parameters.

Methods: Between 1992 and 2010, 49/119 (41%) consecutive pediatric transplant recipients underwent unilateral (37%) or bilateral nephrectomy. Forty-seven percent of patients had underlying anomalies of the kidney(s) and urinary tract, 22% cystinosis, 12% focal segmental glomerulosclerosis and 6% congenital nephrotic syndrome. Main nephrectomy indications were polyuria (25%), large proteinuria (20%), polyuria and large proteinuria combined (18%), and recurrent urinary tract infection (23%).

Results: Clinically important complications, including peritoneal laceration, were documented in 10%. In polyuric and proteinuric patients, respectively, urine output decreased from (median) 3.95 to 2.26 mL/kg/h (-30%) and proteinuria from 160 to 100 mg/h/m2 (-40%) after unilateral nephrectomy (p=0.002). Bilateral nephrectomy normalized serum albumin, total protein and fibrinogen concentrations in 90, 75 and 50%, respectively. Incidence of graft thrombosis (2-3%) or early graft loss (6%) was similar in nephrectomized and non-nephrectomized cohorts.

Conclusions: Unilateral nephrectomy satisfactorily reduced urine volume, but not nephrotic-range proteinuria. Severe protein loss requires bilateral nephrectomy to normalize serum protein levels. Nephrectomized and non-nephrectomized patients experienced similarly rare early graft complications.

MP-06.13

Initial Endoscopic Treatment of All Ureteroceles?

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Objective: Ureteral duplication with ureterocele management remains a controversial subject for paediatric urologists. A systematic initial endoscopic approach has been adopted at our center since 2002. We wanted to compare outcomes for patients treated with this algorithm to the historical local experience.

Methods: We reviewed the charts of 141 children with ureteroceles who were treated either endoscopically or surgically (partial or total nephrectomy, reimplantation) between 1990 and 2010 at our center. Patients were divided according to ureterocele's localization (ectopic vs orthotopic), date and nature of initial intervention. The diagnosis and evaluation of ureteroceles were completed by ultrasonography, voiding cystourethrogram and nuclear renal scans.

Results: The mean age of the 141 patients at initial surgery was 20 months. The majority of children were girls (72%) and had duplex system (88%). In the group 1, before 2002 (79 patients), there were more post-natal diagnosis, more ectopic ureteroceles, preoperative vesicouretral reflux (VUR) and severe upper pole hydronephrosis than the group 2 (diagnosed after 2002 (62 patients)). The mean follow up was 42 months and 23 months for group 1 and 2 respectively. Ectopic ureteroceles treated endoscopically underwent secondary procedures in 61% and 36% for group 1 and 2 respectively. Orthotopic ureteroceles treated endoscopically underwent secondary procedures in 42% and 11% for group 1 and 2 respectively. There were also more de novo VUR in the group before

2002. For the various surgical groups, the rate of secondary procedure was between 0 and 27%.
Conclusion: Primary endoscopic treatment seems to be an appropriate option for children with clinically significant ureteroceles. The rate of secondary procedure is low even for ectopic ureteroceles. Finally, endoscopic approach has evolved and seems to offer better outcome in recent years.

MP-06.14

Acute Scrotum in Boys Less than 5 Years Old: 10 Year Experience at a Single Tertiary Care Centre

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Introduction: The acute scrotum is a urological emergency. Boys less than 5 years old fall between the bimodal age distribution of testicular torsion and therefore may be under-recognized and misdiagnosed when presenting with an acute scrotum. Our goal is to quantify and qualify the presentations of acute scrotum in young boys at our institution over 10 years and report clinical findings particular for torsion.
Methods: A chart review was performed on boys less than 5 years of age presenting to the Children's Hospital of Eastern Ontario emergency department with an acute scrotum between January 1st 2000 and December 31st 2009. Clinical factors were identified that differentiated patients with and without the final diagnosis of testicular torsion.
Results: 77 acute scrotum presentations were reviewed with a mean age at presentation of 23 months (SD=19.4).

Testicular torsion was identified as the final diagnosis in 9/77 (12%) of the cases with a median 12-hour onset of symptoms. These patients had left-sided (100% p=0.0004), severe pain (56%, p=0.03), horizontal testicular alignment (43%, p=0.0012) and decreased flow on ultrasound (100%, p<0.0001) when compared to those without torsion. Orchiectomy was performed on 67% of these boys with torsion and this may be due to longer delays to medical assessment secondary to the less-recognizable clinical presentation in this age group.
Conclusion: Testicular torsion can occur in boys less than 5 years old with an acute scrotum and we have identified several clinical factors that are more common in torsion cases. These young boys present later than older boys with torsion and salvage rates are therefore lower. Parental education may benefit these children by reducing delays to treatment.

MP-06.15

Prenatal Diagnosis of Small Omphalocele with Umbilical Bladder Evagination

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Introduction: With advances in prenatal ultrasonography, accurate in utero diagnosis of congenital abnormalities has increased. Although small omphalocele with umbilical evagination of the bladder has been described antenatally, little is known about its pathogenesis or prenatal evolution. We present what we believe to be the first case series to document the fetal ultrasound appearance of this entity, which consists of an hourglass deformity of the bladder with a large superior component extending into the umbilical cord (Figure 1).
Materials and Methods: Retrospective review of case records at our institution from 2008 to 2010 identified three patients presenting with the fetal bladder hourglass deformity and subsequent omphalocele with bladder evagination/fistulization at birth (Figure 2).
Results: All patients underwent surgical intervention within the weeks of life for omphalocele closure and excision/closure of the evaginated bladder. Pathology revealed mildly inflamed bladder mucosa and normal detrusor (without urachal components) in all specimens. Spontaneous, complete voiding and adequate bladder capacity as judged by voiding cystourethrogram were noted in all patients post-operatively.

Fig. 1. MP-06.15

Fig. 2. MP-06.15

Conclusion: Omphalocele with umbilical bladder evagination can be accurately diagnosed by prenatal ultrasonography. It can also be successfully managed by early operative intervention with little or no long-term morbidity for the child. This has implications for perinatal counselling. Based on serial imaging and histopathology, the pathogenesis appears to be more consistent with a herniation of the dome of the bladder into the umbilical cord rather than urachal persistence.

MP-06.16

Hydronephrosis in Children with Abdominal and Pelvic Neoplasia: Outcome and Survival Analysis in a Single Center Pediatric Oncology Series

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Introduction and Objectives: The aim of this study was to ascertain the incidence, outcome and survival in pediatric patients with hydronephrosis related to abdominal or pelvic neoplasms.
Materials and Methods: We conducted a retrospective review of the Hospital for Sick Children's oncology database between January 1995 and November 2009. All children with intra-abdominal (non-renal) and pelvic neoplasms had their charts reviewed.
Results: Three hundred and sixty-six patient charts were reviewed. Sixty six patients (18%) children were noted to have had hydronephrosis at some point during their management. Of these, 12 had hydronephrosis that was not caused by the neoplasm and one patient was lost to follow-

up. Of the remaining, 34 (61%) resolved their hydronephrosis with treatment of the primary neoplasm alone, and in 19 (34%) hydronephrosis persisted following primary oncological treatment. Univariate analysis showed that patients with persistent hydronephrosis (p=0.025), those who had urological interventions (p=0.05) and children with high-stage disease (p<0.001) had statistically significantly worse overall survival. On Cox multivariate analysis, only stage of disease remained statistically significant (p=0.004).

Conclusions: Analysis of this group of patients reveals that pediatric non-renal abdominal and pelvic tumors are associated with hydronephrosis in about 20% of cases. Roughly 60% of these resolved with treatment of the primary tumor alone, where as 13% required specific urological intervention for urinary tract involvement or compression. Patients with pediatric malignant ureteric obstruction were found to have a 20% 5-year mortality rate, with the main predictive factor for survival being stage of the primary disease.

Table 1. MP-06.17

Question	Number of respondents (%)		P value
	Yes	No	
VCUG			
for grade I/II hydronephrosis			0.02
unilateral	14 (20)	56 (80)	
bilateral	27 (39)	42 (61)	
for grade III/IV hydronephrosis			<0.01
unilateral	59 (84)	11 (16)	
bilateral	70 (99)	1 (1)	
with sedation	6 (8)	66 (92)	
with child life support	12 (23)	41 (77)	
Antibiotic Prophylaxis			
for grade I/II hydronephrosis			0.35
unilateral	10 (15)	54 (85)	
bilateral	15 (24)	48 (76)	
for grade III/IV hydronephrosis			0.33
unilateral	41 (65)	22 (35)	
bilateral	47 (75)	16 (25)	
for Megaureter			<0.01
grade I/II HN	26 (44)	33 (56)	
grade III/IV HN	49 (82)	11 (18)	
for Physiological (transient) hydro / UPJO		<0.01	
grade I/II HN	2 (3)	63 (97)	
grade III/IV HN	34 (84)	28 (16)	

MP-06.17

Evaluating Practice Patterns in the Treatment of Antenatal Hydronephrosis: A National Survey of Pediatric Urologists and Nephrologists

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Introduction: Antibiotic prophylaxis (AP) has been recommended empirically for newborns with antenatal hydronephrosis (AHN) to reduce the risk of urinary tract infections (UTI). Unfortunately, there is paucity of literature presenting high-level evidence to support this practice in this patient population. The purpose of this survey was to understand current practice patterns for management of AHN by pediatric urologists (PUs) and nephrologists (PNs) from across Canada in order to help establish the need for a large, multi-centre clinical trial.

Methods: An online anonymous survey was developed using LimeSurvey software. The survey was first piloted amongst pediatricians, PUs and PNs locally for content and face validity and to decrease measurement bias. Subsequently it was distributed to all members of the Canadian Association of PNs and the PUs of Canada twice within a 2 weeks period. The survey captured basic demographics followed by diagnostic and treatment sections. All responses were confidential and all data were checked for completeness prior to analysis. Surveys partially completed were discarded from analysis, but reported in the total response rate. All comparisons between PNs and PUs assumed an 80% power and a 0.05 level of significance.

Results: A total of 95 PNs and 44 PUs (total n=139) were contacted, resulting in 68 total responses (49% response rate). Of these, 30 (44%) were PNs, 37 (54%) were PUs, and 1 (2%) was undisclosed. The number of AHN cases seen annually by PUs ranged from 15 to 300 (median=85 cases/year/provider). Only 22% of the respondents reported having a standard protocol for management of AHN at their institutions. The attached table presents management data on recommending voiding cystourethrogram (VCUG) and AP. The most important factor in favor of giving AP was concern for UTI (68% of the respondents), followed by concern for VUR and obstruction (Table 1). PNs were significantly more likely to order a VCUG for unilateral AHN than PUs (grade I/II: 30% vs 8%, p<0.01; and grade III/IV: 93% vs 70%, p=0.05). PNs were also significantly more likely to give AP to children with bilateral grade I/II AHN (30% vs 12%, p<0.01) and to those with unilateral grade III/IV UPJO (73% vs 34%, p<0.01) when compared to PUs.

Conclusions: According to this survey there are divergent management philosophies regarding the use of AP for children with AHN, especially when megaureter and UPJO are considered. PNs are more likely to order a VCUG for children with AHN when compared to PUs. These results suggest clinical equipoise and support the need for a large, multi-centre clinical trial comparing AP to placebo in children with AHN.