Moderated Poster Session V: Pediatric Urology
Friday, October 8, 11:00 a.m. – noon

P67
TIP Urethroplasty in Primary Hypospadias Repair: A Series of 161 Patients

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Introduction and Objective: The incidence of abnormal meatal position is in constant augmentation and the surgical techniques to correct them are continuously evolving. The tubularized incised plate urethroplasty (Snodgrass) has gained in popularity in the last decade and has now a widespread acceptance for all degrees of hypospadias. We present the outcomes of this technique.

Materials and Methods: We reviewed all cases (213) of primary hypospadias repairs performed by a single pediatric urologist using TIP urethroplasty between July 2002 and January 2009. Cases without a minimum follow-up of two months were excluded. Therefore, we collected clinical data for 161 patients with consideration of their age, meatal position, presence of chordee, the use and duration of a uretral stent and blood loss. We looked for association between complication rate and each of the previously mentioned characteristics of our population.

Results: Over a 6-year period, 161 patients aged between 5 month and 49 years old (median 1.2 years old) underwent primary hypospadias repair by TIP urethroplasty. The median follow-up was 14.6 month. Distal hypospadias was the most common presentation (78.3%). Midshaft hypospadias (7.5%) and proximal hypospadias (14.3%) were also encountered. Fifty-seven patients (36%) had a cutaneous chordee and 10 patients (6%) had an intrinsic chordee that required a dorsal plication. A urethral stent was used for a mean of 11 days in 141 patients (87.5%). Mean estimated blood loss was 15 ml. Fifty-one patients (31.6%) presented 67 complications during follow-up : 12 infections (7.5%), 16 meatal stenosis (9.9%), 15 urethrocutaneous fistulas (9.3%), 13 coronal meatal migrations (8.1%), 1 peno-scrotal complete wound dehiscence (0.6%), 4 esthetical imperfections (2.5%) and 6 others complications (3.7%). Of those patients, 32 required surgical revision (19.8 %). No patient in our cohort experienced a recurrence of chordee after primary repair. Although data collection is still ongoing, we noticed a trend for an association between the occurrence of complications and a more proximal initial meatal position, presence of an intrinsic chordee and patient age at surgery.

Conclusion: The TIP urethroplasty is a frequently used technique which has proved to be safe and effective. Among the factors influencing the results, initial meatal position, presence of an intrinsic chordee and age at surgery seem to have an impact on the occurrence of complications. A significant proportion of patients (23%) in our series had insufficient follow-up. Since long-term follow-up will help for definitive outcome evaluation, we should put effort to correct this issue in the future.

P68
Assessing Ureteropelvic Junction Obstruction (UPJO) Using Original Renographic Criteria for a Decade Proves to be Reliable

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Introduction and Objective: Diagnosing UPJO is challenging. Difficulties reside in identifying patients who require surgery immediately or overtime. Aside from differential function and T1/2, no other renographic criteria have stood the test of time to diagnose obstruction. At our institution, renograms have been performed in an original fashion for a decade using additional criteria including delayed cortical excretion (DCE) and a post-furosemide washout (PFW) at 90 minutes. This study assesses the impact of choosing to treat infants conservatively vs. surgically based on our classification.

Materials and Methods: Between 1998 and 2008, the diagnosis of UPJO in infants with hydronephrosis (HN) was made based on renograms but work-up also included pre/post-op ultrasounds (US) as well as VCUG. Renograms were classified as Class 1: 20min PFW≥40%, Class 2: 20min PFW<40% and additional PFW at 90min≥50%, Class 3: 20min PFW<40% and additional PFW at 90min<50%, Class 4: class 3 with DCE or Class 5: class 3 with differential function<40%. Decisions to operate were based on the renographic findings of poor drainage (class 3), worsened drainage on repeated studies (classes 1-2 becoming >3) and/or signs of renal suffering (classes 4-5).

Results: Although most infants have been managed conservatively, a total of 110 pyeloplasties have been performed in infants either immediately or during follow-up. Among these, 30 patients were withdrawn from this study for lack of data or presence of other anomalies. Eighty pyeloplasties remained available for a retrospective review. Of these, 52 were done without delay (immediate) while 28 have been delayed. Most immediate pyeloplasties were done for renographic classes 4-5 (43/52 patients) while most delayed pyeloplasties were done for infants whose initial renogram did not show decreased ipsilateral function (24/28 had initial renographic studies of class 3 or less). These cases did show renographic deterioration overtime which prompted us to operate. We assumed that classes 4-5 were at risk of further renal suffering. This assumption proved to be correct as most class 4 did loose function after surgery despite improved drainage while half the class 5 HN gained more than 5% if surgery was done immediately. Cases of delayed pyeloplasties allowed us to witness that renographic deterioration overtime may gain function back with release of obstruction.

Conclusion: Our system has proven to be reliable since cases with delayed pyeloplasties did recuperate and those whom underwent immediate pyeloplasties did, at times, continue to loose function despite improved drainage confirming that classes 4-5 do require prompt surgery.

P69
Study Comparing the Applicability of Dorsal Lumbotomy in Older Children

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Introduction and Objective: Dismembered pyeloplasty through dorsal lumbotomy for the correction of ureteropelvic junction obstruction is mainly performed successfully in children less than 5 years old for technical reasons. We compared the records of 108 children who underwent dorsal lumbotomy by age group (< 5 vs. ≥5 years old) to determine if the surgical success and long term results were comparable.

Materials and Methods: We retrospectively reviewed the charts of 108 children undergoing a dismembered pyeloplasty by a single paediatric urologist from 2002 to 2008. Data were obtained from hospital records. The study population was divided into two groups. Group 1 consisted of children <5years old (n= 77) and Group 2 consisted of older children, ≥5 years old (n=31). Patients' characteristics as well as hospital stay, narcotic use, mean decrease in postoperative ultrasound anteroposterior diameter and success rate were compared. Success was defined by absence of symptoms and reduction of renal pelvis anteroposterior diameter and/or decrease of hydronephrosis on ultrasound and/or scintigraphic improvement of the drainage T1/2 when indicated. Univariate analysis was performed to compare the two groups on different factors.

Results: The main mode of presentation in group 1 was prenatal diagnosis (78%), whereas flank pain (68%) dominated in group 2. Mean age and weight at surgery were 1 y.o/8 kg and 10 y.o/35 kg respectively. The mean operative time and the mean blood loss were 100 minutes and 5cc versus 120 minutes and 18cc respectively. The mean hospital stay was 2.5 days for both groups and analgesia requirement was 50% higher in group 2. A Pippi-Salle stent was used in 90% (n=97) of cases while JJ stent in 9% (n=10). Intraoperative and postoperative complications were not significant. The mean follow-up was 16 and 20 months for group 1 and 2. Success rate was 91% and 94% (p=0.6) for both groups respectively.
Conclusion: Our study showed comparable success rates. We can infer that as a technique, dismembered pyeloplasty by dorsal lumbotomy is effective and safe in the older children group as much as in the younger one especially when it is performed by an experienced surgeon. At this time, it will be interesting to perform a prospective study to compare the laparoscopic approach in older children.

P70
Dye-Assisted Lymphatic-Sparing Laparoscopic Varicocelectomy in Children: Initial Experience
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Introduction and Objective: Varicocelectomy in children is still without a 'gold standard' treatment. Though the microscopic technique appears to be effective in adults, there are growing concerns in children about the risk of testicular loss due to arterial injury. The Palomo technique offers a low recurrence rate but with risk of postoperative hydrocele, which could be obviated with lymphatic sparing. We present our initial experience with dye-assisted, lymphatic sparing, laparoscopic varicocelectomy (LSLV) in children.
Materials and Methods: Between 2006 and 2008, 14 consecutive left LSLV were performed by 3 surgeons and their trainees, with mentoring from one surgeon initially. Children were a mean age of 15 years (range 12-18). Varicocele grade was 2 in 4 (29%) cases and grade 3 in 10 (71%) cases. Indications for intervention were testicular hypotrophy in 8 (57%) cases, pain in 5 (36%) and family preference with grade 3 varicocele in 1 (7%). A scrotal, subdartos injection of 2 ml of 1% isosulfan blue or patent blue dye was followed by a 5mm, 3-port transperitoneal exposure of the spermatic vessels. At least one lymphatic was spared and the rest of the spermatic vessels were mass ligated and divided. Clinical data was collected from a retrospective chart review.
Results: Lymphatics were identified in all patients after one injection in 12 and 2 injections in 2. A single lymphatic was spared in 10 cases, 2 in 3 cases and 3 in 1 case, though after the first 6 cases the intention changed to spare only 1 lymphatic. One patient had simultaneous open hydrocelectomy. Overall time of the procedure varied from 30 min to 140 min (mean 89 ±33 S.D). All patients were treated as outpatients with no perioperative complications recorded. Follow-up ranged from 1 to13 months (mean 8± 4.2 S.D.). At last visit, a minimal residual varicocele was noted in 2 cases and no hydroceles. To date no patient has required re-intervention.
Conclusion: This early multi-surgeon experience demonstrates that dye assisted LSLV is easily accomplished. The initial outcomes appear promising, yet longer follow up and a larger cohort are required to accurately assess the efficacy.

P71
Study on Hydrophilic-Coated Catheter Appreciation in a Pediatric Population
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Introduction and Objective: To compare the satisfaction of hydrophilic-coated catheters (SpeediCath) versus uncoated catheters in a paediatric population presenting with myelomeningocele or spinal cord injury, in order to identify a target group for this hydrophilic-coated catheter. The main hypothesis was that patients who will benefit the most would be females using the Speedicath compact catheter.
Materials and Methods: A comparative prospective study was initiated, with an objective of recruiting 30 pediatric patients with neurogenic bladders. These patients accepted to try for one week the SpeediCath catheter and to answer a satisfaction questionnaire. The catheters and the questionnaire were supplied to the patients for free. Thirty one patients accepted to participate and their medical records were reviewed for age, neurologic disease, intellectual deficit, impaired dexterity and method of catheterization (Mitrofanoff/urethra).
Results: The mean age for the 31 patients was 14 years old. Of these patients, 19 were females (61%), 26 were self-sufficient (84%), 4 had a significant intellectual deficit (16%), 9 had impaired dexterity (29%), 8 had spinal cord injury (26%) and 6 had Mitrofanoff (19%). Twenty-three of the 31 patients completed and returned the satisfaction questionnaire. Seven answered by phone and one didn't answered. Fifteen (50%) of the 30 patients reported difficulty at insertion secondary to excess of lubricant. Eleven children (37%) would be ready to proceed with Speedycath. On these 11 children, 9 were females (82%), 10 performed catheterization by urethra (91%), 1 had impaired dexterity (9%), 8 used Speedicath compact (73%) and all were self-sufficient. 100% of females on Speedicath compact who answered the questionnaire would be ready to continue with this catheter. Male patients catheterizing per-urethra and patients using a continent stoma requiring long catheters had problems with the excess of lubricant and preferred to continue to use their usual catheter with some added lubricant.
Conclusion: The majority of the children prefer their uncoated catheter and would not change for Speedycath hydrophilic-coated catheter. A female patient catheterizing per-urethra with a Speedicath compact catheter seems to benefit the most from hydrophilic-coated catheter.

P72
Solifenacin for Overactive Bladder in Children: A Prospective Open-Label Study
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Introduction and Objective: Paediatric urologists frequently encounter children presenting symptoms of bladder overactivity. Optimal anticholinergic pediatric dosage is not well known. Historically, oxybutinin has been effective in treating overactive bladder but is poorly tolerated. Tolterodin has been shown to be as effective as oxybutinin with fewer side effects (S/E). Newer agents, such as solifenacin, could be an alternative but their use in children as never been reported. Therefore, we aimed at optimising medical therapy in a select group of children which failed to improve under oxybutinin or tolterodin by using solifenacin and evaluating its efficacy, tolerability and safety.
Materials and Methods: Paediatric patients presenting refractory overactive bladders with incontinence were offered to enter a prospective open-label protocol using adjusted-dose regimens (solifenacin 1.25 to 10 mg). Inclusion criteria were: absence of correctable neurological anomalies (MRI), failure of symptoms improvement under intensive behavioural and medical (oxybutinin or tolterodin) therapies and/or significant S/E with other agents. The follow-up consisted of voiding diaries, post-void residuals and urine cultures every 3 months and ultrasound and UDS every 6 months. Families were regularly questioned for continence, S/E, compliance, change in behaviour and quality of life. Blood samples and EKG were obtained to detect potential toxicity. The primary end-point was efficacy toward continence; the secondary endpoints were tolerability and safety.
Results: A total of 66 patients (37 girls, 29 boys) were enrolled. Twenty-six patients with neurogenic bladder (10 CIC) and 40 with overactive bladder completed a minimum of 3-months follow-up. Mean age at initiation was 8.8 years. They were on solifenacin for a mean of 12 months. Urodynamic capacity improved from 151±66ml to 325±135ml and uninhibited contractions decreased from 71±29 to 22±18cmH_2O. Continence improved in all (24 dry, 36 significantly and 6 moderately improved).

Forty-eight patients reported no S/E, 14 mild, 2 moderate and 2 withdrew from the protocol due to S/E. Four patients developed significant post-void residuals (>20%). Blood tests and EKG remained normal.
Conclusion: In the presence of overactive bladder refractory to oxybutinin or tolterodin, solifenacin was proven to be an alternative to improve symptoms in the pediatric population. Tolerability was acceptable and the adjusted-dose regimen appeared safe.

P73
Percutaneous Management of Urolithiasis in Children and Adolescents with Spinal Cord Lesions
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Introduction and Objective: Children and adolescents with spinal cord anomalies and nephrolithiasis represent an endourologic management challenge. We report our early institutional experience with PCNL in this complex patient population.
Materials and Methods: We identified all patients with spinal cord lesions undergoing percutaneous management of urolithiasis at our institution between January 2002 and February 2009. Patient demographics, preoperative imaging, stone characteristics, peri-operative outcomes, stone free rates, and progression to adjuvant procedures were reviewed. Our technique for obtaining percutaneous access is similar to what has previously been described in pediatric and adult populations. Stone free status was defined as no radiologic evidence of recurrent stone burden on repeat imaging.
Results: We identified 11 patients (63.6% female) with spinal cord anomalies (64% myelomeningoceles, 9% traumatic spinal cord injuries, 27% other) undergoing percutaneous nephrolithotomy for nephrolithiasis. The mean age in our cohort was 16.2±4.1 years (range 10-22 years), and the mean calculus burden was 1.78±1.0cm (complete staghorn 45.5%, partial staghorn 27.2%). Percutaneous access was urologist obtained in 81.8% of patients, and two children underwent pre operative nephrostomy tube placement in interventional radiology. A 30 Fr access sheath through a single tract was utilized following balloon or amplatz dilation in 63.6% and 27.3% of patients respectively, and a "mini perc" 11Fr access sheath was used in one patient. There were no intra operative complications, and one child required an intra-operative blood transfusion. Post operative complications included urosepsis (9.1%), hemorrhage requiring transfusion (18.2%), and one child required angiographic embolization for persistent post operative bleeding. Following PCNL monotherapy, four patients (36.3%) required second look nephroscopy for stone clearance and additional adjunct procedures (ureteroscopy 27.2%, shock wave lithotripsy 27.2%) were utilized in four patients to treat residual post operative stone burden. With a mean follow up of 13.9±13.3 months, 54.5% of patients are radiographically stone free while 45.5% have small (<5mm) non-obstructive residual stone burden being managed conservatively.
Conclusion: Our early experience indicates that single tract percutaneous management of urolithiasis in children and young adults with spinal cord anomalies is a feasible option for pediatric endourologists. Families must be counseled that multiple procedures may be necessary to achieve stone free status. Familiarity with complex anatomy and prompt clinical recognition of post operative sequelae are necessary to optimize stone free and complication rates.

P74
Ethical Considerations in the Management of Cryptorchidism in the Profoundly Disabled
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Introduction and Objective: A seven year-old severely disabled boy, who functions at the level of a five month-old and is completely dependent on others for all aspects of care, has bilateral inguinal testes. His adoptive parents requested that bilateral orchiectomy be performed in order to prevent him from going through puberty, thereby facilitating their ability to care for him in the family home. This request raised numerous medical, ethical, and legal questions.
Materials and Methods: Ethics consultation was obtained to discuss the therapeutic spectrum available to this child. An interdisciplinary team reviewed the medical facts of the case, pertinent literature, relevant state law and hospital policy, and urologic standards of care. Options discussed included observation with periodic testicular ultrasounds to screen for malignancy, orchidopexy, orchiectomy with testosterone replacement, orchiectomy with additional endocrinologic manipulation to promote early closure of bone growth plates resulting in smaller stature, and orchiectomy alone. Consideration was given to the potential and expected side-effects associated with each treatment option, the impact on overall as well as urologic health, the need for concomitant or future therapy/interventions, testicular cancer risk and screening, and the role of parental decision making in the selection of non-standard of care treatments for their children. Fertility concerns were not an issue.
Results: All of the treatment options listed above were discussed in detail with the patient's parents. The final consensus recommendation, although not unanimous, was to suggest that bilateral orchidopexy be performed. The morbidity associated with this surgery, which is the current standard of care, is small and the metabolic sequelae of being anorchic are likely to increase his already heightened risk of osteoporosis and bony complications. Although androgen replacement could be given, this would require serial blood work, which would be distressing for the patient. Post-orchidopexy testicular examinations to screen for cancer should be possible despite his contracted state. It was unclear how preventing puberty would significantly increase the family's ability to care for their child in the home. Lastly, state regulatory provisions prohibit the involuntary sterilization of mentally handicapped persons for non-medically indicated reasons.
Conclusion: Ethics consultation was a valuable method to gain additional insights into the treatment options available to this patient and his family. Additional longitudinal studies are needed to evaluate the urologic health and needs of disabled children as they grow into adulthood.

P75
High Cost, Minimal Benefit: A Cost-Benefit Analysis of Ultrasound in the Management of Adolescent Varicocele
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Introduction and Objective: Varicoceles are a major cause of male-factor infertility, although the management of adolescent varicoceles remains controversial. Most clinicians advocate repair if there is a significant testicular size discrepancy. Many clinicians have defined this as >20% difference. Annual scrotal ultrasound has been advocated to measure testicular size. Using previously published data, we performed a cost-benefit analysis of using testicular ultrasound versus orchidometry to evaluate for this size difference.
Materials and Methods: A PubMed search was performed using the terms "adolescent varicocele," "ultrasound and varicocele," and "testis size and varicocele." Using the data from the relevant papers, and Medicare reimbursement data from our region, we determined the cost of missing a persistent testicular size difference of >20%. We used the most conservative data from the relevant papers; we feel these data most likely overestimate the number of patients with a size discrepancy and underestimate the sensitivity of orchidometry compared to ultrasound.
Results: Approximately 25% of adolescents with a varicocele have a persistent >20% size discrepancy. We assumed, based on previously published literature, that 40% of this group would be identified as having a size discrepancy with conventional orchidometry, whereas ultrasound would correctly diagnose 100% of the size discrepancies. Since we usually follow patients with serial exams over the course of several years, we calculated that the chance of missing a >20% size discrepancy over the course of three years to be 22%. The medicare reimbursement for in-office scrotal ultrasound is $103, therefore we calculated the cost per case finding of the persistent, missed size discrepancy to be $5616.

Conclusion: Annual ultrasounds to detect a >20% testicular size discrepancy are expensive and there are very limited data that earlier versus later adolescent varicocele repair improves paternity in adulthood. In an era of rising health care costs, the cost of ultrasound to evaluate for size discrepancy is significant and ultrasound should be used sparingly in these circumstances.

P76

Can We Avoid Removing the Adrenal Gland at the Time of Radical Nephrectomy in Children with Wilms Tumor?

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Introduction and Objective: Risk factors for adrenal involvement and indications for adrenalectomy with renal cell carcinoma have been well studied. However, for Wilms tumor, the indications and needs for adrenalectomy are not well defined. Current protocols lack specific guidelines and leave the option to the surgeon. Following the rationale for preserving the adrenal gland during radical resection of other renal malignancies, we sought to determine predictors for adrenal involvement and the impact of adrenalectomy on retroperitoneal recurrence.

Materials and Methods: We retrospectively reviewed all the charts of the patients who underwent surgical resection for Wilm's tumor between 1990-2008 in two large Canadian paediatric referral centers. Children who underwent preoperative chemotherapy or partial nephrectomy were excluded. Patients' characteristics were reviewed, including findings on preoperative diagnostic imaging and pathology reports to determine their potential link with adrenal involvement. Recurrence was evaluated as a time-dependent variable based on follow-up duration.

Results: One hundred and eighty patients were diagnosed with Wilms tumor during the study period. Of those, 91 underwent initial radical nephrectomy as primary treatment. The mean age at diagnosis was 46.7 +/- 38 months and follow-up 108.3 +/- 219.9 months. The disease was stage 1 in 28 patients, 2 in 31, 3 in 24 and 4 in 8. Adrenalectomy was performed, according to surgeon's judgement, in 57 patients (62%) during nephrectomy. Only one adrenal gland was reported positive for Wilms tumor invasion, while periadrenal fat involvement was described in 3 patients (overall incidence 4.1%). None of the studied tumor characteristics (stage, length, location) were predictive of a higher risk of involvement (Fig. 1). On a time-to-event analysis looking at the possible relation between adrenalectomy on retroperitoneal recurrence, no statistically significant difference was found between the groups for which the adrenal gland was removed or not (Mantel Cox p=0.997).

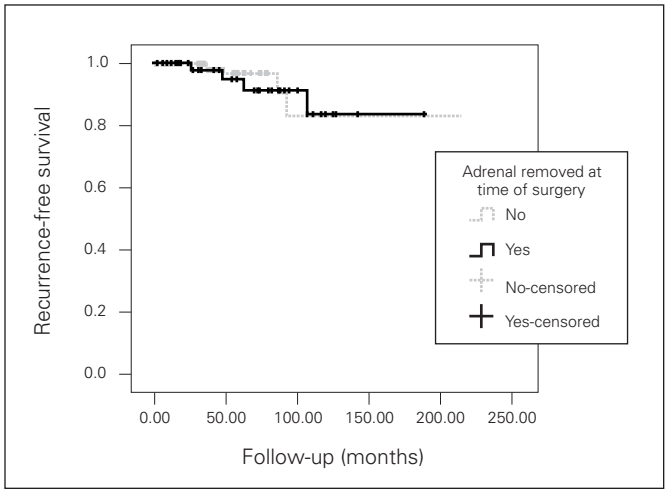

Fig. 1. Effect of adrenalectomy on retroperitoneal recurrence in children with Wilms tumor.

Conclusion: Adrenal involvement in patients with Wilms tumor appears rare and difficult to predict. In this study preserving the adrenal gland was not associated with an increased risk of local recurrence. Thus, it seems prudent to avoid performing an adrenalectomy at the time of radical nephrectomy if technically feasible, attempting to otherwise remove all peri-adrenal fat with the specimen.

P77

Are There Risk Factors for Perinatal Torsion?

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Introduction and Objective: Perinatal torsion of the testis has a poor salvage rate of only 5%. Bilateral torsion comprises 11-33% of all perinatal torsions, the vast majority being synchronous torsion with a rate of 50-89%. Due to low salvageable rate and the real concern for bilateral torsion, risk factors that can predict occurrence of perinatal torsion may be of use.

Materials and Methods: We retrospectively identified nine neonates who were diagnosed with perinatal torsion and underwent bilateral scrotal exploration between 2000-2008. This cohort was compared to neonates with normal bilateral descended testes in terms of birth weight, gestational age, method of delivery, and maternal age to determine if any of these parameters placed a neonate at risk for testicular torsion.

Results: In these nine neonates, physical examination was consistent with unilateral perinatal torsion. No contralateral torsion was discovered at the time of exploration. The mean gestation time, birth weight, maternal age, and the rate of caesarian section between those with perinatal torsion and those without was 38.1 vs. 39.1 weeks (p= 0.31), 3313.7g vs. 3482.4g (p=0.51), 25 vs. 29 years of age (p=0.42), and 67% vs. 32%, respectively.

Conclusion: In this study, there is a greater incidence of perinatal torsion with caesarian delivery, although not statistically significant. There is no statistically significant difference between the group with perinatal testicular torsion and those without in terms of gestational time, birth weight, and maternal age. To date there are no proven risk factors for perinatal torsion.

P78

Evaluation of Hydronephrosis in Pediatric Kidney Transplants and its Clinical Relevance

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Introduction and Objective: The causes of hydronephrosis in renal transplant allografts remain elusive. We evaluated children with either living-related or cadaveric kidney transplants to determine the clinical significance of hydronephrosis in the transplanted kidney.

Materials and Methods: We retrospectively reviewed 54 pediatric patients at The Children's Hospital of Pittsburgh who had received kidney transplants between 1993-2008. Patient demographics and parameters such as renal function, degree of hydronephrosis based on the Society of Fetal Urology (SFU) grading scale, and incidence of kidney rejection and allograft failure were recorded. Complete urologic evaluation was documented, including type of ureteral reimplantation or any underlying urologic abnormalities such as bladder dysfunction.

Results: End-stage renal disease was caused by a variety of diseases, with posterior urethral valves and neurogenic bladders comprising 52% of those with hydronephrosis and 38% of those without hydronephrosis (p=0.41). Of the 54 patients (37% male), 25 (41.5%) developed hydronephrosis (median SFU grade II), with 8 patients (16%) developing high grade hydronephrosis (SFU grade III or IV), 4 patients have no available ultrasounds. In all but one case, hydronephrosis developed for reasons other than anatomical obstruction such as from ureteral stricture or kinking. Thirteen patients had low grade hydronephrosis (SFU grade I or II) compared to 8 with high grade hydronephrosis detected at a mean of 85±121 months after transplantation. In comparing patients with low grade and high grade hydronephrosis, mean nadir serum cre-

atinine (Cr) and mean serum Cr at time of hydronephrosis detection was 0.8±0.4 vs. 0.7±0.5mg/dl (p=0.67) and 3.8±3.7 vs. 2.8±3.3mg/dl (p=0.56), respectively. Patients with low grade and high grade hydronephrosis were not significantly different in regards to kidney rejection (42% vs. 31%, p=0.69) or allograft failure (8% vs. 15%, p=1.0), respectively. Cr level at time of follow-up ultrasound, however, was significantly lower in patients without hydronephrosis compared to those with hydronephrosis (3.2±3.3 vs. 1.4±1.8mg/dl, p=0.02), respectively.
Conclusion: The etiology of hydronephrosis was potentially attributed to underlying bladder dysfunction about 50% of the time. Patients with hydronephrosis had a significantly higher Cr level than those without hydronephrosis, but Cr levels alone did not correlate with degree of hydronephrosis. Furthermore, the degree of hydronephrosis was not a predictor of allograft failure.

P79
Retroperitoneoscopic Nephrectomy in Children on Peritoneal Dialysis: The Gold Standard
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Introduction and Objective: The literature on minimally invasive nephrectomy in patients on peritoneal dialysis (PD) is sparse. Isolated case reports claim that the transperitoneal approach is effective. We present our experience with the retroperitoneal approach (RPN) in children on PD, which to our knowledge is the second reported experience, and the only one documenting dialysis outcomes.
Materials and Methods: Fourteen kidneys were removed from 10 children (median age of 11.5 years; range 6-17) during 11 consecutive RPNs from 2001 to 2008. Three other successful RPNs were excluded from further analysis because the PD catheter was not utilized. Indications included nephrotic-range proteinuria in 8 patients, hypertension in 6 and polyuria in 5, all in preparation for renal transplantation. A 3-port lateral RPN technique was utilized, with significant trainee participation. Preoperative and postoperative biochemistries within 3 months of surgery were compared with the Wilcoxon signed-rank test.
Results: Three bilateral synchronous, 1 bilateral staged and 6 unilateral RPNs were performed. Mean operating times were 174 min (range 115-250) for unilateral and 454 min (range 370-575) for bilateral RPNs, including 1 simultaneous PD insertion and 1 umbilical hernia repair. No open conversions or blood transfusion were needed. PD was initiated after a median of 11 h postoperatively (range 3-56), with a final dialysate titration at a median of 60 h (range 5-312 h). One patient had a peritoneotomy repaired intraoperatively and was hemodialyzed until transplant 1.5 months later. Five patients were rendered anuric. Of the remaining 5 patients, 2 maintained nephrotic-range proteinuria and all 3 previously polyuric patients had desired urine output reduction (p=0.04). Serum albumin and protein concentrations improved significantly after surgery for all patients (p=0.04, p=0.002, respectively). No postoperative complications were noted except for 1 case of *C. difficile* diarrhea.
Conclusion: RPN for end-stage renal disease is a safe and effective operative technique, which preserves peritoneal integrity in children requiring immediate postoperative PD. In the absence of data to the contrary, RPN should be considered the gold standard in patients on PD, as it obviates morbidity related to vascular access for hemodialysis.

P80
Long-Term Functional Outcome After Primary Repair of Classic Bladder Exstrophy
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Introduction and Objective: We present our experience and long-term outcome of bladder exstrophy repair over 20 years.
Materials and Methods: We retrospectively reviewed the charts of all cases with classic bladder exstrophy at our hospital between June 1990 and July 2007. Patients were included if they were older than 5 years at last follow up. Primary closure was carried out within the first 2 days of life in all patients. Bladder neck reconstruction (BNR) with or without augmentaion ileocystoplasty was carried out if incontinence persisted after age 5 years. At last follow up, patients were analyzed in 3 groups. Group-1, had only primary closure, group-2, had BNR and group-3 had BNR and augmentation. Data regarding continence, bladder capacity, voiding pattern and upper tract status including dilation, reflux and scarring by DMSA were assessed in the 3 groups.
Results: Fifteen patients were eligible for the study (6 males and 9 females). Group 1 included 5 patients with a mean follow up of 8 years (5-10), of whom 4 (80%) achieved >2-3 hours dry intervals with urethral voiding and 1 (20%) was totally incontinent. Mean bladder capacity in continent patients was 160±50 ml (100-210). Mean post-void residual was 28±11% (20-40). Three patients underwent bilateral ureteral re-implantations for reflux. One renal unit (10%) was lost because of repeat infections. Group 2 included 5 patients with a mean follow up of 8 years (2-13) after BNR. Four patients (80%) have achieved >3-4hours dry intervals with urethral voiding and one (20%) was totally incontinent despite an additional BN injection. Mean bladder capacity in continent patients was 168±66 ml (125-205). Mean post-void residual was 46±15% (30-60). Four renal units (40%) developed moderate hydronephrosis with no scarring. Group 3 included 5 patients with a mean follow up of 4.6 years (2-7) following BNR and augmentation. All were totally continent via CIC. Mean bladder capacity was 310±79 ml (255-425). Two renalunits (20%) developed mild hydronephrosis with no scarring.
Conclusion: Social dryness and urethral voiding are achievable in nearly half of the cases. Incomplete bladder empting warrants continuous upper tract monitoring. Augmentation with BNR still provides the best level of continence, maximum upper tract protection but CIC seems to be inevitable.

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In vitro Reconstruction of an Autologous, Watertight and Resistant Vesical Equivalent
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Introduction and Objective: Actually, enterocystoplasty is the gold standard to perform bladder reconstruction or replacement. Since this technique has a high morbidity rate, research in bioengineering is underway but new alternatives are needed. At the moment, autologous vesical substitutes are entirely made by tissue-engineering without the use of exogenous matrices at LOEX. Watertight function and mechanical resistance are the major properties of the model that we are working on. The aim of this study was to determine the histological and functional characteristics of our vesical equivalents (VE).
Materials and Methods: Porcine VE are produced in 55 days. Dermal fibroblasts are extracted and expanded from skin biopsies. They are cultured *in vitro* to form cellular sheets. Endothelial cells were seeded on the fibroblast sheets before their superposition. Urothelial cells are then seeded onto this cellular construction. The VE are characterized in histology, immunohistochemistry, electron microscopy, western blot and cell viability. Moreover, mechanical resistance is estimated by uniaxial tensile tests, and the tissue absorption is verified with ^{14}C-urea, which quantifies the degree of impermeability of our VE.
Results: A total fusion of the fibroblast layers and a pluristratified urothelium coating were observed on the *in vitro* engineered VE. Positive markers for cytokeratin 8/18 in immunohistochemistry and western blot confirmed the presence of a urinary epithelium. Electron microscopy confirmed the presence of normal aspect urothelial cells. Our VE permeability to ^{14}C-urea was statistically similar to porcine bladder. Mechanical resistance indicated that our product would be suitable for grafting since its ultimate tensile strength is higher than the native porcine bladder.
Conclusion: This method to produce VE seems very promising to meet the needs in the urological field. Our substitute has proven its efficiency as a barrier to urea and has a sufficient mechanical resistance to support physiological pressures. Additionally, this model is completely autologous, and its possible endothelialization could promote the early vascularization process after grafting and it would significantly reduce inflammation and possible rejection.

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Serosal Lined Extramural Tunnel Principle in the Creation of a Catheterizable Channel in Bladder Augmentation: The Video

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Introduction and Objective: The serous-lined extramural-tunnel technique has been introduced into reconstructive surgery of the urinary tract by Abol-Enein and Ghoneim and its value is now well-appreciated. In this study, we evaluate the versatility of this principle and its aptness to various situations in pediatric reconstructive surgery and we provide a video showing the fine technical details.

Materials and Methods: Over the past 7 years, serous-lined extramural-tunnel technique has been applied in 11 patients with a mean age of 11 years (6-17). Indications for surgery were conversion from ileal loop conduit to continent catheterizable stoma in 2 patients with posterior urethral valves (PUV) and pelvic rhabdomyosarcoma and creation of catheterizable channel in bladder augmentation in 9 patients with PUV (n=1), spina bifida (n=3) and bladder exstrophy (n=5). Concomitant procedures included bladder neck closure in 1, sling in 2, Mitchell bladder neck reconstruction in 5 and Malone antegrade continent enema in 2. The appendix was used as an outlet in 7 while Monti was used in 4 patients. The technique is detailed in the video.

Results: In all patients the stoma was successfully matured to the umbilicus. There were no postoperative complications or difficult catheterization. In the first 3 months all patients were completely continent. Three patients developed secondary incontinence 3-6 months after surgery. Injection of Macroplastique in 1 and Deflux in 2 was tried unsuccessfully. Surgical revision revealed a de-ssusception of the tunnel in the 3 patients. All of whom had Monti as an outlet where the mesentery was left outside the tunnel. The remaining 8 patients remained totally continent with a mean follow up of 2.4 years (2-4).

Conclusion: This technique is very versatile and can be used as primary or salvage surgery. The stoma can always be brought to the umbilicus. The appendix is the preferred continent outlet. Fine surgical details are crucial for success, including fixation of the outer pouch wall of the tunnel to the anterior abdominal wall surrounding the stoma, the use of interrupted non-absorbable sutures in the posterior wall of the tunnel. One disadvantage of the technique is that injection of bulking agent is not useful in treatment of secondary incontinence.

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Dextranomer/Hyaluronic Acid Copolymer (Deflux) Injections in a Teaching Center: The Real Picture

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Introduction and Objective: In the medical literature, injection of bulking agents has demonstrated good success rates for endoscopic treatment of vesicoureteral reflux (VUR) but the best results are reported by those who do many, operate themselves and often modified the technique using larger amounts of injected material. At our institution, we use a modified sting procedure and allow all team members to participate. We hereby evaluate the long-term effectiveness of endoscopic treatment of VUR performed at our teaching hospital.

Materials and Methods: Between 2005 and 2008, 23 males and 56 females (median age of 5.8 years) underwent endoscopic correction of primary VUR with Deflux. Reflux was unilateral in 30 cases and bilateral in 49, affecting 128 ureters. Reflux was grade I in 13 (10%) cases, grade II in 49 (38%), grade III in 53 (42%) and grade IV in 13 (10%). All patients underwent endoscopic correction as a day procedure. A modified sting procedure was used and surgery was either conducted by attendings or residents/fellows under attending's supervision. In addition to routine parameters, patients have been followed with initial cystograms performed late at an average of 11 months.

Results: A total of 128 refluxing ureters were initially injected with Deflux. The reflux was corrected in 86/128 ureters (67%) after a single injection with a success rate by patient of 58%. Second injections increased those numbers to 82% and 75% respectively. An average bolus volume of 0.75ml was used for first and second injections. Successful results by grade (I to IV) after the first injection were 84.7%, 75.5%, 58.5% and 53.8%. We found a statistical difference between grades I-II (77.4%) vs. grades III-IV (57.6%) (p=0.0235).

Conclusion: Our results are comparable to others reported in the literature showing that endoscopic treatment of VUR can be done in a teaching setting using moderate volumes of bulking agents especially for low grade VUR.

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The Anterior Approach to Retroperitoneoscopic Adrenalectomy in Children

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Introduction and Objective: Very limited literature exists on minimally invasive techniques for adrenalectomy in children. Retroperitoneal adrenalectomy (RPA) has the potential advantage of avoiding intra-abdominal organ retraction but, concerns have been expressed with the lateral RPA on the right side. Zhang et al. (J Urol. April 2007) have described a novel anterior RPA approach which appears to overcome the limitations of the lateral approach. Herein, we describe the second reported experience with the anterior approach to RPA in children.

Materials and Methods: Two children, aged 8 and 14 years old, presented with incidentally discovered right adrenal masses measuring 7x5x4 cm and 5x4x4 cm on magnetic resonance imaging. Both patients were placed in the lateral decubitus position with lumbar hyperextension. A 5mm, 3-port approach was used. The retroperitoneal space outside Gerota's fascia is developed under direct vision, from the common iliacs up to the diaphragm. The first fascial plane of dissection is developed anterior to the upper pole of the kidney thus revealing the anterior surface of the adrenal. The second plane of exposure is the inferior surface of the adrenal followed by medial exposure of the vena cava and adrenal vein. After division of the adrenal vein the remaining superior attachments which were suspending the gland are divided. Since the adrenal is suspended by its superior attachments throughout, no manipulation of the gland is required (no touch technique). The posterior port is extended to permit intact retrieval of the specimen with an entrapment sac.

Results: Pathology revealed a 7cm, 60 gm ganglioneuroma in the first patient and a 5 cm, 40 gm pheochromocytoma in the second, with intact surgical margins in both cases. Operative time with these large masses and first experience with this technique was 5 hours in the first case and 3.5 hours in the second, with the trainee performing most of the second case. No intraoperative or postoperative complications were noted, with minimal blood loss and a hospital stay of 36 hours in both cases. No intra-operative hypertension was noted in the patient with pheochromocytoma who had pre-operative pharmacologic alpha and beta blockade.

Conclusion: The anterior approach to right RPA is feasible even in children with a smaller retroperitoneal space and a large adrenal mass. It seems to provide superior exposure of the adrenal gland and vein compared to the lateral RP approach, as suggested by Zhang et al. in their experience with 800 cases in adults.