

Division Data Summary

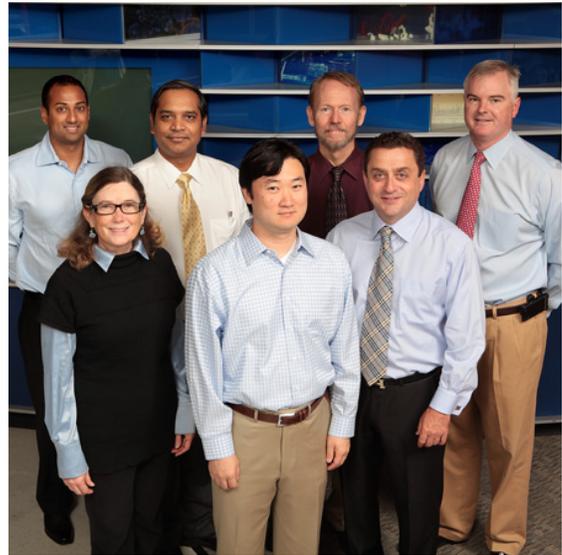
Research and Training Details

Number of Faculty	6
Number of Joint Appointment Faculty	1
Number of Research Fellows	2
Number of Support Personnel	13
Direct Annual Grant Support	\$88,882
Direct Annual Industry Support	\$49,352
Peer Reviewed Publications	11

Clinical Activities and Training

Number of Clinical Staff	17
Number of Clinical Fellows	3
Number of Clinical Students	5
Inpatient Encounters	320
Outpatient Encounters	12,393

Division Photo



Row 1: E Jackson, P Noh, E Minevich
Row 2: S Alam, P Reddy, C Sheldon, W DeFoor

Significant Publications

Reddy PP, Defoor WR. Uteroscopy: The standard of care in the management of upper tract urolithiasis in children. *Indian J Urol.* 26(4):555-563. Oct, 2010.

Advances in technology and the continued evolution in the design of ureteroscopes now permit a primary endoscopic approach to the upper urinary tract of pediatric patients on a routine basis to treat a diverse group of conditions that include urolithiasis, hematuria and strictures. The purpose of this review article is to demonstrate that ureteroscopic lithotripsy is now to be considered the standard of care in the management of upper tract urolithiasis in the pediatric patient, replacing Shockwave lithotripsy (ESWL) as the first line of therapy. Additionally, the article will discuss the available endoscopic equipment and the lessons learned over the years to optimize the success of these procedures in children. MATERIALS AND METHODS: A systematic review of articles written about ureteroscopy (URS) in the contemporary urological literature (1990-2009) on PubMed was undertaken. The success rates and complications of pediatric ureteroscopic procedures were abstracted from the identified publications and the results were tabulated and compared with the success rates of Shockwave lithotripsy. RESULTS: In over 832 URS cases, there was a 5.9% complication rate and a stone-free rate of 93.4%. The stone-free rates of URS are superior to those obtained with the published success rates with ESWL of 80.3% in 1,839 cases. CONCLUSIONS: The safety and outcomes of ureteroscopic lithotripsy in the management of pediatric urolithiasis now justify that this treatment modality be considered the standard of care and first line of therapy in the management of children who present with upper tract stones.

Alam S, Lawal TA, Pena A, Sheldon C, Levitt MA. Acquired posterior urethral diverticulum following surgery for anorectal malformations. *J Pediatr Surg.* 46(6):1231-1235. Jun, 2011.

Despite significant advances in the surgical management of anorectal malformations (ARMs), many children still experience significant debilities from potentially avoidable complications. One complication, the posterior urethral diverticulum, may have untoward consequences if not recognized and treated.

METHODS: A retrospective cohort review was undertaken of male patients who presented to us with persistent problems after being operated on elsewhere for ARM. Twenty-nine patients presented with a urethral diverticulum. Their charts were reviewed for the type of malformation, prior repair, presentation, treatment, and postoperative follow-up. **RESULTS:** Twenty-nine patients were identified that fit the criteria for this study. To date, 28 patients have been managed with reoperation. Urinary complaints were the most common presenting symptoms. All patients were repaired using a posterior sagittal approach. Pathology of the diverticulum in one patient revealed a well-differentiated mucinous adenocarcinoma.

CONCLUSION: The incidence of acquired posterior urethral diverticulum has decreased with the popularization of the posterior sagittal incision. There is a theoretical concern that the incidence may increase with the use of laparoscopy for the treatment of ARMs especially those where the fistula is below the peritoneal reflection. Once detected, the diverticulum should be excised.

DeFoor WR, Jackson E, Minevich E, Caillat A, Reddy P, Sheldon C, Asplin J. The risk of recurrent urolithiasis in children is dependent on urinary calcium and citrate. *Urology.* 76(1):242-245. Jul, 2010.

To determine which risk factors help predict recurrent stone formation. Urinary stone disease is relatively rare in children. At our institution, a full urinary metabolic evaluation is initiated after the first stone episode.

METHODS: A retrospective cohort study was performed to assess urinary metabolic profiles in children with urolithiasis. Twenty-four-hour urine collections were performed and evaluated. Urine chemistries were adjusted for creatinine and weight. Abnormal thresholds were obtained from the available published data. The patients were stratified into solitary or recurrent stone formers by review of the medical record. Multivariate analysis was performed with a logistic regression model to assess for independent risk factors for stone recurrence. **RESULTS:** A total of 148 samples from 88 patients with solitary stones and 84 samples from 51 patients with recurrent stones were evaluated. Age and gender were well-matched between the 2 groups. Most known stones were calcium oxalate, and there were no radiolucent stones in those with unknown composition. A significantly higher number of patients with recurrent stones had abnormal values for calcium (73% vs. 57%) and citrate (30% vs. 13%) by univariate analysis. Both calcium (odds ratio, 2.3, $P < .01$) and citrate (odds ratio, 3.5, $P < .001$) remained independent risk factors for stone recurrence by multivariate analysis.

CONCLUSIONS: There are significant differences in the urinary calcium and citrate levels between children with solitary and recurrent calcium stone formation. This may allow identification of patients at risk for stone recurrence that may benefit from more aggressive dietary and/or pharmacologic intervention.

Ivancic V, Defoor W, Jackson E, Alam S, Minevich E, Reddy P, Sheldon C. Progression of renal insufficiency in children and adolescents with neuropathic bladder is not accelerated by lower urinary tract reconstruction. *J Urol.* 184(4 Suppl):1768-1774. Oct, 2010.

Children with chronic renal insufficiency and neuropathic bladder resistant to medical management may require lower urinary tract reconstruction before renal transplantation. A low pressure urinary reservoir optimizes the chance of graft survival and may slow native kidney death. We evaluated whether the renal deterioration rate is affected by augmentation cystoplasty.

MATERIALS AND METHODS: We performed a retrospective cohort study in children who presented to our institution with chronic renal insufficiency and neuropathic bladders from 2005 to 2009. Chronic renal

insufficiency was defined as a glomerular filtration rate of less than 60 ml per minute. As a surrogate for renal function change, we used the inverse creatinine trend with respect to time to determine the progression rate of renal insufficiency before and after augmentation.

RESULTS: A total of 11 patients with a mean glomerular filtration rate of 34 ml per minute per 1.73 m², mean bladder capacity 168 ml and mean compliance 3.5 ml/cm H₂O met study inclusion criteria. Bladder augmentation or replacement was done at a mean age of 9.7 years with a resultant mean capacity of 486 ml and compliance of 14.7 ml/cm H₂O. Mean followup was 4 years before and 1.9 years after augmentation. There was no statistically significant difference between the preoperative and postoperative slopes of inverse creatinine in 8 of 11 patients (73%). Two of the 3 patients (18%) with different preoperative and postoperative slopes had improving renal function after surgery. There was no statistically significant difference in slopes across all patients.

CONCLUSIONS: In our series bladder augmentation did not appear to hasten progression to end stage renal disease in patients with severe chronic renal insufficiency and neuropathic bladder.

Minevich E. Management of ureteric stone in pediatric patients. *Indian J Urol.* 26(4):564-7. Oct, 2010.

The management of ureteral stones in children is becoming more similar to that in adults. A number of factors must be taken into account when selecting one's choice of therapy for ureteral stone in children such as the size of the stone, its location, its composition, and urinary tract anatomy. Endoscopic lithotripsy in children has gradually become a major technique for the treatment of ureteral stones. The stone-free rate following ureteroscopic lithotripsy for ureteral stones has been reported in as high as 98.5-100%. The safety and efficacy of Holmium:YAG laser lithotripsy make it the intracorporeal lithotripter of choice. Given its minimally invasive features, extracorporeal shock wave lithotripsy (ESWL) has become a primary mode of treatment for the pediatric patients with reno-ureteral stones. Stone-free rates have been reported from 59% to 91% although some patients will require more than one treatment session for stone clearance. It appears that the first-line of therapy in the child with distal and mid-ureteral stones should be ureteroscopic lithotripsy. While ESWL is still widely considered the first-line therapy for proximal ureteral calculi, there is an increasing body of evidence that shows that endoscopic or ESWL are equally safe and efficacious in those clinical scenarios. Familiarity with the full spectrum of endourological techniques facilitates a minimally invasive approach to pediatric ureteral stones.

Division Highlights

Shumyle Alam, MD

Dr. Alam was named Co-Director of the Urogenital Center with Curtis Sheldon, MD. As a part of Improvement Science Methodology related to the coordination of multidisciplinary care, Dr. Alam decreased the time between initial referral of complex genitourinary patients to the development of a treatment plan from 90+ days to a mean of 20 days.

Eugene Minevich, MD

Dr. Minevich has become an integral part of CCHMC's multidisciplinary global initiative with Israel. In collaboration with the CCHMC Global Health Child Center, Dr. Minevich has joined the Israeli Exchange Program providing educational presentations and performing surgery on patients with complex urology conditions.

Paul N. Noh, MD

Dr. Noh, MD, Director of Minimally Invasive laparoscopic assisted robotic surgery in Pediatric Urology is performing robotic and single port with decreased pain, blood loss and length of stay reported.

Elizabeth C. Jackson, MD

The Spina Bifida Team of the Division of Developmental and Behavior Pediatrics has initiated a self-management program for patients 12-21 years of age using ACCEPT techniques. Dr. Jackson is using self-management techniques for all the myelomenigocele patients requiring pediatric urology care in the Spina Bifida Clinic. The children and providers explore readiness for self-catheterization, work together to build an action plan to meet the child's goals and evaluate adherence to the defined plan of care.

Division Collaboration

Bariatric Surgery; Nephrology » Thomas Inge, MD; John Asplin, MD

Urinary metabolic evaluations in morbidly obese children.

Nephrology » Prasad Devarajan

Urinary NGAL in Ureteropelvic junction obstruction in children.

Faculty Members

Pramod P. Reddy, MD, Professor

Division Director

Director, Pediatric Urology Fellowship Program

Research Interests Genitourinary reconstruction, hypospadias repair, urolithiasis, robotic-assisted surgery, renal transplant, disorders of sexual differentiation, neurogenic bladder, prenatal evaluation and fetal care.

Shumyle Alam, MD, Assistant Professor

Co-Director, Urogenital Center

Research Interests Complex genitourinary reconstruction, spina bifida, neurogenic bladder, anorectal malformations, disorders of sexual development, cloaca, renal transplantation in the neurogenic bladder.

W. Robert DeFoor, Jr, MD, MPH, Associate Professor

Director of Clinical Research

Co-Director, Pediatric Urology Fellowship

Research Interests Complex urinary reconstruction; clinical outcomes research, clinical trials, urolithiasis, uro-oncology, laparoscopic-assisted and robotic-assisted surgery and vesico-ureteral reflux.

Eugene A. Minevich, MD, Professor

Director, Stone Center

Research Interests Complex genitourinary reconstruction, microscopic hypospadias, endoscopic treatment of vesico-ureteral reflux, urolithiasis and ESWL.

Paul H. Noh, MD, Assistant Professor

Director, Minimally Invasive Surgery

Research Interests Minimally invasive laparoscopic-assisted and robotic-assisted surgery, prenatal evaluation and fetal care and UTIs.

Curtis A. Sheldon, MD, Professor

Director, Urogenital Center

Research Interests Complex genitourinary reconstruction, renal transplantation and repair of hypospadias.

Joint Appointment Faculty Members

Elizabeth C. Jackson, MD, Associate Professor

Division of Nephrology

Research Interests Clinical Trials, bladder detrusor activity, urolithiasis and nocturnal enuresis.

Trainees

- Alice Payton, MD, PL-7, University of Kentucky, Lexington, Kentucky
- Ingrid Richardson, MD, PL-6, Israel Medical Center / Albert Einstein College of Medicine, New York, New York
- Bezalel Sivan, MD, PL-4, Ben Gurion University Medical School, Beer Sheva, Israel

Significant Accomplishments

Clinical Accomplishments

The Division of Pediatric Urology ranked fourth in this year's *U.S. News & World Report* survey in recognition of our clinical and research activities.

Eugene Minevich, MD, was president of the American Association of Pediatric Urologists (AAPU), served on the Clinical Research Committee of the AAP Section of Pediatric Urology in October and program chairman of the Society of Pediatric Urology, AUA annual meeting in May. He lectured and performed surgery at Schneider Children's Hospital in Shaare Zedek, Jerusalem, in October.

Pramod Reddy, MD, was awarded second prize for a clinical research presentation on "The Impact of The Alexander Technique" on improving surgical ergonomics at the Urology Section of the AAP in October and a paper presented in May at the IPEG Annual Congress in Prague, Czech Republic. Reddy moderated three clinical scientific sessions: "Hypospadias Repair" at the Third World Congress of Pediatric Surgery in Delhi, India; "Tissue Engineering and Stem Cell Research: The Nuclear Energy of Surgery" at the Asian Society of Pediatric Urology in Istanbul, Turkey; and "Challenges of Surgical Education" at the SPU annual meeting in Washington, DC.

Shumyle Alam, MD, was a visiting professor at the Anorectal Malformations (ARM) Workshop 2011 in Rotterdam, Netherlands, and presented, "The treatment of ARM with Special Emphasis on Pediatric Urology."

William Robert DeFoor Jr., MD, was named secretary-treasurer of the AAPU.

Paul Noh, MD, was invited to the Arab Health Congress in Dubai, United Arab Emirates, and presented on the topics of posterior urethral valves and laparoscopy in pediatric urology in January.

The two multidisciplinary clinics, Disorders of Sexual Development Clinic and Urogenital Center, have provided care management for children with complex genitourinary conditions for patients nationally and internationally.

Pediatric Urology Research and Fellowship Program

Pramod Reddy's basic science lab initiated study on the relationship between the CNS and the lower urinary tract and how stress can induce changes in bladder function and morphology. Reddy was principle investigator for phase 3 of a Warner Chilcott darifenacin clinical trial on neurogenic detrusor overactivity. Our division and the

The Division of Developmental Biology recruited Joo-Seop Park, PhD, from Harvard University as an assistant professor.

W. Robert DeFoor Jr., MD, was the lead PI on the subcontract for the NIH clinical trial, "Randomized Intervention for Children with Vesicoureteral Reflux (RIVUR)." DeFoor was also PI on an Oceana Therapeutics Inc. study on VUR Grade II-IV receiving endoscopic correction with Deflux.

Paul Noh, MD, was awarded a National Kidney Foundation grant to study urinary NGAL as a noninvasive biomarker of obstruction in unilateral hydronephrosis. Noh was selected as PI for a Watson Pharmaceuticals Inc. study on the use of oxybutynin chloride topical gel in the treatment of detrusor overactivity.

Our ACGME-accredited fellowship program is recognized nationally and internationally. Alice Payton, MD graduated in June 2011 to begin her career at the University of Toledo. Ingrid Richardson, MD, began fellowship training in July 2010, and Bezalel Sivan, MD, of Israel began international fellowship training in December 2010.

Other Accomplishments

Our division completed the final year of our three-year affiliation with Arkansas Children's Hospital. Pramod Reddy, MD, traveled to Arkansas monthly to perform complex genitourinary procedures for children and urologic procedures for children with spina bifida. This highly successful affiliation resulted in the recruitment of three pediatric urology faculty for the Arkansas hospital.

Elizabeth Jackson, MD, works with our certified nurse practitioners to manage voiding dysfunction patients in our Healthy Bladder Clinic and in the Myelomeningocele Clinic in the Division of Developmental and Behavioral Pediatrics. Jackson was also awarded a \$30,000 research gift from the Junior Cooperative Society to support her study, "Nocturnal Enuresis: Comparison of Buzzer and Voice Alarms on the Rate of Resolution of Bedwetting."

The division hired our fifth nurse practitioner, Tammy Lingsch, who will focus on inpatient care management.

Division Publications

1. Alam S, Lawal TA, Pena A, Sheldon C, Levitt MA. **Acquired posterior urethral diverticulum following surgery for anorectal malformations.** *J Pediatr Surg.* 2011; 46:1231-5.
2. DeFoor WR, Jackson E, Minevich E, Caillat A, Reddy P, Sheldon C, Asplin J. **The risk of recurrent urolithiasis in children is dependent on urinary calcium and citrate.** *Urology.* 2010; 76:242-5.
3. Ivancic V, Defoor W, Jackson E, Alam S, Minevich E, Reddy P, Sheldon C. **Progression of renal insufficiency in children and adolescents with neuropathic bladder is not accelerated by lower urinary tract reconstruction.** *J Urol.* 2010; 184:1768-74.
4. Koyle MA, Elder JS, Skoog SJ, Mattoo TK, Pohl HG, Reddy PP, Abidari JM, Snodgrass WT. **Febrile urinary tract infection, vesicoureteral reflux, and renal scarring: current controversies in approach to evaluation.** *Pediatr Surg Int.* 2011; 27:337-46.
5. Le LD, Alam S, Lim FY, Keswani SG, Crombleholme TM. **Prenatal and postnatal urologic complications of sacrococcygeal teratomas.** *J Pediatr Surg.* 2011; 46:1186-90.
6. Minevich E. **Management of ureteric stone in pediatric patients.** *Indian J Urol.* 2010; 26:564-7.
7. Minevich E, Sheldon C. **Pediatric genitourinary system.** *Greenfield's surgery : scientific principles and practice.* Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2011.

8. Nguyen HT, Hurwitz RS, Defoor WR, Minevich E, McAdam AJ, Mortensen JE, Novak-Weekley SM, Minnillo BJ, Elder JS. **Trimethoprim in vitro antibacterial activity is not increased by adding sulfamethoxazole for pediatric Escherichia coli urinary tract infection.** *J Urol.* 2010; 184:305-10.
9. Podberesky DJ, Weaver NC, Anton CG, Lawal T, Hamrick MC, Alam S, Pena A, Levitt MA. **MRI of acquired posterior urethral diverticulum following surgery for anorectal malformations.** *Pediatr Radiol.* 2011; .
10. Reddy PP, Defoor WR. **Ureteroscopy: The standard of care in the management of upper tract urolithiasis in children.** *Indian J Urol.* 2010; 26:555-63.
11. Tan A, Balachandran J, Sadat S, Gavini V, Dunietz BD, Jang SY, Reddy P. **Effect of length and contact chemistry on the electronic structure and thermoelectric properties of molecular junctions.** *J Am Chem Soc.* 2011; 133:8838-41.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards Annual Direct / Project Period Direct

DEFOOR, W

Randomized Intervention for Children with Vesicoureteral Reflux - per patient

National Institutes of Health(University of Buffalo)

U01 DK 074063	08/09/10-06/30/13	\$40,489
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Randomized Intervention for Children with Vesicoureteral Reflux

National Institutes of Health(University of Buffalo)

U01 DK 074063	08/09/10-06/30/13	\$43,393
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NOH, P

Urinary NGAL as a Noninvasive Biomarker of Obstruction in Unilateral Hydronephrosis

National Kidney Foundation

	07/01/10-06/30/11	\$5,000
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	Current Year Direct	\$88,882
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Industry Contracts

REDDY, P

Pfizer, Inc.		\$25,493
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DEFOOR, W

Oceana Therapeutics, Inc.		\$23,859
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	Current Year Direct Receipts	\$49,352
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	Total	\$138,234
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