Division Data Summary

RESEARCH AND TRAINING DETAILS

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<td>Direct Annual Industry Support</td>
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<td>Peer Reviewed Publications</td>
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CLINICAL ACTIVITIES AND TRAINING

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<td>Number of Clinical Staff</td>
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<td>Number of Other Students</td>
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Significant Accomplishments

Clinical Services Rise to No. 3 in Nation

Our Division climbed from fourth to third in the nation among all pediatric urology programs ranked by *US News and World Report*. The division's national reputation is linked to institutional and divisional strategic goals for clinical expansion. The Center for Disorders of Sex Development (DSD) has provided world-class specialized care for children with congenital chromosomal, gonadal or anatomical variations of sex development. Our Urogenital Center cares for children with highly complex genitourinary conditions involving abnormalities of the bladder, urethra, vagina and anorectum. A third multidisciplinary center, the Stone Center was established offering comprehensive, cost effective and coordinated care management of patients with stone disease of the urinary system. We participated in Cincinnati Children’s phase one Care Coordination cohort. Our team also has established reporting systems and outcome measures for renal function, social continence, and self-management for patients with Posterior Urethral Valves (PUV).

Surgeons Share Expertise Overseas

Partnering with Global Health, Pramod Reddy, MD traveled to India and Eugene Minevich, MD, traveled to Israel to perform complex urological surgeries. Several faculty members also were invited to present at international pediatric urology conferences: W. Robert DeFoor, Jr., MD, MPH, in England; Minevich in England and Italy; Reddy in India, United Arab Emirates and Hungary; and Paul Noh, MD, in South Korea.
Leading Basic and Clinical Research

Reddy’s lab has focused on using a mouse model to study changes in bladder function and morphology induced by social stress. Reddy also leads a clinical trial to evaluate festerodine as a treatment for neurogenic detrusor overactivity.

Joo-Seop Park, PhD, is investigating the self-renewal and differentiation of nephron progenitors during nephrogenesis. Park also attained Trustee Award Funding and a Research Innovation Pilot Funding Award.

DeFoor is the principal investigator on a subcontract for the NIH clinical trial, “Randomized intervention for children with vesicoureteral reflux (RIVUR).” DeFoor and Minevich are evaluating Deflux for VUR patients receiving endoscopic correction. DeFoor also is in a clinical trial using Botox in the treatment of urinary incontinence.

Elizabeth Jackson, MD, is studying, “Nocturnal Enuresis: Comparison of Buzzer and Voice Alarms on the Rate of Resolution of Bedwetting.”

Research Highlights

Joo-Seop Park, PhD

Dr. Park was awarded a two year Trustee Award Grant for his project entitled "Cell Fate Regulation of Nephron Progenitors." Additionally, the Basic Science Research and the Clinical Translational, Outcomes and Health Services Committees approved Dr. Noh’s project entitled “Role of Notch2 as a transcriptional repressor in nephrogenesis” for Research Innovation/Pilot Funding. Dr. Noh’s study was one of six projects funded out of 25 applications. Dr. Park presented two talks: first on February 19, 2013 on "Cell fate regulation of nephron progenitors by Six2 and Notch2" at Department of Physiology University of Cincinnati; and the second was on June 26, 2013 on "Cell fate determination of nephron progenitors by Six2 and Wnt regulate self-renewal and commitment of nephron progenitors through shared gene regulatory networks. Developmental Cell. 2012;23:637-651.

Dr. Paul Noh, MD

Dr. Noh completed his I2S2 outcomes project entitled: “Reduce unused chargeable items in urology minor case OR packs”. Dr. Noh’s global aim was to reduce OR waste and increase value for patients/families. The project’s smart aim was accomplished by reducing the percentage of unused chargeable items in Urology minor case surgical packs from 30% to 5% by June 30, 2013 by separately packaging non routine OR supplies to be used by surgeon, only as needed, based on the specific OR case.

Brian VanderBrink, MD

Dr. VanderBrink led an I2S2 outcomes project entitled: “Improving the efficiency of medical supply requests.” Dr. VanderBrink’s global aim was to improve the family experience and reduce the number of preventable phone calls to Division of Urology. The smart aim was accomplished by increasing the percentage of Urology medical supply requests completed within one business day from 70% to 90% by January 1, 2013 by creating a medical assistant directed performance improvement process to meet this goal.

Elizabeth C. Jackson, MD
Dr. Jackson has completed recruitment of 200 patients for her clinical study entitled: “Nocturnal Enuresis: Comparison of buzzer and voice alarms on the rate of resolution of bedwetting and is analyzing data collected”. Bedwetting alarms are the most effective long term treatment for children with monosymptomatic nocturnal enuresis. The specific aim of this research is to compare efficacy in terms of rate and speed of resolution of bedwetting between an alarm that sounds a buzzer and an alarm that plays spoken directions. A secondary aim will be to assess how long parental assistance is needed to help the child respond to each type of alarm.

Significant Publications


Partial nephrectomy has been previously reported as safe and effective in appropriately selected children with renal cell carcinoma (RCC). However, there are limited reports of laparoscopic or robotic partial nephrectomy for oncologic surgery in children. Additionally, nodal involvement is common in pediatric RCC, and may present even with small primary tumors. Also, it is suggested that lymph node dissection may provide therapeutic benefit.

We present a case of pediatric RCC and demonstrate how the risk of nodal involvement may impact the surgical approach. Robotic-assisted laparoscopy can permit excellent exposure for an oncologically-sound resection, in this case a partial nephrectomy, as well as an extended lymph node dissection.


Paper describes pediatric robotic assisted laparoscopic bladder diverticulectomy with a ureteral reimplantation in a 9-year-old male for a symptomatic paraureteral diverticulum.


Minimally invasive surgery has been increasingly applied in paediatric urology, including the treatment of ureteropelvic junction obstruction. To the best knowledge of the author, the paper describes the first laparoscopic bypass pyeloureterostomy in a 3-month-old male infant, with giant hydronephrosis and high insertion of the ureter into the renal pelvis.


A balance between Six2-dependent self-renewal and canonical Wnt signaling-directed commitment regulates mammalian nephrogenesis. Intersectional studies using chromatin immunoprecipitation and transcriptional profiling identified direct target genes shared by each pathway within nephron progenitors. Wnt4 and Fgf8 are essential for progenitor commitment; cis-regulatory modules flanking each gene are co-bound by Six2 and beta-catenin and are dependent on conserved Lef/Tcf binding sites for activity. In vitro and in vivo analyses suggest that Six2 and Lef/Tcf factors form a regulatory complex that promotes progenitor maintenance while entry of beta-catenin into this complex promotes nephrogenesis. Alternative transcriptional responses associated with Six2 and beta-catenin co-binding events occur through non-Lef/Tcf DNA binding mechanisms, highlighting the regulatory complexity downstream of Wnt signaling in the developing mammalian kidney.


The paper compares the outcomes between standard and robot-assisted laparoscopic pyeloplasty to treat
ureteropelvic junction obstruction in children. A retrospective cohort study was performed of all children who underwent standard or robot-assisted laparoscopic pyeloplasty for ureteropelvic junction obstruction at a single institution from October 2007 to January 2012. Indications for surgery included symptomatic obstruction and abnormal diuretic renal scan. A successful outcome was defined as resolution of clinical symptoms, improvement of hydronephrosis on ultrasound, stable ultrasound with resolution of symptoms or improvement of the drainage curve on diuretic renal scan.

Reviewed 18 patients (median age 8.1 years) who underwent standard and 46 (8.8 years) who underwent robot-assisted laparoscopic pyeloplasty (p = 0.194). Median operative time was 298 minutes (range 145 to 387) for standard and 209 minutes (106 to 540) for robot-assisted laparoscopic pyeloplasty (p = 0.008). Mean hospitalization was similar between the groups (1 day for standard vs 2 days for robot-assisted laparoscopic pyeloplasty, p = 0.246). Narcotic use was similar between the groups. Median followup was 43 months for standard and 22 months for robot-assisted laparoscopic pyeloplasty (p <0.01). Renal ultrasound showed postoperative improvement of hydronephrosis in 85% and stable disease in 15% of patients following robot-assisted laparoscopic pyeloplasty, and improvement in 89.5% and stable disease in 10.5% after standard laparoscopic pyeloplasty. Symptoms resolved in 100% of patients (38 of 38) after robot-assisted laparoscopic pyeloplasty and 87.5% of patients (7 of 8) after standard laparoscopic pyeloplasty.

Robot-assisted laparoscopic pyeloplasty and standard laparoscopic pyeloplasty are effective techniques to correct ureteropelvic junction obstruction, with similar outcomes. Robot-assisted laparoscopic pyeloplasty had a shorter operative time, and its success and complication rates are comparable to standard laparoscopic pyeloplasty.

### Division Publications


Faculty, Staff, and Trainees

Faculty Members

Pramod P. Reddy, MD, Professor

**Leadership** Division Director; Director, Pediatric Urology Fellowship Program; The Curtis Sheldon and Jeffrey Wacksman Chair in Pediatric Urology; Director, Pediatric Urology Fellowship Program

**Research Interests** Complex genitourinary reconstruction; neurogenic bladder; anorectal malformations; disorders of sexual development; renal transplant in the neurogenic bladder; general pediatric urology surgery; prenatal evaluation and fetal care; general pediatric urology surgery; minimally invasive robotic assisted surgery; Kidney stones; ESWL; clinical trials.

Shumyle Alam, MD, Assistant Professor

**Leadership** Director, Urogenital Center

**Research Interests** Complex genitourinary reconstruction; neurogenic bladder; anorectal malformations; disorders of sexual development; renal transplant in the neurogenic bladder; general pediatric urology surgery; complex hypospadias; re-operative hypospadias.

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

**Leadership** Director of Clinical Research; Co-Director, Pediatric Urology Fellowship Program

**Research Interests** Robotic-assisted laparoscopic pediatric urologic surgery; Complex genitourinary reconstruction; clinical outcomes research; clinical trials; kidney stones; uro-oncology; vesicoureteral reflux, prenatal hydronephrosis, posterior urethral valves.

Eugene A. Minevich, MD, Professor

**Leadership** Director, Stone Program

**Research Interests** Kidney stones; ESWL; complex genitourinary reconstructive surgery; microscopic hypospadias; general pediatric urology surgery; endoscopic treatment of VUR.

Paul H. Noh, MD, Assistant Professor

**Leadership** Director, Minimally Invasive Surgery

**Research Interests** Minimally invasive laparoscopic surgery; minimally invasive robotic-assisted surgery; general pediatric urology surgery; prenatal evaluation and fetal care.

Curtis A. Sheldon, MD, Professor

**Leadership** Founding Director, Urogenital Center
Research Interests Ethics, Professionalism

Brian A. VanderBrink, MD, Assistant Professor

Research Interests Spina bifida, genitourinary reconstructive surgery; neurogenic bladder; minimally invasive laparoscopic surgery; clinical trials

Joint Appointment Faculty Members

Elizabeth C. Jackson, MD, Associate Professor (Division of Nephrology; Director of Healthy Bladder Clinic)

Research Interests Voiding dysfunction; overactive bladder; urinary tract infections; metabolic basis of stones; nocturnal enuresis; clinical outcomes research; clinical trials.

Joo-Seop Park, PhD, Assistant Professor (Division of Pediatric Urology; Division of Developmental Biology)

Research Interests Basic science research on nephron progenitor cells differentiation during organogenesis of the mammalian kidney and bladder; studies transcriptional and epigenetic controls of cis-regulatory modules that act downstream of various signaling pathways.

Clinical Staff Members

Sharon Dickman, MSN, CNP, SANE-P
Denise Ferguson, MSN, CNP
Abbey Franklin, MSPAS, PA-C
Odile Kennedy, MSN, CNP
Tammy Lingsch, MSN, CNP
BJ Manz, MSN, CNP
Katie Mueller, MSN, CNP
Nan Tobias, MSN, CNP

Trainees

Nicholas Cost, MD, PL-7, MD - Emory University School of Medicine; University of Texas Southwest MC, Dallas, Texas

Christopher Bean, MD, PL-6, MD - University of Mississippi School of Medicine; Spring Hill College, Mobile, Alabama

Anis Ansari, MD, PL-5, MD - Shyam Shah Medical College, Rewa-Madhya Pradesh, India

Marawan El Tayeb, MD, PL-4, Alexandria School of Medicine, Alexandria, Egypt

Division Collaboration

Bariatric Surgery; Nephrology » Thomas Inge, MD and John Asplin, MD
Urinary metabolic evaluations in morbidly obese children.

Nephrology » Prasad Devarajan, MD
Urinary NGAL in Ureteropelvic junction obstruction in children.

Radiology » Brian Coley, MD
Develop a method to track a patient's radiation exposure from various radiology testing.

Oncology; Pediatric Surgery » James Geller, MD and Gregory Tiao, MD
Renal rhabdomyosarcoma

Oncology; Radiology; Pediatric Surgery » Janes Geller, MD, Eric Crotty, MD, and Roshni Dasgupta, MD
Imaging for pediatric renal tumors.

**Oncology** » James Geller, MD
- Robotic surgery for pediatric renal tumors.

**Oncology; Children's Oncology Group (National Organization)** » James Geller, MD
- Epidemiology and surgical approach to pediatric renal cell tumor.

**Colorectal Center** » Mark Levitt, MD
- Cloaca Project and Neurogenic Bladder Project looking at the long term outcomes.

**Pediatric Sugery** » Gregory Tiao, MD
- Look at urinary outcomes with (1) kidney transplant for urological conditions and (2) infant posterior urethral valves.

**Nephrology** » Stuart Goldstein, MD
- Revise criteria and categories in NAPRTCS.

**Orthopaedic Surgery** » Mehlman, Charles, MD
- External fixator pelvic immobilization in bladder extrophy patients.

**Gynecology** » Breech, Leslie, MD
- Surgical outcomes with feminizing genitoplasty in DSD patients.

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**Grants, Contracts, and Industry Agreements**

**Grant and Contract Awards**

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**Current Year Direct** $29,042

**Industry Contracts**

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**Current Year Direct Receipts** $36,528

**Total** $65,570