

Best of the 2016 Society for Pediatric Urology Fall Congress

Highlights From the 2016 Society for Pediatric Urology Fall Congress, September 9-11, 2016, Dallas, TX

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KEY WORDS

Spinal anesthesia • Neuropathic bladder • Pregnancy • Complications • Cesarean delivery • Urachus • Embryology

The 4th Annual Pediatric Urology Fall Congress was held on September 9-11, 2016, in Dallas, TX, and was well attended by pediatric urology specialists. The scientific program covered the latest developments in the field of pediatric urology. Highlights of the program included the American Association of Pediatric Urologists lecture, “Old Way. New Way. Best Way?” by Drs. Kenneth Kropp and Bradley Kropp. This was a lively father-son discussion of the “then and now” approach to problems in pediatric urology. The American Academy of Pediatrics Latimer lecture, “Long-term Morbidity of Augmentation Cystoplasty: What Have We Learned? A Transitional Urologist’s Viewpoint,” was given by Dr. Douglas Husmann. The Society for Pediatric Urology lecture titled “Vesicoureteral Reflux Is a Phenotype, Not a Disease: Population Health and the Pediatric Urologist,” was presented by Dr. Steve Docimo. Dr. Craig Peters gave a special lunchtime lecture titled “Rare Stone Disease in Children,” which was very timely with the increase in pediatric kidney stones.

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The 2016 American Academy of Pediatrics Urology Medal was awarded to John M. Hutson, MD, DSc, FAAP. Dr. Grahame Smith was the presenter. Dr. Hutson has been the chair of pediatric surgery at the University of Melbourne (Melbourne, Australia) since 2006, and a consultant pediatric urologist at the Royal Children’s Hospital (Melbourne, Australia). Dr. Hutson is a graduate of both Monash University (Melbourne, Australia) and the University of Melbourne. After completing his formal training in general surgery and training at the Royal Children’s Hospital with the late Dr. Douglas Stephens in the 1970s, Dr. Hutson was a surgical research fellow with Dr. Patricia K. Donahoe at Massachusetts General Hospital and Harvard Medical School (Boston, MA) for 3 years. He practiced for a year at Yorkhill Hospital for Sick Children (Glasgow, Scotland) before returning to Melbourne in 1984. In 1993, he was appointed professor/director of Pediatric Surgery at the University of Melbourne. Dr. Hutson has spent 4 decades investigating the embryology of sexual development and the mechanism of testicular descent. Dr. Hutson is also an expert in managing disorders of the gastrointestinal

tract, including anorectal malformations, Hirschsprung disease, and motility-related constipation. He is has published a myriad of papers, book chapters, and books, as well as monographs on the undescended testis, genitourinary malformations, anorectal malformations, and disorders of sexual development.

This year's First Prize for Clinical Research was awarded to the Nationwide Children's Hospital group for their work on the use of spinal anesthesia (SA) for pediatric urologic surgery.¹ With growing concerns about the effects of general anesthesia (GA) in young children, SA with bupivacaine, 0.5% 1 mg/kg was investigated as an alternative technique for lower abdominal, genital, and/or groin procedures requiring fewer than 90 minutes in infants and children. This was a prospective study on children under age 2 years undergoing SA. Demographics, procedure, time required for placement of the spinal anesthetic, length of surgery, success of lumbar puncture, success of attaining adequate surgical anesthesia, need for supplemental systemic sedation, conversion to GA, and perioperative complications were assessed. In some older children, sedation was needed prior to the SA. The need for supplemental sedation or conversion to GA was noted.

Since September 2015, 39 consecutive children (38 boys, 1 girl) with a mean age of 7.3 months (27 days-24 months) underwent SA as their primary means of anesthesia for circumcision (13), hidden penis/circumcision (5), chordee release/circumcision (4), distal hypospadias (6), orchidopexy (8), hernia/hydrocele (2), and labial abscess drainage (1). Injection of bupivacaine was successful in 36 of 39 patients (92%); 3 patients underwent GA due to inability to successfully perform the lumbar puncture.

The procedure times were generally short, with an average time of 40 minutes. Additional sedation was needed in 20% of cases. There were no complications related to the anesthesia or the surgery. These investigators concluded that SA is a safe and efficacious alternative to GA in children younger than 12 months. No airway management is needed and it may obviate the need for systemic anesthetics.

Most women with neuropathic bladder (NB) who have undergone lower urinary tract reconstruction (LUTR) have the potential for pregnancy.² In the modern era, investigators from the University of Indiana (Indianapolis, IN) examined the effects of pregnancy and cesarean delivery, and defined the role of the urologist in their perinatal care.

The records of patients from July 1987 to May 2016 with NB that underwent LUTR and had a cesarean delivery were reviewed. Data regarding demographics, etiology of NB, upper urinary tract changes, urinary tract infection, continence, and catheterization technique during pregnancy were collected and reviewed. Data from the cesarean delivery were also reviewed, noting gestational age at delivery, skin incision, uterine incision, and complications. A total of 10 women who had 16 pregnancies over a 29-year period made up the group for this study. Cesarean delivery was performed for the 14 viable neonates including 2 preterm (25 to < 34 weeks), 5 late preterm (34 to < 37 weeks), and 7 term births. Two miscarriages occurred.

Almost all (13/14) pregnancies had complete data for review; 10 women developed new onset hydronephrosis and 2 developed worsening hydronephrosis. Half were asymptomatic and six required nephrostomy tubes at a median of 30 weeks. Catheterization was

difficult in seven patients, four via the urethra and three via a Monti channel. Almost half (3/7) required indwelling Foley catheters. De novo incontinence occurred in five patients, and nine had symptomatic urinary tract infections, two of which were febrile. A urologist was present at the time of the cesarean delivery. Six cesarean deliveries were scheduled, whereas seven were emergent due to premature labor. Cesarean delivery was performed emergently when a planned vaginal delivery failed to progress. The cesarean delivery was performed using a midline incision in 7 patients and a Pfannenstiel incision was performed in 7; a classical incision in the uterus was performed in 10 patients, and a low transverse incision was used in 4. Intraoperative complications occurred in 6 of 14 patients (43%), including a cystostomy in 5, a bowel deserosalization in 1, and vaginal extension in 1. In one of the emergent cesarean deliveries, a uterine rupture occurred. Urinary fistulae were identified in three deliveries postoperatively.

Despite the involvement of a urologist at the time of delivery, women with NB and LUTR have a high rate of complications during pregnancy and delivery. Prenatal counseling is recommended in this group, so they are aware of the need for close follow-up during and after the pregnancy, as well as at the time of delivery.

The embryologic origin of the urachus remains unknown, but is of interest because the urachus has the potential to develop adenocarcinoma and not transitional cell carcinoma, which is commonly seen in the bladder. Hutson and Penington³ investigated the embryology of the urachus and the bladder because the contribution of the allantois and cloaca to the formation of the urachus and the bladder remain unclear.

The studies were performed using Sprague-Dawley rat embryos (at 11 and 21 days of gestation), and human embryo sections at similar stages. A rat model of VACTERL (Vertebral anomalies, Anorectal malformations, Cardiovascular anomalies, Tracheoesophageal fistula, Esophageal atresia, Renal and/or radial anomalies, Limb defects) anomalies was developed using embryos treated with doxorubicin on days 6 to 9 of gestation. These embryos were similarly examined on days 11 to 21 of gestation. Light microscopy of serial histologic sections was performed.

Investigators found that, in the rat embryo, a urachus or an endodermal allantois had not formed at any embryonic stage. The rat allantois was only mesenchymal.

The cloaca was a single cavity limited by the cloacal membrane ventrally, that, at most, extended superiorly to the umbilical stalk. At no stage was there an extension of the cloacal cavity through the umbilical ring. In contradistinction, human embryos have a discrete allantoic diverticulum that extends off the cloacal cavity and through the umbilical ring into the umbilical cord. Of interest, rat embryos treated with doxorubicin had bladder agenesis because the cloacal cavity did not develop a bladder diverticulum. Although VACTERL is not associated with bladder agenesis in humans, most of the features of these rats simulated the findings consistent with the VACTERL association in humans.

These researchers concluded that their observations support the hypothesis that the human urachus forms from the endodermal allantois diverticulum and the bladder origins are from the cloaca. The bladder buds from the cloaca in the rat; in humans, the initial branch point occurs at the junction of the allantois and the cloaca. ■

References

1. Whitaker EE, DaJusta DG, Alpert SA, et al. Spinal anesthesia for pediatric urological surgery: reducing the theoretic neurotoxic effects of general anesthesia. Presented at: 4th Annual Pediatric Urology Fall Congress; September 11, 2016; Dallas, TX.
2. Roth JD, Casey JT, Whittam BM, et al. Pregnancy and cesarean section in women with lower urinary tract reconstruction: what is the role of the urologist? Presented at: 4th Annual Pediatric Urology Fall Congress; September 9, 2016; Dallas, TX.
3. Hutson JM, Penington EC. Embryology of urachus. Presented at: 4th Annual Pediatric Urology Fall Congress; September 11, 2016; Dallas, TX.