Efficacy of MR Urography in evaluation of pediatric urinary tract

Nicholas Bhojwani.MD
Raj Mohan Paspulati.MD
University Hospitals
Case Western Reserve University
• No disclosures from all authors
Introduction

- Infants and children with suspected urinary tract abnormality are initially evaluated with Ultrasonography. Dilated renal collecting system in this age group is frequently caused by congenital malformation and needs further imaging with various imaging methods including Intravenous urogram, Scintigraphy, Voiding cystourethrography and Retrograde pyelography.
- CT urography has replaced conventional imaging methods of the urinary tract in adults.
- CT urography is associated with exposure to ionizing radiation and has limited soft tissue contrast for evaluation of the urogenital abnormalities in the pelvis.
Introduction

• MR imaging has the advantages of no exposure to ionizing radiation and excellent evaluation of the urogenital anatomy in the pelvis.
• MR imaging technique is challenging due to the small body size, inability to breath hold and need for sedation or anesthesia
PURPOSE

• To assess the efficacy of MR urography as a single imaging technique for evaluation of the urinary tract in infants and children.

• This is a review of our experience over 5 years in the utility of MR urography in evaluation of urinary tract of infants and children from 6 months to 5 years of age. The indications include evaluation of hydronephrosis, recurrent UTI and evaluation of congenital malformations.
MR Urography Technique

- All patients received IV sedation under the supervision of anesthesia team.
- IV saline (10ml/kg body weight) and IV Furosemide (1mg/kg body weight) 15 minutes before IV Gadolinium.
- Axial & Coronal T2 HASTE
- 3D T2 weighted coronal images with fat saturation
- Axial & Sagittal T2 FSE of the pelvis
- Pre and Post Gadolinium T1 3D gradient echo coronal images in arterial, venous and excretory phase.
- Excretory phase images up to 10 minutes delay for complete evaluation of the distal ureters.
- Subtraction and Multiplanar reconstruction images
Methods

• This is a review of our experience over 5 years in the utility of MR urography in evaluation of urinary tract of infants and children from 6 months to 5 years of age.

• Indications: Evaluation of Hydronephrosis, Recurrent UTI, Congenital malformations.
Teaching points

• MR Urography technique & its challenges
• Imaging features of Common urinary tract abnormalities in this age group
• Pit falls MR Urography
Right renal duplex moiety with hydronephrosis of the upper moiety with an intra vesical ureterocele