

## MR Urography (fMRU)

### 1. Patient Preparation:

- Sedation/anesthesia- usually < 7 years of age
- Non-sedate cases NPO 4 hours prior to scan
- Hydration- 20cc/kg bolus prior to imaging
- Bladder Catheterization- Foley catheter without balloon connected to a bag which is placed below the level of the table to facilitate bladder emptying
- Procedural meds- Lasix 1mg/kg (max 20 mg) given 15 min before IV gadolinium injection
- Positioning: Prone (unless precluded by surgery, sedation issues etc...)

### 2. Coverage- from diaphragm to below the bladder, A-P coverage through the kidneys

- 3 pre-contrast sequences, one pre-contrast test scan prior to gad injection, then dynamic T1 3D GRE dynamic series comprised of repetitions for 8 min or until contrast seen in the ureters; delays obtained based on clinical question.

<b>Seq: T1/T 2</b>	<b>2D/3D</b>	<b>Vendor Specific name</b>	<b>Plane</b>	<b>Fat sat</b>	<b>Motion correctio n</b>	<b>Other parameters</b>	<b>Additional info</b>
T2 Single shot	2D	T2 HASTE, SSFSE, SSH-TSE	Sagittal and axial	No	FB or BH based on pt age		Essential for planning oblique coronals
T2	2D	T2 BLADE/Propeller/ MultiVane	Axial (abdomen)	Yes	FB		Depicts scarring, dysplasia well
T2	3D	T2 SPACE/CUBE/VIST A	Coronal (isotropic)	Yes	RT or Navigator		Can use to reconstruct in other planes
T1	3D	VIBE/THRIVE/LAV A	Coronal	Yes	FB	Fast scan	Pre-contrast Oblique to include kidneys, ureters and bladder
T1	3D Post- contrast	VIBE/THRIVE/LAV A	Coronal	Yes	FB	Repeated till contrast in ureters or for 8 min	Can be repeated, same oblique plane as pre-contrast

Legend: FB= free breathing, RT=respiratory triggered, BH=Breath-hold;

Optional sequences:

1. DWI axial b-value (2-3 b values)
2. Coronal T2 SSFSE

Special Situations:

1. Concern for **ectopic ureter**- acquire Axial T2 FS high resolution imaging through pelvis
2. Concern for **calyceal diverticulum**- Coronal and Sagittal 3D T1 VIBE/LAVA/THRIVE delays (at half hour, and one hour or more to identify contrast in the diverticulum)
3. Concern for **fibroepithelial polyp**- Coronal cinematic balanced SSFP (TruFISP/FIESTA/balanced FFE)