MR Urethral Diverticulum or Mass
MR Pelvis WO & W Contrast

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Contact: (866) 761-4200, option 1

Standard uses: Look at the urethra / adjacent region
- Expected clinical history: Pelvic pain, dysuria, urinary frequency, urgency, incontinence, urethral bleeding, frequent UTIs, urethral mass, follow-up abnormal US or CT finding.
- Use this protocol for urethral diverticulum, urethral fistula, or urethral mass/tumor, anterior vaginal wall lesion.
- Do not use this for penis, labia, pelvic floor / bladder dysfunction, bladder sling / suspension.

**Please call body MD if unsure if this protocol is appropriate**

NOTE: Ask whether or not patient has had any prior surgery, injection or other procedure for urinary incontinence.
- If “yes,” check with body radiologist before proceeding.

Patient prep:
(1) Should be NPO for >4 hours except water prior to study if possible

(2) Have patient void approximately 30 – 60 minutes before the study begins

(3) Then (after #2), have patient drink 500 mL water in the 30-60 min before study begins
   a. Images will be best if bladder is neither totally empty nor full

Coil: Phased array pelvic / torso body coil.

Coverage: Position the coil such that there is optimal coverage and signal from the top of the symphysis pubis through the perineum.

Oral contrast: None.

Intravenous contrast: Single dose gadolinium @ 2 cc / sec (Gadavist, MultiHance if Gadavist unavailable).
SUMMARY:

1. Localizer
2. Coronal T2 (Ultra fast SE) non-FS
3. Axial T1 GRE in/out
4. Axial T2 (Ultra fast SE) non-FS
5. Sag T2 (Fast SE) non-FS
6. Oblique axial T2 (Fast SE) non-FS (small FOV – to urethra)
7. Oblique axial T2 (Fast SE) FS (small FOV – to urethra)
8. Oblique coronal (Fast SE) T2 non-FS (small FOV – to urethra)
9. Axial T1 FS pre-contrast
10. Axial T1 FS post-contrast (x3)
11. Sagittal T1 FS post-contrast

STOP – have patient partially void – RESUME

12. Axial T1 FS post-contrast long delay (see below)
13. Subtractions (4 total - all axial)

Sequences:

1. 3 plane localizer

2. Coronal T2 Ultra fast SE (HASTE, SSFSE, FASE) without fat suppression
   a. Breath hold
      i. Concatenation/multi-breath hold is less desirable than single breath hold
   b. FOV: Iliac crests to symphysis pubis.
      i. Complete front to back coverage (skin to skin)
   c. Goal parameters
      i. 7 mm thickness, 25% gap (1.5 mm)

3. Axial T1 GRE in and out of phase
   a. FOV = Superior iliac crest to perineum
   b. Goal parameters
      i. Slice thickness 4 mm
      ii. In plane acquired resolution <1 mm
      iii. Number of averages >= 2

4. Axial T2 Ultra fast SE (HASTE, SSFSE, FASE) without fat suppression
   a. Large FOV = Superior iliac crest to perineum
   b. Goal parameters
      i. Slice thickness 4-4.5 mm
      ii. In plane acquired resolution <1 mm
      iii. Number of averages >= 2

5. Sagittal T2 fast SE (Turbo SE, Fast SE) without fat suppression
   a. Small FOV = 240-320 mm, see example T2 TSE image in Appendix
      i. CC extent: Above bladder to below perineum
      ii. Extend from pelvic sidewall to pelvic sidewall
b. Goal parameters
   i. Slice thickness 3 mm
   ii. Gap 0%
   iii. In plane acquired resolution <1 mm
   iv. Number of averages = 2

6. Oblique axial T2 fast SE (Turbo SE, Fast SE) without fat suppression, small FOV
   a. Small FOV
      i. CC extent: At least sacral promontory to below perineum
      ii. PLANE angulation: Thin slice “true” axial to plane of the urethra = short axis to the urethra
         1. Call radiologist if you have difficulty, occasionally a double oblique technique will be needed when there is significant rotation of the urethra
         2. NOTE: Depending on the plane of the urethra, this may end up being an orthogonal axial acquisition
         3. See appendix
   b. Goal parameters
      i. FOV approximately 200-240 mm
      ii. Slice thickness 3 mm, 0% gap
      iii. In plane acquired resolution <1 mm
      iv. Number of averages >= 2

7. Oblique axial T2 fast SE (Turbo SE, Fast SE) with fat suppression, small FOV
   a. Goal parameters: as for #6.

8. Oblique coronal T2 fast SE (Turbo SE, Fast SE) without fat suppression, small FOV
   a. Small FOV
      i. CC extent: Slices should extend into bladder and sacrum to below perineum
      ii. PLANE ANGULATION: Thin slices “true coronal” plane of the urethra = long axis to the urethra (coronal to #6 & #7.)
      iii. Note: Depending on the plane of the urethra, this may end up being an orthogonal coronal acquisition
      iv. See appendix
   b. Goal parameters
      i. Slice thickness 3 mm
      ii. In plane acquired resolution <1 mm
      iii. Number of averages >= 2

9. Axial T1 Ultra fast 3D-GE with fat suppression (VIBE, LAVA, TIGRE) precontrast
   a. Breath hold
      i. Concatenation/multi-breath hold is less desirable than single breath hold
   b. FOV:
      i. CC: Upper bladder to below perineum
      ii. Trans: Femoral head to femoral head
   c. Goal parameters
      i. Slab slices <= 3 mm
10. **Axial** T1 Ultra fast 3D-GRE fat suppressed (VIBE, LAVA, TIGRE) **post-contrast (x3)**
   a. FOV – as #9.
   b. Slice thickness <= 3 mm
   c. Timing: **25 sec, 60 sec, 2 min**

11. **Sagittal** T1 Ultra fast 3D-GRE fat suppressed (VIBE, LAVA, TIGRE) **post-contrast**
   a. FOV – as in #5.
   b. Slice thickness <= 3 mm
   c. Timing: After axial #10., approx. **3 min delay post injection**

**STOP exam – have patient PARTIALLY VOID – restart for final sequence**

12. **Axial** T1 suppressed (VIBE, LAVA, TIGRE) **post-contrast** – long delay
   a. FOV – as #9.
   b. Slice thickness <= 3 mm
   c. Timing: **approximately 15 min delay post injection (can be longer)**

13. Subtraction series: 4 total (axial)
   a. **NOTE:** Can be 3 total if there are issue with subtracting last axial delay to do re-positioning

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**APPENDIX:**

Dotted line = urethra (oblique coronal)

**Yellow line** = oblique axial

Arrow = urethral diverticulum

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