

Penis and Scrotum MR Pelvis Without and With

Reviewed By: Dan Van Roekel, MD & Jason Jacob, MD
Last Reviewed: October 2022

Contact:

NOTE: Call radiologist before starting patient if any questions re: protocol

Indications: This is for use with acute and non-acute evaluation of the penis and urethra.

- Trauma: fracture, contusion
- Infectious/Inflammatory: Fournier gangrene, scrotal abscess
- Neoplastic: Penile and scrotal mass, Peyronie's disease, Squamous cell carcinoma, Metastases
- Vascular: Cavernosa thrombosis, Mondor Disease.
- Penile Prosthesis evaluation

Penile Prosthesis:

- Most modern penile implants, and all of the inflatable type, can be safely imaged with MR imaging.
- Two prostheses—OmniPhase and DuraPhase (Dacomed, Minneapolis, Minn)—have demonstrated deflection forces and should not be imaged.

Scan/table Time: 45-60minutes

Patient Prep: No solid food four hours prior to exam.

Oral contrast: None.

Coil: Phase-array body coil. Due to coverage of anatomy may need 2 coils.

Scanner: 1.5 T or 3.0 T (the below parameters are for 1.5T)

Coverage: for small field of view, Penis and scrotum.

Intravenous contrast: 0.1 mL/kg gadolinium.

Patient Position:

- Supine in the scanner.
- Towel bundle placed against perineum below scrotum to elevate the scrotum from between the thighs.
- Penis lying on anterior abdominal wall at midline, with folded towel between abdominal wall and penis. Glans of penis taped at midline.
- Folded towel place over penis and scrotum to create a space gap between superficial parts and coil.
- If evaluating a palpable, visible, or symptomatic focus, a marker should be placed in the region of interest.

Perform Core Sequences for all studies, including trauma. Contrast is not needed for a trauma examination. If patient history includes tumor or inflammation, then perform the optional sequences.

Core Sequences:

1. **3-plane localizers with breath hold**
2. **COR HASTE to localize aorta to below genitalia.**
 - a. 400 FOV 6 thick 20%gap
3. **Axial; Whole Pelvis; T2 HASTE (SSFSE)**
 - a. Breath hold. May need 2 concats.
 - b. FOV: 340 mm, Aortic bifurcation to below genitals (including entire scrotum and penis)
 - c. Slice thickness: 6 mm
 - d. Gap: 0%
 - e. Matrix size: 320 x 256
4. **Axial; Whole Pelvis; T1 TSE**
 - a. FOV: 340 mm, Aortic bifurcation to below genitals (including entire scrotum and penis), same slices as #3
 - b. Goal parameters
 - i. Slice thickness: 6 mm
 - ii. Gap: 0%
 - iii. Matrix size: 320 x 256
 - iv. NEX = 1
 - v. Phase direction P-A
5. **3-plane; Small FOV; T2 2D TSE; Sagittal AND Axial AND Coronal.**
 - a. Breath hold: Single breath hold is preferred. (these sequences are 2-5 minutes)
 - b. FOV: 200; small Field of View, planes ORTHOGONAL to the penile shaft. Coned down to penis and scrotum.
 - c. Goal parameters
 - i. Slice thickness: 3mm for Sag and Cor; 4 mm for Axial
 - ii. Gap: 0%
 - iii. Matrix size: 320 x 256
 - iv. NEX = 3 on sag and coronal, and 2 on axial
 - v. Sag and Cor- FOV 200 FOV, need to cover penis and scrotum. NO BH, use sat bands.
 1. phase for Sag is P-A, Cor R-L,
 2. Approximately 40 slices. 3.5min scan time for most scanners. Turn on i-PAT.
 - vi. Axial- 200 FOV, phase is P-A. Approximately 40 slices.
6. **Axial; Small FOV; T2 FS FSE or STIR.**
 - a. FOV: 200, Small FOV, same AX slices as #5 small FOV Axial
 - b. Goal parameters
 - i. Slice thickness: 4mm
 - ii. Gap: 0%
 - iii. Matrix size: 256 x 192
 - iv. Phase- P-A with i-PAT
7. **Axial, Small FOV; T1 Dual Echo spoiled GRE (in phase and opposed phase)**
 - a. FOV: 200 FOV; small Field of View, same AX slices as #5
 - b. Goal parameters
 - i. Slice thickness: 4mm

- ii. Gap: 0%
- iii. Matrix size: 256 x 192
- iv. Phase P-A, no i-PAT

CHECK IMAGES WITH RADIOLOGIST

Additional Sequences for Tumor or Inflammation

8. Axial; Whole Pelvis; T2 FS FSE or STIR

- a. FOV: 340 mm; Same slices as #3
- b. Goal parameters
 - i. Slice thickness: 6 mm
 - ii. Gap: 0%
 - iii. Matrix size: 320 x 256
 - iv. NEX = 2

9. Axial; Small FOV; T1 FS 3D GRE (VIBE, LAVA, TIGRE) Pre and Post-Con.

- a. FOV: 220FOV, Small FOV to include entire penis and scrotum. Same as #5 axial
- b. Goal parameters
 - i. Slice thickness: 4.0mm
 - ii. Gap: 0
 - iii. Matrix size: 224x192, phase partial Fourier off, slice partial Fourier 6/8, phase P-A
 - iv. Post contrast at 30s, 60s, 180s

10. Sagittal and Coronal; Small FOV; T1 FS 3D GRE (VIBE, LAVA, TIGRE) Post-Con.

- a. FOV: 220FOV for both, small FOV to include entire penis and scrotum, same center of slices as Sag and Cor T2 in #5
- b. Goal parameters
 - i. Slice thickness: 3.0mm for Sag and Cor
 - ii. Gap: 0
 - iii. Matrix size: 224 x 192
 - iv. Sag at 90s, coronal at 120s

11. Axial; Whole Pelvis; T1 FS 3D GRE (VIBE, LAVA, TIGRE) Post-Con

- a. FOV: 340 mm; Large FOV; Same as #3
- b. Goal parameters
 - i. Slice thickness: 6 mm
 - ii. Gap: 0%
 - iii. Matrix size: 256 x 192

12. Axial; DWI, b50, b400, b800, 2D EPI.

- a. FOV: 300 mm, Same slices as Large FOV T2 HASTE.
- b. Goal parameters
 - i. Slice thickness: **6mm**

- ii. Gap: 0%
- iii. Matrix size: 120x120
- iv. NEX = 2
- v. B value 50 400 800
- vi. Phase P-A