

## Ultrasound – Bladder Evaluation

### **PURPOSE:**

To evaluate the urinary bladder for wall thickening, intraluminal findings, and for urinary retention (when appropriate).

### **SCOPE:**

Applies to all ultrasound renal studies performed in Imaging Services / Radiology

### **INDICATIONS:**

- Decreased urinary output
- Hematuria; bladder clot
- Urinary tract infection
- Conditions associated with urinary retention (eg. neurogenic bladder)
- History of bladder outlet obstruction
- Confirmation of Foley catheter placement
- Follow up known bladder abnormalities

### **CONTRAINDICATIONS:**

- No absolute contraindications

### **EQUIPMENT:**

Curvilinear transducer with a frequency range of 2-9 MHz that allows for appropriate penetration and resolution of anatomy, depending on patient's body habitus

### **PATIENT PREPARATION:**

- Patient should be well hydrated.
- The patient should be kept from voiding 30 minutes prior to study.
- If patient has a suprapubic or Foley catheter, the catheter should be clamped 1 hour prior to exam to allow for bladder filling unless otherwise contra-indicated based on provider instructions/preferences.

### **EXAMINATION:**

#### **GENERAL GUIDELINES:**

A complete examination includes evaluation of the urinary bladder and calculation of post-void fluid volume

#### **EXAM INITIATION:**

- Introduce yourself to the patient
- Verify patient identity using patient name and DOB
- Explain test
- Obtain patient history including symptoms. Enter and store data page
- Place patient in supine position

## TECHNICAL CONSIDERATIONS:

- Review any prior imaging, making note of associated abnormalities requiring evaluation.
- Bladder lumen and wall abnormalities should be noted. Focal abnormalities should be documented without and with size measurements and color Doppler.
- For intraluminal stones or other debris, images in lateral decubitus are needed to show mobility.
- Document bilateral ureteral jets if there is a concern for urinary obstruction.
- Survey of the ureterovesicular junctions with color Doppler can also be used for twinkling artifact from distal ureteral stones.
- Measure pre- and post-void bladder volumes utilizing 3 orthogonal planes (longitudinal, AP, transverse) when specifically requested, or if history includes risk factors for urinary retention.
- If prostate appears enlarged (lobulated; deforming the overlying bladder lumen), obtain multiple dedicated images (long and transverse) through prostate gland.
  - Measure prostate gland in 3 dimensions only if specifically requested by ordering provider or interpreting radiologist.

## DOCUMENTATION:

- Bladder
  - Grayscale
    - Longitudinal images:
      - Right lateral
      - Midline
      - Left lateral
    - Transverse images:
      - Fundus
      - Mid
      - Base
  - Color Doppler
    - Right and left ureteral jets (when appropriate)
      - Typically only indicated if there concern for urinary tract obstruction, or otherwise requested by the radiologist or ordering provider.
    - Images without and with color Doppler of any focal abnormality
  - Bladder Volumes
    - **If hydronephrosis present, or if bladder volumes specifically requested:**
      - Measure and calculate pre-void bladder volume.
      - Have patient void. Re-measure and calculate post-void bladder volume.
      - Re-image each kidney to document persistent or resolution of hydronephrosis (if present pre-void).
  - Cine sweep of any focal abnormality
  - Stationary cine images of mobile debris, if present
  - Repeat images in lateral decubitus to show stones or debris are mobile
- Prostate  
(In men only, and only if appearing enlarged)

- Longitudinal and transverse images through the prostate, particularly if lobulated and deforming the overlying bladder.
  - Measurements in 3 dimensions (transverse, AP, and long) only if specifically requested by ordering provider or interpreting radiologist.
- Data page(s)

**PROCESSING:**

- Review examination images and data
- Export all images to PACS
- Confirm data in Imorgon (where applicable)
- Document relevant history and any study limitations

**REFERENCES:**

ACR-AIUM Practice Guideline (Revised 2007)

**REVISION HISTORY:**

<b>SUBMITTED BY:</b>	David T. Fetzer, MD	<b>Title</b>	Medical Director
<b>APPROVED BY:</b>	David T. Fetzer, MD	<b>Title</b>	Medical Director
<b>APPROVAL DATE:</b>	11-15-2015		
<b>REVIEW DATE(S):</b>	10-25-2018		Kanupriya Vijay
<b>REVISION DATE(S):</b>	11-12-2018	<b>Brief Summary</b>	Clarified requirements for evaluating prostate gland
	02-23-2020	<b>Brief Summary</b>	Clarified information regarding bladder volume calculations
	4-24-23		Added: Typically, only indicated if there concern for urinary tract obstruction, or otherwise requested by the radiologist or ordering provider.
	4-24-23		Added: need for decubitus positions to show debris/stones are mobile. Ureteral jets only if concern for hydro/urinary obstruction