

College of Health and Medical Technologies
Department of Radiology Technologies
Radiological procedures- 1



MICTURATING CYSTOURETHROGRAPHY

ASCENDING URETHROGRAPHY IN THE MALE

2 nd stage

LECTUER 10-11

Ahmed Salman Jassim
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MICTURATING CYSTOURETHROGRAPHY

Indications

1. Vesicoureteric reflux
2. Study of the urethra during micturition
3. Bladder leak post surgery or trauma
4. Urodynamic studies, e.g. for incontinence

Contraindications

Acute urinary tract infection.

Contrast Medium

High osmolar contrast material (HO CM) or LO CM 150 mg I mL⁻¹.

Equipment

1. Fluoroscopy unit with spot film device and tilting table
2. Video recorder (for urodynamics)
3. Bladder catheter

Patient Preparation

The patient empties their bladder prior to the examination.

Preliminary Image

Coned view of the bladder.

Technique

To demonstrate vesico-ureteric reflux (this indication is almost exclusively confined to children):

1. Using aseptic technique, the bladder is catheterized. Residual urine is drained.
2. Contrast medium (150 mg I mL⁻¹) is slowly injected or dripped in with the patient supine, and bladder filling is observed by intermittent fluoroscopy. It is important that early filling is monitored by fluoroscopy in case the catheter is malpositioned, e.g. in the distal ureter or vagina.
3. Intermittent monitoring is also necessary to identify transient reflux. Any reflux should be recorded.
4. The catheter should not be removed until the radiologist is confident that the patient will be able to micturate, the patient does not tolerate further infusion or until no more contrast medium will drip into the bladder.
5. Older children and adults are given a urine receiver, but smaller children should be allowed to pass urine onto absorbent pads on which they can lie. Children can lie on the table, but adults will probably find it easier to micturate while standing erect. In infants and

children with a neuropathic bladder, micturition may be accomplished by suprapubic pressure.

6. Spot images are taken during micturition, and any reflux is recorded. A video recording may be useful. The lower ureter is best seen in the anterior oblique position of that side. Boys should micturate in an oblique or lateral projection, so that spot films can be taken of the entire urethra.

7. Finally, a full-length view of the abdomen is taken to demonstrate any undetected reflux of contrast medium that might have occurred into the kidneys and to record the postmicturition residue.

8. Lateral views are helpful when fistulation into the rectum or vagina are suspected.

9. Oblique views are needed when evaluating for leaks.

10. Stress views are used for urodynamic studies.

Aftercare

1. No special aftercare is necessary, but patients and parents of children should be warned that dysuria, possibly leading to retention of urine, may rarely be experienced. In such cases a simple analgesic is helpful, and children may be helped by allowing them to micturate in a warm bath.

2. Most children will already be receiving antibiotics for their recent urinary tract infection—the dose will usually be doubled for 3 days, starting on the day prior to the procedure. Children not already on antibiotics will also usually be prescribed a 3-day course (often trimethoprim).

Complications

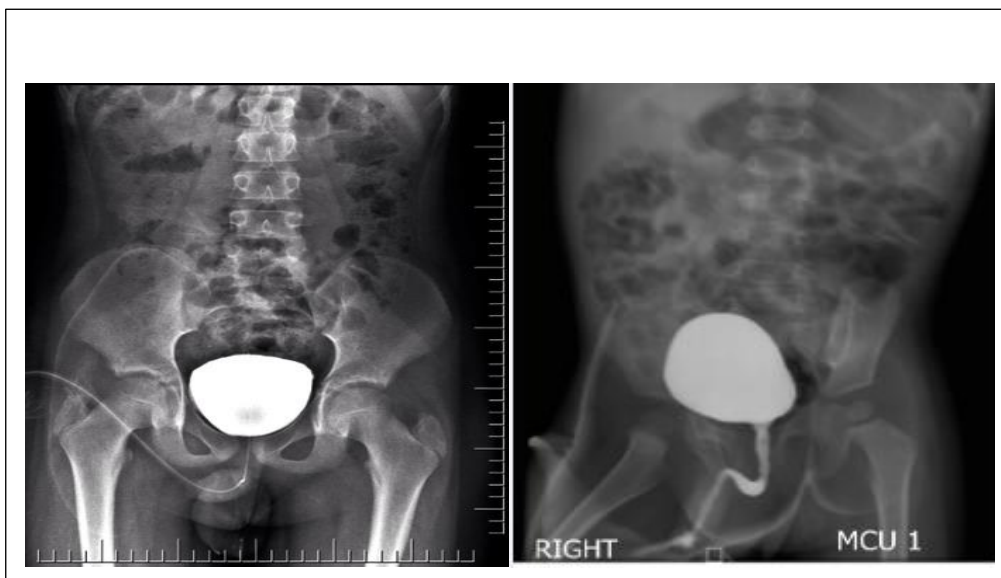
1. Urinary tract infection

2. Catheter trauma may lead to dysuria, frequency, haematuria and urinary retention.

3. Complications of bladder filling, e.g. perforation from overdistension; prevented by using a nonretaining catheter, e.g. Jacques

4. Catheterization of vagina or an ectopic ureteral orifice

5. Retention of a Foley catheter



ASCENDING URETHROGRAPHY IN THE MALE

Indications

1. Stricture
2. Urethral trauma
3. Fistulae or false passage
4. Congenital abnormalities

Contraindications

1. Acute urinary tract infection
2. Recent instrumentation

Contrast Medium

LOCM 200–300 mg I mL⁻¹ 20 mL. Prewarming the contrast medium will help reduce the incidence of spasm of the external sphincter.

Equipment

1. Fluoroscopy unit and spot film device
2. Foley catheter 8-F.

Patient Preparation

Consent.

Preliminary Image

Coned supine posteroanterior (PA) of the bladder base and urethra.

Technique

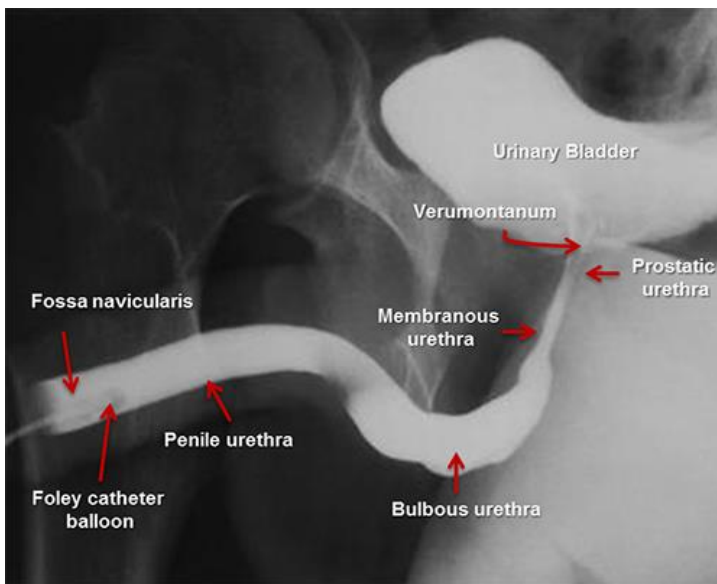
1. Patient supine
2. The catheter is connected to a 50 mL syringe containing contrast medium and flushed to eliminate air bubbles.
3. Using aseptic technique, the tip of the catheter is inserted so that the balloon lies in the fossa navicularis (i.e. immediately proximal to the meatus within the glans), and its balloon is inflated with 2–3 mL of water to anchor the catheter and occlude the meatus.
4. Contrast medium is injected under fluoroscopic control, and steep (30–45°) oblique films are taken. Gentle traction on the catheter is used to straighten the penis over the ipsilateral leg and prevent urethral overlap or foreshortening from obscuring pathology. Depending on the clinical indication, ascending urethrography may be followed by descending micturating cystourethrography to demonstrate the proximal urethra and bladder, assuming there is no contraindication to bladder catheterization, e.g. false passage, stricture. It may be possible to fill the bladder retrogradely via the urethral catheter if the patient is able to relax the bladder neck (and thus avoid bladder catheterization).

Aftercare

None.

Complications Due to the Technique

1. Acute urinary tract infection
2. Urethral trauma
3. Intravasation of contrast medium, especially if excessive pressure is used to overcome a stricture



THANKS