emDocs The EM Educator Series

The EM Educator Series: The Patient Who Can't Pee

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Case 1:

A 59-year-old male presents with severe lower abdominal pain and inability to pass urine for over 12 hours. On ultrasound, you find a significantly distended bladder, with approximately 1 L of urine.

Case 2:

A 23-year-old female presents with suprapubic and pelvic pain. She has not wanted to urinate due to severe pain from a rash that started several days ago.

Questions for Learners:

- 1. What are the etiologies of urinary retention in males and females?
- 2. How does urinary retention present?
- 3. What labs should be obtained?
- 4. What is the utility of imaging?
- 5. What is the ED management, including Foley catheter, coude catheter, suprapubic catheter, and bladder irrigation?
- 6. Are there complications of postobstructive diuresis?
- 7. Who needs emergent urologic consultation?

Suggested Resources:

- Articles
 - o <u>emDOCs Urinary Retention</u>
 - <u>Emergency Medicine Cases Female Urinary Retention</u>
 - o <u>REBEL EM Rapid or Gradual Drainage to Avoid Complications</u>
- Journal Articles
 - Emergency Medicine Practice
 - Surg Clinics North America Urologic Emergencies
 - o Journal of Emergency Medicine Urinary Retention

Answers for Learners:

1. What are the etiologies of urinary retention in males and females?

There are numerous causes that lead to acute urinary retention. Its pathophysiology typically falls under the category of **obstructive**, **inflammatory**, **infectious**, **neurologic**, **or pharmacologic related causes**. Obstructive causes of AUR are either **intrinsic** (prostatic hypertrophy, bladder mass, cystolith) or **extrinsic** (uterine prolapse, pelvic mass, severe constipation).

- Benign prostatic hypertrophy
- Bladder calculi
- Bladder clots
- Meatal stenosis
- Neoplasm of the bladder
- Neurogenic etiologies
- Paraphimosis
- Penile trauma

- Phimosis
- Prostate cancer
- Prostatic trauma/avulsion
- Prostatitis
- Urethral foreign body
- Urethral inflammation
- Urethral strictures

2. How does urinary retention present?

A thorough history is helpful in identifying the underlying cause of urinary retention. Some necessary questions include a detailed medication history, both prescribed and over the counter. Use of recreational drugs should be discussed. The presence of pain as well as the duration and location of the pain is telling in cases of obstruction. Weight loss or presence of fever is helpful in determining underlying malignancy or infection. History of gynecologic or urologic procedures in the past should be elicited. The presence of incontinence, nocturia, and urinary frequency should be discussed as well. The information discussed will assist in narrowing down the broad differential that should be considered in a patient with urinary retention.

Physical exam should include a rectal exam and genital exam in both men and women. Saddle anesthesia or decreased rectal tone may point to a neurologic cause of retention. A tender prostate on DRE may suggest prostatitis, and phimosis is a less common but important obstructive pathology in men. The most common cause of urinary retention in women is uterine prolapse which may go unnoticed without a bimanual exam. The bladder should be palpated for masses. Tenderness in the flanks may suggest obstructive lesions proximal to the bladder in both sexes, while lesions distal to the bladder may cause tenderness to palpation of the scrotum in men.

3. What labs should be obtained?

4. What is the utility of imaging?

Now that a good exam has been completed and a differential formed, lab studies and imaging can help further characterize the origin and severity of retention. Urine should be examined for infectious cells, hematuria or gross blood with clots, large amounts of glucose that may point to poorly controlled diabetes, and more. Renal ultrasound is important in determining if an obstructive process has led to hydronephrosis, and CT of the renal collecting system may also be necessary to assess for tumor, metastasis, stranding to indicate infection, presence of prolapse, or other gynecologic pathology. Labs should include Basic Metabolic panel to evaluate renal function through BUN: Creatinine ratio and electrolyte abnormalities that may be associated with drug use or cancers. CBC can be helpful in

evaluation for infection and in cases where hemorrhagic cystitis or other causes of bleeding are discovered.

5. What is the ED management, including Foley catheter, coude catheter, suprapubic catheter, and bladder irrigation?

The follow-up and treatment plan varies depending upon the underlying cause. In all cases, **prompt and complete decompression of the bladder**, commonly with a Foley catheter, is critical to reducing discomfort and long term morbidity for the patient.

6. Are there complications of postobstructive diuresis?

A rare but potentially lethal complication associated with the relief of (most commonly, chronic) urinary obstruction. May result in dehydration, electrolyte imbalances, and death if not adequately treated

- Urine is usually hypotonic with large amounts of sodium chloride, potassium, phosphate and magnesium
- Urine Output > 125 200mL/hour after relief of obstruction for at least 3 consecutive hours
- Urine Osmolarity > 250mosm/kg

7. Who needs emergent urologic consultation?

If unable to decompress, consider urologic consultation to present worsening of post-obstructive renal disease.