

## **Do No Harm Clinical Vignette**

**Author:** Miranda Merrill, MD

### **Story from the front line:**

A man in his 70s was brought to the emergency department (ED) by his family after 5 days of fatigue, disorientation and occasional agitation. Prior to presentation, he suffered from mild memory loss requiring frequent reorientation but he was otherwise independent in activities of daily living. On presentation to the ED, he was afebrile with a normal heart rate and blood pressure. His exam was unremarkable except for profound somnolence and he was oriented only to self. Initial labs were notable for Na: 129, K: 3.7 and Cr: 2 (from an unknown baseline). WBC: 7.2, Hgb: 14, platelets: 257. An abdominal ultrasound showed bilateral hydronephrosis and bladder distention with severe prostatic hypertrophy. A urinary catheter was placed for bladder decompression and he was admitted to the hospital. His renal function improved rapidly and his mental status subsequently recovered. He was started on tamsulosin and finasteride for benign prostatic hypertrophy (BPH) and the following day he was discharged home with an indwelling catheter and a plan for follow-up in urology clinic in 7 days. He returned to the hospital ~7 days after discharge with severe agitation and gross hematuria. He was admitted to the hospital and found to be febrile (39 C) and tachycardic (HR: 105). On exam he was agitated and in great distress. Palpation of his abdomen revealed a tender, 10-cm suprapubic mass and his catheter was draining frank blood. Labs were notable for: WBC: 18, hemoglobin: 8 and urinalysis was positive for leukocyte esterase and large blood. Abdominal CT scan revealed a large bladder hematoma. Urine culture eventually grew enterococcus. He was treated with appropriate IV antibiotics but developed worsening agitation, persistent fevers and a rising leukocytosis. He required 3 units of packed red blood cells for ongoing hematuria. He was eventually taken to the operating room for bladder hematoma evacuation and prostatectomy. Following this procedure, his infection improved as well as his mental status. He was transitioned to oral antibiotics and eventually his catheter was removed and he was discharged home.

### **Teachable moment:**

Could the severe illness and injury this patient suffered have been avoided?

The management of AUR due to BPH typically consists of emergent bladder decompression with placement of a urinary catheter and initiation of an alpha-1 antagonist and a 5-alpha reductase inhibitor. The definitive treatment to prevent recurrence is prostatectomy, however, not all cases require surgical intervention. Studies have shown that in many cases (20-40%) surgery can be avoided with a short duration of indwelling catheterization.<sup>1</sup>

The risks associated with indwelling urinary catheters are well established and common. The most frequently encountered complication is infection, >25% of patients with indwelling catheters develop bacteriuria, 24% of whom subsequently

suffer a urinary tract infection and 3% of whom develop bacteremia.<sup>2</sup> In addition to infection, 3.4% develop urethral strictures and many more experience urinary leakage and hematuria. Despite the frequent incidence of adverse events, the potential benefit of avoiding unnecessary surgery is felt to outweigh the associated risk. The duration of required catheterization however is not well established.<sup>3</sup>

It is currently recommended that an indwelling catheter remain in place for 7 to 14 days prior to a voiding trial, however, the evidence behind this recommendation is controversial. A cross-sectional study of acute urinary retention (AUR) published in 2006 found that the success rate of voiding after 3 days of catheterization in those with BPH receiving adjunctive medical therapy (5-alpha reductase, alpha-1 antagonist) was 53%. Those who required re-catheterization underwent a second voiding trial at 7 days with a 25.9% success rate. This study also observed a significant increase in adverse events (UTI, hematuria, catheter obstruction) in the group with >3 days of catheterization (15.9% vs 32.3%).<sup>4</sup> Similarly, a systematic review concluded that despite a paucity of data, <3 days of catheterization is safe and can avoid catheter related complications.<sup>5</sup>

In spite of these conclusions, our current practice is to allow 7 days before a voiding trial. This may be over treatment of AUR and expose patients to unnecessary harm. This patient may have had a very different course had he not been discharged with an indwelling catheter. An extended duration of catheterization led not only to a long re-hospitalization, but a severe infection, bladder injury and hemorrhage requiring blood transfusions, and an emergent surgical procedure. An alternative approach might be to attempt a voiding trial at 3 days rather than the more conservative trial at 7 days during outpatient follow-up.

#### **References:**

- 1.) Fitzpatrick, J.M., Kirby, R.S. Management of acute urinary retention. *BJU Int.* 2006;97. Suppl 2:16.
- 2.) Saint, S. Clinical and economic consequences of nosocomial catheter-related bacteriuria. *Am J Infect Cont.* 2000;28(1):68.
- 3.) Hollingsworth, J.M., Rogers, M.A., Krein, S.L., Hickner, A., Kuhn, L., Cheng, A., Chang, R., Saint, S. Determining the non-infectious complications of indwelling urethral catheters: a systematic review and meta-analysis. *Ann Intern Med.* 2013;159(6):401.
- 4.) Desgrandchamps, F., De La Taille, A., Doublet, J.D., RetenFrance Study Group. The management of acute urinary retention in France: a cross-sectional survey in 2618 men with benign prostatic hyperplasia. *BJU Int.* 2006 Apr;97(4):727-33.
- 5.) Yoon, P.D., Chalasani, V., Woo, H.H. Systematic review and meta-analysis on management of acute urinary retention. *Prostate cancer prostatic dis.* 2015 Dec;18(4):297-302.

