



Onesies, Twosies, not a game of Jackstones

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A 64-year-old white male was followed for three months outpatient for urinary retention with a history of benign prostatic hypertrophy. A 2-cm urinary bladder calculus was found on renal ultrasound, and the patient underwent an elective suprapubic prostatectomy. The bladder calculus was identified as a jackstone calculus.

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A 64-year-old white male was followed in an outpatient urology office for urinary retention. Past known medical history included benign prostatic hypertrophy (BPH), bladder calculi, gout, arthritis, nephrolithiasis, chronic urinary tract infections, Lyme disease, and hypertension. Past surgical history included cholecystectomy. The patient initially presented to the urologist's office after having a Foley catheter placed in the emergency department for acute urinary retention. Over a course of three months, the outpatient work-up for urinary retention included imaging studies, voiding trials, and pharmacologic treatment with tamsulosin and finasteride. Causes of urinary retention are classified as obstructive, infectious and inflammatory, pharmacologic, and neurologic.¹ Differential diagnosis at the time of presentation included BPH, prostatitis, cystitis, urethritis, neoplasm, pharmacologic use, and neurologic etiologies. The primary etiology was thought to be BPH based on the history, physical examination, normal laboratory tests, and review of current medication regimen. In males, the most common reason for acute urinary retention is BPH.¹

Imaging studies included renal ultrasound, transrectal ultrasound, and computed tomography (CT) scan of the abdomen and pelvis. The patient was found to have a 211-mL prostate volume evidenced on transrectal ultrasound and a

2-cm urinary bladder calculus evidenced on renal ultrasound. A CT scan without contrast revealed thickening of the urinary bladder wall and an approximate 3-cm stellate calcification in the bladder, which is consistent with bladder calculus (Figs. 1 and 2). In addition, it showed an enlarged prostate measuring 7.9 cm with elevation of the floor of the urinary bladder—findings consistent with chronic bladder outlet obstruction.

The patient failed multiple voiding trials despite the use of tamsulosin and finasteride. Options were discussed with the patient. On the basis of the size of the prostate and the evidence of a bladder calculus, a suprapubic prostatectomy was indicated. The patient was admitted to the hospital for an elective suprapubic prostatectomy.

At the time of the suprapubic prostatectomy, the bladder calculus was identified as a jackstone because of its spiculated anatomy, and was removed (Fig. 3). After the bladder calculus was removed, multiple smaller stones were identified and also removed. The patient tolerated the procedure and was discharged home within a week. The pathology report of the bladder stone was of gross examination only, which noted a “stellar shaped yellow-tan dark brown hard single large stone measuring 3.5 × 3.4 × 3.4 cm.”

Jackstone bladder calculi are identified based on their spiculated appearance, which resembles toy jacks. As described in a case report in 1927 making reference to the child's game: Jacks are “little stones or knobbed metal pieces used in a child's game of throwing up and catching one or more at a time.”² It was noted in the case report the

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Figure 1 Axial view of stellate calcification within the bladder.

specimens removed from a suprapubic prostatectomy to be ammonio-magnesium phosphate. Characterized as light in weight and easily fractured.² The stone analysis frequently reveals ammonium urate, uric acid, or calcium oxalate stones, with calcium oxalate being the most common.³ The pathophysiology of bladder stones is a manifestation of a pathologic condition that causes urinary stasis, such as obstructive BPH in our patient. This condition is most commonly reported in men. Patients can present with irritative voiding symptoms, urinary tract infections, intermittent urinary stream, hematuria, and pelvic pain.³ In patients with underlying prostatic obstruction, bladder calculi are usually asymptomatic and found as incidental findings. This is noted in a case report of a large jackstone calculus incidentally found on abdominal sonographic examination of a 75-year-old man.⁴



Figure 2 Coronal view depicting the stellate calcification within the bladder.



Figure 3 A 3.5 × 3.4 × 3.4cm Jackstone Calculus retrieved during the suprapubic prostatectomy.

Complications include chronic bladder irritation, chronic urinary tract infections, fistulas, and urethral obstruction. Pericystitis may develop chronically and can result in adherence of the bladder to the adjacent pelvic fat. Bladder perforation is a rare complication.³

Treatment of bladder calculi caused by outlet obstruction involves the use of endoscopic extraction of the stone. In some cases, the calculus is too large to pass through the endoscopic sheath and requires fragmentation first. Bladder calculi are usually soft and, once crushed with the aid of forceps, are then able to wash out through a cystoscope sheath.⁵ If these measures fail, other methods to augment fragmentation of the calculus, such as ultrasonic, electrohydraulic, laser, and pneumatic lithotrites, are available.⁶

Treatment of BPH after failure of medical therapy involves surgical techniques that include transurethral resection of the prostate, laser prostatectomy, transurethral incision of the prostate, transurethral microwave therapy, transurethral needle ablation, and an open prostatectomy.⁷ An open prostatectomy can be approached in three different ways: retropubic, suprapubic, and perineal.⁸ In this particular case, the size of the prostate and large bladder stone indicated a suprapubic prostatectomy approach for retrieval of the bladder calculus. With this approach, it provides access for open stone removal and treatment of the underlying obstruction—the prostatic adenoma in our case.

References

1. Selius BA, Subedi R: Urinary retention in adults: diagnosis and initial management. *Am Fam Physician* 77:643-650, 2008
2. Everidge J: Jackstone calculi. *Proc R Soc Med* 20:717-718, 1927
3. Stoller ML: *Urinary stone disease*. In: Tanagho EA, McAninch JW, editors. *Smith's General Urology*, 17th ed. New York: McGraw-Hill Professional, 2007
4. Perlmutter S, Hsu CT, Villa PA, et al: Sonography of a human jackstone calculus. *J Ultrasound Med* 21:1047-1051, 2002
5. Tanagho EA, Bella AJ, Lue TF: *Neuropathic bladder disorders*. In: Tanagho EA, McAninch JW, editors. *Smith's general urology*, 17th ed. New York: McGraw-Hill Professional, 2007
6. Stoller ML: *Retrograde instrumentation of the urinary tract*. In: Tanagho EA, McAninch JW, editors. *Smith's general urology*, 17th ed. New York: McGraw-Hill Professional, 2007
7. Edwards JL: Diagnosis and management of benign prostatic hyperplasia. *Am Fam Physician* 77:1403-1410, 2008
8. Miles BJ, Schwartz BF: Simple prostatectomy. Available at: <http://emedicine.medscape.com/article/445996-overview>. Accessed December 5, 2011