Utilizing trans-scrotal percutaneous cystolitholapaxy in the case of massive inguinoscrotal herniation of the bladder with concomitant bladder calculi

Tyler Trump *, Chad Crigger, Ahmad Dahman, Chad Morley, Stanley Zaslau, Stanley Kandzari

West Virginia University, Department of Urology, 1 Medical Center Drive, Morgantown, WV, 26506-9251, United States

**A R T I C L E   I N F O**

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- Bladder stone
- Hernia
- Cystolitholapaxy

**A B S T R A C T**

**Background:** Massive herniation of the bladder presents a rare diagnostic challenge. Rarely, bladder herniation is complicated by the development of bladder calculi. We present a therapeutic approach for this situation.

**Case presentation:** A 90-year-old presented with recurrent urinary tract infections secondary to bladder calculi in the setting of inguinoscrotal bladder herniation. He subsequently underwent successful trans-scrotal percutaneous cystolitholapaxy as a creative approach to an unusual presentation.

**Conclusion:** Massive inguinoscrotal herniation of the bladder is a rare clinical entity with significant morbidity and mortality. Intervention requires a balance of patient health status and anatomy, lending to creative approaches as necessary.

1. Introduction and background

Inguinoscrotal herniation of the bladder, also referred to as “scrotal cystocele,” is an exceedingly rare disorder that can provide a dilemma as both diagnosis and treatment can prove challenging. Herniation is postulated to occur from the combination of increased intra-abdominal pressure coupled with weakened abdomino-inguinal tissue. Obese elderly males are most at risk and typically present with scrotal swelling, obstructive urinary symptoms, urinary tract infections (UTI), and incomplete bladder emptying. Diagnosis is usually incidental – either on imaging or at the time of inguinal herniorrhaphy. While these hernias are rare, even more infrequent do they contain bladder calculi. We report the case of an 81-year-old man who presented with a large inguinoscrotal mass consistent with scrotal cystocele and massive bladder calculi treated with trans-scrotal percutaneous cystolitholapaxy.

2. Case Presentation

An 81-year-old man with a history of atrial fibrillation, heart failure with ejection fraction of 15%, pulmonary embolus, benign prostatic hyperplasia (BPH) with urinary retention requiring chronic indwelling catheter presented to the emergency department with urinary retention, catheter malfunction, fevers, and scrotal pain. Work-up, including renal-bladder and scrotal ultrasound, revealed herniation of the bladder through the right inguinal canal containing large bladder calculi and bilateral hydrenephrosis. Based on the degree of difficulty reducing his hernia and his severe co-morbid conditions, he and his family elected to forgo reduction cystoplasty with herniorrhaphy. Rather, they elected to proceed with management with trans-scrotal foley catheter with removal of bladder calculi at time of foley placement via trans-scrotal cystolithotomy (Fig. 1 A, B). Removal of his bladder calculi proved successful and the patient was managed conservatively with serial plain film imaging.

The patient did well for an additional 9 years until he began to develop recurrent UTIs requiring two hospitalizations due to sepsis. He was noted to have recurrent bladder stones. At 90 years old, the patient and his family elected to undergo surgical intervention to remove the bladder calculi, which represented a potential nidus of his recurrent infections. Preoperative imaging revealed a 5.5 × 3.5 cm calculus in the right hemiscrotum and several other calculi measuring approximately 1 × 1 cm (Fig. 2).

The patient underwent trans-scrotal percutaneous cystolitholapaxy through his existing foley catheter insertion site. He was taken to the operating room and placed in dorsal lithotomy position. His existing foley catheter was removed and a 0.035 Sensor wire was passed through the existing tract into the bladder. A NephroMax balloon was passed over a working wire and inflated to 16 atm for 5 min. Next, a 15 cm × 30 Fr NephroMax sheath was advanced over the balloon into the bladder...
followed by a rigid nephroscope immediately revealing the largest stone in the scrotal portion of the bladder (Fig. 3 A, B).

The stone was fragmented and removed with the aid of grasper devices and ultrasonic lithotripsy. Flexible cystoscopy then revealed a 1 cm stone in the pelvic portion of the bladder, which was removed intact with a basket. No other stones were visualized in the bladder. Fluoroscopy revealed no additional bladder stones; however, there was residual stone burden at the level of the prostatic urethra. Cystoscopic evaluation through the urethra revealed complete obliteration of the lumen at the level of the bulb urethra. The access sheath was removed and a 20Fr council-tip catheter was passed over the safety wire into the bladder. At this point the procedure was terminated and the patient successfully extubated. The patient was discharged following the procedure. He was without further urinary tract infections and continued with monthly catheter exchanges for management of his lower urinary tract obstruction. He was last seen by urology three months post-operatively for inpatient catheter exchange during an admission for aspiration pneumonia, which unfortunately proved to be fatal.

3. Discussion

Between 1 and 4% of inguinal hernias involve the bladder; however, the incidence is greater in men older than 50, and possibly as high as 10% in this population. In developed countries the diagnosis is usually made early with either operative correction or close monitoring for disease progression. It is important to make the diagnosis of bladder involvement prior to inguinal herniorrhaphy as injury to the bladder is associated with a 12% mortality rate. Early detection of giant inguinoscrotal hernias are rare and generally only seen after several years of self-neglect leading to delayed diagnosis.

The most common conditions associated with bladder hernias are BPH, hydronephrosis, and bladder stones. Inguinoscrotal hernias that involve the bladder are extremely rare, and the concomitant finding of bladder stones rarer still. Literature review revealed one prior case with the finding of a bladder stone within the scrotal cystocele itself; however, patient management was not offered in the reviewed study. Their report suggested presenting symptoms were two-stage micturition and recurrent UTI, similar to our patient.

We offer a novel approach for the management of scrotal cystocele with cystolithiasis. Ideally, herniorrhaphy can be performed, using either mesh (Lichtenstein technique) or performed laparoscopically. However, available options are dictated by the functional status and co-morbid conditions of the patient. For our patient, the severe degree of herniation, age, co-morbid conditions, and patient choice precluded definitive repair. In our case we have demonstrated a viable and safe approach for the treatment of this urologic conundrum.

4. Conclusion

Massive inguinoscrotal herniation of the bladder is a rare clinical entity with significant morbidity and mortality. Additionally, scrotal cystocele with bladder calculi presents a unique challenge to the urologic surgeon. We present a novel treatment option with the trans-scrotal percutaneous cystolitholapaxy performed on the patient who does not qualify for definitive surgical correction of his hernia. Such an approach provides a safe, minimally invasive option in patients with the goal of decreasing morbidity, particularly in the form of recurrent UTI.

Author disclosure statement

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Fig. 3. A and B: Surgical setup for trans-scrotal percutaneous ultrasonic cystolitholapaxy (left, A) and intraoperative view obtained (right, B).