Case Report

An intravesical ureterocele with a large impact stone: a case report

Pises Insuan[1], Wimol Insuan[2]

[1]Department of Surgery, [2]Department of Radiology, Sukhothai Hospital, Muang, Sukhothai, Thailand

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Abstract

Ureteroceles can occur asymptomatically or present with various clinical signs and symptoms. Urine stasis within the dilated distal segment can result in recurrent urinary tract infections and stone formation. This case study focusses on a 51-year-old woman who had experienced intermittent left flank and left lower quadrant pain for six months due to an intravesical ureterocele with a large impacted stone. Diagnosis was established through ultrasonography, CT scan, and cystoscopic examination. Treatment included transurethral incision of the left ureterocele followed by cystolitholapaxy using a 26 Fr Resectoscope and hook electrode with a U-shaped incision and stone fragmentation with a stone punch. The procedures resulted in a successful resolution of symptoms. A voiding cystourethrogram (VCUG) carried out 10 weeks post-surgery revealed the absence of vesicoureteral reflux (VUR).

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Introduction

A ureterocele is a cystic dilatation of the distal ureter with associated tissue defect leading into the urinary bladder.[1] Ureteroceles may present as a spectrum of clinical manifestations, ranging from being asymptomatic to causing various symptoms such as recurrent cystitis, bladder outlet obstruction, or even kidney failure. Stasis of urine within the dilated distal segment can predispose individuals to recurrent urinary tract infections and the formation of stones.[2] An intravesical ureterocele with a stone is a rare condition and may mimic vesical calculi. Management varies between centers, depending on the availability of instruments and the expertise of the surgeon. The objective of this study is to describe the clinical presentation, diagnosis, treatment, and outcome of an intravesical ureterocele complicated by a large impacted stone.

Case Report

A healthy 51-year-old women who had previously undergone a transabdominal hysterectomy (TAH) with bilateral salpingo-oophorectomy (BSO) 20 years ago, presented with mild intermittent left flank and left lower quadrant pain for 6 months. She had had dysuria for 1 week and urinalysis revealed microscopic hematuria. She was treated for acute cystitis by a general practitioner and was sent to the urology department for con-

Corresponding author: Pises Insuan

Address: Department of Surgery, Sukhothai Hospital, Jarodwithithong Road, Bankluay, Muang, Sukhothai 64000, Thailand

E-mail: piinsuan@gmail.com

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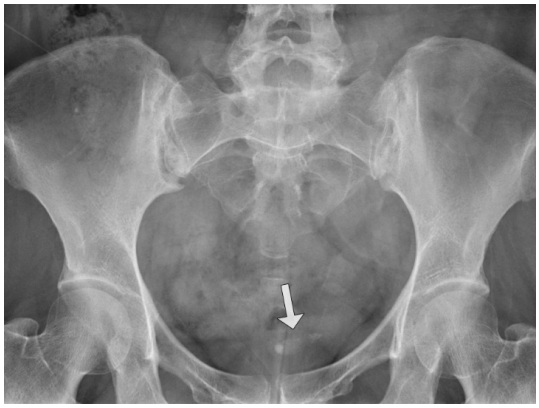


Figure 1. Plain KUB showing 10×25 mm faint radio-opaque stone in the pelvis (arrow).

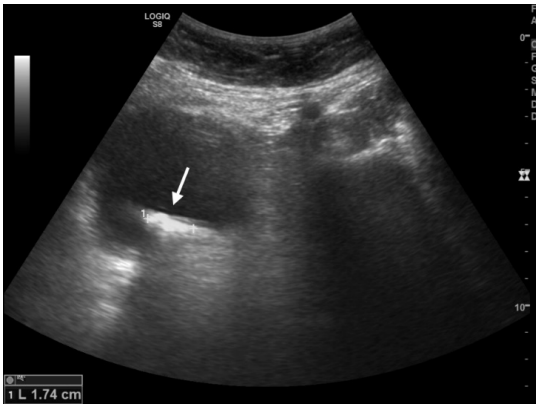


Figure 2. Ultrasound of the KUB system showing a 1.7-cm vesical calculus; VC (arrow).

sultation and further examination. She reported no history of gross hematuria, difficulty with urination, intermittency, urinary incontinence, nocturia, prior urinary tract infection or trauma associated with the perineal-pelvic organ. Plain film KUB indicated a suspected faint-opaque bladder stone approximately 1.0 x 2.5 cm (Figure 1). Ultrasound of the KUB system showed a 1.7-cm vesical calculus (VC) and 5-mm left lower calyceal stone (Figure 2).

Cystoscopic examination was performed which showed a normal urethra. There was a large impact stone with the distal end protruding into the urinary bladder at the left ureteric orifice, with a mushroom-like appearance, suggestive of ureterocele stone (Figure 3). Contrast-enhanced CT of the KUB system demonstrated a large left ureterocele with a large stone approximately 2.2 x 1.1 cm and also a small component impacted at the distal end, indicating a small left distal ureteric calculus about 4 mm. There was no evidence of hydronephrosis (Figure 4A, B). A provisional

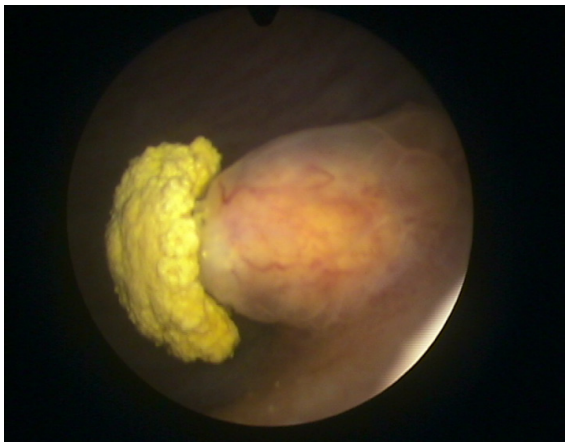
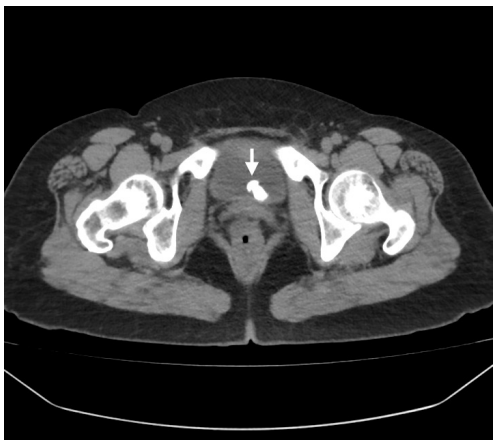


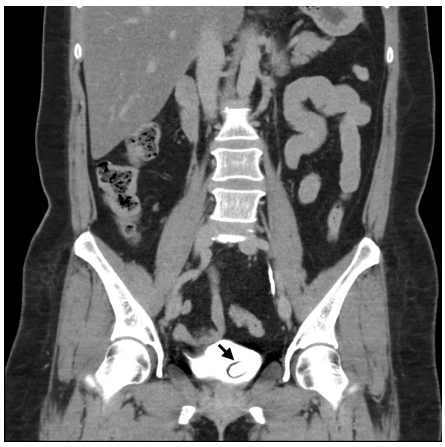
Figure 3. Cystoscopy image showing outpouching of left ureter with impacted stone projecting from the orifice.

diagnosis of intravesical ureterocele with a large impact stone was made based on the cystoscopic examination and the CT scan.

The patient was taken to the operation room for a transurethral incision of the left ureterocele and cystolitholapaxy using 26 Fr Resectoscope and a hook electrode with U-shaped incision. The



A



B

Figure 4. A) Contrast-enhanced CT of the KUB system demonstrating a large left ureterocele with a large stone approximately 2.2 x 1.1 cm (arrow). B) The cobra head sign in the delayed phase (arrow).

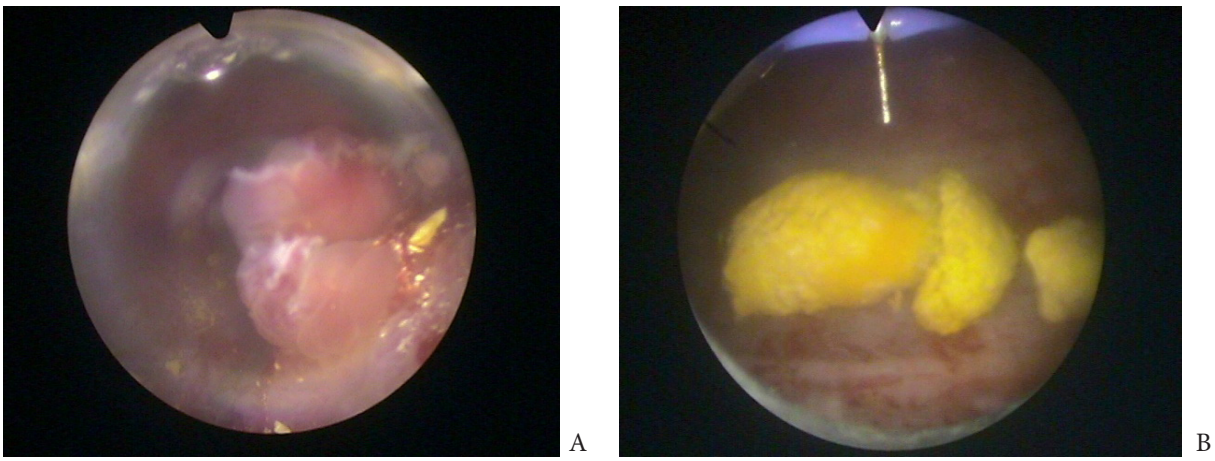


Figure 5. (A, B). Ureteric orifice incision using Collins knife to extract the impacted stone.

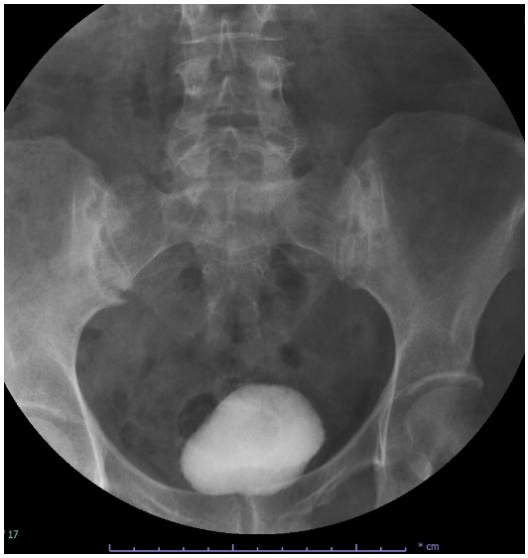


Figure 6. VCUG at 10 weeks after surgery, no VUR.

stone was extracted into the urinary bladder (Figure 5A, B). Then the stone was fragmented with a stone punch and the fragments were removed using an Ellick evacuator. Left ureteroscopy was performed using a semi-rigid uretrorenoscope 8/9.8 Fr to evaluate the ureter and the small distal ureteric calculus; however, the distal ureteric stone passed intravesically following the extraction of the ureterocele stone. A 6 Fr DJ stent was placed into the left ureter and a Foley catheter was retained postoperatively which was then removed the following day. The left DJ stent was taken off at 6 weeks after surgery. Voiding cystourethrogram (VCUG) was done at 10 weeks after surgery, there was no evidence of vesicoureteral reflux (VUR) (Figure 6). Follow up at 16 weeks after surgery found normal micturition and normal urinalysis.

Discussion

Ureterocele is a condition characterized by cystic dilatation of the distal ureter, intravesical ureter, and out-pouching into the urinary bladder. It is reported to occur at an incidence of 1 in 4000 children in Europe and the United States[1], with a four times higher occurrence in females compared to males. It was once considered exclusive to Caucasians, although cases have been reported in African and Asian populations.[2] Classification of ureteroceles includes single-system ureteroceles, associated with a single kidney, collecting system, and ureter, and duplex-system ureteroceles, associated with kidneys that have completely duplicated ureters. The orthotopic (intravesical) type is a ureterocele contained within the bladder at a normal or next to the normal site. The ectopic type is a ureterocele which extends into and opens at the bladder neck or posterior urethra. In 1954 Stephens' classification categorized affected ureterocele orifices into distinct types including stenotic ureteroceles which are located inside the bladder with an obstructing orifice, sphincteric ureteroceles which lie distal to the internal sphincter, sphincterostenotic ureteroceles which have characteristics of both stenotic and sphincteric ureteroceles, and cecoureterocele which are elongated beyond the ureterocele orifice by tunneling under the trigone and the urethra.[1] Understanding regarding these subtypes is crucial for accurate diagnosis, treatment planning, and the prediction of outcomes in patients with ureterocele-related issues.

Ureteroceles can be asymptomatic or present with various signs and symptoms ranging from recurrent cystitis to kidney failure. In adults,

diagnosis is often incidental, though symptoms like intermittent flank pain, recurrent urinary tract infections, or those due to the presence of calculi may occur.[2] Kidney and bladder ultrasonography serve as the initial imaging modality due to their extensive availability, non-invasiveness, and ability to provide valuable information about the upper and lower urinary tracts. These procedures typically identify a ureterocele as a fluid-filled cystic intravesical mass. However, to fully evaluate the lower urinary tract and assess for concomitant vesicoureteral reflux, VCUG is essential. This procedure helps identify any reflux of urine from the bladder back into the ureters and kidneys, which is commonly associated with ureteroceles. From an intravenous pyelogram (IVP) or CT urogram, the presence of an intravesical ureterocele can be identified by a characteristic imaging sign known as the "cobra head sign." This sign is indicative of the appearance of the dilated intravesical portion of the ureter, resembling the head of a cobra, while the extravesical ureter forms the body of the cobra.[3]

Treatment options include endoscopic incision, upper pole partial nephrectomy, and complete reconstruction. In our case, where the ureterocele is complicated by a calculus, it is not uncommon for stones to occur within a ureterocele in a significant proportion of cases. A study of relevant literature indicates this is the case in 5% to 40% of cases.[4,5] Many surgical techniques have been described in the literature, however, endoscopic ureterocele incision or deroofing by resectoscope with cutting current or holmium laser with stone extraction and fragmentation, are easy to perform and give good results.[6-8]

Conclusions

Transurethral ureterocele incision with U-shape by hook electrode with subsequent extraction of the stone into the urinary bladder, followed by cystolitholapaxy using a stone punch, has proven to be an effective method for treating an intravesical ureterocele complicated by a large impacted stone. This approach is minimally invasive, easy to perform, and yields favorable outcomes.

Conflicts of Interest

The authors declare no conflict of interest.

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