Case Report

# Multiple symmetric calculi in the duplex system ureterocoele

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**Abstract:** Ureterocoele is the cystic dilatation of the terminal ureter. A duplex-system ureterocoele implies one associated with the upper pole moiety of a complete ureteral duplication. These days, ureterocoeles are detected on antenatal sonograms but detection of multiple symmetric stones in an adult is infrequent. We report a rare case of bilateral duplex system ureterocoele with multiple and symmetric stones on right upper moiety in an adult.

*Key words:* cobra head deformity, duplex system ureter, multiple symmetric calculi, ureterocoele, ureterolithiasis.

## Introduction

Ureterocele is a congenital urinary abnormality that can be detected by antenatal sonography with radiological confirmation after birth[1]. Calculi are frequently demonstrated in ureterocoeles with a reported incidence of 4–39%.[2] They are usually asymptomatic but the presence of stones in ureterocoeles may present as urinary tract infections, increased urinary frequency, urinary urgency, nocturia, vesicoureteral reflux. Most duplex system ureterocoeles present as urinary tract infections at an early age, with multiple symmetric stones in an adult being unusual [3-5].

### Case report

A 23 years old female presented to our outpatient clinic with complains of intermittent lower abdominal pain and burning micturation for seven months. There was no previous history of urinary tract infections or stone disease. Family history was insignificant. She was having normal menstrual cycles and did not have any abnormal vaginal discharge.

General examination was normal. On per abdominal examination, hypogastrium was tender, there was no organomegaly and the bowel sounds were normal. Pelvic examination also revealed normal findings.

Urinary tests and renal function tests were normal. X-ray of kidney, ureter and bladder (Fig.1) showed multiple symmetric radio-opaque shadows in right pelvis. Ultrasonography of abdomen (Fig.2) revealed cystic structure full of calculi like structure in right pelvis. X-ray IVP (Fig.3) showed duplex renal system bilaterally with ureterocoele of upper moiety with multiple calculi on the right side. These findings were confirmed by CT scan of the pelvis (Fig. 4).

**Fig. 1.** Multiple and symmetric Radio-opaque shadows

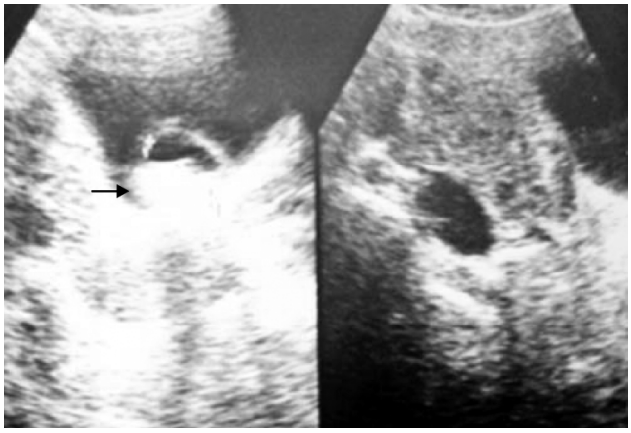

**Fig. 2.** Ultrasonography showing calculi within cyst

**Fig. 3.** IVP (a) Duplex renal system
(b) Dilated right ureter
(c) Ureterocele with calculi

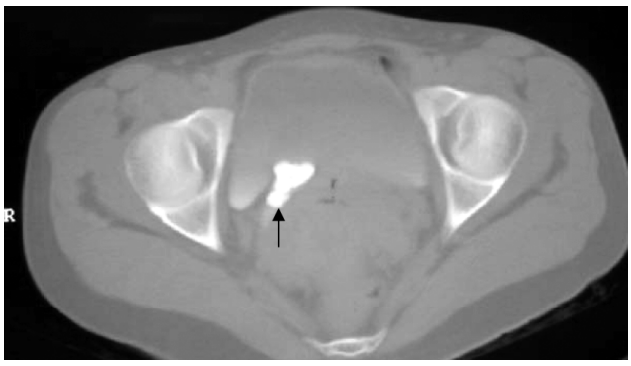

**Fig. 4.** Ureterolithiasis seen in CT pelvis

## Discussion

A ureterocoele associated with the upper pole moiety is located inferomedial to the lower pole ureter (Weigert-Meyer rule). The true etiology of ureterocoele with ureterolithiasis is not known. One postulated theory is that small stones formed in the kidney descend to the ureterocoele and increase in size by rolling up and down in the ureter and renal pelvis similar to being rubbed together like river stones. The composition of stones is usually calcium oxalate and calcium phosphate [5].

Ureterocoeles are associated with ureterolithiasis, obstructive uropathy, detrusor hypertrophy, vesicoureteral reflux, renal and bladder dysplasia, hydronephrotic atrophy and renal scarring. The most common presentation of a ureterocoele is urinary tract infection. Patients may present with hematuria, purulent urine, pyelonephritis and abdominal pain. Urinary incontinence or retention may also be seen if the ureterocoele causes an obstruction at the level of the bladder [6, 7].

Radiological evaluation includes empty bladder ultrasonography. It is the most sensitive test and finding of a well-defined cystic intravesical mass within the posterior bladder wall is suggestive of a ureterocoele. Pseudoureterocoele, a solid periureteric orifice mass in the bladder should also be ruled out. Contrast-enhanced studies like IVP not only delineate renal anatomy but are also useful in evaluating the differential renal function. IVP helps in identifying ureterocoeles within the bladder as a thin non-enhancing rim around contrast enhancement within the ureterocoele classically called spring-onion or cobra-head deformity. Now, CT scan allows the functional and anatomic identification of ureterocoeles in a single study [6, 7].

Treatment often requires surgical interventions like extracorporeal shock wave lithotripsy (ESWL) or laparoscopic/endoscopic transurethral ureterocoele incision with stone fragmentation and extraction[8] and open surgery in selected cases that requires great skill and precision[9]. Even holmium laser has been successfully used for the management of ureterocele calculi[10].

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