

## Case Report

# Minimal invasive management of rare case of ureteroceles with stone: a diagnostic challenge

Nimesh Bharatkumar Thakkar\*, Abhesinh Chauhan

Department of General Surgery, GMERS Medical College, RGUHS, Gandhinagar, Gujarat, India

**Received:** 02 March 2019

**Revised:** 06 April 2019

**Accepted:** 11 April 2019

### \*Correspondence:

Dr. Nimesh Bharatkumar Thakkar,  
E-mail: Rangdatt@yahoo.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

Ureterocele is a cystic dilatation of the lower part of the ureter. One of its presentations in the adult population is the presence of a stone, usually a solitary stone, inside the ureterocele. Authors present a rare case of Ureterocele with stone in it managed with transurethral deroofting and cystolitholapaxy. This work has been reported in line with the SCARE criteria.

**Keywords:** Cystoscopy, Cystolitholapaxy, Diagnostic Challenges, Endourology, Ureterocele with calculus

## INTRODUCTION

An ureterocele is a birth defect where the portion of the ureter closest to the bladder swells up like a balloon and the ureteral opening is often very tiny and can obstruct urine flow. It poses a great challenge owing to its numerous types and clinical presentations. Its incidence is 1 in every 4000 individuals.<sup>1</sup> This blockage can affect how the part of the kidney affected develops and works. It is most often associated with a duplicated collecting system, where two ureters drain their respective kidney instead of one.<sup>2</sup>

### Types of ureterocele<sup>3,4</sup>

- Intravesical: Confined within the bladder,
- Ectopic: Some part extends to the bladder neck or urethra,
- Stenotic: Intravesical ureterocele with a narrow opening,
- Sphincteric: Ectopic ureterocele with an orifice distal to the bladder neck,

- Sphincterostenotic: Orifice is both stenotic and distal to the bladder neck,
- Cecoureterocele: Ectopic ureterocele that extends into the urethra, but the orifice is in the bladder.

## CASE REPORT

A 24 years old female patient came with the chief complaints of lower abdominal pain, burning pain during micturition (dysuria), flank pain occasionally on left side and frequent urination. She had no other complaints. No past history of any chronic illness, hypertension or diabetes. She has no previous surgical history.

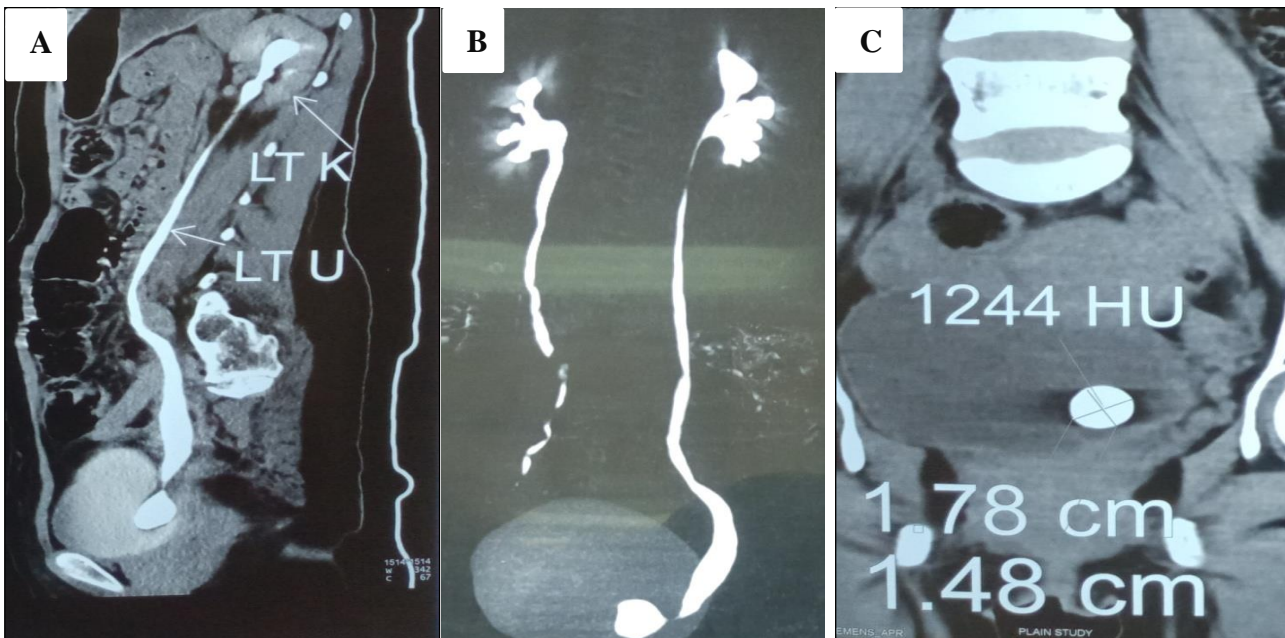
Laboratory investigation showed Hg 12gm/dl, creatinine 1.1mg/dl, normal coagulation profile, uric acid 8.1mg/dl, urinalysis on admission showed few white blood cells but no red blood cells or bacteria. Abdominal x-ray showed semi radiopaque stone in the area of the bladder urinary tract ultrasound showed the ureterocele and the stone within.



**Figure 1: Usg showing shadow with query to bladder stone.**



**Figure 2: X-ray KUB showing radio-opacity in pelvis P/O bladder stone.**



**Figure 3: CT-IVP showing left ureterocele with calculus within and mild hydroureter (A) with normal functioning both kidneys and normal right ureter (B), 1.4\*1.7 cm calculus within left ureterocele (C).**

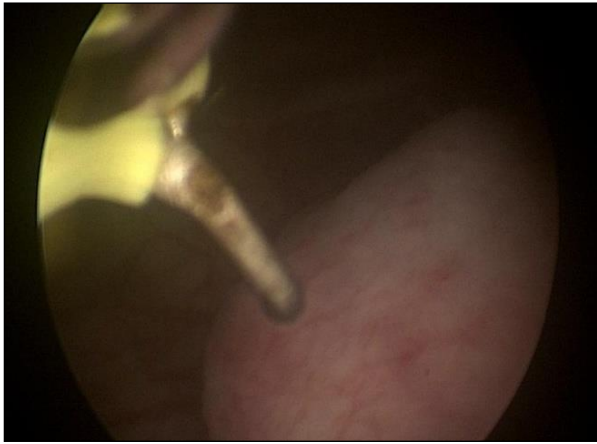
Urinary tract computerized tomography (CT) scan showed a large stone at the left vesicoureteric junction measured 1.7×1.4cm in cross-section with left hydroureteronephrosis.

On the next day the patient underwent endoscopic operation under spinal anesthesia. The patient was put in lithotomy position, a 22F cystoscope was introduced into the bladder, the right ureteric orifice was identified and a large left intravesical ureterocele was seen with no apparent left ureteric orifice noticed which goes with the fact that most intravesical ureteroceles have stenotic

orifices then a 24F resectoscope was inserted, deroofting of the ureterocele with cutting current was performed and the stone was visualized and nudged with the loop into the bladder. Cystolitholapaxy was performed at the same session and stone fragments were removed. The operation was concluded with insertion of a 3-way 20F Foley catheter and irrigation was started. The Foley catheter was removed the next day and postoperative abdominal x-ray and showed no residual stone in the bladder.

Urinary tract ultrasound showed the ureterocele and the stone within. Urinary tract computerized tomography

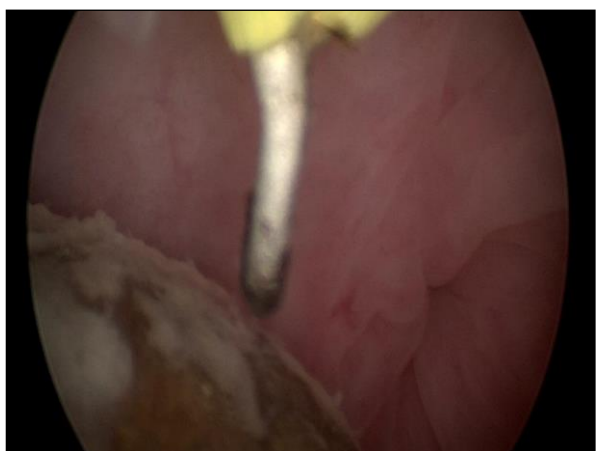
(CT) scan showed a large stone at the left vesicoureteric junction measured 1.7×1.4 cm in cross-section with left hydroureteronephrosis. On the next day the patient underwent endoscopic operation under spinal anesthesia.



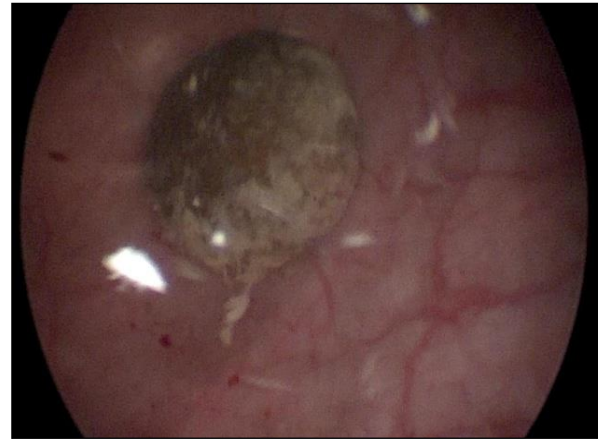
**Figure 4: Cystoscopic view of upper surface ureterocele.**



**Figure 5: Cystoscopic examination showing base of ureterocele.**



**Figure 6: Stone in the ureterocele showing in its undersurface with left V for removal.**



**Figure 7: Stone extracted out into bladder.**

The patient was put in lithotomy position, a 22 F cystoscope was introduced into the bladder, the right ureteric orifice was identified and a large left intravesical ureterocele was seen with no apparent left ureteric orifice noticed which goes with the fact that most intravesical ureteroceles have stenotic orifices then a 24F resectoscope was inserted, deroofting of the ureterocele with cutting current was performed and the stone was visualized and nudged with the loop into the bladder. Cystolitholapaxy was performed at the same session and stone fragments were removed. The operation was concluded with insertion of a 3-way 20 F Foley catheter and irrigation was started. The Foley catheter was removed the next day and postoperative abdominal x-ray and showed no residual stone in the bladder.

## DISCUSSION

Ureteroceles have diverse presentations ranging from life-threatening sepsis, renal failure, recurrent urinary tract infections (UTIs), to no symptoms at all being detected incidentally.<sup>5</sup> These variable presentations are a reflection of the numerous types of ureteroceles, hence there are multiple classification systems such as the Stephens classification which depends on the size and location of the ureteric orifice or the functional based classification by Churchill, however due to their complexity these systems have gained less popularity and more simplified system was established by the American Academy of Pediatrics is more frequently used which classifies ureteroceles to intravesical (orthotopic) ureterocele or ectopic (if part of the ureterocele extends to the bladder neck or urethra permanently).<sup>6</sup> According to Stephens classification, intravesical ureteroceles may be stenotic (40%) or non-obstructive (5%), while ectopic ones may be sphincteric (40%), sphincterostenotic (5%), cecoureterocele (5%) or blind (5%). In most series 60-80% of ureteroceles are ectopic as opposed to intravesical and 80% of ureteroceles are associated with the upper moiety of a complete duplication, this is more evident in the pediatric age group, but when found in adults they are usually intravesical of single system.



In keeping with previous arguments, the clinical presentations will vary with age; in pediatric age group the presenting condition is usually recurrent UTIs or urosepsis, incontinence, failure to thrive, urinary tract calculus, abdominal mass, bladder outlet obstruction and vaginal or urethral prolapse, while in the adult population the diagnosis is usually made incidentally, sometimes it presents with intermittent flank pain, recurrent urinary tract infection or calculus.<sup>7</sup>

The diagnostic imaging starts with ultrasound due to its availability and non-invasive nature, it is also an excellent modality in this condition as it can show the cystic dilatation in the posterior wall of the bladder and sometimes it can provide valuable information regarding the duplicity of the system. Intravenous urography (IVU), although less commonly performed nowadays may show poor function of the affected side with delayed excretion or no excretion at all, however if the renal parenchyma retains some function a characteristic cobra head sign can be seen due to the opacified urine inside the intravesical ureterocele surrounded by halo sign produced by the wall of the ureter, it is worth mentioning that IVU can still be of importance in cases of confusing anatomy. Voiding cystourethrogram is an essential part of the evaluation as it will detect the presence of vesicoureteral reflux, moreover renal nuclear imaging shows the function of renal tissue. The numerous clinical presentations, the type of the ureterocele and the age of the patient are all many clinical variables that will guide the appropriate choice of management as there is no single method suffices for all cases and thus the management should be individualized, nevertheless the goals of management should be applied to all cases and these include maximal preservation of renal function, prevention and treatment of vesicoureteral reflux (VUR), unobstructed drainage of all functioning parenchyma, prevention of bladder outflow obstruction, maintaining continence and the removal of any potential source of infection.<sup>8,9</sup>

Endoscopic treatment includes transurethral puncture and transurethral incision; these are applicable mainly to the intravesical types and may be curative in up to 90% of cases. The open procedures are often reserved for the more complex types.<sup>10</sup> The operative procedures include upper pole nephrectomy and partial urethrectomy in cases associated with dysplastic upper pole in a duplicated system. Intravesical excision with common sheath reimplantation is done when the upper tracts are normal or there is no indication for partial nephrectomy. Treatment of the ureteroceles in this study was mainly by open method.

The specific procedures included excision with ureteric reimplantation and incision with marsupialization. These patients require long-term follow-up to monitor renal function, symptoms and occurrence of vesicoureteral reflux, especially in patients treated with endoscopic method or simple open incision.<sup>11</sup>

## CONCLUSION

Ureteroceles represent a clinical challenge in term of diagnosis and management due to their variable presentations and types, thus treatment has to be individualized to each case and its co-existing pathology. The prognosis of ureteroceles are related to the degree of associated reflux or obstruction. Depending on the size and position of a ureterocele, they may prolapse into the ureter causing complete bladder obstruction. Redundant collection systems are usually smaller in diameter than single and predispose the patient to impassable kidney stones. Ureteroceles which are complicated by stones can be effectively managed with endoscopic resection but require long term follow up.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

## REFERENCES

1. Agha RA, Fowler AJ, Saeta A, Barai I, Rajmohan S, Orgill DP, et al. The SCARE statement: consensus-based surgical case report guidelines. *Int J Surg.* 2016;34:180-6.
2. Weiss JP. Embryogenesis of ureteral anomalies: a unifying theory. *Aust New Zeal J Surg.* 1988;58(8):631-8.
3. Stephens FD. Aetiology of ureteroceles and effects of ureteroceles on the urethra. *Brit J Urol.* 1968;40(4):483.
4. Tanagho EA. Anatomy and management of ureteroceles. *J Urol.* 1972;107(5):729-36.
5. Hutch JA, Chisholm ER. Surgical repair of ureterocele. *J Urol.* 1966;96(4):445-50.
6. Merlini E, Chiesa PL. Obstructive ureterocele-an ongoing challenge. *World J Urol.* 2004;22(2):107-14.
7. Coplen DE, Duckett JW. The modern approach to ureteroceles. *J Urol.* 1995;153(1):166-71.
8. Muhammed A, Hussaini MY, Ahmad B, Hyacinth MN, Garba KD. Ureterocele in adults: Management of patients in Zaria, Nigeria. *Arch Int Surg.* 2012;2(1):24.
9. Monfort G, Morisson-Lacombe G, Coquet M. Endoscopic treatment of ureteroceles revisited. *J Urol.* 1985;133(6):1031-3.
10. Blyth B, Passerini-Glazel G, Camuffo C, Snyder HM, Duckett JW. Endoscopic incision of ureteroceles: intravesical versus ectopic. *J Urol.* 1993;149(3):556-60.
11. Dominici A, Travaglini F, Maleci M, Di Cello V, Rizzo M. Giant stone in a complete duplex ureter with ureterocele. *Urol Int.* 2003;71(3):336-7.

**Cite this article as:** Thakkar NB, Chauhan A. Minimal invasive management of rare case of ureterocele with stone: a diagnostic challenge. *Int J Res Med Sci* 2019;7:1972-5.