Original Article

IAHS Medical Journal
Volume 08 Issue 01 June 2025; 35-38

# Endoscopic Electrosurgical Incision of Ureterocele : Our Experience

Nazim Uddin Md. Arif[1*] Ishtiaque Ahmed[2] Sharmeen Akter[2]
Khandaker Minhazur Rahman[2] Munaiba Ahmad[3] Khaled Salahuddin[4]
Fahmida Begum[5] Md. Mizanur Rahman[6]

**ABSTRACT**

***Background:*** *Uretercele is a congenital abnormality affecting the urinary tract characterized by the cystic dilation of the ureter at its insertion point in to the bladder. The purpose of the study is to report experience of endoscopic electrosurgical treatment of ureterocele.*

***Material and methods:*** *This was a retrospective study conducted from January 2018 to December 2023 at Uttara Adhunik Medical College Hospital and in a Private Clinic in Dhaka, 45 patients with ureterocele were treated endoscopically. Data of these patients were analyzed retrospectively.*

***Results:*** *Patient age range 20-40 years and male female ratio was 20:25. Forty patient had unilateral ureterocele, stone in the uretrocele found in 5 patients. All the patients were underwent "Smiling mouth" electrosurgical meatotomy. Associated stone in the ureterocele was fragmented using pneumatic lithotripter. The mean duration of postoperative stay was 1-2 days, mean follow-up was 16 months. Postoperative successful decompression was evident in all patients. Non-obstructed pelvicalyceal system and improved renal parenchymal thickness observed in ultrasound among the follow-up of all patients.*

***Conclusion:*** *Endoscopic electrosurgical management of ureterocele can be done without any significant postoperative morbidity. Electrosurgical incision is effective in decompressing the ureterocele in long-term follow-up. It is a simple, minimally invasive and no need for any specialized costly instrument.*

**Key words:** Endoscopic treatment; Flank pain; Ureterocele.

## Introduction

An ureterocele is a cystic dilatation of terminal ureter into the bladder with narrowing of vesicoureteric junction that impair urine flow. The incidence of ureterocele is estimated 1 in 4000 live births.[1] It may be asymptomatic, may present with dysuria, bladder outlet obstruction, flank pain, hydroureteronephrosis, urinary tract infection etc. Urine routine examination, urine culture and sensitivity test, ultrasonogram of Kidney Ureter Bladder (USG-KUB), serum creatinine, X-ray Intravenous Urography (IVU) is enough for diagnosis. Computed Tomography scan (CT scan) or Magnetic Resonance Imaging (MRI) may require for better understanding in inconclusive cases. In case of ureterocele with duplex ureter, help to assess the functional status of upper moiety by radionuclide renal scintigraphy: 99 mTc Diamino-Succinil Acid (DMSA) and 99mTc Mercaptoacetil-triglicine (MAG-3) renal scan. The goals of urological management of ureterocele are to relieve obstruction, prevent Urinary Tract Infections (UTIs), minimize surgical morbidity and number of procedures. Uretrocele without duplex ureter are mostly orthotopic and the corresponding kidney usually shows reasonably good function. Treatment options for ureterocele are observation / conservative, endoscopic incision, excision and reimplantation, upper pole heminephrectomy, nephrectomy. Symptomatic ureteroceles need appropriate treatment. Conservative management is an option in an asymptomatic child with a good to poor functioning upper moiety draining through a nonobstructed ureterocele. Leaving poor functioning or dysplastic parenchyma does not increase the risk of hypertension.[2] Endoscopy has been suggested as first-line management of ureterocele and has the advantages of the minimal-invasive approach. Several techniques for endoscopic decompression have been used, including incision with electrocautery, puncture with a stylet and cold knife incision, More recently, the laser have been used for ureterocele incision.[3]

1. Associate Professor of Urology
Uttara Adhunik Medical College, Dhaka.
2. Junior Consultant of Urology
Uttara Adhunik Medical College, Dhaka.
3. Intern Doctor
Chittagong Medical College Hospital, Chattogram.
4. Consultant of Urology
Uttara Adhunik Medical College, Dhaka.
5. Senior Consultant of Nephrology
Evercare Hospital, Dhaka.
6. Associate Professor of Urology
Chittagong Medical College, Chattogram.

*Correspondence : **Dr. Nazim Uddin Md. Arif**
Cell : +88 01710 95 03 12
Email : arif_bd_ctg06@yahoo.com

Date of Submission : 2oth April 2025
Date of Acceptance : 14th June 2025

IAHS Medical Journal
Volume 08 Issue 01 June 2025; 35-38

**Material and methods**

A retrospective study was performed from January 2019 to December 2025 at Uttara Adhunik Medical College Hospital and a Private Clinic in Dhaka city, 45 patients were included. Presenting symptom were flank pain, lower abdominal pain, dysuria, intermittent obstructive, voiding symptoms. Two patients had no significant symptoms and were incidentally diagnosed.In preoperative diagnostic work-up urine routine examination, urine culture and sensitivity test, ultrasonogram kidney ureter bladder, serum creatinine, complete blood count, random blood sugar, X-ray IVU with micturating film were done (Figure 1, 2).

Preoperative antimicrobial prophylaxis given to all patients, the endoscopic procedure was carried on under spinal anesthesia. Cystoscopy revealed orthotopic uretrocele (Intravesical) in all patients (Figure 3, 4). Number, position and morphology of the ureterocele and ureteral orifices were checked. One patients ureterocele protruded in to the prostatic urethra. Guidewire placement done through ureteric orifice in 40 patients and in 5 patients required puncture of the uretrocele for guidewire placement. After guidewire placement classic smiling incision given at the base of all ureterocele with the help of monopolar electrocautery.

Adequacy of incision was established by the subsequent passage of the ureteroscope into the distal ureter. Stone in the ureterocele was fragmented with either pneumatic lithotripter and stone fragments were removed from bladder. Double-J ureteric stent and perurethral Foley catheter was placed at the end of surgery. DJ stent keeps vesicoureteric orifice patent during healing of ureter (Figure 6). Perurethral catheter was removed on the 1st postoperative day, while ureteric stent on the 21st postoperative day.

In follow up urine routine examination and culture sensitivity, USG-KUB at 3 monthly for one year and yearly to be continued for next 5 years. X-ray IVU with micturating film was done postoperatively only if positive urinalysis and urine culture were found positive for persistent or recurrent UTIs and significant upper tract dilatation was observed without decompressive changes after 6–12 months.

**Results**

Out of 45 patients, 25 were female and 20 were male patients.Age range of the patient was 20-40 years. Duplex system ureterocele ectopic ureter with ureterocele were not included in this study. All 45 patients had single system ureterocele. 17 patients had ureterocele on the right side, 23 on the left side and 5 ureteroceles were bilateral. In situ stone was found in 5 cases (Table I). Most common presentation was flank pain followed by lower abdominal pain, urinary tract infections and bladder outlet obstruction. Endoscopic incision with electrocautery were made in all patients as smiling mouth fashion. Associated stone in the ureterocele was fragmented using pneumatic lithotripter. Patient need to stay in hospital 1-2 days, mean follow-up was 16 months. Postoperative successful decompression was evident in all patients. Non- obstructed pelvicalyceal system and improved renal parenchymal thickness observed in ultrasound in all patients' follow-up.

**Table I** Socio-demographic distribution and affected uriter location (n=45)

| Parameter | | Number |
|---|---|---|
| Patients | | 45 |
| Age (years) | | 20-40 |
| Gender | Male - | 20 (44.45%) |
| | Female - | 25 (55.55%) |
| Side | Right - | 17 (37.78%) |
| | Left - | 23 (51.11%) |
| | Bilateral - | 5 (11.11%) |
| Stones in Ureterocele | | 5 (11.1%) |

Table I Out of 45 patients, 20(44.45%) were male and 25 (55.55%) were female. Bilateral ureterocele were present as 5(11%) cases and 23(51.11%) were in left ureter. Stones present in 5(11.11%) respondents.

**Table II** Presenting symptoms of the patients (n=45)

| Symptoms | No of the Patients | Percentage (%) |
|---|---|---|
| Flank pain | 40 | 88.8 |
| Lower abdominal pain | 15 | 33.3 |
| Dysuria | 10 | 22.2 |
| Obstructive voiding symptoms | 7 | 15.5 |
| Asymptomatic | 2 | 4.4 |

Only 2 patients were Asymptomatic, 40(88.8%) had frank symptorms pain and dysuria mentioned by 10 (22.2%) of patients.

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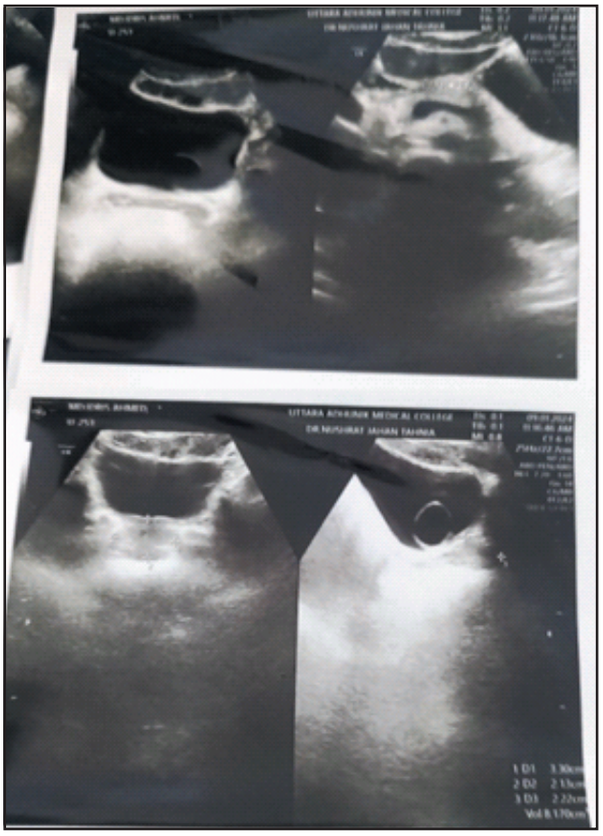

**Figure 1** Ultrasonogram image showing cystic structure of ureterocele


**Figure 2** X-ray IVU showing left sided ureterocele

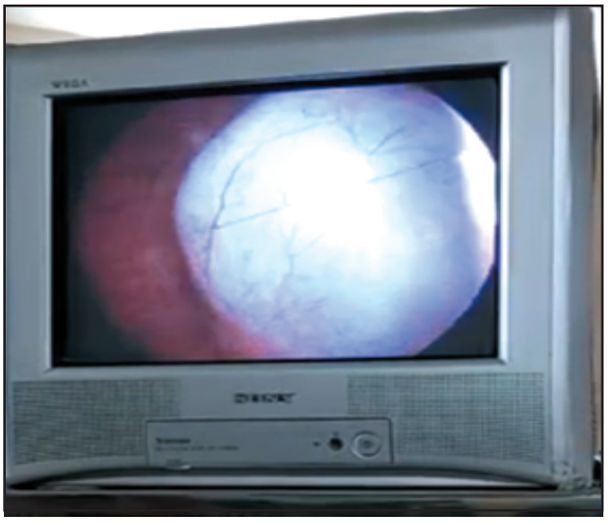

**Figure 3** Cystoscopy showing orthotopic ureterocele

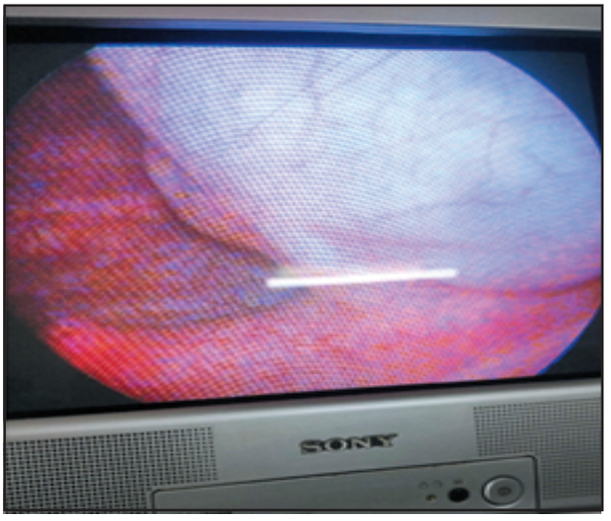

**Figure 4** Cystoscopy showing orthotopic ureterocele

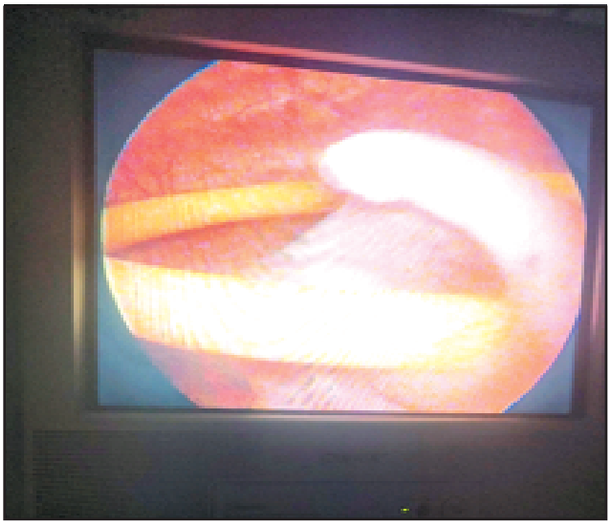

**Figure 5** Lower end of DJ stent

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Volume 08 Issue 01 June 2025; 35-38

## Discussion

Most ureteroceles that manifest in adults are single system, almost always intravesical and occupy a proper trigonal position.[4] The main presentation in adult is flank pain, recurrent UTI, urgency and abdominal pain.[5] In this research main presenting symptom was flank pain, lower abdominal pain, dysuria. Widespread availability of ultrasound makes the diagnosis of ureterocele easier.[6] The "Cobra head" finding in IVU is a characteristic radiological finding of ureterocele.[7] Ultrasonogram and X-ray IVU were the main diagnostic tools in the research. Ureterocele are classified as orthotopic or intravesical and ectopic or extravesical. The orthotopic ureterocele is completely located in the bladder at the trigone angle, mostly combined with a single pyelo-ureteral system. It is more commonly observed in older children and adults.[8] All of the patients had single system intravesical ureterocele. Treatment options for ureterocele are conservative management, endoscopic decompression, open reconstruction. Decompression by endoscopic techniques has several options including cold and hot knife incision(electrocautery), puncture, and more recently,laser incision (holmium or KTP).[9,10] Technique described by Rodriguaz, endoscopic meatotomy with "smiling mouth" fashion, where remaining mucosal flap acts as valve under the pressure of the filling bladder. When the vesical pressure is increased in a fullbladder, the inert mucosa is collapsed preventing the passage of liquid from the bladder to the ureter.[11]

Endoscopic meatotomy is recommended as a first-line treatment for intravesical ureterocele on a single ureter in adults and it is the final treatment in 77% to 93% of cases[12,13] We treat all of our patient with endoscopic electrosurgical smiling incision. Well decompression of ureterocele achieved in all patients. Hydroureter and renal pelvic dilation gradually resolved in all patients. Postoperatively, no patient present with urinary tract infection.

## Conclusion

Endoscopic electrosurgical management of ureterocele can be done without any significant postoperative morbidity. Monopolar electrosurgical incision is effective in decompressing the ureterocele in long-term follow-up. It is a simple, minimally invasive and no need for any specialized costly instrument. In modern era, laser is being used widely as an energy source for incising the ureterocele. In this country, most of the operating room laser machine is not available, so electro surgical incision of ureterocele can be done as an alternative method.

## Disclosure

The authors declare no conflict of interest.

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