CASE REPORT

Endoscopic Dilatation of Meatal Stenosis of Ureterocele in Adult Patients: An Easy and Innovative Technique with Literature Review

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This study presents initial experience in endoscopic meatal dilatation of obstructive ureterocele in adult patients. During cystourethroscopy, we tried to find the orifice of ureterocele, passed a guide wire and introduce an 8 Fr ureteroscope in to the ureterocele orifice, going up to the renal pelvis as under vision dilatation of ureterocele meatus. Two Double-J stent were inserted and remained for six weeks to keep the meatus dilated. Adverse effect of endoscopic management was decreased due to minimal anatomic changes. Patients' symptoms were relieved and no evidence of new onset vesico-ureteral reflux and obstruction were seen after up to one-year follow-up. Endoscopic meatal dilatation of stenotic ureterocele in adult patients is safe and effective thus, trying to find the orifice of ureterocele is suggested.

Keywords: meatal dilatation; ureterocele; ureteroscope

INTRODUCTION

Ureterocele is a cystic dilation of the distal ureter. It is a congenital anomaly, associated with other anomalies such as a duplicated system and other diseases[(1)]. There is no consensus on the management of ureterocele, type of presentation, and function of the affected kidney, and there are issues that should be considered in ureterocele cases. Thus, individualized management is expectable (1). The ureterocele in an adult patient is rare and usually asymptomatic. The management of ureterocele mainly have focused on pediatric patients in the literature. Endoscopic approach has been accepted as a temporary technique and was introduced as a useful surgical management with minimal postoperative morbidity[(2)]. Ureteral re-implantation and/or bladder neck reconstruction is not necessary for all patients especially in adult patients[(3)]. The successful management of ureterocele is associated with relieving the obstruction, and prevention of de novo vesicoureteral reflux (VUR)[(4)]. High incidence of acquired VUR (up to 35%) in endoscopic approach has been reported and it was associated with endoscopic techniques (transurethral incision (TUI), watering can technique) and ureterocele type[(3,4)].
We present successful endoscopic meatal dilatation in adult obstructive ureterocele without adverse impact on outcomes.

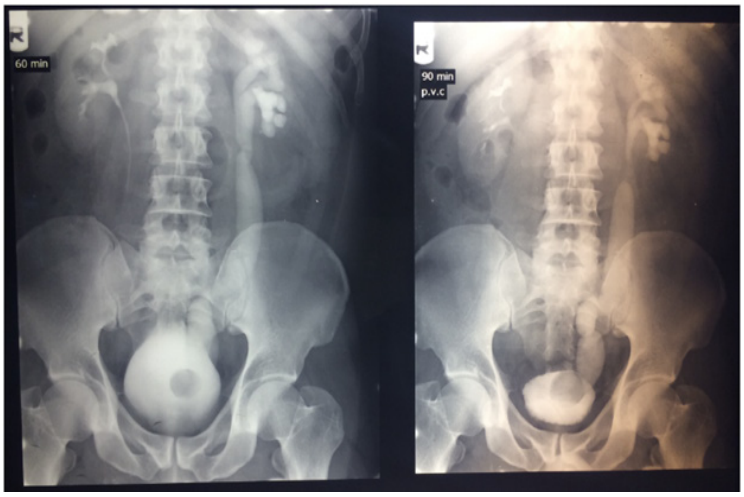

Figure1. Pre-operative Intravenous Urography (IVU).

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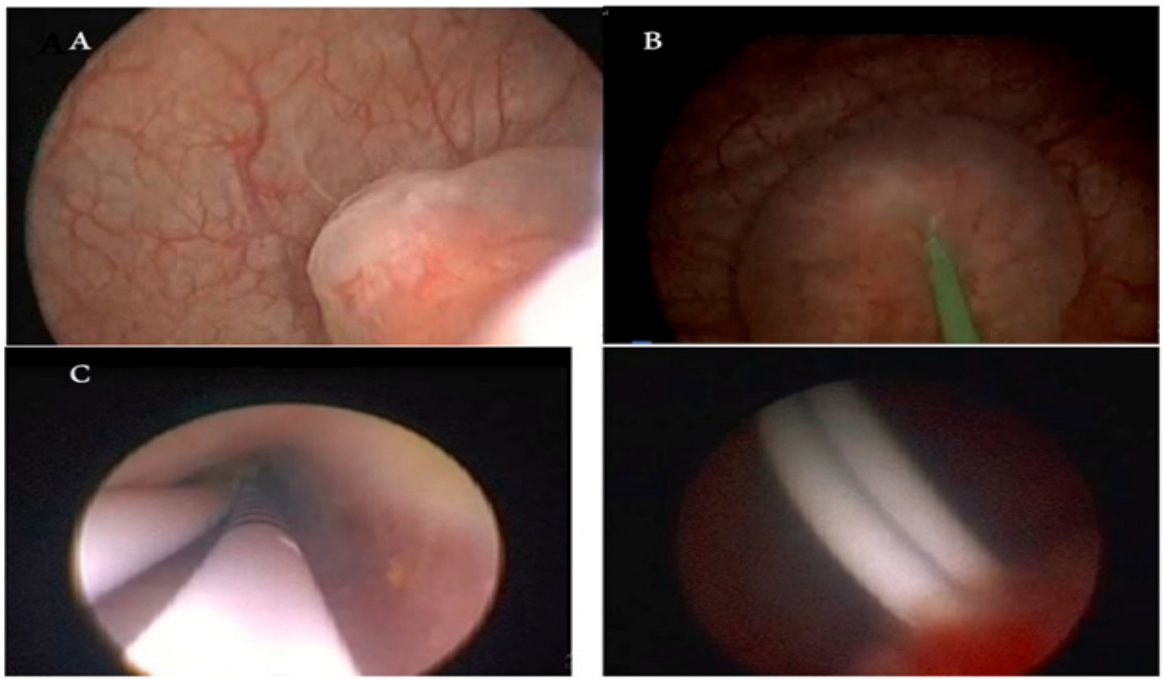

Figure2. A. Intra-operation urine jet from pin point native orifice of ureterocele, before endoscopic dilatation. **B.** Intra-operation insertion of guide wire. **C.** Insertion of two Double-J.

CASE PRESENTATION AND TECHNIQUE

A) A forty-year-old man was referred to our clinic with the complaint of vague abdominal pain for years and hydroureteronephrosis on abdominopelvic ultrasonography. The orthotopic single system ureterocele was obsereved in intravenous urography (IVU) (**Figure 1**). During cystourethroscopy, the pinpoint orifice was found at the anterolateral of ureterocele with sharp urine jet through the orifice (**Figure 2A**). The safety wire was inserted, and with 8Fr ureteroscope via native orifice we were able to enter into the ureter and continue up to the renal pelvis under vision dilatation procedure (**Figure 2B**). Then two Double-J stent were inserted to keep the meatus dilated (**Figure 2C**). After 6 weeks, both Double-J stents were removed. There was no evidence of de novo VUR and obstruction after 12 weeks of follow up (**Figures 3,4**). The urinary stasis after one year follow up was resolved.

B) A forty-three-year-old man came to our clinic with left renal colic pain due to a one-centimeter uretero-vesical junction stone (**Figure 5A**). The patient was being prepared for transurethral lithotripsy. During cystoureteroscopy, ureterocele was found incidentally with a pinpoint orifice. 0.038 Fr guide wire was inserted, 8 Fr ureteroscope was passed through the ureterocele orifice, the stone was extracted and removed with grasper and ureteroscopy was continued up to the renal pelvis (**Figure 5B**). After removing the ureteroscope, the ureterocele meatus remained dilated enough and urine jet was seen. Two Double-J stent were inserted to keep the meatus dilated. After 6 weeks, both Double-J stents were removed. The voiding cystourethrography (VCUG) was normal 12 weeks post-operation. There was no evidence of hydronephrosis on abdominopelvic ultrasonography in one-year follow-up.

C) A thirty-year-old woman with a complaint

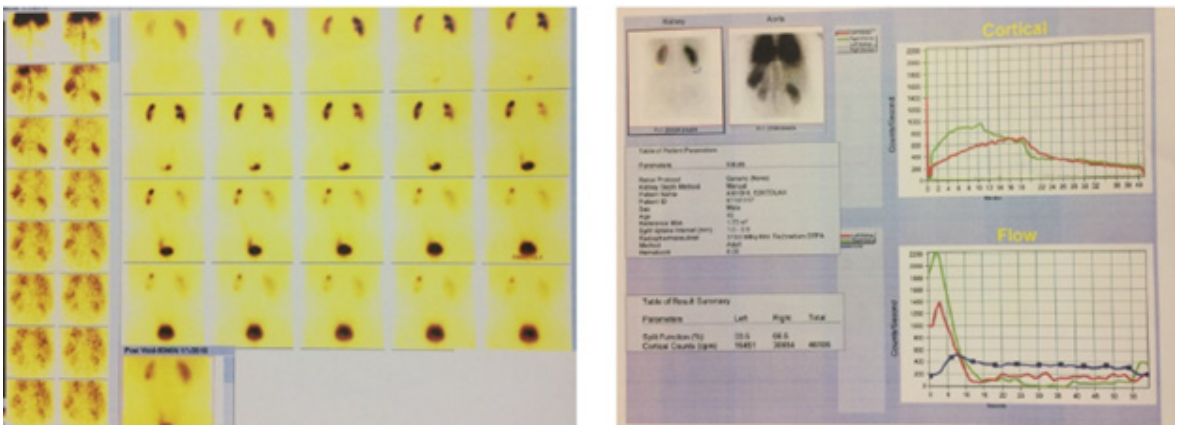

Figure 3. Post-operative DTPA Scan after 12.

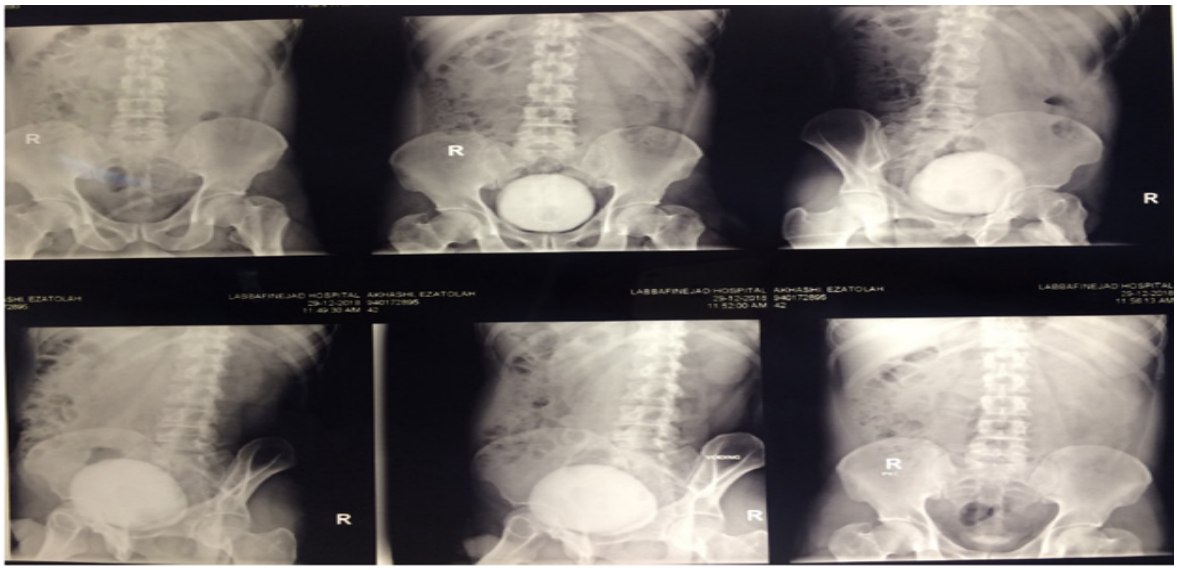

Figure4. Post-operative VCUG after 12 weeks.

of recurrent urinary tract infection was referred to our clinic. The patient had a history of laparoscopic heminephrectomy due to non-functioning lower pole left kidney with complete double collecting system and also history of right side nephrectomy twenty years before referral due to non-functioning kidney with unknown etiology. Pre-operative evaluation consisted of serum creatinine (1.7 mg/dL) and normal ultrasound on the remaining part of the left kidney. On the cystourethroscopy, there were two ureteral orifices on the left side of trigone (cephalad one for lower moiety and caudal one on the tip of ureterocele for upper moiety) (**Figure 6A**). A guide wire was inserted to the cephalad orifice to make sure that was for lower moiety with no connection to the upper moiety.

The second safety guide wire was inserted into the ureterocele orifice (**Figure 6B**) and 8 Fr ureteroscope was passed through the native orifice of the ureterocele up to the renal pelvis. After removing the ureteroscope, the ureterocele orifice was seen to be dilated enough and urine jet was seen. The Double-J stent was inserted (**Figure 7**) and removed after six weeks. On one-year follow-up, the patient was asymptomatic and the urine culture was negative.

D) A thirty-five-year-old man was referred to our clinic with refractory irritative lower urinary tract symptoms. Abdomino-pelvic ultrasonography showed right side moderate hydroureteronephrosis without any apparent causes of obstruction. The single system ureterocele was seen in IVU (**Figure 8**). The patient was scheduled for endoscopic management of ureterocele, during cystourethroscopy native meatus of ureterocele was apparent (**Figure 9**) and guide wire 0.038(Fr) was inserted and 8 Fr ureteroscope was passed through the native orifice of ureterocele over the guide wire and ureteroscopy continued up to the renal pelvis. After removing the ureteroscope, the ureterocele orifice was seen to be dilated enough and urine jet was seen. The Double-J stent was inserted. After limited follow-up (three months) hydroureteronephrosis was relieved in ultrasonography and IVU (**Figure 10**).

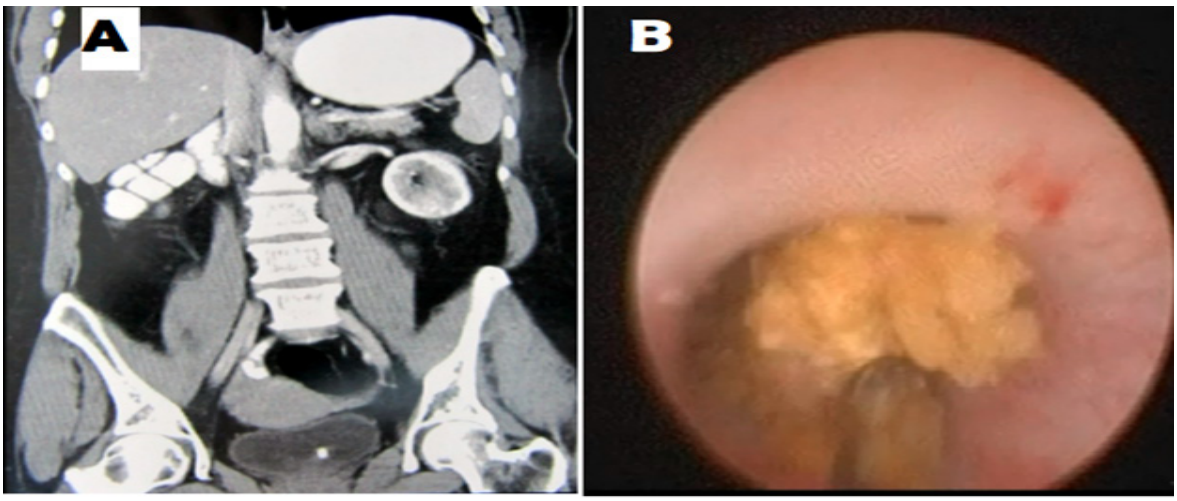

Figure5. A. Pre-operative abdomino-pelvic CT-Scan without contrast. **B.** The large stone located in ureterocele.

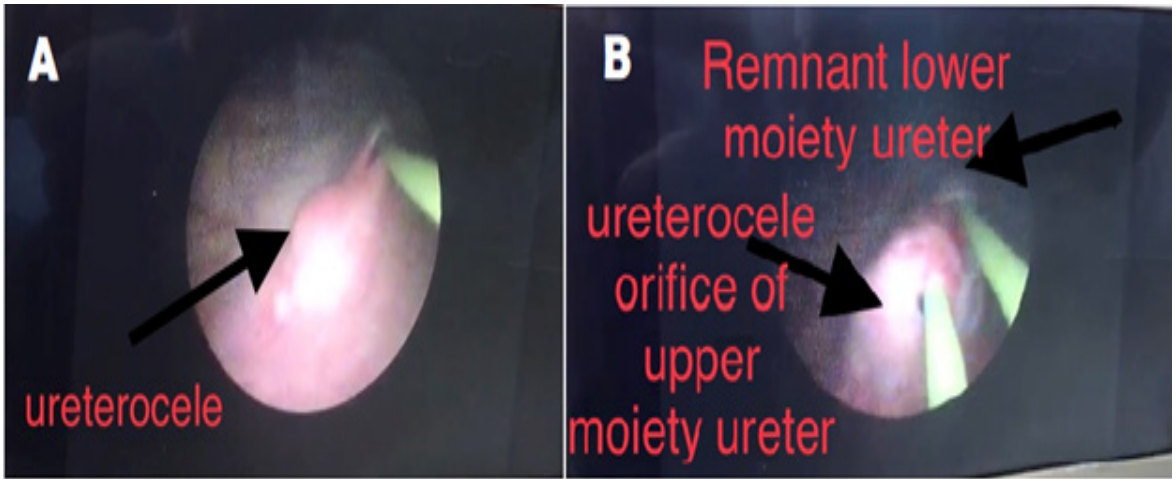

Figure 6. A. Insertion of guide wire to lower moiety remnant ureter. **B.** Intra-operation insertion of guide wire.

DISCUSSION

Most adults ureteroceles are in single system, intravesical, and located on the trigone of bladder. The therapeutic management of ureterocele is controversial, which is related to the type of presentation and postoperative morbidity. Short operation time and acceptable outcomes of endoscopic approach have made the endoscopic procedure the first-line therapy at some centers [5], however according to previous studies, there is no consensus on any priority for the type of endoscopic techniques[6] (**Table 1**).

The high incidence of VUR and the necessity of auxiliary procedures in endoscopic approaches are considered as disadvantages of transurethral incision (TUI) or puncturing[4,6].

The goals of endoscopic techniques are to decompress the obstructed system while minimizing the incidence of postoperative reflux[7], therefore, less manipulation of anatomic integrity in ureterocele is an important technical point to reach these goals.

We went through literature for treatment of adult ureterocele and summarize them in **Table 1**.

Dutov and colleagues studied 51 patients with true ureterocele in adult patients in which 26 patients underwent endoscopic incision wall of ureterocele. Incidence of de novo VUR was not reported[8]. Also Sadiki and

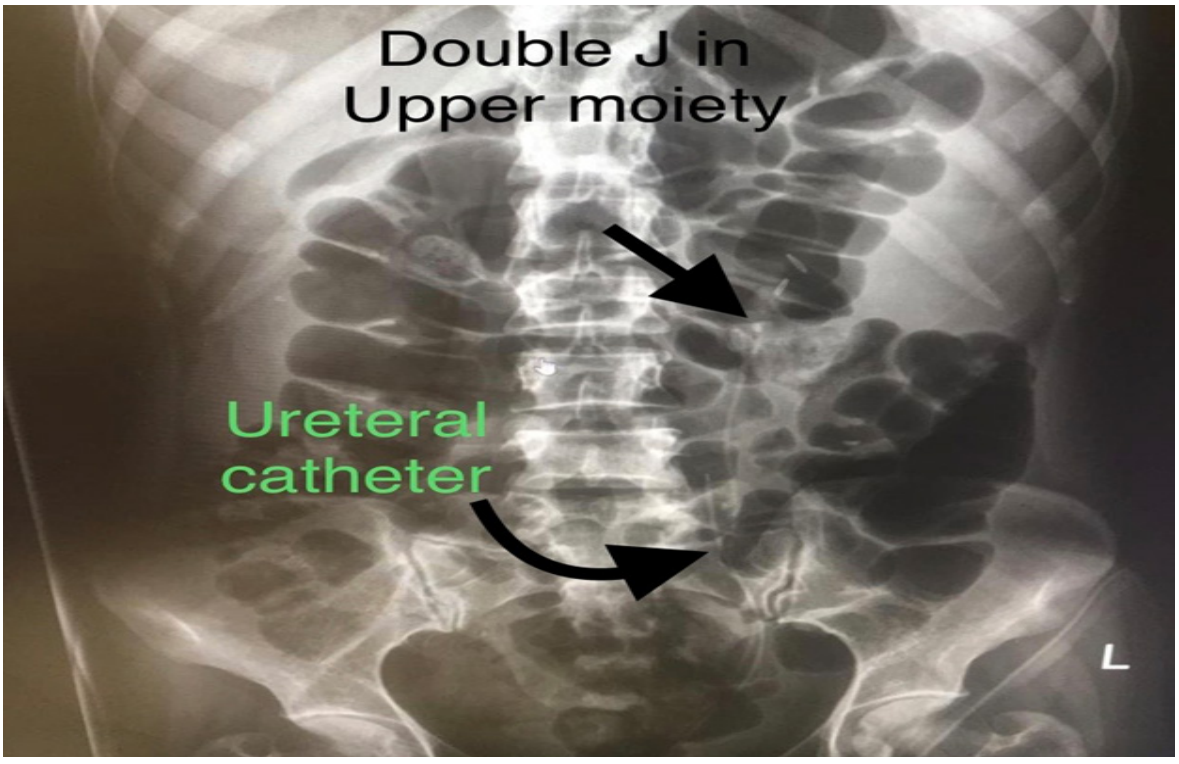

Figure 7. Post operation KUB.

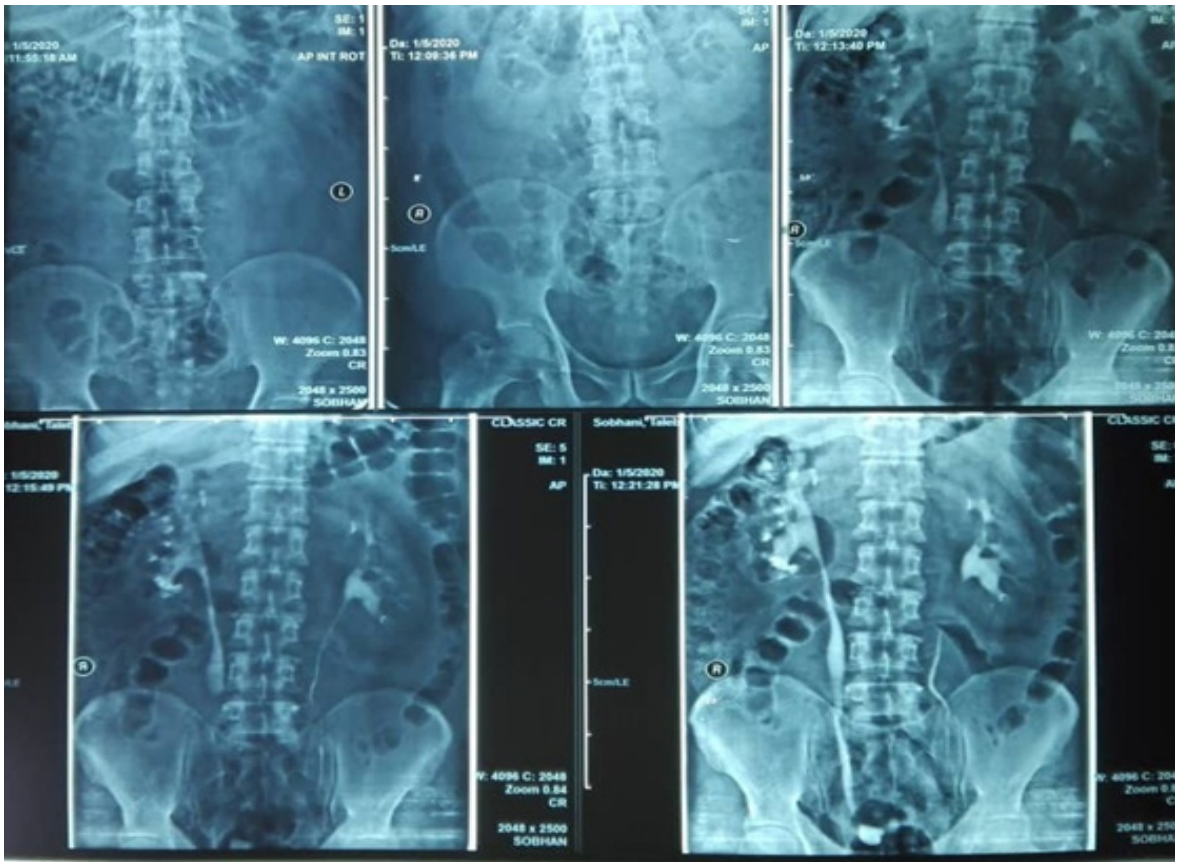

Figure 10. Post-operative Intravenous Urography.

with ureterocele who underwent TUI and were followed by ultrasonography and micturating cystourethrography (MCU). MCU revealed grade-1 VUR in three patients and grade-2 VUR in one patient at 3-month follow-up. Repeated MCU at six months revealed complete resolution of VUR in these patients[6].

Based on previous reports that were shown in Table 1, it seems that there is no consensus for the location, length, and instrument for ureterocele incision and sometimes there is no confidence to cut the full thickness of ureterocele wall. It seems that our technique can offer a uniform procedure for every surgeon by details of the procedure and have the answer for above mentioned unanswered technical questions with acceptable outcomes.

CONCLUSIONS

We introduce our initial experience in the endoscopic management of adult ureterocele. It seems that meatal dilatation of stenotic ureterocele without changing anatomic integrity is a safe, feasible, and effective endoscopic technique for relieving obstruction and preventing new-onset VUR.

Table 1. Literature review on the management of ureterocele.

Author	Year of study	Number of patient	Endoscopic technic	Secondary intervention	Incidence of. VUR post op	Occurrence of post op. obstruction
Rodriguez(10)	1984	25	Smiling mouth incision	None	1 (4%)	Not reported
Gotoh (11)	2000	1	Small Incision	None	Nil	Not reported
Chtourou (12)	2001	20	endoscopic horizontal ureterocele incision	None	1 (5%) – resolved after six months	Not reported
Aron (13)	2001	1	Holmium laser incision	None	Nil at 3 months	Not reported
Jones (14)	2002	2	Holmium laser incision	None	Not specified	Not reported
Lieb (15)	2003	1	Holmium laser incision	None	Not specified	Not reported
Dutov (8)	2004	51	Incision wall of ureterocele	None	Not specified	Not reported
Sadiki (9)	2005	14	Endoscopic meatotomy	1 (7%) resection of the ureterocele and Hendren ureteric reimplantation	5 (35.7%) resolved after three months 1 (7.14%) Persistent after six months	Not reported
Spatafora (16)	2006	15	Collins knife incision	None	3 (20%)	Not reported
Singh (17)	2007	2	Transverse incision	None	Nil at 6 months	Not reported
Shah (6)	2008	16	Holmium laser incision	None	4 (25%) resolved after six months	Not reported

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