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UNILATERAL COMPLETE DUPLEX URETER WITH SEPARATELY PLACED DISTAL DOUBLE STONES

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ABSTRACT
The presence of separate stones in completely duplicated ureter is a rare clinical entity. In this case report, a 53 years old female patient who admitted to hospital with left flank pain and who was found to have bilateral left complete duplicated ureter obstructed with concomitant stones was described. She was treated with rigid ureteroscopy. It should be kept in mind that diameters of duplicated ureters may be smaller than normal. Hence, both operation can be more challenging, and traumatization of ureters is more likely compared to standard procedure. Due to different anatomical structures of ureters in order to prevent serious injury during operation, procedure should be done with utmost care, devices with low caliber and high visual quality. In cases when ureteral passage does not fit calibration of ureteroscopy, definitive treatment should be postponed until passive dilatation should be obtained by ureteral catheters.

INTRODUCTION

Unilateral complete ureter duplication is described as state of having two completely different ureters originating from the same kidney with double pelvicalyceal system opening to bladder with double ureters. During embryological development two ureteral buds develop from one mesonephric duct, this forms completely duplicated ureters. It's incidence is 0.1%-3%, and it is more common in females [1,2]. Unilateral complete duplex systems can be found together with congenital urinary tract anomalies such as ureterocele and vesicoureteral reflux.

The duplex system is asymptomatic, and it's diagnose is incidental. Symptoms are mostly due to infection, reflux or obstruction. Flank pain may accompany symptoms if there is severe hydronephrosis. The potential stone formation is highly possible due to urine stasis.

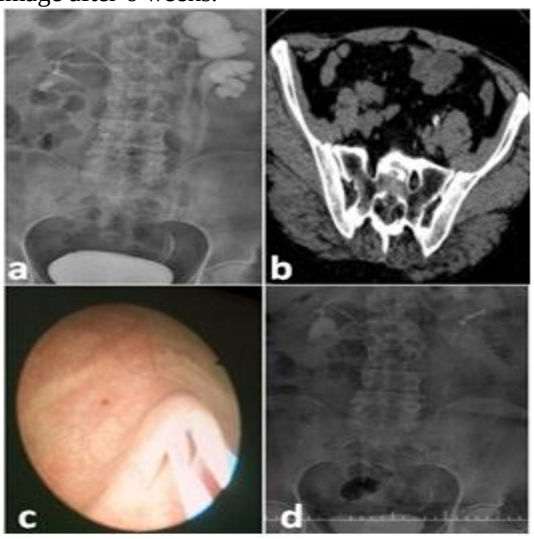
Presentation of Case

A 53 years old woman admitted to our clinic with recurrent left flank pain, urgency, nausea and vomiting. Patient had no fever. On urine analysis, she had macroscopic hematuria. Her renal function tests were normal. On direct urinary system X ray 5 mm opacity was localized at the lower part of her left ureter. Renal ultrasound was scheduled for her.

On ultrasound, the right kidney was normal but grade 3 hydronephrosis was detected on her left kidney. In Intravenous Urography (IVU), a duplex pelvicalyceal system was visualized on the left side and both of the ureters calyceal structures had hydroureteronephrosis. On abdominal tomography without contrast hydronephrotic complete duplex system and both two distal ureters with 5mm stones were confirmed. Endoscopic ureter stone extraction treatment was scheduled for the patient. Her urine cultures showed no urinary tract infection. Patient information form about the procedure and written informed consents were obtained. Rigid cystoscopy were performed under general anesthesia with lithotomy position. Placement of orifices of both ureters was correct, they had two separate openings to left trigon and there was no ureterocele. Retrograde safe passage to the left kidney was obtained with 0.0035 inch guide wires under scope from the medial and lateral orifices. Under rigid ureteroscopy (R. Wolf 7.5 fr) guidance we reached the stone in the

medial orifice. We performed lithotripsy by intracorporeal Holmium: YAG Laser (Karl Storz) 365µm fiber and defragmented the stone. Later we performed the same procedure to the other stone in the lateral orifice. We saw that both of the ureters were endoscopically stone free. The ureteral catheter was not applied to the patient. The patient was discharged having seen no residual stone on postoperative day one direct urinary tract X-ray. On her control at postoperative 6th week, an IU was given to her. Hydroureteronephosis was fully cleared away in renal calyceal structures (Figure 1).

Figure 1. Radiological and endoscopic findings of the patient. **(a)** Preoperative intravenous urography image, **(b)** Preoperative noncontrast Computerized Tomography, **(c)** Endoscopic appearence of double ureteral orifices, **(d)** postoperative intravenous urography image after 6 weeks.



DISCUSSION

The presented case of concomitant obstruction of complete duplex ureters due to stone is a first case report in Turkey and second case report in the literature. Aiken et al, published the first case report about complete duplex ureter stones in 2014. Because of challenging access to stone, they could not defragment the stone in the first session. They applied ureter catheter, and stone was removed after passive dilatation due to ureter catheter application. Stone was then removed during their second session [2].

Duplicated ureters may have smaller diameters than their normal counterparts. Moreover, the risk of iatrogenic injury to another ureter during surgery is high due to their common adventitial sheet. In the presented case here, the anatomy of the ureteral orifice was appropriate for rigid ureteroscopy. Therefore, the patient becomes easily stone-free after the procedure in a single session. Laser lithotripsy with low energy was used to minimize the harmful effects to neighboring tissues, and a ureteral stent was not applied at the end of the operation.

Duplicated ureters have potential negative effects on renal functions urinary tract stones such as ureterocele, vesicoureteral reflux and obstructive uropathy [3-5]. Diagnose of completely duplicated ureters is done via radiologic interventions and early diagnose complication rate.

Complete duplicated ureters may have different anatomical structure. Hence, they have higher complication rate during standard ureteroscopy [1]. In the presented case, the ureteral stone has been removed successfully, and the patient has been endoscopically treated. No ureteral stent application was necessary at the end of the procedure. On her examination at postoperative 6th week, her physical examination was normal, and IVU revealed hydronephrosis was cleared away on renal calyceal structures.

CONCLUSION

Visualization of the urinary system and identification of congenital anomalies are very important prior to surgery for urinary tract stone disease both to prevent the surgical complications and to promote the success of the surgery. Because patients with urinary tract anomalies may have divergent anatomical structures, during surgery surgeons should act with extra care, modern devices with low caliber and higher visual quality. In addition to this, all movements should be avoided to damage the surrounding tissue. In cases where calibration of ureter does not permit for standard ureteroscopy, persistent instrumentation should be avoided, and curative treatment should be left for a second session.

DISCLOSURE

The authors declare no conflict of interest.

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