CASE REPORT

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Uretrorenoscopy laser lithotripsy treatment of stones impacted in the left ureter 10 years after right kidney autotransplantation

Ureterorenoskopska laserska litotripsija u lečenju kamenova impaktiranih u levom ureteru deset godina nakon autotransplantacije desnog bubrega

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Abstract

Introduction. Urinary tract calculosis is a very common condition in general population. It appears in 5–10% of population, and can be managed conservatively or by minimally invasive, endoscopic and surgical procedures or extracorporeal shock way lithotripsy. Lesions of the ureter can be resolved by JJ stent insertion, end-to-end anastomosis, ureterocystoneostomy, percutaneous nephrostomy, nephrectomy, intestinal graft interposition or kidney autotransplantation. **Case report.** We presented surgical treatment and outcome in a female patient, with a large defect of the right ureter due to impacted stone treatment, following a successful autotransplantation of the right kidney. Ten years later a stone impacted in the left ureter was successfully treated by ureterorenoscopy and laser lithotripsy. Asynchronously combined kidney aoutotransplantation and ureterorenoscopic lithotripsy preserved kidney function. **Conclusion.** Bilateral organs preservation should be considered even in the absence of malignancy, especially in younger population.

Key words:
ureterolithiasis; lithotripsy, laser; transplantation, autologous; kidney.

Apstrakt

Uvod. Kalkuloza urinarnog trakta sreće se veoma često u opštoj populaciji. Javlja se kod 5–10% populacije i može se zbrinjavati konzervativnim pristupom, minimalno invazivnim endoskopskim ili hirurškim procedurama ili razbijanjem kamena udarnim talasima van tela. Oštećenja uretera mogu biti rešavana plasiranjem ureteralnih sondi, terminoterminalnom anastomozom uretera, ureterocistoneostomijom, perkutanom nefrostomijom, interpozicijom grafta creva ili autotransplantacijom bubrega. **Prikaz bolesnika.** Prikazali smo tok i ishod lečenja bolesnice sa velikim defektom desnog uretera nastalog kao posledica lečenja zaglavljenog kamena, sa naknadnom uspešnom autotransplantacijom desnog bubrega. Posle deset godina, kamen se zaglavio u levom ureteru i uspešno je razbijen ureterorenoskopskom laserskom litotripsijom. Asinhrona autotransplantacija bubrega i ureterorenoskopska litotripsija su rezultovali očuvanjem bubrežne funkcije bolesnice. **Zaključak.** Očuvanje parnih organa je opcija lečenja i u odsustvu malignih oboljenja, naročito kod mlađih bolesnika.

Ključne reči:
ureterolitijaza; litotripsija, laser; transplantacija, autologna; bubreg.

Introduction

Urinary tract calculosis appears in 5–10% of general population and can be managed conservatively, by Extracorporal shock way lithotripsy (ESWL), ureterorenoscopic lithotripsy, open or laparoscopic surgery, as well as by percutaneous nephrolithotripsy [1]. Lesions of the ureter account for 1% of all urinary tract lesions. Most often they are iatrogenic, caused by gynaecological interventions, abdominal surgery and urological treatment – open surgery or ureterorenoscopy [2]. Large defects of the ureter may be treated surgically, performing transureteroureterostomy, the psoas hitch method, Boari flap, nephrectomy, renal autotransplantation or with intestinal tract graft interpositions [2].

Case report

A 47-year-old female patient experienced renal colic type pain on the right side accompanied by a high-grade fever in June 1999. Diagnostic procedures and treatment were initiated in the United States and showed the presence of a suppurative pyelonephritis accompanied by II degree hydronephrosis and right-sided ureterolithiasis. Antibiotics

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were administrated and a JJ stent inserted into the right ureter. One month later the patient was hospitalised at our institution because of urosepsis and pyelonephritis of the right kidney. Sonography of the kidney showed II/III degrees ureterohydronephrosis on the right side. The findings of the left kidney were without any peculiarities. A kidney, ureter and bladder (KUB) radiography revealed that the superior end of the JJ stent lied outside the ureter. Antibiotic treatment was initiated and the JJ stent removed. A percutaneous nephrostomy catheter was inserted into the renal pelvis of the right kidney. In the vicinity of the lateral process of the L4, a knee bend in the ureter with a funnel-like taper was observed

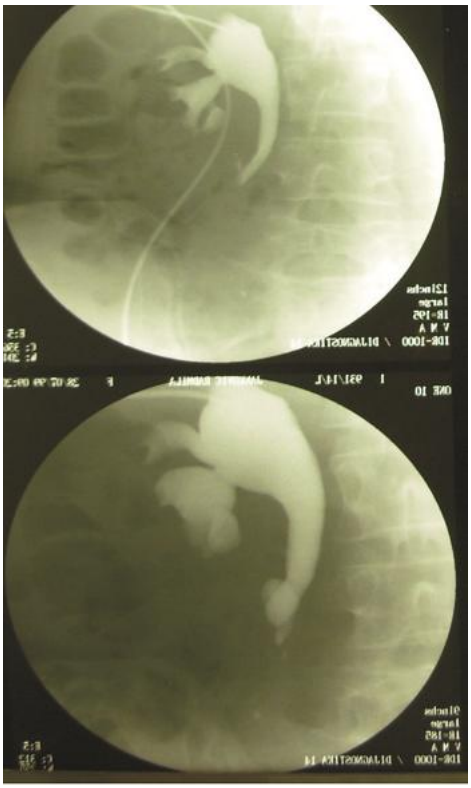

Fig. 1 – Anterograde urography, right side, showed hydronephrosis on the right, knee bend of the ureter in the vicinity of the lateral process of L3, the distal segment of ureter did not show.

that was impassable for the contrast media (Figure 1). The patient was operated on 5 September 1999 when periuretral fibrosis was found with complete occlusion of the lumen of the right ureter, running 15 cm from the ureteropelvic junction to the vicinity of the iliac blood vessels. An autotransplantation of the right kidney was performed into the right iliac fossa. A control sonogram was performed on the day 4 following the operation and it showed no hydronephrosis or calculosis of the autotransplanted kidney. On the postoperative day 16 the patient was discharged home, afebrile, with normal laboratory test results and proper depuration.

In December 2009, the patient reported to the urologist for renal colic type pain on the left side. Renal sonography revealed III degree hydronephrosis of the left kidney. A stone measuring 12 × 6 mm was observed below the left ureteropelvic junction. Intravenous urography showed the right autotransplanted kidney in the pelvis minor, excreting in a timely fashion and proper concentrations, without

Fig. 2 – Intravenous urography performed in December 2009 showed hydronephrosis of the left contralateral kidney. The right autotransplanted kidney in the pelvis minor without urinary stasis. Both kidneys excreted contrast media. The left ureter did not show.

hydronephrosis. Hydronephrosis was seen on the left kidney and the left ureter did not appear (Figure 2). The patient undervented ureterorenoscopy with laser lithotripsy of the stone in the left ureter with insertion of a JJ stent into the left ureter. The JJ stent was removed three weeks postoperatively. Three months after the surgery the patient had no longer any of the complaints and intravenous urography findings were without any peculiarities (Figure 3).

Fig. 3 – Intravenous urography performed in February 2011 showed no peculiarities on either kidney, pyelocaliceal system or ureter.

Discussion

Large defects of the ureter may be treated surgically by interposing the small intestine [2, 3]. This surgical method is accompanied by a number of complications: frequent urinary infections, improper renal function, electrolyte disorders and intestinal obstruction [4]. In cases when anatomical and technical considerations do not allow the use of an intestinal segment or other method for replacing the missing part of the ureter, renal autotransplantation may be the method of choice [2–5]. This is of a particular significance among patients with the anatomically or functionally solitary kidney. In the presented patient ureterocystoneostomy was not possible due to the size of the defect of the ureter, nor was possible to obtain a long enough graft of the bladder. Studies have shown excellent results and 93% preservation of the function of the autotransplanted kidney [4–7]. Thrombosis of renal blood vessels of autotransplanted kidneys is the most serious complication that appears in 0.5–4% of cases [8]. Ten years after autotransplantation, patient had laser ureterorenoscopic lithotripsy on the other kidney. Until the 1980s ureterolithotomy was the only treatment for stones in the ureter. With the development of ESWL and ureterorenoscopy, the indications for ureterolithotomy were brought down to minimum, with only 1–5% of patients requiring open surgery [9]. Complete disintegration and elimination of calculi is achieved among 93.1–97.7% of patients by URS laser lithotripsy and/or ESWL, methods that are painless, effective and have low rates of serious complications [10].

Kidney function deterioration was prevented in the presented patient by a proper combination of conservative treatment, minimaly invasive procedure, open surgery and endourological intervention.

Conclusion

Kidney preservation is indicated whenever it is possible, even in the absence of malignancy.

R E F E R E N C E S

1. *Bartoletti R, Cai T, Mondaini N, Melone F, Travaglini F, Carini M*, et al. Epidemiology and Risk Factors in Urolithiasis. Urol Int 2007; 79(1): 3−7.
2. *Dobrowolski Z, Kusionowicz J, Drewniak T, Habrat W, Lipczynski W, Jakubik P,* et al. Renal and ureteric trauma: diagnosis and management in Poland. BJU Int 2000; 89(7): 748−51.
3. *Armenakas NA.* Ureteral trauma: surgical repair. Atlas Urol Clin North Am 1998; 6(2): 71−84.
4. *Schoeneich G, Winter P, Albers P, Fröhlich G, Müller SC.* Management of complete ureteral replacement. Experiences and review of the literature. Scand J Urol Nephrol 1997; 31(4): 383−8.
5. *Shekarriz B, Lu H, Duh Q, Freise CE, Stoller ML.* Laparoscopic nephrectomy and autotransplantation for severe iatrogenic ureteral injuries. Urology 2001; 58(4): 540−3.
6. *Neo EN, Zulkifli Z, Sritharan S, Lee BC, Nazri J.* Renal autotransplantation after an latrogenic left ureteric injury. Med J Malaysia 2007; 62(2): 164−5.
7. *Bodie B, Novick AC, Rose M, Straffon RA.* Long-term results with renal autotransplantation for ureteral replacement. J Urol 1986; 136(6): 1187−9.
8. *Giustacchini P, Pisanti F, Citterio F, de Gaetano AM, Castagneto M, Nanni G.* Renal vein thrombosis after renal tranplantation. An important cause of graft loss. Transplantation Proc 2002; 34: 2126−7.
9. Assimos DG, Boyce WH, Harrison LH, McCullough DL, Kroovand RL, Sweat KR. The role of open stone surgery since extracorporeal shock wave lithotripsy. J Urol 1989; 142(2 Pt 1): 263−7.
10. *Binbay M, Tepeler A, Singh A, Akman T, Tekinaslan E, Sarilar O,* et al. Evaluation of pneumatic versus holmium:YAG laser lithotripsy for impacted ureteral stones. Int Urol Nephrol 2011; 43(4): 989−95.

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