



Endourology

A New Method for Fragmented Ureteral Stent Extraction: Flexible Renoscopy



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ABSTRACT

Usage of ureteral DJ stent is very common in urology practise. There are some complications according to the increased usage of ureteral DJ stent in the literature. Stent fragmentation is a rare complication of ureteral DJ stent. In this study we present a 53-year-old male patient who had previous stone surgery and a ureteral DJ stent applied to our polyclinic with complaint of 3-months-long right side pain. In the radiologic examination we observed that DJ stent was fragmented from the upper end on the right kidney. We extracted the fragmented part of ureteral DJ stent with flexible ureterorenoscopy.

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Introduction

Usage of ureteral DJ stent is very common in urology practise. Urinary diversion, management of ureteral obstruction, post-operative drainage, trauma, reconstructive surgery and after oncologic cases can be listed among its indications. A number of complications after increased usage are indicated in literature. These are pain, fever, irritative symptoms, incrustation, migration and rarely stent fragmentation. We aimed to present a case in which we used flexible renoscopy in the treatment of fragmented DJ stent.

Case

53-year-old male patient applied to our polyclinic with complaint of 3-months-long right side pain. We learned that Retrograde Intrarenal Surgery (RIRS) was applied and DJ stent was placed to the patient at another hospital 1 year ago due to the right kidney and ureteral stone from the patient history, and he did not go for his controls. Routine biochemical and hemogram analyzes

were normal. Protein, hemoglobin and leukocyte esterase were positive and 192 erythrocyte and 18 leukocytes were in urinalysis. The patient's urine culture was sterile. We observed in the kidney urether bladder graphy (KUB) that DJ stent was fragmented from the upper end on the right kidney (Fig. 1). We planned RIRS for the extraction of the fragmented DJ stent. We took the patient's written consent.

We administered parenteral antibiotic to the patient 1 hour before the operation. After we applied general anesthesia at supine position, we took the patient to modified dorsal lithotomy position. Then we entered right urether with semirigid ureterorenoscopy. We passed by the petrified DJ stent to the ureter upper end. We primarily fragmented the petrified part near the DJ stent at the upper end of ureter by pneumatic lithotripsy. The fragmented parts were migrated to the kidney. Then we extracted the distal part of the DJ stent with forceps. Afterward, we placed a guide wire to the right ureter and placed ureteral access sheath over it to the ureteropelvic junction under fluoroscopic control. We entered through it with flexible ureterorenoscope (Flex-X2, Karl Storz, Tuttingen, Germany). We extracted the proximal part of the DJ stent placed on lower calyx via access sheath by sending basket catheter through flexible ureterorenoscope (Fig. 2). Then we entered with flexible ureterorenoscope again and applied lithotripsy to the calculi pushed up to the kidney lower calyx with 200 mm holmium laser probe (Ho YAG Laser; DornierMedTech; Munich, Germany). We

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Figure 1. Preoperative KUB graphy.

placed 5f 26 cm DJ stent (GEOTEK, Ankara, Turkey) after checking for the remaining residue calculi by fluoroscopy. We completed the process by placing 16 f foley catheter. The beginning of endoscopy to catheter placement lasted for 75 minutes in total. No complications were monitored. We took the KUB graphy of the patient on the postoperative first day (Fig. 2). We extracted the catheter and discharged the patient on the postoperative first day. We called him for control 3 weeks later and extracted his DJ stent.

Discussion

Usage of ureteral stent has increased in the last 20 years. These stents include various materials such as polyurethane, silicon,

silitech, C-Flex, Percuflex and metal.¹ All of them have advantages and disadvantages on their own. An ideal material should be chemically stable in urine, resistant to infection and crustation, non-irritating and affordable.²

Polyurethane is a material of which usage in stents has increased because it is versatile, cheap, improves urine drainage thanks to its large corner holes and increases luminal urine flow. Complications are seen as a result of this increased usage. El-Faqih et al³ stated that incrustation rate was 76.3%, stent migration was 3.7%, infection was 6.7% and fragmentation was 0.3% in permanent stents remaining for over 12 weeks in their study on 290 stone patients. However, while incrustation was 9.6% in the stents remaining for less than 6 weeks, it was 47.5% in the stents remaining for between 6 and 12 weeks. An extended stent case is presented in our study too. Optimal remaining time of the stent is between 8 and 16 weeks. As the stent remaining time extends, the stent is exposed to urine and some factors in urothelium and elasticity, strength and flexibility loss happens as a result of this.¹ If it is planned to remain for a longer time, the ureteral stent should be changed once in 8–12 weeks in polyurethane stents.

Ureteral stent fragmentation is a rare complication. A lot of mechanisms have been stated to cause this complication. The most frequent one is infection. Depolymerization occurs on the material as a result of infection.⁴ Another mechanism is aging of the stent. Mechanism failure due to aging may develop and the stent may become frangible instead of flexible.⁴ In this case, breakings are seen more frequently on the parts where the stent kinks in particular. Attention should be paid for any kinks to occur while placing the ureteral stent.⁴

Stent material also affects fragmentation. Although silicon stents are stated to be more long-lasting, to have more tension strength and to be less fragmented, a splintered ureteral silicon case is indicated in literature.⁵

Ureterorenoscopic and percutaneous methods were used in the treatment of fragmented ureteral stent under the guidance of fluoroscopy in literature.⁴ Midureteral stent fragments were taken using basket under the guidance of fluoroscopy.⁴ In our case, the



Figure 2. Postoperative KUB graphy and fragmented DJ stent.

fragmented ureteral stent was extracted using basket by flexible renoscopy under the guidance of fluoroscopy. Thus the patient was saved from percutaneous intervention and discharged from the hospital the day after the operation. This case is the first study made using this method in literature.

The most important point in preventing stent fragmentation is to prevent the delay in extracting the stent from the patients and to ensure the patient to come for control in 2 or 3 months at the latest besides the stent selection and preventing urinary system infection. In the treatment of stent fragmentation, usage of RIRS except for percutaneous approach provides shorter hospitalization duration in addition to being an applicable and rational method.

Conflicts of interest

All authors declare no conflicts of interest.

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