Consecutive Anterograde & Retrograde Approach in Treatment of Distal Ureteral Obstruction

Abstract

Ureteral obstructions are defined as deterioration of ureteral drainage. The most common cause of ureteral obstruction is congenital malformations, especially at the level of the ureteropelvic and ureterovesical junctions. Acquired ureteral stenoses are more infrequent. After diagnosis and determination of the location, the appropriate approach is planned in order to protect renal function and resolve ureteral obstructions. Currently, while the number of laparoscopic treatments has increased, conventional open surgery is still preferred as the traditional treatment of choice in cases of complete obstruction. However, in patients who are not suitable candidates for such reconstructive surgeries, minimal invasive interventional methods may be necessary. In this study, we present the use of the anterograde trans-nephrostomic and retrograde combined endoscopic approach to open the ureteral ostium in two patients who were not suitable candidates for reconstructive open/laparoscopic surgery in light of the literature.

Keywords

Endoscopy; Obstruction; Treatment; Ureter

Özet


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Endoskopi; Obstrüksiyon; Tedavi; Üreter

DOI: 10.4328/JCAM.1872  Received: 30.04.2013  Accepted: 30.05.2013  Printed: 01.09.2013  J Clin Anal Med 2013;4(suppl 1): 13-5

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Introduction

Ureteral obstructions are defined as deterioration of ureteral drainage. They can be severe enough to cause renal dysfunction or a minor disorder without any clinical manifestation. The most common cause of ureteral obstruction is congenital malformation, especially at the level of the ureteropelvic and ureterovesical junctions. Acquired ureteral stenoses are more infrequent and usually occur following iatrogenic (local surgery and endoscopic) procedures, infection, trauma, malignancy, or radiation therapy.

Diagnosis can be established through excretory urography, CT scan, retrograde pyelography, or magnetic resonance imaging. Especially in cases of suspected gross hematuria or malignancy, retrograde pyelography, or magnetic resonance imaging. Diagnosis can be established through excretory urography, CT scan, retrograde pyelography, or magnetic resonance imaging. After diagnosis and determination of the location, the appropriate approach is planned in order to protect renal function and resolve ureteral obstructions [1, 2, 3]. Currently, while the number of laparoscopic scopic procedures has increased, conventional open surgery is still preferred as the traditional treatment of choice in cases of complete obstruction. However, in patients who are not suitable candidates for such reconstructive surgeries, minimal invasive interventional methods may be necessary.

In this study, we present the use of the anterograde trans-nephrostomitic and retrograde combined endoscopic approach to open the ureteral ostium in two patients who were not suitable candidates for reconstructive open/laparoscopic surgery in light of the literature.

Case Report

A 75-year-old female patient presented with pain in the right side. The patient, who had been operated on due to a rectal tumor, had undergone a colostomy and had a urethral catheter, with a diagnosis of neurogenic bladder. Ultrasonography revealed grade 3 hydroureteronephrosis and bilateral thinning of the kidney parenchyma. An intravenous iodinated contrast agent could not been used because of the inappropriate blood urine and creatinine levels (urea: 76; creatinine: 1.8). The right ureteral orifice could not be seen on cystoscopy, so a percutaneous approach was taken. The lower collecting canals of the right kidney were entered with sonographic guidance. A contrast agent injected via a nephrostomy catheter was passed to the bladder through a very thin gap at the lower end of the ureter. Under fluoroscopy, a 0.038-in. guidewire was inserted into the ureter and passed to the bladder. Implantation of a double-J stent was attempted via the guidewire, but without success. The patient was then put in the lithotomy position, and the guidewire could be seen in the bladder lumen on a cystoscopy.

Surgical technique: Interventions were made using a rigid cystoscope (19 FR; Richard Wolf, Knittlingen, Germany) with the patients in the dorsal lithotomy position, under general or sedation anesthesia. Ciprofloxacin was given to the patients before and after the operation. The guidewire went through the ureteral orifice, and it was seen in the bladder. The guidewire was then taken out with a flexible grasping forceps. A balloon dilator was sent over the guidewire, but it could not be passed through the orifice, which was so narrow (pinhead) that only the guidewire could be passed through it. Therefore, the cystoscope was removed and the bladder was accessed with a 24 FR resectoscope (27 FR; Richard Wolf). The ureter orifice was cut about 1 cm with a guided Collings knife to be parallel to the guidewire (Figure 1). Then, the ureter was accessed where the guidewire was completely exposed. A narrow ureter segment and orifice were cut from the anterior wall, and the posterior wall of the lower end of the ureter was reached. When the normal part of the ureter was reached, a double-J stent was inserted. The patients were discharged uneventfully on the first day after the operation, and the side pains were relieved in both patients.

In one patient, there was no complaint of dysuria due to the stent. For control, a CT was performed in one patient and ultrasonography in the other six weeks after the operation. Hydroureteronephrosis regressed from grade 3 to grade 1. In both patients, when the double-J stent was removed, the orifice was observed to be wide. At 1- and 3-year ultrasonographic controls, hydroureteronephrosis did not increase. No pain or any other complaint was observed in followup.

Discussion

Currently, treatment options for patients with ureter ureteral obstruction have increased along with technological advance-
Endoscopic dilatation and incision are recommended as the first choice in congenital and acquired benign, segmental, or partial stenosis, and this is also a potential option in ureteropelvic junction stenosis [3]. Good results have been reported in 50–76% of balloon dilatation cases [7]. Similarly, in screening the literature, 55% (48/88) of the cases were reported to have good outcomes with balloon dilatation [8]. However, better results are generally associated with endoureterotomy [9]. Successful outcomes have been reported in average of 78% (62/100) of endoureterotomy cases [7, 8]. Excellent results were reported, with short hospitalization time, in many patients who had complete distal ureter stenosis using a cutting balloon catheter [10]. Similarly, it has been reported that cold cutting of ureteral stenosis with endoscopic scissors is a safe method and that good results were obtained in 12–24-month followups. Thus, this method has been reported as a treatment option in benign intrinsic ureteral stenosis [3].

All these endoscopic approaches can be applied in cases where the ureter lumen can be seen in cystoscopy and passed through a guidewire. Especially in endoscopic treatment of bladder tumors, the ureter ostium can be resected in order to achieve radical oncologic results in some cases when the ureter ostium is affected, which could lead to complete obstruction of the resected ostium. Conventional open or laparoscopic surgery can be applied in this situation. It has been reported in the literature that minimally invasive anterograde trans-nephrostomic and retrograde endoscopic approaches were important in producing a new ostium [11]. We also believe that the antegrade approach is an alternative treatment option when the orifice cannot be defined, as in our two cases.

In another study in which the percutaneous approach was applied, it was reported that a percutaneous double-J stent was inserted due to the postoperative migration of the stent. Furthermore, it was stated that insertion of a percutaneous J stent is an alternative option to endoscopic or surgical treatment in selected cases [12].

In both our patients, in whom there was stenosis that did not allow percutaneous insertion of a J stent, passing a guidewire into the bladder offered a retrograde approach. Therefore, our patients, who were under risk of morbidity and mortality under open or laparoscopic surgical options, could be treated using a combined anterograde and retrograde approach.

**Conclusion**

An endoscopic procedure including dilatation and ureterotomy must be attempted before making the decision to use an open or laparoscopic approach in patients with benign ureteral obstruction. If this option fails, the patient should then be scheduled for open/laparoscopic surgery, and it should be determined whether an opaque agent and the guidewire can pass through the obstructed area. If the guide can be passed into the bladder, endoscopic treatment should be administered, using a combined anterograde and retrograde approach.

**Competing interests**

The authors declare that they have no competing interests.

**References**
