

Orijinal Makale

Antegrade Ureteral Stenting: Our Clinical Experience
Antegrad Üreteral Stentler: Klinik Deneyimimiz
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Özet

Giriş: Üreteral stentler genellikle retrograd pozisyonda yerleştirilmektedirler. Bununla birlikte bazı durumlarda retrograd olarak stent yerleştirmek oldukça zordur. Bu durumda perkütan nefrostomi, antegrad stent yerleştirme ve açık operasyon gibi alternatifler bulunmaktadır.

Hastalar ve Yöntem: Üreteral stentler 26 olguya üreteral obstrüksiyonu gidermek için antegrad olarak yerleştirildi. Hastalar ayrıntılı öykü, fizik muayene, direk üriner sistem grafisi, üriner ultrasonografi, idrar tahlili, idrar kültürü, rutin hematolojik ve biyokimyasal tetkiklerle değerlendirildiler.

Bulgular: Hastaların ortalama yaşları 56.36±4.1 (47-71) yılı. Üriner sistem enfeksiyonu stent yerleştirilmesi sonrası %26.9 oranındaydı. Toplam 7 hastada benign 19 hastada ise malign nedenlerle antegrad stent yerleştirildi. Antegrad stent yerleştirme 26 hastanın 22'sinde (%84.61) başarılıydı. Toplam 4 olguda antegrad stent yerleştirme başarılı değildi. Bu dört olguya nefrostomi yerleştirildi.

Sonuçlar: Antegrad üreteral stent yerleştirme kabul edilebilir komplikasyon oranları ile üreteral obstrüksiyonların tedavisinde güvenli ve nispeten kolay bir işlemdir.

Anahtar Kelimeler: Üreter, obstrüksiyon, tedavi, antegrad stent.

Abstract

Introduction: Ureteral stents generally are inserted in retrograde position. However, in some situations it is difficult to insert a retrograd stent. At this point, there are few alternatives such as percutaneous nephrostomy, antegrade stenting and open operation.

Patients and Methods: Ureteral stent was inserted to 26 patients as antegrade to relieve ureteral obstruction. All patients were evaluated with detailed medical history, physical examination, plain abdominal graphy, urinary ultrasonography, urinalysis, urinary culture, routine hematologic, and biochemical analysis.

Results: The mean age of the patients was 56.36±4.1 (range 47 to 71) years. Urinary tract infection was relatively common (26.9%) after stent insertion. Seven stent placement were performed for benign ureteral obstruction and for 19 malign disease. The procedure was technically successful in 22 (84.61%) of 26 patients, and stent placement was performed as a one-stage procedure. Antegrade stenting was not successful in four cases. In four case, nephrostomy was inserted.

Conclusions: Antegrade ureteric stent insertion is a safe, reliable, and relatively easy treatment option in ureteric obstruction with acceptable complications rates.

Key Words: Ureter, obstruction, treatment, antegrade stent.

Introduction

The obstructions of the urinary system may result from various intraluminal and extraluminal causes (1). Ureteral stents are placed to prevent or relieve ureteral obstruction due to an intrinsic or extrinsic etiology, including ureteral calculi, ureteral stricture, congenital anomalies (ureteropelvic junction obstruction), retroperitoneal tumor or fibrosis (1,2). Stents are also commonly inserted before open surgical or endoscopic procedures to help identify the ureters and prevent inadvertent ureteral injury (3). Ureteral stents generally can be inserted as retrograde (4,5). In some situations such as an obstruction close to the vesicoureteric junction, tumor, and stenosis at the ureteroileal junction of an ileal conduit, it is difficult or impossible to insert a retrograde stent (6). In addition, in some disorders such as terminal stage malignant diseases, retrograde ureteric stenting can be invasive, requires a general or spinal anaesthesia (6). In these situations, to relieve of ureteral obstructions several alternative methods have been described such as ballon dilatation, endoureterotomy, retrograde ureteroscopic endopyelotomy with the holmium:YAG laser, open operation, and antegrade ureteral stenting (7). Antegrade stenting is minimally invasive intervention.

We report our experience in a group of patients with different pathological conditions and ureteral obstruction in whom placement of a

ureteral stent had been attempted. The indications, techniques and results are discussed with the relevant literature.

Material and Methods

Ureteral stent was inserted to 26 patients as antegrade to relieve ureteral obstruction. All patients were evaluated with detailed medical history, physical examination, plain abdominal graphy, urinary ultrasonography, urinalysis, urinary culture, routine hematologic, and biochemical analysis. In addition normal clotting function (prothrombin time) was evaluated. Exclusion criteria were as follows: coagulopathy, known or suspected urosepsis, acetylsalicylic acid or antiplatelet therapy.

Initially, all patients underwent percutaneous nephrostomy, under local anaesthesia and with X-ray fluoroscopy, to relieve the obstruction. Ideally, a lower-pole calyx, facing posteriorly, was then selected for secure renal entry. If a lower-pole calyx was unsuitable for example, because of overlying ribs or a cuteness of the lower-pole infundibulum or pelvic angle then an upper-pole or middle-pole calyx was punctured. After then, contrast medium was injected through the nephrostomy tube to access the level of obstruction. After calyceal entry was confirmed by means of aspiration of urine, to insert the antegrade ureteric stent, a guidewire was passed into the nephrostomy tube and manipulated through the ureteric obstruction into the bladder (Figure 1). The stent was then

passed over the guidewire with the distal tip in the bladder and the proximal tip in the renal pelvis.



Figure 1. Percutaneous insertion of the guidewire (White arrows).

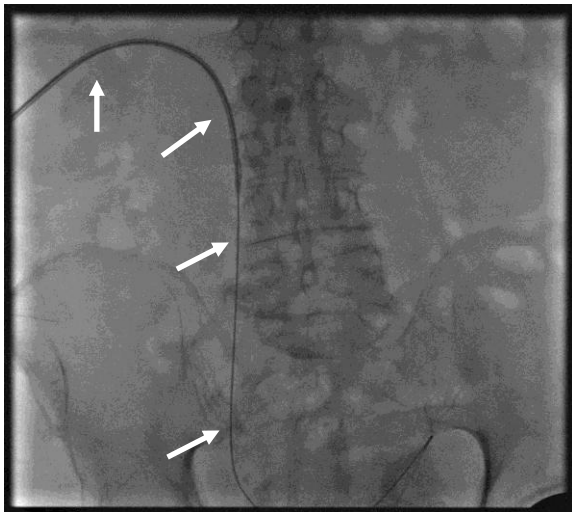


Figure 2a. The insertion of the ureteral stent (White arrows).

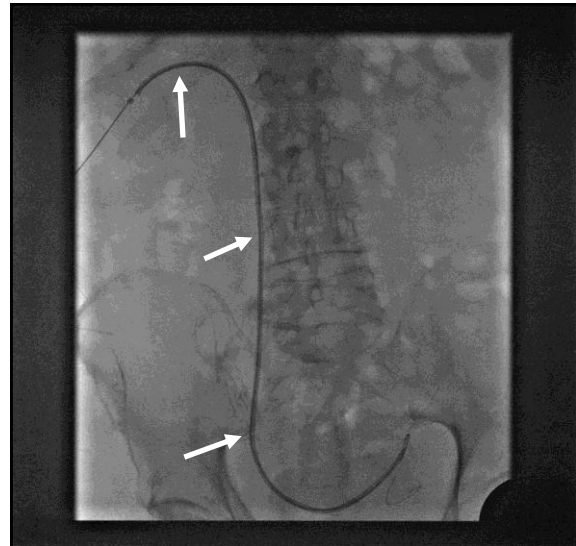


Figure 2b. The insertion of the ureteral stent (White arrows).

If one-stage stent placement failed for example, because there was an strict stricture, a stent was non-functional or there was bleeding, or clotting was seen a locking pigtail nephrostomy drainage catheter was inserted and left in place for free drainage. Technical success was defined as insertion of an antegrade stent, and successful clinical outcome was identified by increased urine output and improved renal function—as assessed by a decrease in serum creatinine level without major complications.

All patients were advised to maintain an oral fluid intake of at least 1 L for the next few days. All patients were informed that the bladder urine would be pink for a few days but to contact the hospital if bleeding increased.

Results

The mean age of the patients was 56.36 ± 4.1 (range 47 to 71) years. A total of 27 attempted percutaneous antegrade ureteric stents were made in 26 patients. There were 17 men and 9 women. A total of 25 patients underwent unilateral stent insertion; one, bilateral stent insertion. Urinary tract infection was relatively common (26.9%, n=7) after ureteral stent insertion, but other complications were rare. Seven stent placement were performed for benign ureteral obstruction and 19 for malign disease (Colon cancer in 10 patients, cervix cancer in 6 patients, endometrium cancer in 2 patients and retroperitoneal tumor in one patient). The procedure was technically successful in 22 (84.61%) of 26 patients, and stent placement was performed as a one-stage procedure. Antegrade stenting was not successful in four cases. In four case nephrostomy was inserted.

There were no major complications caused by antegrade stenting; minor complications encountered were urinary tract infection, pain, haematuria, and pyrexia associated with the procedure.

Discussion

Cystoscopic placement of a ureteral stent is a routine procedure with a broad spectrum of indications from prophylactic placement prior to extracorporeal lithotripsy of large renal calculi to

urinary diversion in cases of tumor-compressed ureters (1). This procedure is also indicated in the acute relief of hydronephrosis secondary to a ureteral calculus (8,9). In ureteral obstructions, stent can be inserted as antegrade or retrograde (10). The traditional method of treating ureteral obstructions is retrograde stent insertion. Placement of the stent can, however, be very difficult or even impossible in some cases in spite of various technical aids as hydrophilic coated guide wires or stents. In a series of 92 patients, Yossepowitch et al. could successfully insert an ureter stent via a retrograde route in 945 of their patients with benign intrinsic obstructions, but only 73% of their patients with malignant extrinsic obstruction (11). In another study, Chitale et al. report a success rate of only 21% for retrograde stent insertion in 65 patients with ureteral obstruction due to pelvic malignancy (12). If the retrograde stent can fail percutaneous nephrostomy placement can be thought. But, internal stents more pleasant for patients, since they generally cause a little discomfort. In addition, external catheterization restrict some activities. Another advantage of internal stents over nephrostomies is the lower risk of infection. Therefore, a number of authors have proposed various methods of ureteral stenting applicable to such difficult cases. Antegrade ureteral stenting is frequently performed as minimally invasive procedure (13-15). This intervention is performed by radiologist or urologists. The first published report of percutaneous antegrade stent insertion

was by Mazer et al. (5) in 1979. Since then, the use of antegrade stenting has become a common procedure. It is valuable alternative to conventional retrograde stent insertion as it may be performed under a local anaesthetic and does not require the use of operating theatre facilities.

The success rates of antegrade stenting changes between 88% and 96% in different series. In this context, Hoe JW (16) reported 16 patients with urinary obstruction, in which 11 antegrade ureteral stent insertions were successfully attempted. In series of Lu et al. (17) the primary failure rate for benign ureteral disease was 31%. According to authors this may be a reflection of the larger number of impacted ureteral calculi in their practice. In present study, the overall success rate was 84.61%, which compares favourably with reported rates of 90% and 100% by Planaca and Schaik, respectively (18,19). Generally, the failure rate is higher in patients with malignant or external obstruction than in patients with benign obstruction (19,20). In a study, the antegrade stenting success was reported as 83% in. In that study, the seven failures were due to gynecological cancers (21). In remaining 27 patients' failure reasons were Burch colposuspension, recurrent tumor, pyelolithotomy and pyeloplasty. Other series reported that the success rates changes between 47% and 90% in patients with malignant ureteral obstruction (22-25). Similarly in present study the high failure rates were seen in patients with malignant disease.

The major disadvantages of antegrade ureteral stent insertion are that it requires percutaneous renal puncture. The major complications (serious bleeding, septicemia) rates have been reported as 2.5% (26-28). In a standards-of-practice document from the Society of Cardiovascular and Interventional Radiology, a serious hemorrhage risk of 1%–4% is noted, although this risk refers to nephrostomy tube insertion alone. In study of Bellman et al., they had no major complications or an increased transfusion rate in 50 patients (29). Limb and Bellman recently reported 112 patients who underwent antegrade ureteral stent insertion (30). Six of 112 patients required postoperative transfusion. No patient in the present study developed major bleeding, and we have not yet seen major bleeding that required embolization after ureteral stent placement in our practice.

As a result we can say that percutaneous antegrade ureteric stent insertion is a safe, reliable, and relatively easy treatment option in ureteric obstructions. However, it should be kept in mind that failure may be seen in patients especially with malignant disease.

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