

# Point of technique

## Endoscopic Resection of Lower Ureter in Upper Urinary Tract Tumors

MOHAMMADZADEH REZAEI MA

*Department of Urology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran*

### ABSTRACT

**Purpose:** To evaluate the efficacy and safety of endoscopic resection of lower ureter in upper urinary tract tumor cases.

**Materials and Methods:** Five patients with transitional cell carcinoma (TCC) of the upper urinary tract were enrolled in this study. Nephrectomy was carried out through a flank incision and distal ureter with a cuff of bladder, which was removed using endoscopic approach. Complications and recurrence rate were evaluated.

**Results:** A total of 5 patients with upper urinary tract tumor underwent the endoscopic resection of lower ureter. All the patients had grade I transitional cell tumor. Two patients had suffered from bladder TCC treated previously. During the follow-up two cases developed bladder tumor: one, 18 months and another, one year postoperatively, both in the base of bladder, which was managed successfully by transurethral resection (TUR).

**Conclusion:** Endoscopic resection of lower ureter in selected patients with upper urinary tract tumors can lead to lower morbidity, shorter operation time, and higher patient's satisfaction. Despite the minority of cases in this study, it seems that this method is applicable in selected cases.

**KEY WORDS:** transitional cell carcinoma, upper urinary tract, treatment

### Introduction

Upper urinary tract tumors constitute 5% of urothelial tumors. The standard treatment is nephroureterectomy along with the resection of a cuff of bladder in the vesicoureteral junction.<sup>(1)</sup> To do so, a long incision from flank to pelvic area or two incisions, one in flank and another as a Gypsonic incision, is indispensable. Moreover, a midline incision in order to remove kidney, ureter, and a portion of bladder is another option.<sup>(2)</sup> All these procedures lead to long incisions and various complications. We introduce endoscopic resection of lower ureter in these cases, which is less invasive and brings about a better outcome. To our knowledge, this method has not been reported at least in our country.

### Materials and Methods

Five patients with transitional cell carcinoma (TCC), who required nephroureterectomy were referred to our urology department of Ghaem hospital, at Mashhad. Nephrectomy was carried out through a flank incision and distal ureter with a cuff of bladder was removed endoscopically.

### Technique

The patient was secured in lumbar position and kidney was removed through a flank incision (intercostals 11 and 12). Ureter was dissected adjacent to iliac vessels or bladder, if possible, using blunt dissection. Consequently, ureter was freed. An 8 F Nelaton catheter was placed in the ureter and pushed into the bladder. Afterwards, the end of the catheter was cut and the end of

the ureter was fixed to it with a nylon 2.0 suture (fig. 1). Flank incision was then sutured in three layers preceded by establishing a drain.

In order to endoscopically resect the ureter, patient was secured in lithotomy position. The endoscopic sheet was advanced into bladder and the tip of ureteral catheter was found and grasped, allowed to gently pull the catheter and cystoscope together toward urethra and finally excising from the urethral meatus (fig. 2). A 24 F resectoscope was inserted into bladder parallel to the catheter, while it was pulling by assistant surgeon. Then, bladder mucosa and muscles in an area 1.5 cm around the ureteral orifice was incised by coagulation using electro hook. This process was done with the bladder filled with an adequate volume of liquid.

Nelaton catheter was, then, pulled gently under the supervision from inside the bladder, yielding the inversion of the ureter, which was fixed to the end of the catheter. As a result, the ureter along

with a cuff of bladder in vesicoureteral junction consisting of ureteral muscles and Waldeyer sheath were resected and removed. The operation ended by inserting a Foley catheter to provide bladder drainage.

In the second or third follow-up day, drain was removed and so was the urethral catheter in the sixth or seventh post-operative day.

### Results

A total of 5 patients with upper urinary tract tumor underwent the endoscopic resection of lower ureter, whose mean age was 56 (range 45 to 68) years.

All the patients had grade I TCC (four in renal pelvis and one in ureter). Two patients had suffered from bladder TCC, treated before the operation. During the follow-up, two patients developed bladder tumor: one, 18 months and another, one year postoperatively, both in the base of bladder, which were managed successfully by TUR.

### Discussion

As this method is not a standard approach, it can be only compared with the current standard methods in order to discuss its advantages and complications. However, McDonald reported this surgical approach in 1952 for the first time.<sup>(3)</sup> This method had not been reported in authentic journals until laparoscopic nephrectomy was popularized, and endoscopic resection of distal ureter became a common approach.<sup>(2,4)</sup>

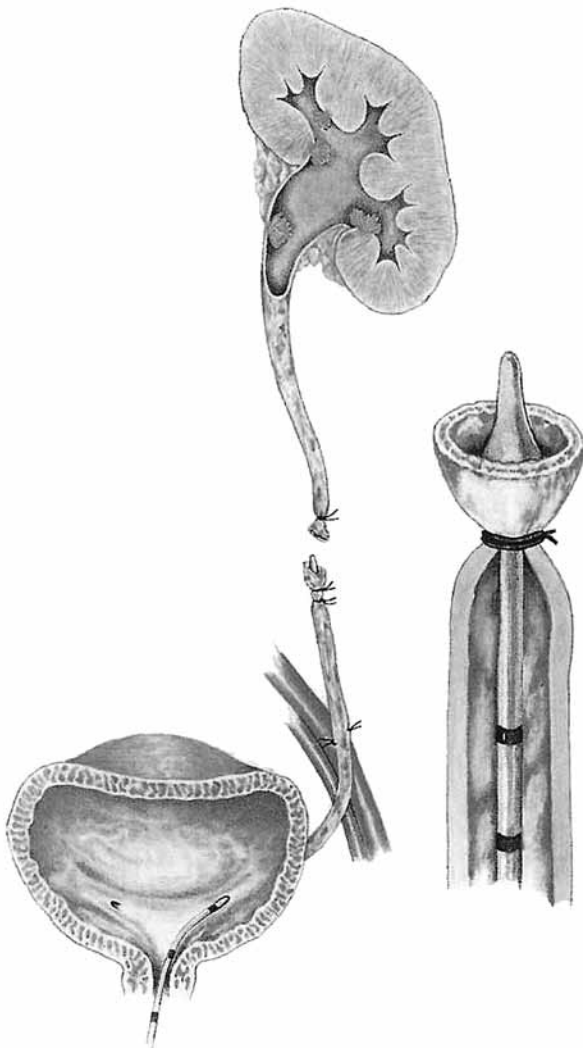


FIG. 1. Placing the catheter and fixing the end of the ureter to the catheter



FIG. 2. Inserting the endoscopic sheet in order to grasp the catheter and gently pulling the catheter and cystoscope together toward the urethra

Intra- and post-operative complications consist of extravasation, intraperitoneal rupture of bladder, tumor implantation on cuff resection site, and retroperitoneal tumor implantation due to temporal cells seeding.<sup>(1,5)</sup> Recurrent tumors have been reported at a rate of 20% to 30% in open surgical operations, 80% of them within one to two years.<sup>(1)</sup>

Fortunately, none of our cases had tumor recurrence in the site of resected bladder cuff and recurrent tumor in the operated side was observed in one patient 18 months after the operation.

Patients with high grade and invasive tumors or lower ureter tumors are not good candidates for this surgical method. Moreover, cases with simultaneous bladder and pelvis tumors, pelvic infectious diseases (PID), previous pelvic radiotherapy, retroperitoneal fibrosis, and previous surgical manipulation in the respective site are not appropriate candidates for endoscopic resection of ureter using this method.<sup>(1)</sup>

Laguna et al reported a comparison of 19 patients with nephroureterectomy using one incision with 15 patients who underwent nephroureterectomy using two incisions. They found that operation time, bleeding, hospitalization stay, analgesic administration, and the overall morbidity were lower in endoscopic resection group than that in two-incisional approach. However, complications in the two groups were similar.<sup>(6)</sup>

## Conclusion

Endoscopic resection of lower ureter in patients with upper urinary tract tumors can lead to lower morbidity, shorter operation time, and higher patient's satisfaction. Nonetheless, patients should be meticulously selected, as all the cases are not eligible for this method; low grade caliceal or upper ureter tumors, particularly in females and in whom nephrectomy is performed laparoscopically, are the most appropriate cases for this surgical method. Our study, albeit with few cases, showed that endoscopic resection of lower ureter is an appropriate method, when indicated.

## References

1. Hetherington JW, Ewing R, Philips NH. Modified nephroureterectomy: a risk of tumor implantation. *Br J Urol* 1986; 58: 368-370.
2. Logadottir Y. Single incision nephroureterectomy. *BJU Int* 2001; 88(1): 124-127.
3. McDonald HP, Upchurch WE, Sturdevant CT. Nephroureterectomy: a new technique. *J Urol* 1952; 67: 804-9.
4. Fadden PT, Nakada SY. Hand-assisted laparoscopic renal surgery. *Urol Clin North Am* 2001; 28(1): 1023-1030.
5. Seaman EK, Lawin KM, Benson MC. Treatment options for upper tract transitional cell carcinoma. *Urol Clin North Am* 1993; 20: 349.
6. Laguna MP, de la Rosette JJ. The endoscopic approach to the distal ureter in nephroureterectomy for upper urinary tract tumor. *J Urol* 2001 Dec; 166(6): 2017-22.