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Upper urinary tract dilation due to conglutination of intraluminal distal ureters after orthotopic neobladder with split-cuff nipple ureteral reimplants: Early results of 8 cases

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Abstract

Objective: We reviewed our experience with dilation of the upper urinary tract caused by the conglutination of distal ureters after orthotopic neobladder reconstruction using the split-cuff nipple ureteral reimplant technique.

Materials and methods: From January 2000 to April 2007, 250 consecutive patients underwent radical cystectomy and orthotopic neobladder reconstruction. Ureterointestinal anastomosis was performed using the split-cuff nipple technique in 291 renoureteral units. The patients from a single center were followed up for a mean period of 8 months (range 1–22) after surgery. We incised the conglutination band using a transurethral endoscope. Patient characteristics, endoscopic technique, measurement of serum creatinine levels, and results of ultrasonography, cystoscopy, and excretory urography were collected.

Results: Hydronephrosis was found in 8 patients (14 renoureteral units) due to the conglutination of the distal ureters to each other ($n = 6$) or to the neobladder wall ($n = 2$). After the incision procedure, seven patients had obvious improvement in renal function and hydronephrosis, and their symptoms disappeared. In 1 patient, hydronephrosis developed again because of ureteroenteric stenosis after 7 months and was resolved by open surgical revision. The hydronephrosis had improved greatly in this patient by 5 months after revision.

Conclusion: Conglutination of the distal ureters is a cause of hydronephrosis after orthotopic neobladder reconstruction using the reimplant technique with the split-cuff nipple. Cystoscopy is mandatory in following up patients who have hydronephrosis with the split-cuff nipple ureteral reimplant technique, not only to confirm the diagnosis but to treat the complication by incising the conglutination band. Continued follow-up is required to evaluate the long-term results of this treatment.

Keywords: Conglutination; Endoscopy; Neobladder; Nipples

1. Introduction

Over the past decades, orthotopic reconstruction has become the preferred method of urinary diversion for patients with invasive bladder cancer [1,2]. The proportion of cystectomy patients receiving a neobladder at medical centers has increased from 50% to 90% [3–5]. However, dilation of the upper urinary tract is the major concern in ureteroenteric anastomosis for orthotopic reconstruction in patients with bladder cancer [6]. This can be caused by partial or complete obstruction of urine flow, reflux of infected urine, and formation of stones. In order to prevent these complications, various surgical techniques have been created for ureterointestinal reimplantation, but, so far, no single method has proven to be superior to the others.

We have adopted several methods of ureterointestinal anastomosis for ureteral reimplantation in our center during the past decade. When the split-cuff nipple technique was used, the conglutination of intraluminal distal ureters was found to be one of the primary causes of dilation of the upper urinary tract. We have investigated the early results of the endourological management of this newly-found complication in 8 patients. The data we report are based on the experience at a single center, and the initial effect of this treatment has been encouraging, although long-term follow-up is needed. To our knowledge, this is the first report

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of the conglutination of intraluminal distal ureters causing dilation of the upper urinary tract after orthotopic reconstruction.

2. Materials and methods

Between January 2000 and April 2007, 250 consecutive patients underwent pelvic lymph node dissection, radical cystectomy, and orthotopic bladder substitution using ileum or sigmoid colon. Ileal neobladder replacement was performed as described by Hautmann et al. [3]. During follow-up, hydronephrosis was found in 8 patients due to the conglutination of the distal ureters to each other or to the neobladder wall after ureter implantation using the split-cuff nipple technique in 291 renoureteral units (with a 1.4% stricture rate). Characteristics of these patients are summarized in Table 1. The patients ranged from 39 to 74 years of age (mean 52 years). The procedure had been performed according to the method of Sagalowsky [7]. Seven ureteral double-J stents were left in place for 3 weeks after surgery in 3 of the patients; these were removed after retrograde cystography showed no urinary leakage. Three of the patients received 2 or 3 courses of adjuvant chemotherapy. The post-void residual urine volume of all patients as evaluated by ultrasonography before the operation was less than 100 ml.

Preoperative studies included ultrasonography, retrograde cystography, excretory urography (IVU), cystoscopy, urine cytology, and determination of serum creatinine levels. Hydronephrosis was present in all patients. No reflux was observed on retrograde cystography, and IVU showed no stenosis at the ureterointestinal anastomosis. The possibility of recurrence of the tumor at the ureteroenteric anastomosis was excluded by cystoscopy and urine cytology for all patients. The patients had initially been managed with adequate hydration and temporary placement of a Foley catheter for drainage of the neobladder, which led to an improvement in symptoms and a decrease in serum creatinine level. However, the situation recurred after removal of the Foley catheter. Indications for intervention included hydronephrosis, elevated creatinine, initially ineffective conservative treatment, and the presence of a conglutination band on cystoscopy.

We performed incision of the conglutination band via 24F rigid endoscopy using a transurethral resectoscope. Cystoscopic procedures generally followed standard techniques. When we had identified the 2 ureteral nipples in the urinary reservoir, we incised the conglutination band between the nipples or between the nipple and the reservoir wall. A loop electrode was used to incise initially, and, when indicated, a needle electrode was used for precise incision of the tissue. A dose of 20 mg furosemide was given intravenously following the treatment. Several minutes later, we could see urine ejected from the ureteral orifices. No ureteral stent was implanted. An 18-F Foley catheter was placed, and prophylactic antibiotics were administered for 1 to 3 days. All operations were performed by 1 senior surgeon in the department (F-j.Z.).

To evaluate dilatation of the upper urinary tract, IVU was performed before the patients were discharged home. Follow-up examinations for all patients included measurement of serum creatinine levels (normal range 42–92 μmol/l), ultrasonography, cystoscopy, and an interview scheduled at 3-month intervals during the first year, every 6 months during the subsequent 3 years, and annually thereafter. An IVU was performed at 3 to 6 months after surgery. Abdominopelvic computed tomography was done annually. Success was defined as relief of symptoms, a decrease in serum creatinine levels, and radiologic improvement.

3. Results

Reflux and stenosis were ruled out in all the patients by radiographic studies. The renal morphology and function were normal before urinary reconstruction except in patients 4 and 8, both of whom had diagnoses of hydronephrosis on the left side due to the tumor at the left ureteral orifice, with increased serum creatinine levels of 121 μmol/l and 112 μmol/l, respectively. We found by cystoscopy that the intraluminal distal ureters had conglutinated to each other or

Table 1
Patient characteristics

No.-age-sex (years)	Pathologic staging[a]	Intestinal type	Placement of double-J stents	Adjuvant chemotherapy	Residual volume (ml)[b]
1-50-Male	T4aN0M0	Ileum	No	Yes (GC)	32
2-53-Male	T2N0M0	Ileum	Yes	No	60
3-74-Male	T2N0M0	Ileum	Yes	No	24
4-71-Male	T3bN0M0	Ileum	No	Yes (GC)	40
5-51-Female	T2N0M0	Ileum	No	No	20
6-68-Male	T2N0M0	Sigmoid colon	No	No	10
7-43-Male	T2N0M0	Ileum	No	No	36
8-39-Male	T3bN1M0	Ileum	Yes	Yes (M-VAC)	15

GC = gemcitabine/cisplatin; M-VAC = methotrexate, vinblastine, doxorubicin and cisplatin.
[a] Pathologic staging was classified according to the 2002TNM classification.
[b] Evaluated by ultrasonography before the operation.