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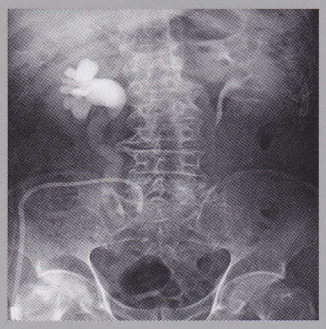

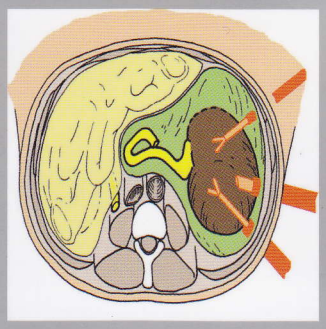

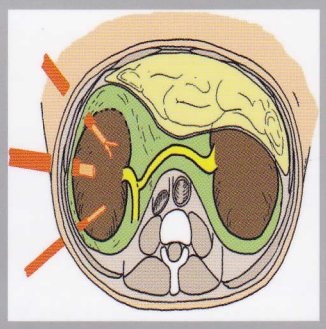

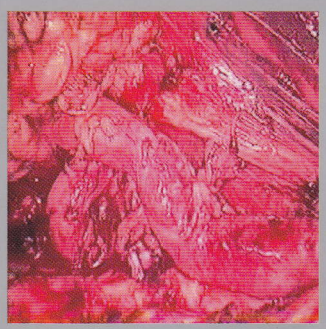

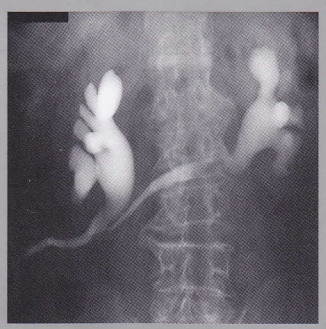

Case Study of the Month

Highlights

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Case Study of the Month

Retroperitoneoscopic Transureteroureterostomy with Cutaneous Ureterostomy to Salvage Failed Ileal Conduit Urinary Diversion

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Abstract

Reconstruction for failed urinary diversion is technically challenging, due to severe tissue adhesion around the anastomotic site. We report successful laparoscopic transureteroureterostomy with cutaneous ureterostomy via a completely extraperitoneal approach to salvage failed ileal conduit in two patients with necrotic ileal conduit and bilateral anastomotic obstruction, respectively. This novel, less invasive approach may offer a viable alternative to open surgical revision for failed ileal conduit urinary diversion.

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1. Case report

A 73-yr-old man was referred to our hospital with necrotic ileal conduit 14 mo after total cystectomy. The conduit was probably atrophic because of a continued ischemic condition. A Nelaton catheter placed in the lumen of the ileal conduit was necessary to maintain the passage of urine. Antegrade pyelography revealed right hydronephrosis and right ureteral obstruction near the ileal conduit (Fig. 1). After careful discussion with the patient, we decided to perform retroperitoneoscopic transureteroureterostomy (TUU) with cutaneous ureterostomy urinary rediversion.

The patient was placed in the right lateral flank position under general anesthesia. A 12-mm trocar port for the scope was first made on the midaxillary line by open laparoscopic procedure. After expanding the extraperitoneal space with blunt finger dissection and a balloon dissecting trocar (PDB-S2, US Surgical, Norwalk, CT, USA), two trocars for the right and left hands of the surgeon were inserted on both sides of the scope port. An additional trocar was inserted caudal to the port for the left hand under endoscopic view (Fig. 2a). The left donor ureter was identified, carefully dissected caudally, and transected at the level of the left common iliac artery. Proximal mobilization of the donor ureter was performed, preserving the periureteral tissue and associated vascularization. The retroperitoneal space was further extended to expose the aorta and vena cava superior to the inferior mesenteric vessels. The end of the donor ureter was placed in the extended space just superior to the inferior mesenteric vessels (Fig. 3a). All ports were removed,

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Fig. 1 – Preoperative antegrade pyelography revealing right hydronephrosis and right ureteral obstruction near the ileal conduit.

the wounds were closed, and the patient position was changed from the right to the left flank position for the right retroperitoneal procedures.

With similar laparoscopic technique, pneumoretroperitoneum was also established on the right side (Fig. 2b). The right recipient ureter was exposed and transected at the level of the right common iliac artery. A retroperitoneal tunnel was made superior to the inferior mesenteric vessels and connected to the left retroperitoneal space. The previously mobilized left ureter was identified and transposed, pulling it through the retroperitoneal tunnel with an atraumatic grasper (Fig. 4). The end of the donor ureter was spatulated, and a longitudinal ureterotomy at the medial aspect of the recipient ureter was performed to match the lumen of the donor ureter. End-to-side anastomosis was performed using interrupted 5-0 absorbable sutures (Fig. 3b). The recipient ureter was pulled out through one of the trocar ports and a ureteral stoma was made lateral to the existing ileal stoma using the Toyoda method [1]. The ureteral stent was advanced to the donor ureter. A retroperitoneal drain was placed on each side. The ileal conduit and stoma were left in place.

Surgical time was relatively long at 485 min, and estimated fluid loss was 1050 ml, most of which was estimated to be urine. Postoperative retrograde pyelography revealed no anastomotic stenosis (Fig. 5). Follow-up abdominal ultrasonography showed only mild dilatation of the upper urinary tracts, and postoperative renal function has been stable with a tubeless condition for >12 mo. Atrophy of the ileal conduit was progressing, and the stoma shrank in size and was completely covered with skin by about 4 mo postoperatively.

The second case of retroperitoneal TUU was a 41-yr-old woman with bilateral hydronephrosis due to anastomotic failure of ileal conduit urinary diversion after neoadjuvant chemoradiotherapy who was undergoing anterior pelvic exenteration for stage IIIb uterine cervical cancer. Surgical time was 483 min, and estimated fluid loss was 390 ml. Follow-up abdominal ultrasonography

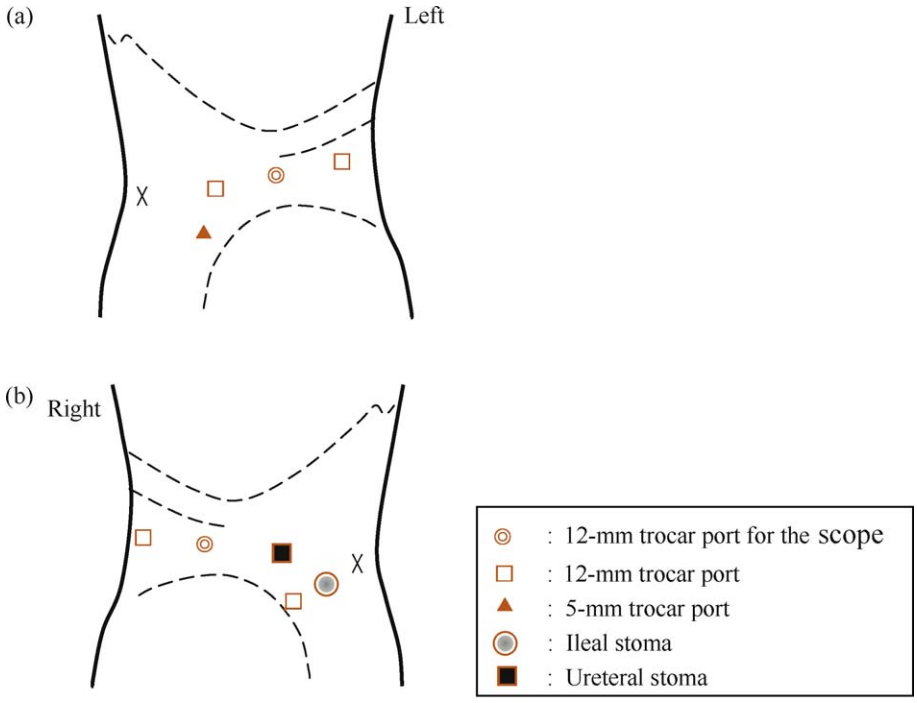

Fig. 2 – Distribution of trocars (a) for left retroperitoneal procedures; (b) for right retroperitoneal procedures.

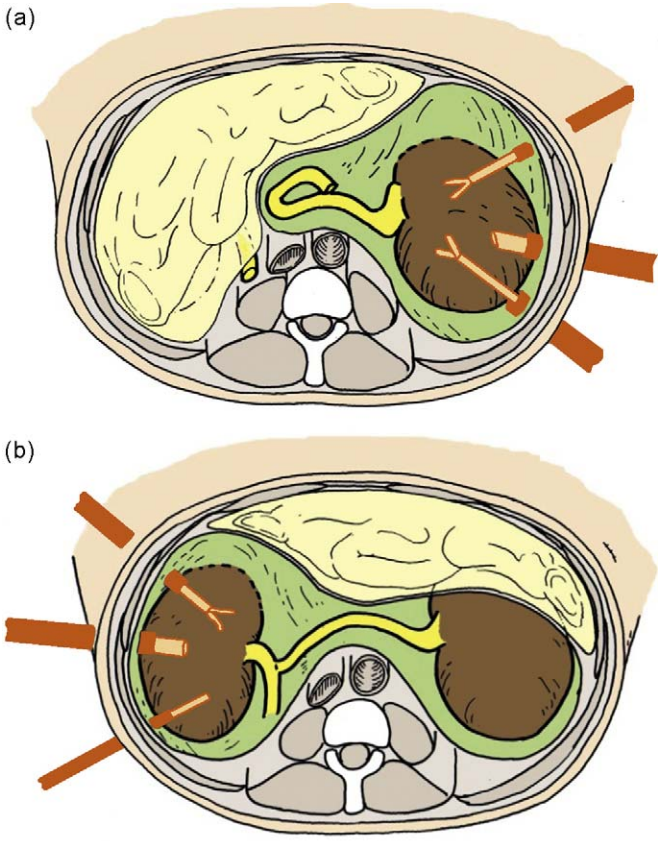

Fig. 3 – (a) The end of the donor left ureter was placed in the extended retroperitoneal space in front of the great vessels; (b) the left ureter was pulled through the retroperitoneal tunnel and anastomosed to the right ureter.

showed no hydronephrosis, and renal function has remained stable with a tubeless condition for >48 mo. The patient is doing well and using only two or three pads per day to protect the dry ileal stoma.

2. Discussion

TUU is currently indicated in the treatment of lower ureteral lesions when ureteroneocystostomy is not feasible. Although other methods such as ureteral substitution are considered, TUU is technically simpler and more reliable and appears to be associated with less morbidity, thus providing excellent long-term outcomes [2,3]. TUU with cutaneous ureterostomy has also been reported as a viable alternative urinary diversion technique for both benign and malignant diseases [4]. Laparoscopic surgery has recently become the preferred approach for various reconstructive urologic procedures. Dechet et al demonstrated the feasibility of laparoscopic TUU in a porcine model [5]. Piaggio and Gonzalez first reported successful laparoscopic TUU in children [6]. To the best of our knowledge, however, no reports have described laparoscopic TUU with cutaneous ureterostomy via a completely extraperitoneal approach.

We believe that the retroperitoneal laparoscopic approach offers several advantages in the salvage of failed ileal conduit diversion. First, a relatively comfortable working space is provided despite the previous intraperitoneal surgery. In the present cases, despite previous intraperitoneal surgeries or additional pelvic radiotherapy to the whole pelvis, visualization of the retroperitoneal space was excellent, and retroperitoneal structures were easily exposed, except for moderate tissue adhesion around the distal ureters. Second, under a retroperitoneoscopic view, a retroperitoneal tunnel is easily made superior to the

Fig. 5 – Postoperative retrograde pyelography revealing no anastomotic stenosis.

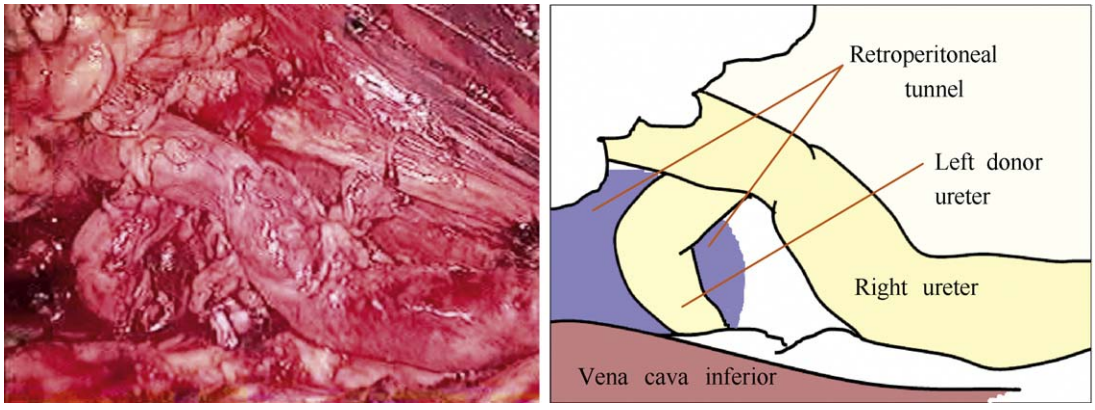

Fig. 4 – The left ureter was pulled through the retroperitoneal tunnel into the right retroperitoneal space for end-to-side anastomosis.

inferior mesenteric vessels and just anterior to the aorta and vena cava, efficiently making the donor ureter run for a shorter distance across the great vessels. In the present cases, the donor ureter was not long enough to transpose inferior to the inferior mesenteric vessels for anastomosis. Third, as previously reported, retroperitoneoscopic cutaneous ureterostomy is a simple and less invasive procedure, using one of the trocar ports as a stoma site [7].

In summary, retroperitoneoscopic TUU may prove to be a viable alternative to open surgical revision for anastomotic failure in ileal conduit urinary diversion.

Conflicts of interest: The authors have nothing to disclose.

EU-ACME question

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Question:

What were the advantages of retroperitoneal laparoscopic transureteroureterostomy (TUU) in these patients?

A. Relatively comfortable working space, despite previous intraperitoneal surgeries
B. Short donor ureter running inferior to the inferior mesenteric vessels
C. Bilateral ureteral stomas
D. Short operation time despite invasive procedures.

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