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Case Report

Long-term Result in Ureteroneocystostomy for Complete Duplicated Ureters in Renal Transplantation

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Duplicated ureters are the most common congenital malformation of the upper urinary tract, but there are few reports on the transplantation of kidneys with duplicated ureters. We introduce different techniques for the ureteroneocystostomy of double ureters and long-term results. We specifically detail the experience of two patients with duplicated ureters at Bong Seng Memorial Hospital from March 1995 to May 2012. In our first case, the top technique of spatulating and suturing duplicated ureters was applied with the bottom technique for double ureteroneocystostomy. The operation time was 4 hours and 45 minutes, while the ureteroneocystostomy took 32 minutes. In the second case a double-armed 4.0 Vicryl suture was placed on each tip of the ureter and both needles passed from the inside out through the bladder wall. The ureters were pulled into the bladder and the suture was tied on the serosa of the bladder. The operation time was 3 hours and 50 minutes, while the ureteroneocystostomy took 15 minutes. Neither urological complications nor urinary tract infections were observed in the follow-up period and no double-J stent was needed. We therefore conclude that these two techniques are available procedures for handling duplicated ureters, with the technique applied in the second case particularly time-effective.

Key Words: Ureteroneocystostomy, Duplicated ureters, Kidney transplantation
중심 단어: 요관방광문합술, 중복요관, 신이식

Introduction

Ureteral duplication may be associated with an ectopia or an ureterocele but is also compatible with a normally functioning renal system if both ureters enter orthotopically or there is partial duplication. Ureteral duplication is a common condition, described in approximately one in 125 peoples on the basis of autopsy series, which tend to be less selective(1). As the supply of renal allografts is still insufficient, some investigates reported that ureteroneocystostomy for completely duplicated ureters in renal transplantation.

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Case Reports

From March 1995 to May 2012, 600 renal transplantations were performed at the Bong Seng Memorial Hospital. We treated two patients with complete duplicated ureters.

1) Case 1

The recipient, a 54-year-old female, required hemodialysis three times per weeks due to renal failure from diabetes mellitus nephropathy. The recipient's 34-year-old daughter was decided as a donor. During preoperative evaluation, we found duplicated ureters without hydronephrosis in left donor kidney by intravenous pyelography (IVP). Side incisions in both ureters were sutured next to each other using 4-0 chromic suture. Ureteral reimplantation was performed mucosa to mucosa direct anastomosis of the ureter to the anterolateral surface of the bladder. The vesical peritoneum with muscular layer was closed over the ureters for prophylaxis of vesical reflux (Politano-Leadbetter method) in September 20, 2001 (Fig. 1). Total operat-

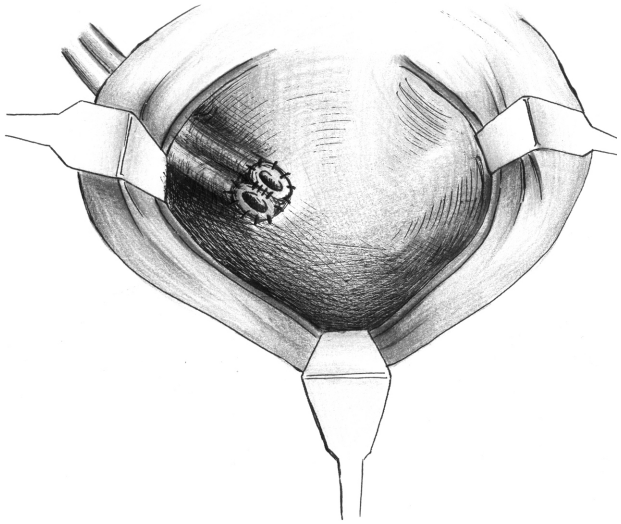

Fig. 1. Surgical technique. 1) Both uerter side incision and anastomosis; and 2) mucous to mucous ureteroneocystostomy.

ing time was 4 hours 45 minutes, and urinary procedure time occurred 32 minutes. We didn't use any double-J stent.

2) Case 2

The recipient, a 58-year-old male, required hemodialysis three times per weeks due to renal failure from unknown origin of end stage renal disease. He was underwent 1st kidney transplantation in January 16, 1990, donated from his mother. The recipient's 28-year-old son was selected as a donor. During preoperative evaluation, we found duplicated ureters without hydronephrosis in both donor kidneys by IVP. A 3-cm-longitudinal myotomy was performed on the right anterolateral wall of the bladder until the mucosa was exposed through the muscle incision. Medial side wall in both ureters was direct anastomosis. A 0.5-cm-elliptical opening was made on the distal mucosa. A double armed 4-0 Vicryl suture was placed on each tip of the ureters. Both needles were brought into the bladder through the mucosa elliptical opening and the passed from the inside to out through the full thickness of the bladder at the 1.5 cm distal portion from the elliptical opening. The ureters were pushed into the bladder by pulling the suture and tie. The vesical peritoneum with muscular layer was closed over the ureters for prophylaxis of vesical reflux using by 3-0

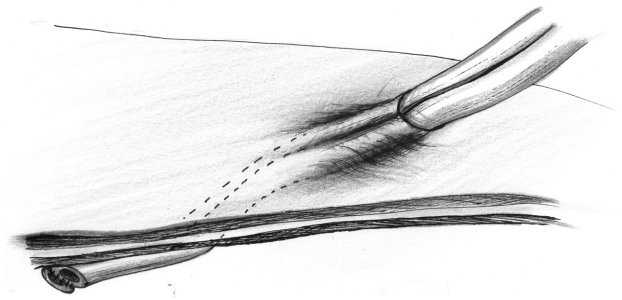

Fig. 2. Surgical technique. 1) A double armed 4.0 vicryl suture was placed on each tips of the ureter; 2) both needles were passed from the inside out through the bladder wall; and 3) the ureters were pulled into the bladder and the suture was tied on the serosa of the bladder.

Vicryl interrupted suture (Gregoire-Lich procedure) in May 23, 2002 (Fig. 2). Total operating time was 3 hours 50 minutes, and urinary procedure time occurred 15 minutes. We didn't use any double-J stent.

Discussion

There was no reflux, extravasation, urine leakage, or urinary tract infection during postoperative period. The renal function became normal after operation. The serum Cr level was 1.0 mg/dL (normal range; 0.7～1.2) in case 1, 0.9 mg/dL in case 2. We followed up patients with IVP for 5 years after transplantation. The IVP revealed no stenosis and no stricture. In 1st case, no change occurred during follow-up period in Cr level (1.0～1.1). In 2nd case, the Cr level slightly elevated (0.9～1.6), however dialysis was not required. There have been no complications, either immediate or late which ranged from 120 to 131 months.

Early transplant surgeons refused to undergo surgery using duplicated ureters due to post operative urologic complication such as urinary leakage, stricture, reflux, and urinary tract infection(2,3). The rate of surgical complications and long-term graft survival in transplantation using kidney with duplicated ureters has not been established. Nevertheless, there are few reports on successful kidney transplantation using kidney with duplicated ureters(4).

Single ureter reimplantation in kidney transplantation can be easily performed intravesically via a cystotomy (Politano-Leadbetter method) or extravesically using ure-

teral graft only (Gregoire-Lich procedure)(5). Some technical modifications were necessary for the duplicated ureteroneocystostomy(6-9). It is important to preserve the ureteral blood supply to prevent urological complication after ureteroneocystostomy(10). Although there were only two cases of duplicated ureters kidney transplantation, two techniques are available and safe procedure in duplicated ureters and specially modified extravesical ureteroneocystostomy may be more time save procedure.

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