



Impact of Double-J Ureteric Stent in Kidney Transplantation: Single-Center Experience

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ABSTRACT

We retrospectively evaluated the use of double-j stent and the incidence of urological complications in 2 groups of patients who received a kidney transplant. From January 2005 to September 2007 we studied 172 patients receiving kidney transplants, 65 and 107 from living and cadaver donors, respectively. From the 172 patients, a total of 34 were excluded due to ureterostomy or Politano-Leadbetter ureterovesical anastomosis. Another 21 patients were excluded from the study due to graft loss due to acute or hyperacute rejection, cytomegalovirus (CMV) infection, or vascular complication. The remaining patients were divided into 2 groups: group A (44 patients) and B (73 patients) with versus without the use of a double-j-stent, respectively. The 2 groups were comparable in terms of donor and recipient gender, ischemia time, and delayed graft function. We failed to observe significant differences between the 2 groups in mean hospital stay (23 ± 9 and 19 ± 9), urinary leak (2.3% and 4.1%), and urinary tract infection (20.4% and 19.2%), among groups A and B, respectively. The only difference observed concerned the gravity of the urinary leak; no surgical intervention was needed among the double-j stent group versus 2 patients demanding ureterovesical reconstruction in the nonstent group. In conclusion, our data suggested that the routine use of a double-j stent for ureterovesical anastomosis neither significantly increased urinary tract infection rates, nor decreased the incidence of urinary leaks, but may decrease the gravity of the latter as evidenced by the need for surgical intervention.

OVER the last decades significant advances have been made in renal transplantation. Despite those advances, there are still concerns over technical issues affecting early graft survival. Urological complications are associated with significant morbidity, mortality, and prolonged hospital stay and frequently require a second surgical intervention. The incidence of urological complications leading to graft failure has decreased significantly over the last decades to less than 5%.¹ Preservation of the distal ureteric blood supply during donor nephrectomy, sparing of the periureteric fat during kidney harvesting, and extravascular reconstruction technique may be responsible for those advancements.²⁻⁶ Among all urological complications, leaks are the most frequently encountered complication in the early posttransplantation period. The routine use of a double-J ureteric stent remains controversial with a reported increased incidence of urinary tract infection (UTI) and ureteric obstruction. In an effort to evaluate the incidence of those complications, we performed a single-

center study comparing the efficacy of a double-J stent in kidney transplantation.

METHOD AND MATERIAL

Between January 2005 and September 2007, we performed 172 kidney transplantations. We retrospectively reviewed prospectively collected data from the patients' medical records. Among the 172 renal transplants, 65 and 107 were from living and cadaveric donors, respectively. Thirty-four patients were excluded from the study; 24 due to ureterostomy and 10 due to Politano-Leadbetter reconstructions. A further 21 patients were also excluded due to losing their grafts due to acute or hyperacute rejection, vascular

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complications, or cytomegalovirus (CMV) infection. The other patients underwent a Lich-Gregoir anastomosis with or without double-J stents; group A consisted of 44 patients with a stent and group B, 73 patients without a stent. Both groups showed no differences in demographics, rates of delayed graft function (DGF), or length of cold ischemia time. The graft was revascularized in a standard way, with the renal vein anastomosed to the side of the external iliac vein. The renal artery was end-to-end anastomosed to the internal iliac artery, or end-to-side to the external iliac artery. The Lich-Gregoir ureterovesical anastomosis was performed in group A around a 4.8 F, 12 cm silicone double-J stent (VORTEK, Coloplast, Humlebaek, Denmark) that was endoscopically removed on the 14th postoperative day under local anesthesia. In both groups, a Foley catheter was left to drain the bladder for 5 days; suction drains were placed for 6 days. Both groups received immunosuppressive therapy with IL-2 monoclonal antibodies, calcineurin inhibitors, mycophenolate mofetil or mTor inhibitors and steroids. Acute rejection episodes were treated with steroid boluses and antithymoglobulin (ATG).

Clinical presentation of a urinary leak was regarded as urine output from drain, fever, pain, and/or swelling at the graft site or peritoneum as well as signs of sepsis. The patient characteristics and complications were recorded in an electronic database. The Pearson correlation and student *t*-tests were used, with $P < .05$ considered significant.

RESULTS

Both groups showed no significant difference concerning DGF, episodes of acute rejection, and mean hospital stay: group A 23 ± 9 and group B 19 ± 9 days. UTI were observed in 9/44 (20.4%) and 14/73 (19.2%) in groups A and B, respectively. Pearson correlation test showed no significant difference between the 2 groups ($P = .465$). We observed no deaths in either group.

Urinary leak was present in 1/44 (2.3%) kidney transplants in the double-J stent group. The patient presented with a urinary leak on the sixth postoperative day. The leak was treated with a Foley catheter reinserted for 10 days with no surgical or radiological intervention. Among group B there were 3/73 (4.1%) patients with a urinary leak. In 1 patient the leakage resolved spontaneously by reinserting a Foley catheter. In the remaining 2 patients surgical treatment was required, one of which was a Politano-Leadbetter ureterovesical anastomosis. A Pearson correlation test showed no statistical significance difference between the 2 groups ($P = .596$).

DISCUSSION

Improvements in graft survival as well as decreased morbidity and mortality rates during the last 2 decades have allowed renal transplantation to become the treatment of choice for patients with end-stage renal disease. Urinary leakage, the most common complication during the early posttransplantation period, has been reported to occur at a rate of 0–8.9%.¹ The most frequent cause of urinary leakage is ureteral necrosis due to ischemia.⁶

Ureteral double-J stents are frequently used in urology practice, but their use in kidney transplantation remains

controversial. This controversy has been observed in both retrospective studies^{7–10} and in prospective randomized trials.^{11–15} Three controlled trials have suggested that routine stent insertion decreased the incidence of postoperative urologic complications by favoring the healing of the vesicoureteral anastomosis.^{11–13} In contrast, 2 studies showed no significant improvement from stenting,^{14,15} even describing an increased incidence of associated UTI. Bassiri et al¹⁴ reported an equal incidence of ureteral complications between the 2 arms, with a significant increase in the incidence of UTI among the stented group. In contrast, Kumar et al¹³ reported an equal incidence of positive urine cultures in both groups, with the incidence of ureteral complications significantly greater among the nonstented group. This discrepancy could have risen because most of the previous studies contained heterogeneous groups of patients and adopted different techniques of ureterocystostomy. In our series, we failed to observe a significant difference in urinary leakage between the double-J stent group and the nonstented group, namely 2.3% and 4.1%, respectively. In both groups our preferred method of ureterocystostomy was the Lich-Gregoir technique. Although the urinary leakage showed no difference, there was a marked difference in the gravity of those complications between the stented and the nonstented groups, with the latter needing surgical intervention in two thirds of the cases compared with none in the stented group.

Our results concerning the incidence of UTI were in accordance with previous investigators, showing a marked increase in the double-J-stented group. Although we tried to keep the median time of stent removal to less than 12 days and administered prophylactic antibiotics to all patients we observed a slightly but not significantly higher incidence of UTI.

In conclusion, carefully used surgical techniques to avoid urological complications during organ harvest and implantation decrease the incidence of urological complications, especially leakage. In our series the use of a double-J stent in the a ureteral anastomosis was not likely to decrease the frequency of leakage, but is likely to reduce the gravity of the complication and the need for reoperation. In addition the use of a double-J stent should not be associated with increased UTI in renal transplant recipients.

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