ORIGINAL ARTICLE

Urological Complications in Live Related Renal Transplantation

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ABSTRACT

Aims: To study the incidence of post transplant urological complications in live related kidney transplantation at our centre, and the impact of JJ ureteric stent.

Patients and method: This is a reterospective review of 75 consecutive renal transplantations performed at Shaikh Zayed Post Graduate Medical Institute and National Institute of Kidney Diseases Lahore over a period of two and half years from June 2006 to December 2008. All patients underwent extravesical ureteroneocystostomy and all, except one were stented. From the retrieved clinical records, the occurrence of various minor and major urological complications and their management was studied.

Results: The over all incidence of urological complications among transplant recipients was 9.3% observed in 7 patients. The complications were urinary leakage 2 (2.66%), clots retention 1 (1.33%), uretro vesical junction obstruction 1 (1.33%) and urinary tact infection was observed in 3(4.0%) patients. All the complications were managed accordingly.

Conclusion: The technique of stented extravesical ureteronecystostomy has lead to extremely low rate of urological complications in our series. Other factors which may reduce the urological complications are preserving adventitia, fat and blood supply of ureter by delicate dissection during donor nephrectomy and prevent kinking and twisting of ureter are important factors in reducing the post transplant urological complications.

Keywords: Renal transplantation, Urological complications, JJ Stenting.

INTRODUCTION:

Ureteric complications have been reported primarily from centers with predominantly cadaver donor programmes. The data on urological complications of renal transplantation in live donor setting is limited. As renal transplant has gained much wider acceptance as a treatment option for patients with end stage renal disease in the last three decades, it is important to have some local data regarding urological complication, in live related renal transplant patient and their management. We reviewed all the renal transplantations carried out at our centre over a period of two and half years, the urological complications and their management.

PATIENTS AND METHODS:

This is a retrospective review of seventy five consecutive live related renal transplantations performed at Shaikh Zayed Postgraduate Medical Institute and National Institute of Kidney Diseases, Lahore, between June 2006 and December 2008.The clinical records of all the transplant recipients were retrieved and analyzed. Preoperatively extensive work up for both the donor and recipient was performed including HLA typing, cytotoxicty cross match and CT angiogram for evaluation of donor vessels. All of our patients were first time transplant recipients. Seventy two grafts were placed in right iliac fossa and three in left iliac fossa. Two of the patients had history of right femoral catheterization for coronary angiography and one had multiple right sided surgeries. Seventy four recipients were immunosuppressed with combination of Cyclosporine, Azathioprine and corticosteroids, one was induced with simulect due to mildly positive panel reactive antibodies. Revascularization of the graft was carried out in a standardized manner. The graft renal vein was anastomosed end to side with external iliac vein. The renal artery was either anastomosed end to end with native internal iliac or end to side fashion with native external iliac artery.

Urinary continuity was established by modified Lich Gregoire technique of extra vesical ureteroneocystostomy. JJ stent was placed in all

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except first patient. Foley catheter and skin stitches were removed on 5th and 14th post operative day respectively. The patients were discharged on 10th post operative day and JJ stent removed four weeks after the surgery.

RESULTS

All of our patients were having living donor renal transplant. Among the seventy five recipients sixty two 62 (82.7%) were male and 13 (17.3%) were females. Gender ratio 4.7:1, with a mean age of 30.8 years. (Range, 20-60 years).All the patients were first time transplant recipients. The demographic details of the cases are summarized in table I.

Table I. Demographical details of the 75 transplant cases

Transplant	Male	Females	Male:Female Ratio	Age range (in years)	Mean (in years)	First Transplant
75	62	13	4.7:1	20-60	30.8	75

Four urological complications were observed in seven patients, constituting an overall incidence of 9.3% of which all were males. There were two cases of urinary leak 2(2.66%), one case (1.33%) of uretrovesical junction obstruction, one1 (1.33%) patient had recurrent episodes of haematuria leading to clot retention and 3(4.0%) with urinary tract infection were observed.

The leakage of urine in both patients started with in twenty four hours of surgery. One of the patients on re-exploration had leakage from uretroneocystostomy which was initially done without a JJ stent and was manged by reimplantation of the ureter over a JJ stent. The second patient had an iatrogenic injury; the ureter was transected at the pelvic uretreic junction during donor nephrectomy, Boaries flap was prepared in the recipient to overcome the length of ureter. On exploration leakage at the anastomosic site observed (Renal pelvis and the Boaries flap), which was primarily repaired. Despite multiple surgical attempts and different procedures, he continued to leak. Eventually on the 10th Post operative day he had an arterial blow out for which graft nephrectomy had to be carried out. The incidence of various urological complications is given in table II.

Table II. Incidence of various urological complications

Complications	**n=**	**Incidence(%)**
Urinary leakage	02	2.66
Uretrovesical junction obstruction	01	1.33
Clots retention	01	1.33
Urinary tract infection	03	4.0

One patient (1.33%) of uretrovesical junction obstruction constituting 1.33% of all, diagnosed three months after transplantation on ultrasonography and antigrade study, was successfully managed by reimplantation of the ureter.

One patient had recurrent episodes of haematuria leading to clot retention, requiring 2 units of blood, cystoscopic clot evacuation performed.

Urinary tract infection was observed in three patients (4.0%) diagnosed on culture and sensitivity of urine and managed accordingly.

DISCUSSION

Urological complications following renal transplantation cause significant morbidity and may result in failure of allograft. The two important factors influencing the success of vesico ureteral anastomosis are the vascularity of the donor ureter, which is potentially at risk during the donor nephrectomy and by handling during transplantation. Vascular compromise produces ischemia and necrosis that affects the distal part of ureter[1,2,3]. In one of our case the ureter was transected at pelviureteric junction during donor nephrectomy. There was no ureter, resulting ultimately in graft loss. Fistula and stenosis are the main causes of morbidity in the transplant patients[1, 4].

Although the overall rate of stent related complications has been decreased over the last 30 years. The current literature indicates a frequency of ureteric complications between 4-11%[5,6,7]. However in our series overall urological complication rate was 9.3% which is comparable to other series. The ureteral complication rate in our series was 4% which matches with other series. A study carried out by A Sirvastava et al[8], reported 7.7% complicatation rate with non stented and 2.0% with stented ureteral anastomosis, the complication rate in our series is slightly higher than A Sirvastava, it may be due to a smaller number of patients in our series. Sirvastava, overzealous dissection at renal hilum and ureter as the cause of ureteral ischemia and subsequently complications. It has been our policy to avoid dissection in triangle between renal vessels, ureter and lower pole of the kidney to avoid damage to ureteral vasculature present in this area. As the ureter receives most of the blood from renal vessels, we use the minimum required length of the ureter.

Other factor which might has resulted in low complication rate in our series is the routine use of extravesical ureteroneocystostomy, which has been

shown to be associated with a lower incidence of urological complications in other studies as well[9].Most of the urological complications occurred early after renal transplantation, this corroborates with similar finding in other studies[6,10].

Role of routine ureteric stenting is debatable in literature. Kumar evaluated the effect of ureteric stenting in prospective randomized study and concluded that routine placement of stent was cost effective and almost eliminate urological complications[11]. Many studies have shown that routine use of JJ stents in kidney transplantation significantly reduced the number of early urinary fistulas and ureteral obstructions[12,13]. Same is our experience with JJ stent.

The use of stents though beneficial in reducing the incidence of urological complications, is fraught with possibility of complications like infection, encrustation, stone formation, migration or breakage. These possible complications can be avoided by using stents for minimal possible duration. Stenting for two weeks avoids complications with out compromising benefits[14].

A series from Salsalone et al[15], reported that the infective complications are mostly due to stent being left in for a long period of time. In our study the symptomatic urinary tract infection was observed in 3(4.0%) patients. This is relatively low compared to other series. The rate of urinary tract infection in transplanted patients with stented uretroneocystostomy has been reported as high as 31%[16]. The clot retention is unpleasant for the patients. The stented extra vesical technique avoids a large cystostomy and consequently low incidence gross haematuria and clot retention. In our study, only one patient had clot retention.

CONCLUSION

The technique of stented extravesical ureteronecystostomy has lead to a low rate of urological complications in our series.

Other factors which may reduce the urological complications are preserving adventitia, fat and blood supply of ureter by delicate dissection during donor nephrectomy and prevent kinking and twisting of ureter are important factors in reducing the post transplant urological complications.

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