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# IMPACT OF URETERAL DOUBLE J STENTING ON KIDNEY TRANSPLANT OUTCOMES-A SINGLE CENTER EXPERIENCE

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**ABSTRACT** Renal transplantation is as an important treatment of choice for ESRD patients. Stents may be placed during surgery to protect the neocystoureterostomy site. But they cause many complications.The aim of this study was to compare the incidence of UTI and other complications in patients undergoing renal transplant with or without stent insertion..All kidney transplant recipients from MMC between January 2013 and December 2017 were included in our study.A total of 209 patients included.One hundred and two (48%) patients had UTI. Eighty eight patients had stent and 121 patients had no stent.The incidence of UTI was more in patients with stent (59%) than in patients with no stent(41%).Other complications like ureteral stricture and urine leak were similar in both groups.Stents increased the risks of urinary tract infections and might have a detrimental effect on graft survival.So stenting is indicated only in selective patients with strong indications.

**KEYWORDS :**

## BACKGROUND

Renal transplantation is considered as an important treatment of choice for end stage renal disease, despite improvements in peritoneal dialysis and haemodialysis. Renal transplant surgery is associated with urologic complications rate varying from 20% to 30% [1].Some of the complications are urinary tract infections, urinary leak and urinary obstruction [2].During the transplant surgery, stents may be placed to protect the neo cystoureterostomy site and to decrease anastomosis-related complications [3].However, this double j stent placements do not seem to reduce the risk of development of complications in various studies. Also such stent placements may tend to increase the risk of other complications such as urinary tract infection (UTI), ureteral strictures and graft dysfunction [4].Various studies have shown that more than 80% of renal transplant recipients have at least one episode of urinary tract infection in the first 12 months post-transplant. UTI has been shown to harm the graft function and survival. [5,6,7,8]

## OBJECTIVES

There are only a few studies regarding the outcomes of double J stenting in renal transplant recipients. The aim of this study was to compare the incidence of UTI and other complications such as delayed graft function (DGF), ureteric stricture and leak in patients undergoing renal transplant with or without stent insertion.

## MATERIALS AND METHODS

All recipients of kidney transplant at Institute of urology, Madras Medical College, Chennai between January 2013 and December 2017 who were on regular follow up were included in our study. For deceased donor transplant recipient induction immunosuppression used was Anti thymocyte globulin (1mg/kg single dose intra operatively before clamp release) and for living related renal transplant, Basiliximab 20 mg (intra-operatively and on day post-operative day 4).The maintenance immunosuppression included combination of calcineurin inhibitors (tacrolimus or cyclosporine), Mycophenolate mofetil and prednisolone.

During the surgery, a 5-French, 12 cm double J stent was placed to establish internal drainage from the uretero-pelvic junction to the bladder. Double J stent was inserted for all patients undergoing deceased donor renal transplantation and in select cases of living related renal transplantation. Rigid cystoscopy was used to remove the stent under local anaesthesia 6 weeks after the surgery. A third generation cephalosporin was given as prophylaxis before the removal of DJ stent.

Data were collected from the records and analysed retrospectively. The diagnosis of UTI was made depending upon symptoms and microbiological culture. The requirement of dialysis within the first 7 days of surgery was used as a definition for delayed graft function(DGF).Complications were compared between those with and without stent.

### Statistical analysis

Differences between the two groups were tested by the chi square test analysis. A P-value of <0.05 was adopted as accepted value for statistical significance.

## RESULTS

A total of 209 renal transplant recipients were included in our study, comprising 170 males and 39 females with a male to female ratio of 4.3:1(Table 1).No significant differences were found between the groups (stented and non-stented) in mean age of recipients, donors and mean duration of renal failure.Out of the 209 transplant recipient patients, all of the deceased donor recipients and few of the living donor recipients had DJ stent insertion. Eighty eight (47.7%) of 209 patients had double j stent insertion. The remaining 121(49.5%) patients did not have stenting.

Some important characteristics of the study population are given in table 1.

The average period for stent removal was 41 days (± 3 days).Urinary tract infection occurred in 48% (102/ 209) of patients. Causes of native kidney diseases were ascertained from the records. Diabetes mellitus was the most commonest cause of ESRD accounting to 35.8% of patients, followed by idiopathic (24.4%),then glomerulonephritis (16.3%).Neurogenic bladder was the cause of ESRD in 3.8 % of patients(table 3).

Various complications occurring post-transplant were compared between stented and non-stented groups.(table 4).Obstruction/ stricture occurred in 2 out of 88 patients (2.3%) in stented group when compared to 4 out of 121((3.3%) in non-stented group.

Urinary Leak had occurred in similar proportions in both stented and non-stented group, 3 out of 88(3.4%) patients and 4 out of 121(3.3%) patients respectively.The incidence of total UTI episodes in stented group was 52 (59.1%) out of 88 patients and in non-stented group was 50 (41.3%) out of 121 patients.

In stented group, of 52 patients with UTI 33 (63.46%) had early UTI. In non-stented groups 35(70%) out of 50 patients had early UTI. In both the groups early UTI was more common than UTI occurring in later part of the transplant.

Delayed graft function was present in 65(73.8%) of patients in stented group whereas in non-stented group 21(17.3%) patients had the same complication. Rejection occurred in 19 (21.6%) out of 88 patients in stented group. In group with no stent rejection occurred in 17(14%) out of 121 patients.

**Table 1: Baseline characteristics of the renal transplant recipients in our study**

| Variables | Values |
|---|---|
| Total no of patients | 209 |
| Male : female | 170:39 (81.3%:18.7%) |
| Stented : No stented | 88:121 (47.7%: 49.5%) |
| Incidence of UTI | 102/209 (48%) |
| Male : female UTI incidence | 75/170: 27/39 (44%:69%) (p0.004) |
| UTI prophylaxis | 100% |
| Urinary tract abnormality | 10/20 (50%) |
| Foleys catheter removal (average no of days) | 9.4(±2.1) days |
| New onset diabetes after transplantation (NODAT) | 33/61(50%) |
| Urosepsis | 12/102(10%) |
| Graft dysfunction | 40/102(39.2%) |

**Table 2:Comparison of Renal Transplant recipients with and without stents**

| Variables | Stented (N = 88) | Non Stented (N = 121) |
|---|---|---|
| Mean Age of recipients(yrs) | 36.3 | 34.2 |
| Mean Age of donors (yrs) | 40 | 49 |
| Mean duration of renal failure (in months) | 37 | 26 |

**Table 3: Causes of native kidney disease in Renal Transplant recipients**

| Causes of RF | No. (%) |
|---|---|
| DM | 75 (35.8) |
| Hypertension | 32 (15.3) |
| Neurogenic bladder | 8 (3.8) |
| Glomerulonephritis | 34 (16.3) |
| Interstitial nephritis | 9 (4.3) |
| Idiopathic | 51 (24.4) |
| Total | 209 |

**Table 4:Post-Transplant Complications in Stented and Non-Stented recipients**

| | Stent( N=88) | Non Stent(N=121) | P Value |
|---|---|---|---|
| Obstruction/stricture | 2/88(2.3%) | 4/121((3.3%) | p 0.6 |
| Urinary Leak | 3/88(3.4%) | 4/121(3.3%) | p 0.7 |
| Total UTI | 52/88 (59.1%) | 50/121 (41.3%) | p 0.01 |
| Early UTI | 33/52 (63.46%) | 35/50 (70%) | - |
| Late UTI | 19/52(36.54%) | 15/50 (30%) | - |
| DGF | 65/88(73.8%) | 21/121(17.3%) | p 0.04 |
| Rejection | 19/88(21.6%) | 17/121(14%) | p 0.21 |

## DISCUSSION

Stent insertion increases the risk of infection post-transplant [1,5]. Stent placement was associated with UTI even after the removal [9].

Two studies, one from Akoh JA et al [10] and another study by Ranganathan et al[9] found a significant proportion of transplant recipients with stent developed UTI than those without stent. Another Cochrane study also showed that stenting increased the risk of urinary tract infection[11].Urinary tract infection poses a deleterious effect on the graft survival [7].

In our study,we have compared various complications between stented and non-stented groups. No significant differences were found between the groups (stented and non-stented) in age of transplant recipients, donors and mean duration of renal failure.

In our study, UTI occurred in 102(48%) renal transplant recipients. Female patients had more UTI than male patients (69% vs 44%) in our study, which is statically significant. All the patients were put on cotrimoxazole prophylaxis post-transplant unless there was a contraindication. Urosepsis occurred in 12(10%) of the patient who had UTI. Graft dysfunction occurred in 40(39.2%) patients.

In our study, diabetes mellitus was the most commonest cause of ESRD (75 patients-35.8%), followed by idiopathic (51 patients-24.4%), then glomerulonephritis (34 patients-16.3%).Neurogenic bladder was the cause of ESRD in 8 patients (3.8 %) (Table 2).

Fifty two (59.1%) out of 88 patients in the stented group had urinary tract infection when compared to 50 (41.3%) out of 121 in non-stented group, which is statistically significant (p value 0.01).This is similar to the study by Ranganathan et al and Akoh JA et al in which stented group had more incidence of UTI than non-stented group. In both stented and non-stented groups UTI occurred more commonly in early post-transplant than in late post-transplant.

When we compare the delayed graft function between the two groups, it was more common in the stented group. Sixty five (73.8%) out of 88 patients in stented group and 21(17.3%) out of 121 in non-stented group had delayed graft function, which is statistically significant(p value 0.04).But the caveat in comparing this complication is stents were kept in all deceased donor transplant recipients in whom delayed graft function was more common due to prolonged cold ischemia time.

Rejection occurred in 19 (21.6%) out of 88 patients in stented group whereas 17(14%) of 121 patients in non-stented group had this complication.Though rejection rate was higher in stented groups than non stented groups this is statistically insignificant (p value 0.21).

In our study there were no difference between stented and non-stented groups in other complications like ureteral obstruction, stricture and urinary leak. This is similar to previous studies showing that stents offered no benefit in preventing Ureteral stenosis or leaks (10, 16). However, in contrast to our study, some studies have reported lower urinary leak rates in the stented group (2, 17, 18).

The strength of our study is its large sample size and longer duration of follow up. The limitations of our study are its retrospective nature and exclusion of patients who are not on follow up .

## CONCLUSION

Stents are associated with increased incidence of UTI and might have a detrimental effect on graft function and survival. Hence stenting should be done only in selective patients with strong indications.

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