Renal Transplantation In Abnormal Bladder; Management Options And Their Effects On Graft Outcome

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Introduction:

- Normal urinary bladder stores urine at low pressure, does not leak and completely empties by natural voiding.
- Correction of structural urological disorders and optimization of emptying and storage function of the bladder (by bladder augmentation or urinary diversion) should be achieved before transplantation if conservative treatment failed in patients with bladder dysfunction to protect the upper urinary tract.
- The aim is to determine the outcome of renal transplantation among the differently managed abnormal bladder patients.

Methods:

- This is a retrospective study of 30 renal transplant recipients with abnormal bladder who were transplanted between 1990 to 2015.
- Patients were divided in to 2 groups based on abnormal bladder management. Group (A) included 12 patients who required surgical procedures for their bladder such as (augmentation cystoplasty, Mitrofanoff procedure, ileal conduit, vesicostomy and artificial urinary sphincter in 6, 1, 2, 1 and 2 patients respectively). Group (B) included 18 patients who were managed with oral antichlonegic or beta-3 sympathomimetics drugs, clean intermittent catheterization (CIC), suprapubic catheterization or combination of these options.
- Patients characteristics, graft function, survival (Estimated glomerular filtration rate (eGFR) less than 15 ml/min was considered as graft failure) and post operative complications were compared among both groups.
- Statistical data analysis was done by IBM SPSS version 20 with student t-test used for mean and Chi-Square test used for categorical variable. P value ≤ 0.05 was considered significant.

Results:

- Neurological causes of abnormal bladder were more common (75%) in group (A) while urological causes were more common (94%) in group (B), (P=0.000).
- 94% of patients in group (B) were male compared to only 50% in group (A), (P= 0.005).
- Mean eGFR at 1, 3 and 5 years was higher in group (A) (55 ± 29 ml/min, 47 ± 29 ml/min and 42 ± 28 ml/min) than in group (B) (39 ± 23 ml/min, 30 ± 21 ml/min and 26 ± 21 ml/min) respectively but not significant, (P > 0.05).
- There was no significant difference in the graft survival between the 2 groups as shown in the **Kaplan –Meier survival curve**, (Log Rank test, P = 0.42).

- The incidence of wound infection was significantly higher in group (A) than in group (B), (33% Vs 5%, P = 0.04). All other postoperative complications were not significantly different among both groups.

Patients characteristics	Group (A)	Group (B)	P value
Mean age at time of transplantation	37 $\pm$ 17.6 years	28 $\pm$ 15.7 years	0.18
Sex (Male: Female)	6:6	17:1	0.005
Type of donor kidney (Live: Deceased)	2:10	6:12	0.31
Number of transplant (First: Second)	11:1	14:4	0.31
Native nephrectomy	6/12	6/18	0.36
Main cause of abnormal bladder (Neurological : Urological)	9:3	1:17	0.000

Discussion:

- In the past, urinary diversion was the usual approach to bypass the abnormal bladder. With the use of augmentation cystoplasty and CIC in small-volume poor-complaint bladder, a low-pressure and complaint reservoir can be created that can protect the upper urinary tract.¹
- Reconstructive surgery should be done before transplantation to avoid deleterious impact of immunosuppressive drugs on the healing process.² All the procedures of bladder rehabilitation in our study except vesicostomy were performed prior to renal transplantation.
- Sager et al (2011) reported no significant difference (P = 0.9) in the graft survival among patients with normal bladder (Group A), those with abnormal bladder who did not require surgery of their bladder (Group B) and those with abnormal bladder who required surgery of their bladder (Group C). Graft survival at one year was (93.38%, 95.45% and 93%) and at five years was (82.45 %, 79.85% and 86.58%) for groups A, B and C respectively.³
- Larger multicenter study is required to further confirm these results.

Conclusion: The options of abnormal bladder management (either by surgical procedures or any other methods of management) did not have an impact on the graft outcome after renal transplantation as long as a safe, low pressure and suitable bladder is achieved.

References:

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