

## SUCCESSFUL RENAL TRANSPLANTATION IN A PEDIATRIC PATIENT WITH SMALL CAPACITY BLADDER AND CLOSED BLADDER OUTLET: A CASE REPORT

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### ABBREVIATIONS:

ESRD: End stage renal disease

### KEY WORDS:

paediatric renal transplantation, vesico-ureteral reflux.

### ABSTRACT

Congenital genito urinary anomalies are often associated with multiple system involvements. Children suffering from such anomalies require multiple surgeries for their survival and better quality of life. We report a case of successful renal transplantation in a female child with such multiple congenital anomalies.

### CASE REPORT

A 16 year-old female patient with end stage renal disease presented to us for renal transplantation. She was born with cloacal anomaly and ventricular septal defect. Left transverse colostomy was performed immediately after birth. At the age of 10 months, recto-vaginal pull-through was done by posterior sagittal exploration followed by closure of colostomy. She was found to have right side grade V reflux causing recurrent urinary tract infection; treatment by Teflon injection failed to resolve this reflux. At the age of 3 years right ureteric re-implantation with resection of lower 2/3 of the left ureter

was done for non-functioning left renal unit. She had undergone anterior sagittal exploration at the age of 5 years for persistent urethro-vaginal fistula; due to unfeasibility of separating and repairing of the fistula, closure of bladder neck was performed along with replacement sigmoid loop vaginoplasty and continent vesicostomy.

At the age of 10 years, deterioration of renal function was detected and hence right cutaneous ureterostomy was performed for better drainage of urine. Her renal function had deteriorated in the next five years and she developed end stage renal disease (ESRD).

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In pre-operative evaluation we had found stenosis of continent vesicostomy, reduced capacity of bladder to 80 cc and right side persistent grade V reflux. A 6.6 Fr ureteroscope through vesicostomy could not be negotiated. Right side nephroureterectomy and ileal augmentation cystoplasty was carried out and appendix was used as a conduit as per Mitrofanoff's principle. A 22 Fr size Foley catheter was kept as drainage tube for the purpose of irrigation and removing mucous. Two weeks after surgery she received donor haemopoietic stem cell transplantation into the thymus, portal and peripheral circulation, as a part of pre-transplant tolerance induction protocol. Six weeks later successful renal transplantation was carried out in extraperitoneal space of left iliac fossa and nadir serum creatinine was achieved to 0.70 mg %. She was maintained on cyclosporin A, 4 mg/kg BW/day and prednisolone, 0.3 mg/kg BW/day along with prophylactic antibiotic and performing clean intermittent catheterization through appendix conduit with bladder capacity of 360 ml. At 3 months follow up, her serum creatinine remained same without any episode of urinary tract infection or rejection and she is on CsA, 3 mg/kg BW/ day and prednisolone, 0.2 mg/kg BW/ day as immunosuppressants.

#### DISCUSSION

Renal transplantation is the treatment of choice in children with ESRD.<sup>1</sup> Renal transplantation is indicated in patients with ESRD secondary to lower urinary tract diseases, e.g. contracted post-inflammatory bladder or in neuropathic patients. Such patients have bladders that are no longer an adequate reservoir and may not empty completely at normal voiding pressure. About 6 % of patients undergoing renal transplantation every year in the United States have ESRD secondary to a lower urinary tract abnormality.<sup>2</sup> It is logical not to use such a bladder for renal transplantation since native kidneys have already been damaged. Such patients with lower urinary tract abnormalities, when require renal transplantation; the aim is to achieve continence and to establish low-pressure voiding with no vesico-ureteric reflux. Bladder augmentation may be required to improve the capacity and compliance.

Our patient had refluxing right renal unit with previously performed surgery at the lower end and also, later on in upper part, she had cutaneous ureterostomy. We did not attempt to perform augmentation uretero-cystoplasty where both ends of ureter had compromised blood supply due to previously performed surgeries. Bladder capacity was only 80 cc and 5 Fr feeding tube could go barely through continent vesicostomy; this required both augmentation cystoplasty and continent conduit of adequate caliber so that patient can get adequate

reservoir for urine and also perform self clean intermittent catheterization without much problem.

There is no general consensus about the timing of augmentation cystoplasty. To avoid potential adverse effect of immunosuppressants on healing; augmentation cystoplasty should be performed before renal transplantation.<sup>3</sup> However, other groups believe that cystoplasty should be delayed until renal function is stable after transplantation and when the immunosuppressive regime has been reduced.<sup>4</sup> The latter also avoids problem of dry bladder. We kept a large bore Foley catheter for irrigation of augmented bladder and removing the mucous and thereby avoided problem of dry bladder. In fact, as the time interval between the two surgeries increased, we found reduced secretion of mucous. Thus, performing augmentation cystoplasty prior to renal transplantation may give less problems related to mucous in post transplant phase. Also, cystogram not showing any urinary leak and achieved bladder capacity after augmentation gives better understanding about volume at which patient should do clean intermittent catheterization, as in our case. Further, since pedicle of used ileum and appendix remain either in midline or right side, it is safe to perform renal transplantation in left iliac fossa to avoid potential risk of damage to either pedicle.

Since augmented bladder has normal sensation of filling, timely emptying is possible. This avoids high intravesical pressure. Also irrigation of bladder and aspiration of residual urine may prevent mucous precipitation and residual urine thereby preventing stone formation and bacterial growth.

#### CONCLUSION

Renal transplantation in a paediatric patient with small capacity bladder and closed bladder outlet can be performed safely after augmenting bladder with bowel and providing appropriate continent conduit.

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**TRANSPLANTATION INDIA**

**Editor-in-Chief:**

H.L. Trivedi, F.R.C.P. (C)

**Journal Office Research & Publication Department**

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