Abstract:
Cadaver renal transplantation is a fast upcoming concept in India. It provides a viable option for renal replacement therapy for patients with chronic renal failure. Donors less than 6 years of age are not classified as ideal candidates for cadaveric kidney donation. Nevertheless, these kidneys from paediatric donors have been used with reasonable success rates. We performed a cadaveric renal transplantation from a 5 year old girl child declared brain dead from a road traffic accident, to her father who was suffering from chronic kidney disease. This endeavour proved to be technically and emotionally taxing to the entire team and the graft is functioning well.

Keyword: Cadaver renal transplant, paediatric deceased donor, enbloc renal transplantation

Introduction:
With rising population and increasing life expectancy, the incidence of non-communicable diseases is bound to increase. One of the most devastating complications of this is chronic renal failure. Although renal transplantation is a well-established urologic sub-speciality in India, the shortage of donors is a serious drawback. The most successful method to address this shortage is cadaveric donors. Rising awareness of cadaveric organ donation programmes have substantially increased the cadaveric donor pool. Still, the numbers are grossly inadequate to manage our ever-growing cohort of chronic kidney disease patients. Thus came the extended criteria donors. Paediatric donors form a unique sub-category in this extended criteria donors. The small size of their kidneys and the size discrepancy when transplanting into adult recipients make these kidneys more vulnerable to graft failure in the long term. Specific indications in these cases and utmost importance to technique prove valuable in optimising...
outcome. Herewith we present a case of en-bloc paediatric cadaver renal transplantation done in our institution.

**Case report:**  
A 5 year old girl child was declared brain dead after a road traffic accident and polytrauma. The child was resuscitated as per standard protocol. The relatives were counselled for organ donation. Serendipitously the child’s father, a 34 year old man was suffering from chronic kidney disease due to glomerulonephritis. After ethical board approval and cross matching, the patient was prepared for surgery. Organ harvesting was done on the child. Suitable recipients for liver were not found, and only both kidneys and cornea were taken for transplantation. The child’s kidneys measured about 7cm long and about 3cm wide. Due to the small size of the child’s kidneys, enbloc transplantation of both kidneys to a single recipient rather than two recipients was planned.

By a long midline incision the thoracic and abdominal cavities were opened. After thorough laparotomy, bowels were reflected by cutting along mesentery and the retroperitoneum was exposed. Kidneys along with Gerota’s fascia were dissected along with the aorta and vena cava. Both kidneys, fascia, aorta below coeliac trunk and inferior vena cava were harvested enbloc. During bench dissection, the fasciae were removed; aorta and IVC were carefully dissected taking care to tie all small branches and tributaries. The cranial end of the aorta and IVC were closed with 5-0 monofilament polypropylene sutures. Meanwhile recipient bed preparation was done and both kidneys enbloc were handed over to the recipient team. The caudal end of the donor aorta was sutured end to end with recipient right iliac artery. Caudal end of IVC was sutured end to side with recipient right external iliac vein. All vascular anastomosis was done with 6-0 monofilament polypropylene. The two ureters were separately anastomosed to the bladder by modified Lich-Gregoir technique. Post operative recovery was uneventful. Urine output was good from post operative day one and was about 4000ml per day at one week post operatively. Serum creatinine touched nadir value of 76µmol/L on 4th post operative day. Doppler study of the transplanted kidneys was done and the flow pattern was normal. The patient is on follow up for 20 months and maintaining renal function well.

**Discussion:**  
Renal transplantation is the most cost effective and durable management option in patients with CKD. Though haemodialysis and peritoneal dialysis are the most common modes supporting patients with ESRD, these methods are fraught with complications and rising cost factors in long term. Hence, transplantation is the ideal form of treatment in these patients. But, the pool of live related donors will never be able to match the demand for renal grafts. Cadaver transplantation has proved to be a successful substitute in this setting. The criteria for an ideal deceased kidney donor are normal renal function, no hypertension requiring treatment, no diabetes mellitus, no malignancy other than a primary brain tumour or treated superficial skin cancer, no generalized viral or bacterial infection, acceptable urinalysis, age between 6 and 50 years, and negative assays for syphilis, hepatitis, HIV, and human T lympho proliferative virus. Expanded criteria donors are defined as donors older than 60 years old or donors 51 to 59 years
old with any two of the following risk factors: cerebrovascular death, hypertension, and serum creatinine level greater than 1.5 mg/dL. Paediatric deceased donors are a separate category by themselves. The results of cadaver transplantation with paediatric donors are definitely inferior to those of that from the ideal donor. The poorer graft survivals for kidneys from the very young are due to small anatomic parts and the risk of technical problems. The relative immaturity of the kidneys and hyperfiltration injury due to reduced nephron mass are said to be reasons for the reduced long term outcome. These problems due to reduced nephron mass may be overcome by enbloc renal transplantation, which is transplanting both kidneys of the donors together with the vascular pedicel attached to the major vessels to preserve renal blood supply. This enbloc technique is also being used in deceased donors with abnormal renal function or abnormal biopsy findings. The technical feasibility and the favourable outcome of enbloc paediatric cadaver transplant are well established. There are many studies comparing enbloc versus single kidney transplants from paediatric donors. Majority of them show an improved overall graft function and survival in long term of enbloc recipients. In a study by Bayana et al (2010) the rates of acute rejection in enbloc kidneys was 6% as opposed to 9% in solitary paediatric kidney transplants. Effective GFR was also shown to improve in these recipients over time. However the rate of thrombosis was high (5%) in enbloc as opposed to 3.3% in solitary transplants. Another study by Lawrence et al in 2011 compared outcome in life years after enbloc and solitary kidney transplantation. The greatest improvement after enbloc transplantation is seen in younger age group recipients; but the authors found no significant improvement in older people. This particular case of ours is of more significance because the father of the brain dead child was the recipient. Probably the HLA matching was favourable because of the first degree relationship. The graft function was comparable to that of a live related transplantation.