

RENAL TRANSPLANTATION WITH VASCULAR ANOMALIES: A SALVAGEABLE SURGICAL CHALLENGE

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Problem. In India the renal transplant programme is dependent upon live related donor pool because the cadaveric programme is still in its infancy. Renal vascular anomalies are common problems. The ground reality is that one of the members in the family with the same blood group, usually mother or wife, consent for donation without any further choice. In such a scenario, it becomes difficult to refuse transplantation on the ground of anomalous vessel even in the early phase of transplant programme.

Purpose: To assess the outcome of renal transplant with multiple vessel.

Design: Author could start regular renal transplant programme 3years back after completing his training under Miss Rozanne Lord at Cardiff Royal infirmary in 1995. Donor and recipients were evaluated as per standard protocol. Renal vascular anatomy was assessed with spiral CT and all patients even up to three renal arteries were taken-up for transplantation. Facilities for microsurgical bench surgery was made ready in all such cases.

Findings: During the last two and half years, a total of 32 renal live donor renal transplants were performed. Nine of these kidneys had anomalous vessels. In two kidneys, renal arteries had very early branching. Two kidneys had double arteries of equal size and the other two had additional, thin, lower polar arteries. One kidney had three renal arteries and two kidneys had double renal veins. These anomalies were either bilateral or the kidney with multiple arteries was chosen for retrieval on the basis that the opposite kidney, despite having a single artery had a relatively better GFR and hence was left for the donor. In patients with early branching, a common stump, 2mm in size, could be retrieved and it was anastomosed end to side with external iliac artery. Of the two kidneys with two equal size arteries, one underwent conjoined anastomosis and the other underwent two separate end to side anastomosis with external iliac artery. In two cases with polar arteries, sequential anastomoses were performed after releasing clamps of the main vessel. In the patients with three renal arteries, bench micro vascular surgery under loop magnification was performed to anastomose the smaller artery end to side to one of the renal artery. Subsequently, two separate end to side anastomosis were performed with the external iliac artery. In two kidneys with double vein, one had small vein which was simply ligated and the other had two small veins of equal size in which conjoined anastomosis was performed to make common ostium, which was anastomosed end to side to external iliac vein. Initially all the patients received cyclosporine, azathioprine and prednisolone for immuno-suppression. In two cases cyclosporine was replaced by tacrolimus because of its toxicity.

Conclusions: In all the cases, end to side anastomoses with external iliac artery were preferred utilizing the technique of parachuting. All grafts had immediate perfusion with immediate diuresis except the one with three arteries which started diuresis three hours post operatively, responding to frusemide infusion at the rate of 120mg/hr. All showed good perfusion on colour Doppler done on the 4th day with resistive index in normal range. The follow-up ranged from 2 months to two and half years. One patient with double arteries having two separate anastomoses died 2months post operatively with functioning graft due to a cardiac problem. The remaining patients are all doing well with mean serum creatinine of 1.6 mg% (0.9 to 1.9mg) at the last follow-up.

Relevance: Multiple renal arteries in live donor transplantation are no longer a contraindication. Bench micro-vascular surgery and end to side anastomosis with external iliac artery using the technique of parachuting results in a satisfactory outcome of these surgical challenges, which are otherwise a relative contraindication in live donor transplantation.