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Dual Kidney Transplantation: A Single Centre Case Series

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Introduction

The use of expanded criteria donor kidneys has opened up a potential pool of donors to address the needs of transplant waiting lists. In some cases it may acceptable to use 2 kidneys from the same deceased donor, that would have otherwise both been discarded, as a way of providing sufficient functional nephron mass (Dual Kidney Transplant, DKT)[1]. This technique may open up a further pool of potential donors. We study the efficacy and safety of the DKT procedure with a view to increasing the size of the kidney donor pool. We study the outcomes of a cohort of 10 recipients of DKTs performed in the Churchill hospital in Oxford. Data was collected prospectively and averages are presented as median (range).

Results

All 10 patients had both transplanted kidneys implanted unilaterally on the right side; median CIT 11.5 hours (10-20 hours), median WIT 64 minutes (60-98 minutes), median operating time 220 minutes (205-300 minutes).

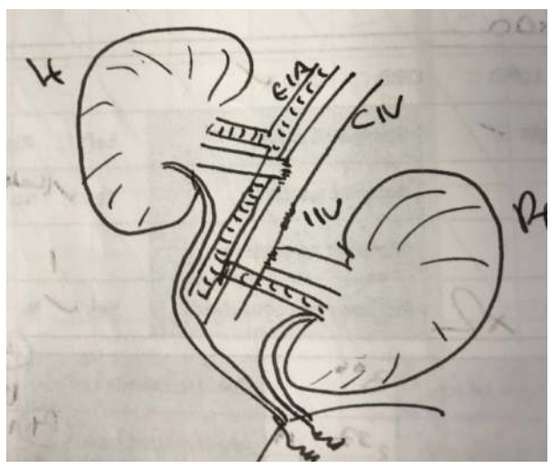


Figure 1: Illustration of dual kidney transplant taken from the operation note

Outcomes

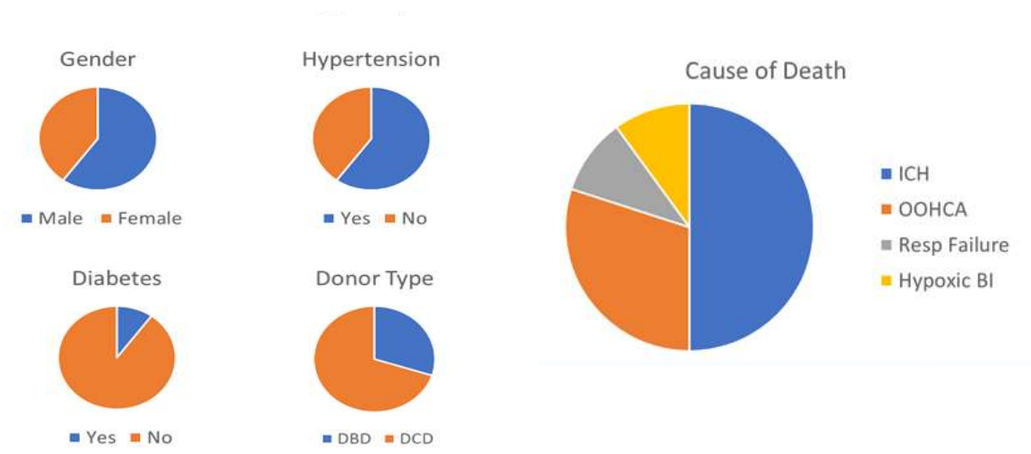
50% had showed DGF, 40% showed initial function, and 10% had primary non-function. Length of stay was 9 days (5-10 days). Median patient follow-up was 1.7 years. Nine biopsies were taken from 5 patients, of which 2 showed BPAR (Figure 2), 3 showed CNI toxicity, 3 showed ATI and donor vascular disease, and 1 showed severe T cell and ABMR. Median recipient eGFR at 12 months was 31.5 ml/min (24-73 ml/min) (Figures 4 & 5). Post-operative complications included 1 ureteric leak with single transplant nephrectomy, 1 hydronephrosis that was successfully managed with nephrostomy and re-stenting, and 1 transplant renal artery stenosis that was successfully angioplastied. 1-year graft survival was 90% and 1-year patient survival was 100%.

Recipient Demographics

Recipients had median age 62 years (42-79 years), all were having their first transplant and median waiting time was 325 days (111-1925 days).

Donor Demographics

Median donor age was 71 years (59-79 years), median eGFR 60ml/min (41-90 ml/min), 70% were DCD.



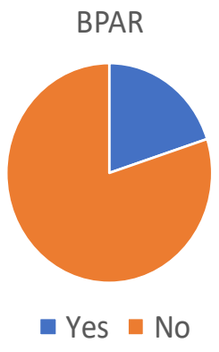


Figure 2: Biopsies
9 biopsies taken from 5 patients showed:
2- BPAR
3- CNI
3- ATI and donor vascular disease
1- post nephrectomy severe T cell and ABMR

Figure 3: Initial function

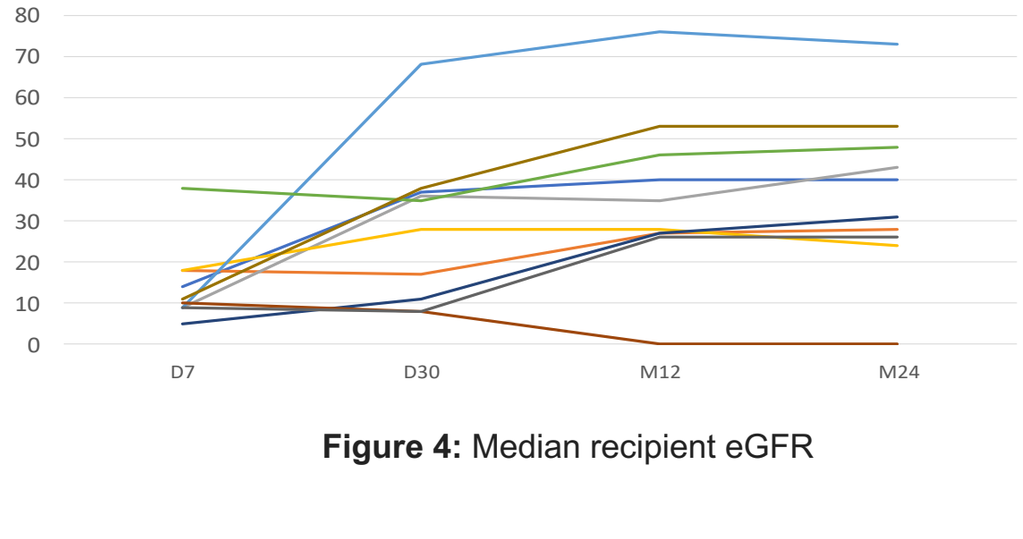


Figure 4: Median recipient eGFR

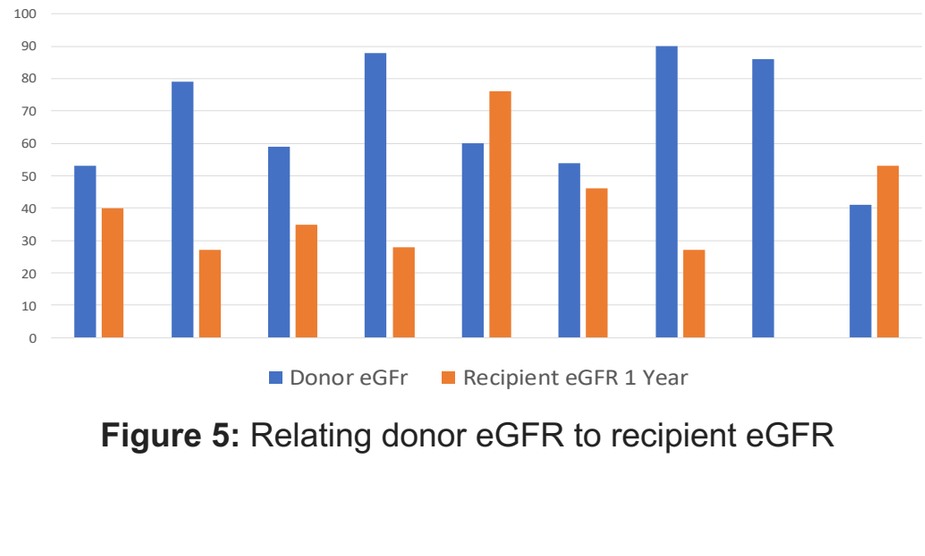


Figure 5: Relating donor eGFR to recipient eGFR

Discussion:

We have demonstrated the safety and efficacy of DKT in a cohort of 10 individuals. We have been very selective in our choice of both donor and recipient. This suggests that increased acceptance of DKT could be a safe and effective way to increase the kidney donor pool in very specific patient-donor combinations. Further questions remain on the criteria for determining donor kidney status to maximise the value of dual kidney transplantation.

1 Remuzzi et al, Early Experience with Dual Kidney Transplantation in Adults using Expanded Donor Criteria, JASN December 1999, 10 (12) 2591-2598;