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RENAL TRANSPLANTATION FOLLOWING DONATION AFTER CARDIAC DEATH (DCD): IMPACT OF DURATION FROM WITHDRAWAL TO ASYSTOLE

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Introduction. DCD donation involves a variable period of donor physiological instability prior to asystole. This combined with a 'stand off' period of warm ischaemia, before cannulation and in situ cold perfusion, has potential negative impact on patient and graft outcomes. It is known that the use of DCD kidneys is associated with an increased rate of delayed graft function (DGF) but that recipient outcomes, such as graft and recipient survival, are comparable to donation after brain death donors (DBD). This study seeks to identify the impact of the time to donor asystole upon subsequent graft and recipient outcomes at a single UK centre. **Methods.** A retrospective study of renal transplant activity using DCD grafts between 2002-2009 was undertaken. The median time to achieve asystole was calculated. Grafts procured from donors with a short duration to asystole (i.e less than median) were compared with those procured from donors with longer duration to asystole. Rates of DGF, primary non function (PNF), acute rejection (AR), 5 year graft and patient survival and estimated GFR were compared. Categorical data were compared using χ^2 or Fishers exact test; longitudinal data were compared using a Student t test; all at a 5% level of statistical significance. **Results.** 201 renal transplants from DCD donors were performed over the study period. Twenty-two were excluded from the analysis due to lack of data on asystole times. Therefore a total of 179 grafts were analysed. The median time to asystole was 20 minutes. 113 had asystole times above the median, 66 had short duration asystole times. The groups were comparable in terms of donor and recipient demographics, time to in situ perfusion (16 min vs 15 mins; $t=179$; $p=0.25$), cold ischaemia (16 hrs vs 16 hrs 50 mins; $t=175$; $p=0.77$) and implantation warm ischaemia time (31 mins vs 33 mins; $t=177$; $p=0.09$). DGF rates (49% vs 57%; $\chi^2=0.02$; $p=0.13$) were comparable, whilst PNF rates were higher (3% vs 4%; $\chi^2=57.2$; $p<0.001$) in the group with longer asystole. Five year graft survival (89% vs 89%; $\chi^2=0.09$; $p=0.6$) were comparable, whilst recipient survival (90% vs 71%; $\chi^2=18.2$; $p=0.02$) were significantly lower where the time to asystole was longer. Calculated GFRs were comparable at 5 years (62 ml/min vs 52 ml/min; $t=24$; $p=0.32$). Rates of AR were lowest amongst the longest asystole time group (20% vs 16%; $\chi^2=23.4$; $p<0.001$). and recipient 5 year survival lowest where the time to asystole was highest. **Conclusions** The use of DCD donors result in acceptable rates of DGF and medium term graft survival and function. However, there is an urgent need to identify the acceptable delay before donor asystole. Use of grafts from donors with asystole times beyond 20 minutes may jeopardise immediate graft function and recipient survival.

Disclosure: All authors have declared no conflicts of interest.

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SEQUENTIAL TRANSPLANT OF PAIRED KIDNEYS FOLLOWING DONATION AFTER CARDIAC DEATH (DCD): IMPACT OF LONGER COLD ISCHAEMIA TIME ON THE SECOND KIDNEY ON GRAFT AND PATIENT OUTCOME.

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Introduction. Grafts procured from DCD donors are inherently exposed to variable periods of potentially injurious warm ischaemia. This is in combination with a period of cold ischaemia prior to transplantation leads to increased rates of delayed graft function (DGF) and primary non function (PNF) in DCD kidney transplants. Whilst most centres transplant DCD kidneys expediently, paired kidneys from the same donor are often transplanted sequentially and not concurrently due to logistical reasons. This study seeks to identify the impact of prolonged Cold ischaemia time on the second kidney in a sequential transplant of DCD kidneys in a single centre. **Methods.** A retrospective study of renal transplant between 2002 and 2009 using DCD grafts was undertaken. Paired grafts procured from the same donor were compared according to the order they were transplanted (1st vs 2nd). Rates of DGF, primary non function (PNF), acute rejection (AR), 5 year graft and patient survival were compared. Categorical data were compared using χ^2 or Fishers exact test; paired longitudinal data were compared using a paired Student t test; all at a 5% level of statistical significance. **Results.** In the study period (2002-2009) a total of 201 kidneys from DCD donors were implanted. Six paired kidneys were transplanted concurrently and 21 were either imports, implanted as dual grafts, enbloc grafts or the second graft could not be utilised due to damage or poor perfusion. The remaining eighty four paired kidneys were transplanted sequentially and included in analysis. First transplanted kidneys had significantly shorter CIT compared to second transplanted grafts (mean 13hours 41 mins vs 17 hours 45 mins; $t=3.3$; $p=0.04$). The groups had comparable implantation warm ischaemia times (32 mins vs 32 mins; $t=1.8$; $p=0.07$). PNF rates (1% vs 3%; $\chi^2=0.09$; $p=0.08$) were comparable between first and second transplanted kidneys. Rates of DGF (47% vs 62%; $\chi^2=7.2$; $p=0.02$) were highest amongst the grafts transplanted second. Rates of AR (22% vs 12%; $\chi^2=26.1$; $p<0.001$) were highest amongst the first transplanted kidneys. 5 year recipient (92% vs 90%; $\chi^2=0.07$; $p=0.3$) were comparable regardless of the order of transplantation; whilst graft (74% vs 89%; $\chi^2=0.06$; $p=0.04$) survival rates were higher amongst the cohort of second kidneys. **Conclusions.** Sequential transplant of paired kidneys from DCD donors result in higher rates of DGF in kidneys transplanted second. Prolonged CIT of the second graft does not appear to be deleterious to long-term graft or recipient survival. Paradoxically better recipient survival was observed in the recipients of the second graft which remains unexplained. It is acceptable to transplant DCD grafts sequentially, without jeopardising long-term graft or recipient outcome.

Disclosure: All authors have declared no conflicts of interest.