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LETTER TO THE EDITOR

Successful outcome of paediatric *en bloc* kidney transplantation from the youngest donation-after-cardiac-death donor in the United Kingdom

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We wish to highlight the successful outcome of *en bloc* kidney transplantation from the youngest donation after cardiac death (DCD) donor into a paediatric recipient in the United Kingdom. The donor (Maastricht Category III) was 2 years old and 12 kg male subject who died of drowning. Only kidneys were accepted for transplantation for a single recipient and were retrieved *en bloc* with aorta and vena cava. The recipient was a 15-year-old female subject weighing 40 kg, with end-stage renal failure secondary to familial nephritis and had a previous failed transplant caused by renal vein thrombosis.

The *en bloc* allograft was implanted extraperitoneally in the left iliac fossa using a modification of the previously described Newcastle technique for graft implantation [1]. In their technique, the infrarenal portions of the aorta and cava are transposed to a 'suprarenal' position to facilitate lowering of kidneys in the pelvis and implantation of ureters of shorter length. However, as the liver was not retrieved in this case, and also as sufficient suprarenal aorta and inferior vena cava (IVC) were provided, vascular reconstruction was not required. At the back table, the aorta and IVC below the renal vessels, together with the origins of the coeliac and superior mesenteric arteries were over-sewn using 6.0 Prolene suture (Fig. 1).

Graft implantation was to the external iliac vein and artery using continuous 6.0 Prolene suture. The ureters were implanted separately onto the bladder using 'on-lay' technique over pigtail stent using PDS sutures (Fig. 2). The first warm-, cold- and second ischeamia times were 11 min, 11.5 h and 32 min respectively. Primary function was observed and postoperative recovery was uneventful. Immunosuppression consisted of tacrolimus, azathioprine and prednisolone. The patient remains well to date and 3-month creatinine was 84 μmol/l (0.95 mg/dl).

The practice of transplanting paediatric *en bloc* kidneys is not universally accepted. Reports of increased organ discard rates, technical complications, graft thrombosis, rejection, decreased functional nephron reserve, and claims of suboptimal patient and graft survival have all contributed to the reluctance of many centres to transplant kidneys from the very young donors [2–4]. Vascular damage is not uncommon in these small kidneys and a leading cause for discard, particularly within a multi-organ procurement setting [5]. Furthermore, variable periods of first warm ischaemia, higher incidence of delayed graft function and impact on long-term graft survival associated with DCD donors mean that utilization of this source may be questioned. More recently, reports of successful outcomes of paediatric *en bloc* kidney transplantation into adult recipients has provided evidence of its efficacy [6–8] but its role in paediatric recipients and in the DCD setting remains controversial and little reported.

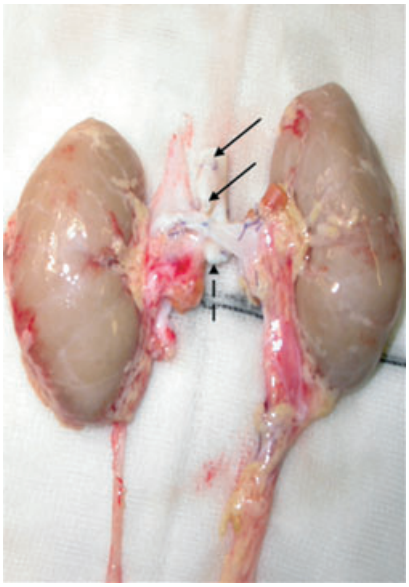

Figure 1 Graft preparation utilising a modified Newcastle technique [1]. Exclusion of the infra renal portion of the aorta and vena cava (*dashed arrow*) and origins of coeliac trunk and superior mesenteric artery (*arrows*).

Since 1988, there have been only 39 paediatric *heart-beating en bloc* donor kidney transplants in the United Kingdom and all into adult recipients. The mean donor- and recipient ages for heart-beating *en bloc* donors were 3 (range 0–6 years) and 37 (range 15–72 years) years

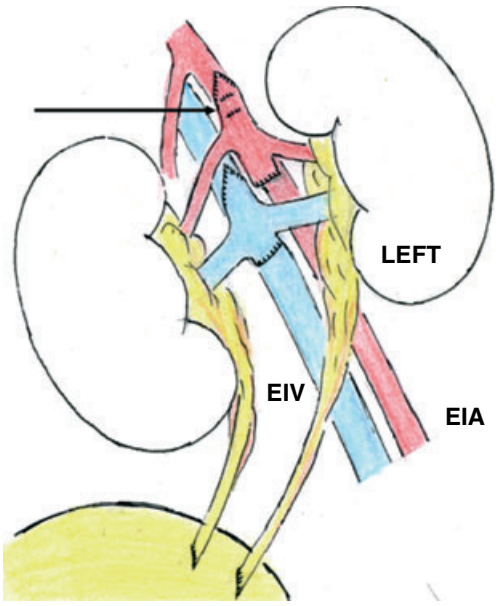

Figure 2 Graft implantation in the left iliac fossa. Arterial and venous anastomosis to external iliac vessels and separate ureteric anastomosis to bladder.

respectively [UK Transplant (September 2008), personal communication]. The decision on transplanting paediatric kidneys either *en bloc* or as a single allograft at extremes of donor age remains difficult and is at best arbitrary. Borboroglu *et al.* [9] suggest separation of paediatric kidneys when the kidney is >6 cm in length and the donor weight is > 14 kg. In the United Kingdom, donors of age less than 5 years and/or less than 15 kg are retrieved and offered *en bloc* for transplantation.

Our case is particularly remarkable as it attempts to expand the boundaries of donor and recipient criteria in renal transplantation. Not only is this the first reported case DCD *en bloc* kidneys into a paediatric recipient, it is also from the youngest DCD donor in the United Kingdom. To our knowledge, only Saito *et al.* [10] have reported successful outcome in paediatric recipients. We believe paediatric donor- and recipient criteria can be expanded further to increase the number of transplants. Although technically challenging, a careful assessment of the donor and potential recipient and measures to avoid prolonged warm and cold ischeamia can result in successful outcomes from paediatric *en bloc* DCD donors into paediatric recipients.

Shahid G. Farid,[1] Paul J. Goldsmith,[1] Jayne Fisher,[1]
Sally Feather,[2] Eric Finlay,[2] Magdy Attia[1]
and Niaz Ahmad[1]
1 Department of Transplantation,
Division of Surgery,
St James University Hospital, Leeds, UK
2 Department of Peadiatric Nephrology,
St James University Hospital, Leeds, UK

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