

## Update on En Bloc Renal Transplantation in Pediatric Recipients

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### Introduction

Little has changed in the past decade with respect to the growing disparity between available organs and the number of recipients on the deceased donor renal transplant list. Pediatric patients have the most to lose, especially those on dialysis, since the uremic environment can have profound effects on neurodevelopmental outcomes and the quality of life of children and their families; much of this can be ameliorated by renal transplantation [1].

### En Bloc Renal Transplantation: Show me the Money!

Retrieval of kidneys from young donors in an 'en bloc' manner allows utilization of allografts that were previously discarded. This practice has been increasing over the years based on early successes from pioneering centers [2-6] with more recent reports confirming its feasibility and good short term outcomes [7,8]. These studies, while promising, have been limited to small case reports and series. Very recently, our group undertook an analysis of the outcomes of en bloc renal transplants in pediatric recipients, using the large national Organ Procurement and Transplantation Network database [9]. The study analyzed information on 126 children who received an en bloc transplant; outcomes on these were compared to 6756 children who received a standard deceased donor transplant. Compared to the standard group, the en bloc group had shorter wait times between registration on the list and transplantation with a median wait time of 157 days compared with 208 days for the standard deceased donor recipients ( $P=0.03$ ). When analyzing allograft survival, adjusting for co-variables, the hazard ratio for allograft failure of en bloc transplants was no different than that of standard donor kidneys at 1.04 (95% CI, 0.71-1.51;  $P=0.85$ ).

### Other Benefits of En Bloc Transplants

In the past, organs from small donors have been avoided by the transplant community because of the low nephron mass and a higher risk of vascular complications. Based on animal studies and experience from clinical settings, en bloc grafts increase in size rapidly to adapt to the host environment [4,10-13]. This was supported by our study, in which eGFR was significantly higher as far out as 5 years after transplantation, for recipients of en bloc kidneys compared with recipients of standard deceased donor kidneys. These observations further support the use of young donor kidneys into pediatric as opposed to adult recipients since pediatric grafts are better able to acclimatise to the needs of growing children.

While early reports of increased vascular complications with en bloc transplantation were discouraging [14-17], recent reports have shown more encouraging outcomes [4,18-20], further confirmed by our study findings. This is likely due to increased experience and improvements

in surgical techniques over time, which should help further reduce the skepticism in using young donor kidneys for transplantation.

### Conclusion

At this time, there is sufficient information that has been collected to justify the use of en bloc kidneys in pediatric patients. Using such kidneys can reduce wait times on dialysis for children and allow more optimal growth and development of children as they grow. Clearly longer follow up is needed to look for possible long-term consequences of such transplants, including hyperfiltration injury.

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