

KIDNEY TRANSPLANTATION OUTCOMES STRATIFIED BY AGE: A CONTEMPORARY POPULATION COHORT ANALYSIS USING NATIONAL REGISTRY DATA



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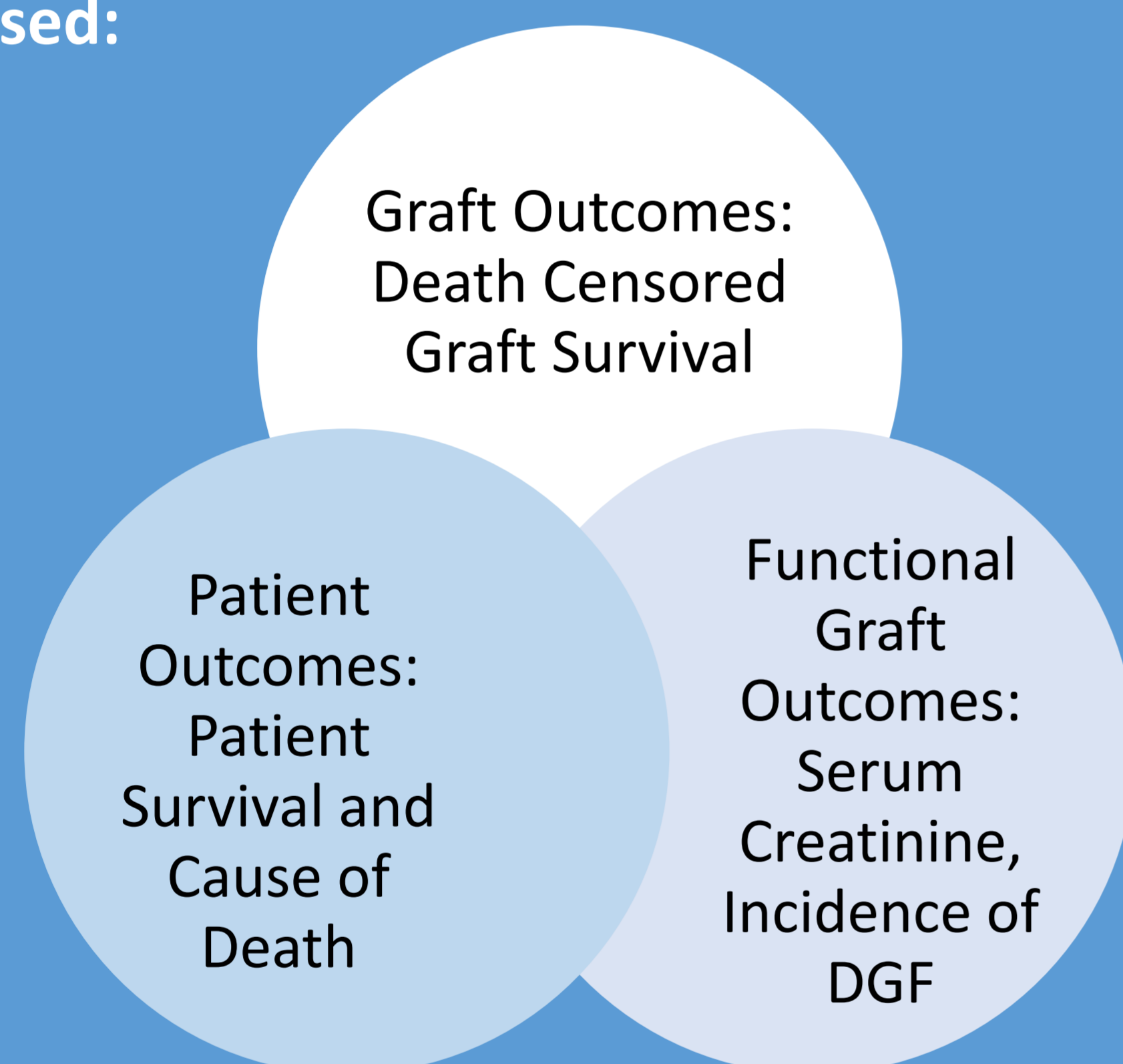
Introduction and Aims:

- It is well established that patients with end-stage kidney failure that receive kidney transplants have huge improvements in life expectancy compared with the alternative treatment of dialysis. However, the risks versus benefits of kidney transplantation become less clear with increasing age.
- With our aging population and many patients in their 70's and 80's are receiving transplants yet they are often excluded from clinical research trials.
- Therefore, I intend to look at the current practice of transplantation in elderly patients in the UK and determine how recipient age affects clinical outcomes in the contemporary era of transplantation practice. Results from this study will hopefully aid decision making into the optimal allocation of these precious resources

Methods:

This nationwide population cohort analysis used the NHS Blood and Transplant Registry dataset for all deceased donor single kidney transplants to adults aged 18 and over performed in the UK between 2003 to 2015. We originally stratified cases into recipients aged 18-40, 41-59, and 60 and older and then undertook further subgroup analysis focusing on patients over 60, using the following age bands (1=<59, 2=60-65, 3=66-70, 4=71-75, 5=76+).

Outcomes Assessed:



Results:

- There were 18,769 transplants in our study cohort, with the median age for recipients 48, and age groups were as follows; 40 and under (n=4712), 41-59 (n=8968), and 60 and over (n=5055).
- In unadjusted analyses, graft survival differed significantly across the age groups (p<0.001). Cox regression analysis showed graft survival was significantly better for the age group 41-59 years (Hazard Ratio [HR]: 0.793, p<0.001) compared with the over 60's group. However, there was no significant difference between graft survival of the over 60's compared to the under 40's [HR=0.984, p=0.755].

Results:

- Patient survival between the three groups confirmed reduced patient survival with HR 0.143 (p<0.001) and HR 0.353 (p<0.001) for the ages under 40's and 41-59 respectively.
- Delayed graft function varied significantly between the age groups (40 and under, 23.4%; 41-59, 28.1%; 60 and over, 33.1%, p<0.001).
- Mean creatinine among surviving kidneys was higher in the 60 and over groups (142 mmol/l) versus the 41-59 group (139 mmol/l) and 40 and under (138 mmol/l) (p<0.001).
- **Subgroup Analysis:**
- Further stratification of age groups 60-65 (n=2396), 66-70 (n=1496), 71-75 (n=679), and >75 (n=148) showed worse outcomes for creatinine, delayed graft function, graft and patient survival for the over 75 groups compared to other 'older' adults.

Table 19 Subgroup Univariable Survival Analysis.

Recipient age(years)	Graft Survival			
	Hazard Ratio	P value	95.0% Confidence Interval	
Reference group 76+	-	<0.001	Lower	Upper
<59	0.518	<0.001	0.359	0.747
60-65	0.572	0.004	0.392	0.835
66-70	0.618	0.015	0.420	0.910
71-75	0.613	0.021	0.404	0.929
Recipient age(years)	Patient Survival			
	Hazard Ratio	P value	95.0% Confidence Interval	
Reference group 76+	-	<0.001	Lower	Upper
<59	0.123	<0.001	0.093	0.163
60-65	0.341	<0.001	0.225	0.455
66-70	0.556	<0.001	0.416	0.744
71-75	0.590	<0.001	0.433	0.806

Conclusions:

- Even in the contemporary era, increasing recipient age remains a predictor of inferior clinical outcomes graft survival, adding a layer of complexity into the decision of how best to allocate such scarce resources.
- In the literature, there is much heterogeneity in defining at the elderly and therefore we lack clear guidelines on risk of kidney transplantation stratified by recipient age.
- In our analysis, we highlight this difficulty by showing the gradual stepwise decrease in graft survival and the unusual pattern of delayed graft function amongst the 60 and over group.
- Therefore, we recommend further research into clinical outcomes among the 60 and over group and consideration should be given for targeted research for age-adapted immunosuppression to optimise outcomes for older kidney transplant recipients.

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