

CHAPTER 16

PERITONEAL DIALYSIS VERSUS HAEMODIALYSIS

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The aim of this study was to use ANZDATA as a database to determine whether dialysis modality pre-transplant affects the incidence of delayed graft function (DGF), serum creatinine at six months, occurrence of any rejection episode(s) within the first six months post transplant, and graft and patient survival at twelve months.

The cohort transplanted between 1997 to 2000 inclusive with primary cadaveric grafts was examined. Grafts that never functioned and living grafts were excluded. A total of 1131 patients were included with 785 patients (69%) maintained on haemodialysis (HD) and 346 patients (31%) maintained on peritoneal dialysis (PD) pre-transplant. There were fewer indigenous but more diabetic patients maintained on peritoneal dialysis pre-transplant (fig 16.1).

In univariate analysis, dialysis modality pre-transplant did not affect graft (death = failure) and patient survival at twelve months (fig 16.2). Haemodialysis patients were more likely than peritoneal dialysis patients to have delayed graft function, a serum creatinine greater than 150umol/L at six months, and occurrence of any rejection episode(s) at six months. Younger donors and non-indigenous recipients were associated with a better graft survival. Younger and non-indigenous recipients were associated with a better patient survival. Non-diabetic patients (compared to diabetic patients) had a better patient survival, but the difference in graft survival was not significant (fig 16.3).

Figure 16.1

Demographic Characteristics of Cohort		
	Haemodialysis	Peritoneal Dialysis
Recipient age (>45 years)	59%	55%
Race (indigenous)	8%	4% *
Diabetes (type I and II)	11%	17% *
Coronary Artery Disease (CAD)	10%	10%

* P <0.05 Fishers exact test

Figure 16.2

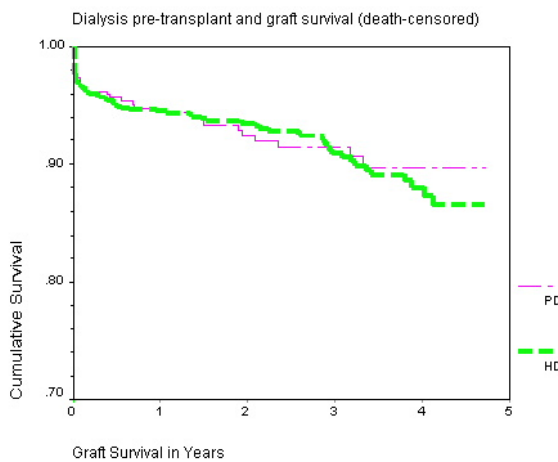
Association of Haemodialysis and Peritoneal Dialysis with Transplant Outcomes: Univariate Analysis					
	Haemodialysis	Peritoneal Dialysis	Odds Ratio	Confidence Interval	P Value
Graft survival (1 year)	02%	92%	1.0	NS	NS
Patient survival (1 year)	96%	96%	1.0	NS	NS
Delayed Graft Function	26%	18%	1.6	1.2-2.3	0.003
Creatinine <150 umol/L (6 months)	38%	29%	1.5	1.1-2.0	0.008
Rejection (6 months)	34%	27%	1.3	1.0-1.8	0.04

Figure 16.3

Donor, Recipient, and Surgical Factors and Graft/Patient Survival				
		Functioning Graft at 1 Year		Alive at 1 Year
Donor Factor	Age	0-49 years	93% *	96%
		50+ years	90% *	96%
Recipient Factors	Age	0-44 years	93%	98% *
		45+ years	91%	95% *
	Race	Non-indigenous	92% *	97% *
		Indigenous	88% *	91% *
	Maximum PRA	0-25%	93%	97%
		25+%	89%	92%
	Diabetes	Yes	89%	92% *
		No	92%	97% *
CAD	Yes	86%	93%	
	No	93%	97%	
Surgical Factor	Ischaemic Time	0-11 hours	91%	95%
		12+ hours	92%	97%

* Significant p-value (Pearson chi-square)

Figure 16.4



In a Kaplan-Meier survival curve (created to 30th September 2001), dialysis modality pre-transplant did not significantly affect death-censored graft survival (fig 16.4) or patient survival (fig 16.5). 85% of haemodialysis patients compared to 89% of peritoneal dialysis patients had a functioning graft at the censored date. 85% of HD patients compared to 84% of PD patients were living at the censored date.

A multivariate analysis of predictors of graft and patient survival was performed using Cox regression (fig 16.6). Younger donors and non-indigenous recipients were more likely to have a better death-censored graft survival at twelve months in a multivariate analysis. Younger and non-indigenous recipients were more likely to have a better patient survival at twelve months in a multivariate analysis.

Figure 16.5

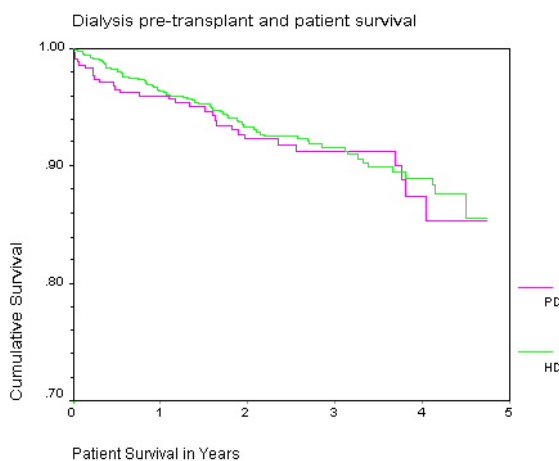


Figure 16.6

Multivariate Analysis of Graft and Patient Survival			
		Multivariate (p-value) Graft survival	Multivariate (p-value) Patient Survival
Recipient Factors	Age	Not Significant	0.000
	Ethnicity	0.000	0.000
	Treatment	NS	NS
	Diabetes	NS	NS
	CAD	NS	NS
	Maximum PRA	NS	NS
Donor Factor	Age	0.001	NS
Surgical Factor	Ischaemic Time	NS	NS



Figure 16.7

Rejection-free survival was also examined; those treated with peritoneal dialysis patients were less likely to have had a rejection episode by six months (fig 16.7). 72% of patients maintained on peritoneal dialysis pre-transplant compared to 65% of patients maintained on haemodialysis were free of rejection by six months.

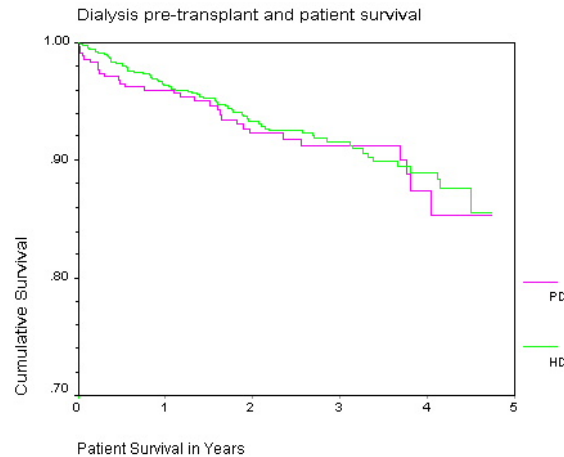


Figure 16.8

Multivariate Analysis of Rejection at 6 Months

		Multivariate (p-value) Rejection at 6 months
Recipient Factors	Age	0.002
	Ethnicity	NS
	Dialysis Treatment	0.01
	Diabetes	0.000
	CAD	NS
	Maximum PRA	NS
Donor Factor	Age	0.009
Surgical Factor	Ischaemic Time	NS

Dialysis modality pre-transplant remained a significant factor affecting the occurrence of any rejection episode at six months in a multivariate logistic regression model (fig. 16.8). Older donors, younger recipients, and the presence of diabetes in the recipient were also associated with an increased risk of having a rejection episode by six months.

Figure 16.9

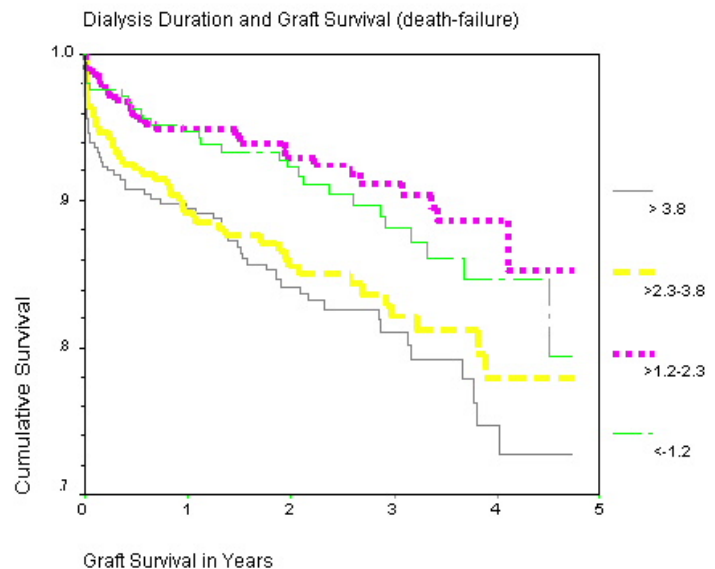
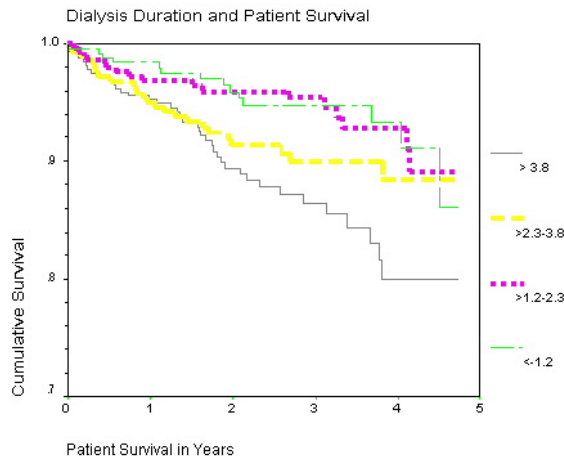


Figure 16.10



Dialysis duration pre-transplantation (irrespective of dialysis modality) was divided into quartiles (<1.2 years, >1.2 to 2.3 years, >2.3 to 3.8 years, and >3.8 years).

Patient and graft outcomes were also compared by duration of dialysis prior to transplantation. Patients who were on dialysis for the shortest duration (lowest quartile) had a better graft survival than those who were on dialysis for the longest duration (highest quartile) with 95% of the former compared to 89% of the latter quartile had functioning grafts at one year (fig 16.9). Patients who were on dialysis for the shortest duration (lowest quartile) had a better patient survival than those who were on dialysis for the longest duration (highest quartile) with 98% of the former compared to 95% of the latter quartile were alive at one year after transplantation (fig 16.10). Duration of dialysis prior to transplantation remained an independently significant predictor of outcome in a multivariate analysis (fig 16.11). In addition, younger donors, non-indigenous recipients, and the presence of CAD in the recipient were factors associated with a better graft survival. Younger and non-indigenous recipients were associated with a better patient survival.

Figure 16.11

Multivariate Analysis of Graft and Patient Survival (including dialysis duration)

		Graft Survival (p-value)	Patient Survival (p-value)
Recipient Factors	Age	NS	0.000
	Ethnicity	0.000	0.000
	Treatment	NS	NS
	Diabetes	NS	NS
	CAD	0.02	NS
	Maximum PRA	NS	NS
	Dialysis duration	0.009	0.02
Donor Factor	Age	0.001	NS
Surgical Factor	Ischaemic Time	NS	NS