



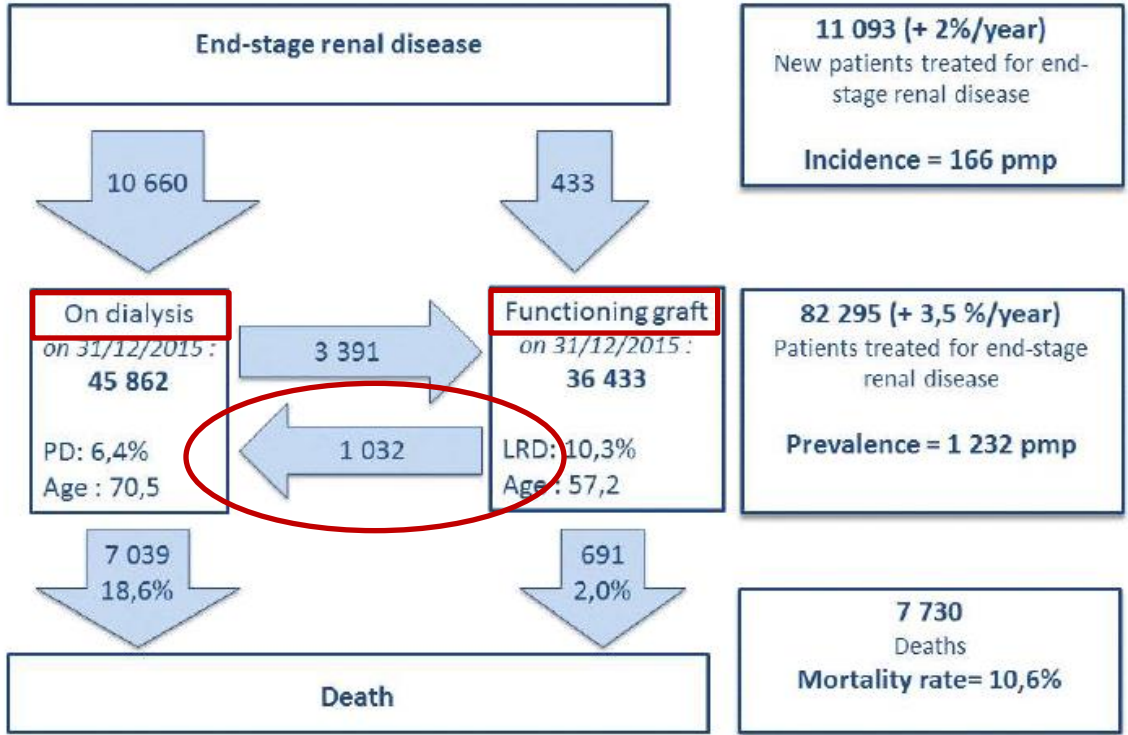
Peritoneal dialysis after kidney transplant failure: a nationwide matched cohort study from the French Language Peritoneal Dialysis Registry (RDPLF)

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PD after kidney transplantation failure

In 2015



↑ Number of patients returning to dialysis after KT failure

>85% start on HD
 ≈5% start on PD

Whether or not the choice of dialysis modality has an impact on the patient outcomes following failed KT ?



In the literature ...

Authors	Period	n Tx Group	n Control Group	Stat adjustment	patients'survival	PD survival	peritonitis
Mujais and al.	2000-2003	494	494/479	Age, gender, DM, PD modality, PD period	similar	similar	similar
Davies and al	1989-2001	28	469	Age, comorbidities	similar	similar	ND
De Jongue and al	ND	21	136	ND	similar	similar	similar
Duman and al.	ND	34	82	No adjustment	similar	similar	higher
Sasal and al.	1989-1996	42	43	Age, DM	lower	lower	similar

Only few studies

Small sample size (<100)

Populations not always « well » matched

→ No proven superiority of one modality over the other

→ No reason for under-use of PD

..... And in the RDPLF ?

Mujais S. KI 2006

Davies SJ. PDI 2001

De Jonge H. PDI 2004

Duman S. Int Urol Nephrol 2004

Sasal J. PDI 2001



Methods

Set-up in 1986 in France
>80% of all PD patients are registered
Data updated / 3 months

Retrospective multicentre study
All french incident PD patients (> 18 years)
between 2002 January and 2012 December

328 started after KT failure
(Tx group)

656 never transplanted
(Control group)

Matching:
Age and Gender
Period of PD start

Methods



Extracted covariates :

- Age
- Gender
- DM
- Charlson Comorbidity Index
- PD modality 3 months after start (APD/CAPD)
- Centre size (considering number of incident PD patients/centre/year)

- Peritonitis episodes
- Causes of transfer to HD

- Follow up until 2014 December
- OR according to: Death / Kidney transplantation / Recovery / transfert out-unknown

Results

	Tx Group (n=328)	Control Group (n=656)	p
Patient's characteristics			
Median age (years)	50.7 *19,5-82,6+	50.8 *18.2-91.4+	0.9
Gender: Male , n (%)	166 (50.6%)	341 (52%)	0.7
Diabetes mellitus, n (%)	45 (13.7%)	162 (24.7%)	0.0001
Median Charlson Comorbidity Index	4 *3-11+	4 *3-14+	0.05
PD modality			
APD, n (%)	213 (64.9%)	300 (45.7%)	<0.0001
Assisted PD, n (%)	35 (10.7%)	146 (22.3%)	<0.0001
PD period:			
1st period: 01/2002 to mid 06/2007	130 (39.6%)	217 (33.1%)	0.05
2nd period: mid 06/2007 to 12/2012	198 (60.4%)	439 (66.9%)	0.05
Center size *, n (%)			
<10 patients (80 centres)	139 (42.4%)	349 (53.2%)	0.002
10 to 20 patients (26 centres)	141 (43%)	284 (43.3%)	0.9
>20 patients (4 centres)	48 (14.6%)	23 (3.5%)	<0.0001



Baseline patients characteristics

Results

	Tx Group (n=328)	Control Group (n=656)	p
PD duration (months)	17 *14-20+	21 *19-23+	0.004
Final outcomes n (%)			
Ongoing PD	43 (13%)	81 (12.4%)	0.8
Death	33 (10.1%)	82 (12.5%)	0.3
Transfer to HD	145 (44.2%)	198 (30.2%)	<0.0001
Transplantation	96 (29.2%)	260 (39.6%)	0.002
Others *	11 (3.5%)	35 (5.3%)	0.2
Episode of peritonitis n (%)			
Patients with at least 1 episode of peritonitis	143 (43.6%)	263 (40.1%)	0.3
1 episode of peritonitis	89 (27.2%)	144 (22.1%)	0.2
2 episodes of peritonitis	32 (9.7%)	66 (10%)	0.6
≥ 3 episodes of peritonitis	22 (6.7%)	53 (8%)	0.3

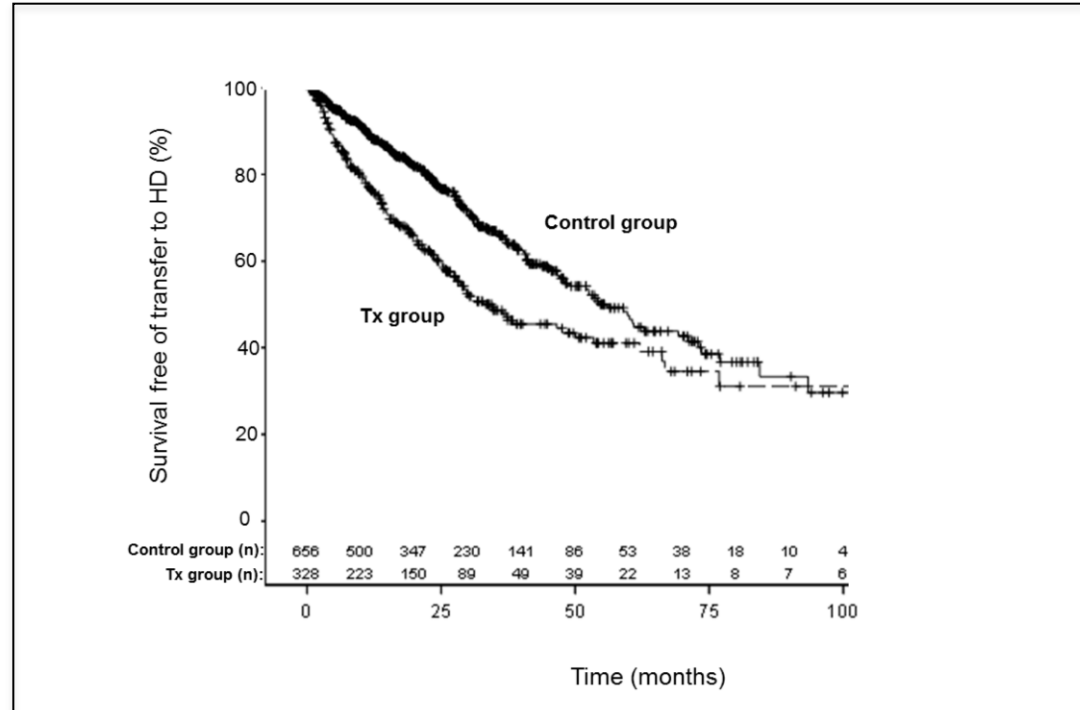


Follow -up

Results

**Patients in Tx group experienced a higher technique failure:
2 years-survival free of transfer to HD
59% in Tx group vs 77.7% in Control group (p<0.0001)**

**Death censored
PD technique survival**



KM analysis (Cox model)

Results

KM method overestimates the probability of an event of interest when there are competing events (death / KT)

		COX MODEL						
		Univariate analysis			Multivariate analysis			
		HR	95% CI	p	HR	95% CI	p	
Age (years)		0.99	0.98-0.99	0.0003	0.99	0.98-0.99	0.03	✓
Male gender	No	1	1.09-1.67	0.006	1	1.06-1.65	0.01	✓
	Yes	1.35			1.33			
Charlson Comorbidity Index		0.94	0.88-1	0.05	1.01	0.94-1.1	0.75	
Diabetes mellitus	No	1	0.81-1.32	0.81				
	Yes	1.03						
Kidney transplant failure	No	1	1.34-2.08	<0.0001	1	1.3-2.02	<0.0001	✓
	Yes	1.67			1.62			
PD modality	CAPD	1	0.92-1.44	0.22				
	APD	1.15						
Assisted PD	No	1	0.47-0.83	0.002	1	0.55-1.06	0.11	
	Yes	0.62			0.76			
Peritonitis episode	No	1	0.7-1.07	0.17	1	0.69-1.06	0.15	
	Yes	0.86			0.85			
Centre size (<10 vs ≥10 new patients/year)	<10	1	0.76-1.16	0.53				
	≥10	0.93						
Period of the study	second vs first	0.99	0.79-1.24	0.92				

Death censored PD technique survival Multivariate analysis

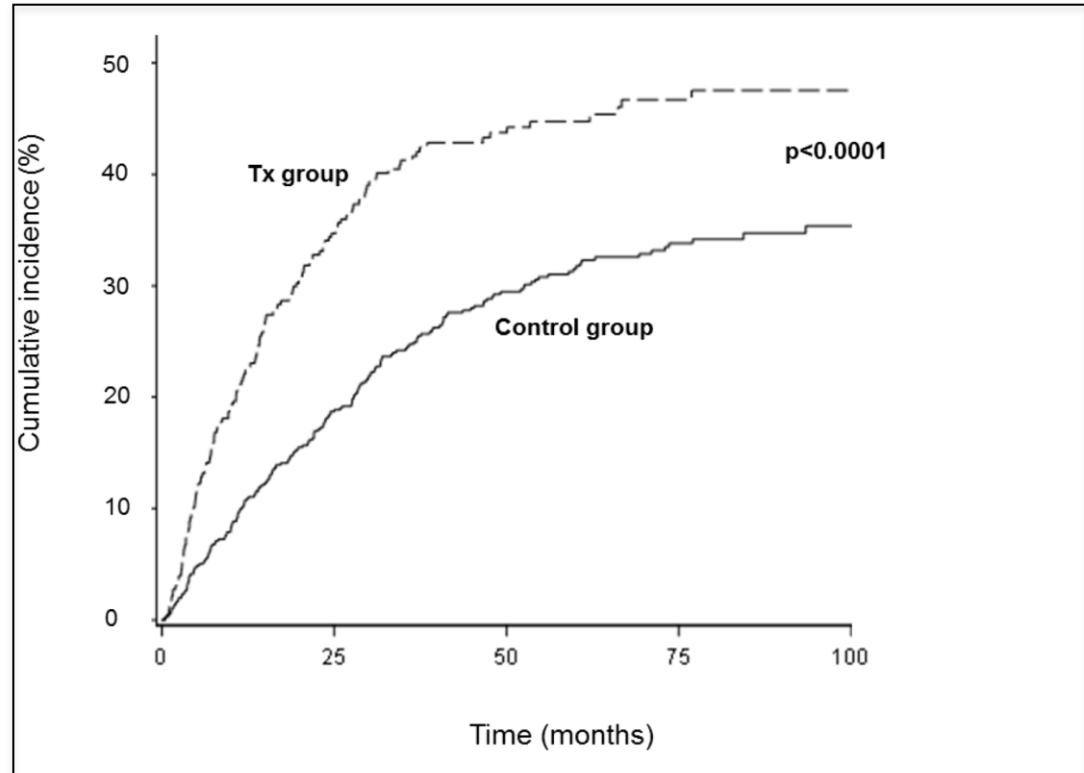
Results

Death censored PD technique survival Competing risk analysis

		FINE and GRAY MODEL					
		Univariate analysis			Multivariate analysis		
		HR	95% CI	p	HR	95% CI	p
Age (years)		0.99	0.99-1	0.1	0.99	0.99-1	0.22
Male gender	Yes	1	0.98-1.5	0.07	1	0.97-1.49	0.09
	No	1.22			1.2		
Charlson Comorbidity Index		0.99	0.94-1.05	0.78			
Diabetes mellitus	No	1	0.89-1.46	0.29			
	Yes	1.14					
Kidney transplant failure	No	1	1.38-2.12	<0.0001	1	1.35-2.08	<0.0001
	Yes	1.71			1.68		
PD modality	CAPD	1	0.85-1.33	0.6			
	APD	1.06					
Assisted PD	No	1	0.55-0.99	0.04	1	0.64-1.2	0.4
	Yes	0.74			0.87		
Peritonitis episode	No	1	1.11-1.69	0.003 ✓	1	1.12-1.71	0.002 ✓
	Yes	1.38			1.38		
Centre size (<10 vs ≥10 new patients/year)	<10	1	0.75-1.15	0.49			
	≥10	0.93					
Period of the study	second vs first	0.97	0.78-1.2	0.8			

Results

Death censored
PD technique survival
Competing risk analysis



Cumulative incidence function (Fine and Gray model)

Results

Causes of transfer to HD

	Tx Group (n=145)	Control Group (n=198)	p
Ultrafiltration and/or adequacy failure	67 (47%)	80 (40.4%)	0.3
Ultrafiltration failure	14 (9.8%)	28 (14.2%)	0.09
Adequacy failure	53 (37.2%)	52 (26.4%)	0.09
Peritonitis	24 (16.8%)	33 (16.7%)	0.9
Malnutrition	4 (2.8%)	3 (1.5%)	0.5
Causes related to PD*	33 (23.5%)	51 (35.9%)	0.6
Causes unrelated to PD	15 (10.5%)	30 (15.2%)	0.2

*catheter dysfunction / patient burn-out / inability to do PD / ESP

Discussion

We report in a large French national cohort, that patients with failed transplant as cause of ESRD have significant lower PD technique survival rate

Nevertheless, patients' survival and risk of peritonitis were not different

METHOD

Association between PD technique failure and failed transplantation before PD start does not mean causality

Interpretation is obviously critically dependent on the choice of the control group

Strength of our study :

- Nationwide study (no centre/practice effect)
- Control group matching: no difference in term of comorbidities (except DM)
- Matching on access to Kidney Transplantation
 - would have accentuated results ?

Discussion

We report in a large French national cohort, that patients with failed transplant as cause of ESRD have significant lower PD technique survival rate

Nevertheless, patients' survival and risk of peritonitis were not different

RESULTS

We observed a significant higher rate of PD technique failure in Tx group as Sasal and al. (PDI 2001) in contradiction with results of Mujais and al. (KI 2006)

- In multivariate analysis: No “centre size” effect
- Cox model vs Competing risk model

Discussion

We report in a large French national cohort, that patients with failed transplant as cause of ESRD have significant lower PD technique survival rate

Nevertheless, patients' survival and risk of peritonitis were not different

RESULTS

Failed transplant before PD start was not associated with a higher risk of peritonitis in our study.

Immunosuppression regimen ? (no data)

Peritonitis is widely recognized as affecting PD patients/technique survival and mortality

not a surprise ... but only seen with Competing risk model !

Discussion

We report in a large French national cohort, that patients with failed transplant as cause of ESRD have significant lower PD technique survival rate

Nevertheless, patients' survival and risk of peritonitis were not different

LIMITATIONS

No data about :

Dialysis period before Kidney Transplantation

Transplant-related parameters: immunosuppressive therapy management, need for transplantectomy ...

Monitoring of clinical and adequacy parameters: UF rate, RRF, weekly Kt/V urea, PET test results ...

→ Impact on PD technique failure ?

Conclusions

PD is a suitable method for failed kidney transplant patients and can be most commonly used

Patients' survival and peritonitis rate were similar

We observed higher technique PD failure among patients with ESRD due to transplant failure also influenced by peritonitis experienced during PD therapy

- Need further investigations to explain mechanisms involved**
- Needed for better characterization of PD patients starting after kidney transplant failure and to help nephrologists in the selection and medical care of these patients**