



# Comparison of Kidney Transplantation Results From the Same Deceased Donor Between Patients With the First Transplantation and Retransplanted Patients

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## ABSTRACT

**Background.** It has been determined that there are about 25% patients with renal allograft failure on the waiting lists.

**Methods.** We analyzed 406 patients who received a kidney graft from 2013 to 2015 in a single center. The analysis resulted in 33 pairs of patients: for one recipient in the pair it was the first transplantation and for the other it was the second or a subsequent one. Graft and patient survival, graft function, delayed graft function episodes, primary nonfunction, and acute rejection episodes were analyzed to assess the outcome of kidney retransplantation. The follow-up period was 2 years.

Delayed graft function was observed in both groups ( $P = .3303$ ).

**Results.** Although in the second group there were twice as many episodes of acute rejection than in the first group (8 to 4), the results are not statistically significant ( $P = .1420$ ). Primary graft dysfunction was observed only in the second group. Five patients who had lost their kidney graft during the follow-up period were observed in the second group. The probability of graft loss in the second group was as follows: 3% on the day of the transplantation, 12% after 3 months, and 15% after 13 months. All of the patients survived during the 2-year follow-up period. A similar estimated glomerular filtration rate was observed in dialysis time in both groups.

**Conclusion.** There are no statistically significant differences in kidney graft function between patients with the first transplantation and those with the repeat one. Good kidney transplantation results are attainable in both groups. It seems that retransplantation is the best treatment option for patients with primary graft failure.

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**K**IDNEY transplantation is the best-known method of treating end-stage renal disease.

Transplantation not only prolongs a patient's life, compared with patients remaining on a chronic dialysis regimen, but also allows for a return to normal life. Graft and patient survival has increased during the past decades because of the fast and dynamic development of transplant medicine. Nevertheless, chronic rejection remains a problem, and a growing number of patients with failed kidney transplants are returning to a dialysis regimen or undergoing retransplantation. It has been determined that about 25% patients on the waiting lists are patients with renal allograft failure. It is believed that repeat transplantation confers a better survival advantage to patients over dialysis.

## PATIENTS AND METHODS

We analyzed 406 patients who received a kidney graft from 2013 to 2015 in a single center. Pairs of patients were included in the analysis: for one recipient in the pair it was the first transplantation and for the other it was the second or a subsequent one. For both primary and secondary recipients, the donor was the same. Analysis

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**Table 1. Descriptive Statistics**

	n	Mean	Median	Dispersion	Variance	SD	CV	Skewness	Kurtosis
Group 1									
Age	33	47.697	50.000	50.000	198.9	14.1034	29.56871	-0.263198	-1.12250
BMI	33	24.241	23.500	15.350	16.8	4.0997	16.91252	0.384271	-0.55252
WIT 2	33	38.727	36.000	78.000	230.3	15.1746	39.18312	2.085674	5.90295
CIT	23	1292.435	1087.000	1570.000	236077.2	485.8777	37.59398	0.292088	-1.36184
HLA MM	33	2.242	2.000	3.000	0.8	0.9024	40.24385	0.569267	-0.20512
Dialyses (mo)	33	23.939	20.000	120.000	473.6	21.7628	90.90807	2.824005	11.39727
Group 2									
Age	33	43.576	43.000	42.000	135.1	11.6217	26.67015	0.057334	-1.08328
BMI	33	22.828	21.450	14.130	14.8	3.8432	16.83543	0.573597	-0.89740
WIT 2	33	37.182	34.000	40.000	90.0	9.4883	25.51874	1.207803	1.32600
CIT	24	1324.17	1251.500	1680.000	259908.2	509.8119	38.49332	0.318839	-1.04103
HLA MM	33	2.121	2.000	4.000	1.0	1.0234	48.24602	0.488938	-0.02434
Dialyses (mo)	24	54.917	48.000	144.00	1569.7	39.6198	72.14539	0.980152	0.10508

Abbreviations: BMI, body mass index; CIT, cold ischemia time; HLA MM, HLA mismatches; WIT, warm ischemia time.

**Table 2. Descriptive Analysis**

	Group 1	Group 2
Sex, male	21	23
Primary kidney failure		
Glomerulonephritis	13	11
Diabetic nephropathy	2	3
Polycystic kidney disease	5	1
Unknown	3	4
Hypertensive nephropathy	2	2
Reflux nephropathy	2	3
Obstructive nephropathy	1	1
IgA nephropathy	1	3
Urinary tract anomaly	1	2
Systematic vasculitis	2	1
Cancer	1	0
Other	0	2
Dialysis type		
Preemptive	2	1
Hemodialyses	26	29
Peritoneal	3	3
Both	2	0
Induction immunosuppressive therapy		
None	17	4
Basiliximab	16	22
Thymoglobulin	0	7
Donor characteristics		
Sex mismatch	19	15
Panel reactive antibody		
Maximum (%)	6.45 (0-83)	18.18 (0-100)
Last (%)	2.81 (0-83)	11.27 (0-93)

**Table 3. Kidney Graft Function in Groups**

	Group 1	Group 2	P Value
DGF	13	15	.3303
HD post Tx (mean)	0.79	2.03	.151
Acute rejection	4	8	.1420
PGD	0	4	.121
Graft failure	0	5	.063

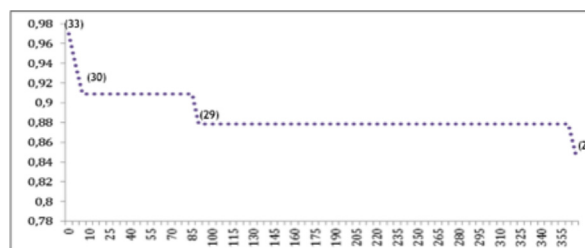
Abbreviations: AR, acute rejection; DGF, delayed graft function; HD, hemodialysis; PGD, primary graft dysfunction; Tx, transplantation.

resulted in 33 pairs, in which the control group consisted of primary graft recipients (group 1).

Graft and patient survival, graft function, delayed graft function episodes, primary nonfunction, and acute rejection episodes were analyzed to assess the outcome of kidney retransplantation. Group 1 consisted of primary kidney graft recipients and group 2 of patients who received a kidney for the second or the third time. Medical records and post-transplant data were analyzed. Graft loss was defined as a graftectomy or a return to dialysis. Delayed graft function was defined as a failure to decrease serum creatinine within 72 hours or a requirement for dialysis within the first week after transplantation. For the majority of the patients a standard immunosuppressive therapy was a combination induction therapy with prednisone, mycophenolate mofetil, and a calcineurin inhibitor. The standard initial dosage was 0.05 mg/kg of body mass for calcineurin inhibitor and 1000 mg of mycophenolate mofetil. A 250-mg dose of methylprednisolone was administered during vascular anastomosis. Later, the dosages of the calcineurin inhibitor were adjusted so that serum concentration was 12-14 ng/mL. Some of the patients (21) did not fulfill requirements for treatment with induction therapy. The follow-up period was 2 years.

**RESULTS**

Patients in the second group were younger (Table 1). The majority of the recipients had a body mass index (BMI) within the normal range; however, primary recipients had a slightly higher BMI. Group 2 had longer cold ischemia time (CIT); however times of vascular anastomosis (warm ischemia time [WIT] 2) were almost the same. The number



**Fig 1.** Graft loss in the secondary group in time (Kaplan-Meier).

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