

Long-term Clinical Outcomes of Kidney Re-transplantation

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ABSTRACT

Background. Kidney re-transplantation is commonly considered to have a higher immunological risk than first kidney transplantation. Because of the organ shortage and increasing waiting lists, long-term outcomes of kidney re-transplantation are being studied. However, reports of re-transplantation outcomes are not common. We have reported our 30 years of experience with second kidney transplantations.

Methods. Of 1210 kidney transplantations between November 1982 and August 2016 performed in our hospital, 105 were second kidney transplantations (2nd KT). Living donor KT was 44; deceased donor KT was 61.

Results. Patient survival rates at 1, 5, and 10 years were 100%, 97.2%, and 90.7%, and graft survival rates were 97.0%, 94.6%, and 71.5%, respectively. The leading cause of graft failure in the 2nd KT was chronic rejection (60%). In addition, induction immunosuppressant, maintenance immunosuppressant, delayed graft function, and graft survival time at the 1st KT had a significant impact on graft survival time at the 2nd KT.

Conclusions. Reasonable results in both patient survival and graft survival rates were found in the 2nd KT. Careful monitoring of immunologic risk is needed.

KIDNEY transplantation (KT) is the treatment of choice for end-stage renal disease. However, although outcomes after transplantation have improved over the years, graft loss is a problem ultimately confronted by many recipients [1].

For such patients, re-transplantation often provides the best chance for survival and good health [1]. Kidney re-transplantation is commonly considered to have a higher immunological risk than first KT [2]. Therefore, long-term outcomes of kidney re-transplantation are being studied.

However, reports of re-transplantation outcomes are not common. We have reported our 30 years of experience with second KTs.

METHODS

All kidney re-transplantations performed at our hospital between November 1982 and August 2016 were retrospectively analyzed. Of 1210 kidney transplantations, 105 were second KTs. The number of KTs from living donors was 44; from deceased donors, 61. Re-transplantation includes only recipients of second KT. Recipients of a third KT, ABO-incompatible KT recipients, and recipients <18

years old excluded. The following recipient variables were assessed: recipient age at transplantation, sex, cause of end-stage renal disease, human leukocyte antigen (HLA) profile, and number of HLA mismatches. Donor variables included donor age at donation, sex, and HLA profile. Transplantation variables included type of induction therapy, immediate graft function, presence of delayed graft function (DGF), and initial immunosuppressive regimen. DGF was defined as a failure to decrease the serum creatinine within 72 hours or a requirement for dialysis within the first week after transplantation. Graft loss was defined as a return to dialysis and graft removal.

Baseline characteristics were described by use of mean value ± standard deviation. Patient survival and graft survival rates at 1, 3, 5, and 10 years were evaluated by use of the Kaplan-Meier method.

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Table 1. Baseline Demographic Characteristics of Kidney Re-Transplant Recipients

Variables	All Patients (n = 105)
Age, years	42.5 ± 10.2
Sex, male:female, n (%)	71 (67.6):34 (32.4)
Donor type (living:deceased), n (%)	44 (42):61 (58)
RRT before KT, n (%)	
Hemodialysis	87 (82.9)
Peritoneal dialysis	10 (9.5)
Preemptive	8 (7.6)
Duration of RRT, months	59.6 ± 63.0
Cause of end-stage renal disease, n (%)	
Glomerulonephritis	96 (91.4)
Diabetes mellitus	6 (5.7)
Others	3 (2.9)
HLA mismatch number	3.7 ± 1.5
Induction immunosuppressant, n (%)	
Basiliximab	57 (54.3)
Anti-thymocyte globulin	15 (14.3)
None	32 (30.5)
Main immunosuppressant, n (%)	
Tacrolimus	89 (84.8)
Cyclosporine	13 (12.4)
Others	3 (2.8)
Cold ischemic time, minutes	175.6 ± 187.1
Delayed recovery of graft function, n (%)	33 (31.4)
Biopsy-proven acute rejection, n (%)	30 (28.6)
First graft survival time, months	81.4 ± 63.1
Follow-up duration, months	108.5 ± 80.6

Values are expressed as mean ± SD, n (%).
Abbreviations: KT, kidney transplantation; RRT, renal replacement therapy; HLA, human leukocyte antigen.

RESULTS

Baseline characteristics of kidney re-transplantation recipients are shown in Table 1. Among this group, mean

recipient age was 42 years. The predominant cause of end-stage renal disease was glomerulonephritis. Seventy percent of re-transplantation recipients received induction therapy with either basiliximab or anti-thymocyte globulin. Thirty-three percent of re-transplantation recipients underwent delayed graft function and 30% of recipients underwent acute rejection. Mean follow-up duration was 9 years. Figure 1 shows the patient and graft survival rates. Patient survival rates in re-transplantation were 100%, 97.2%, and 90.7% at 1, 5, and 10 years, respectively; graft survival rates were 97%, 94.6%, and 71.5%, respectively. We compared clinical and laboratory parameters between the graft failure group and the non-graft failure group in Table 2. Mean recipient age was younger in the graft failure group compared with the non-graft failure group. Fifty percent of the graft failure group received induction therapy, whereas the non-graft failure group received induction therapy approximately 80%. Among 50% of the graft failure group, 1 patient did not receive anti-thymocyte globulin therapy, whereas 18% received anti-thymocyte globulin in the non-graft failure group. In the graft failure group, 60% received an initial immunosuppressive regimen including tacrolimus, and 94% of the non-graft failure group received a tacrolimus-based regimen. Graft survival time during the first transplantation period was 45 months versus 96 months. In the graft failure group, DGF and acute rejection had significantly higher incidence. Infectious complications consist of cytomegalovirus infection and other viral infections, bacterial pneumonia, and allo-graft pyelonephritis. Two graft recipients had pulmonary tuberculosis. Another 2 graft recipients had esophageal candidiasis. Thirteen recipients were diagnosed as having post-transplantation DM. Surgical complications comprised hydronephrosis, postoperative hematoma, and

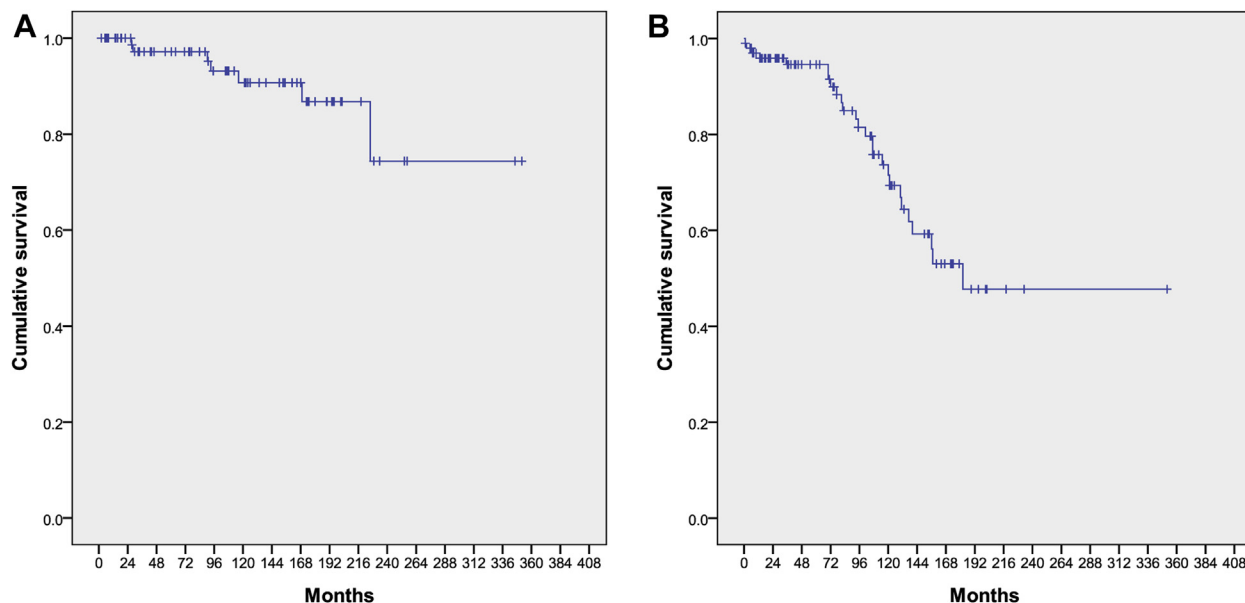


Fig 1. (A) Cumulative patient and (B) graft survival rates in kidney re-transplantation recipients.

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