

Successful 4th Kidney Transplantation

A Case Report From Iran

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Kidney transplantation is generally considered the best option for most patients with end-stage renal disease requiring renal replacement therapy, even for patients with graft failure. Here, we describe a case of a 49-year-old man who received his 1st kidney transplant the United Kingdom from his brother when he was 18 years old in. Thirty-one year after the first transplant, he underwent successful 4th living-unrelated kidney transplantation with no serious complications at our transplant center. He continued to have excellent allograft function and his latest serum creatinine 33 months after his 4th transplant was 1.2 mg/dL. To our knowledge, this is the first case of 4th kidney transplantation from Iran.

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INTRODUCTION

Most of patients returned to hemodialysis after losing a kidney allograft ask their physicians whether they can have a chance to receive another kidney and whether its outcome is desirable as a first kidney transplant. Transplantation is generally considered the best option for most patients with end-stage renal disease requiring renal replacement therapy,¹ even for patients with graft failure.² The advantages of transplantation are greater for younger patients and in whom preemptively or shortly after the need for renal replacement therapy has arisen.² In addition, the Organ Procurement and Transplantation Network/United Network for Organ Sharing reported that graft survival is not significantly different for the first kidney transplantation versus repeat kidney transplantation.³ It is important to be noted that after kidney allograft failure and restarting dialysis, the mortality will be higher in comparison with dialysis patients who have not been transplanted.⁴

Here, we present the first report of successful 4th kidney retransplantation in Iran that has been done in Baqiyatallah hospital in June of 2009.

CASE REPORT

A 49-year-old Iranian man, who lived in England, received his 4th kidney transplant from an unrelated kidney donor, a 23-year-old man, on June 10th, 2009. He had been diagnosed with end-stage renal disease when he was 17 years old, but the primary disease was unknown. He had been initially on hemodialysis. He received his first kidney transplant to the right iliac fossa from his brother in the United kingdom, when he was 18 years of age. After 5 years, his first transplant failed due to chronic allograft dysfunction and then he returned to hemodialysis for 2 years. Subsequently, he received his second transplant to the left side from a deceased donor, but lost it because of infection, and the graft was removed immediately and another course of hemodialysis was started and continued for 4 years. Then, he received third transplant to the right iliac fossa from his another brother, which was functioning for 15 years, but gradually, its function dropped and he was on hemodialysis for 6 years. He came back to Iran and was referred to our transplant center for the fourth kidney transplant after the failure of the third donated organ he received.

On computed tomographic angiography, the distal end of the right internal iliac artery was obliterated. With a right pararectus incision (scar of previous incision) the skin and fascia was opened and the previous allograft was removed and vascular anastomosis was done (end to end to the internal iliac for the artery and end to side to the external iliac for the vein). The ureter was subsequently anastomosed to the bladder with modified Lich technique.

After the transplantation, our patient received rabbit anti-human thymocyte globulin, tacrolimus, mycophenolate mofetile, and prednisolone. He had excellent initial function and was discharged after 15 days from hospital with a serum creatinine of 1.2 mg/dL. He had no episodes of rejection. The posttransplantation course was complicated by lymphocele that was treated conservatively with long-term Foley catheter insertion for about 4 months. He continued to have excellent allograft function and his latest serum creatinine 33 months after his fourth transplant was 1.2 mg/dL.

DISCUSSION

We describe, to our knowledge, the first case of the 4th kidney transplantation in Iran that was functioning for 3 years (still functioning on the latest visit) without any serious surgical or medical side effects, except for a lymphocele formation that was managed successfully with conservative treatment.

Retransplantation is often requested by patients whose kidney allografts fail, mainly due to a better quality of life and favorable short-term and long-term outcomes from retransplantation.⁵ It has been reported that the 1-, 3-, and 5-year graft survival rates are not significantly different between the first kidney transplantation and repeat kidney transplantation.³ However, some investigators reported a lower graft survival for retransplantation, especially for the third and fourth retransplantations.^{5,6} The overall short-term outcome of retransplantation has been reported to be desirable.^{5,7} Although, mortality rate in patients with failed allograft and returning to dialysis is assumed to be equal to dialysis patients,⁸ patient survival may be significantly increased in the case of retransplantation,⁹ especially for grafts from living donors.¹⁰

Some surgeons prefer to perform orthotopic transplantation (nephrectomy of the native kidney and anastomosis of graft vessels and ureter to

native renal vessels and ureter)^{11, 12}; however, we believe that our method is better because incision is smaller, operative time is less with decreased cold ischemic time, and anastomosis of vascular stumps is easier. Thus, we recommend this technique for retransplantation. Although there is no limitation about the number of retransplant surgeries, vascular anatomy can restrict it; therefore, evaluation of vascular anatomy of the recipients prior to retransplantation can inform us about the presence of proper anastomotic site, stenosis, or other vascular abnormalities.²

The best time for evaluating recipient and potential donors for retransplantation is when the glomerular filtration rate falls to less than 20 mL/min and before initiation of symptomatic end-stage renal disease—the same as for the first transplantation.^{13,14} Routine evaluations before retransplantation are the same as those for the first transplantation. It is important to note that early graft loss can be due to many factors such as acute rejection and various glomerulonephritis, thrombotic microangiopathy, or vascular events that can be prevented by precise assessment.¹⁵

Presence of antibodies is a great apprehension before retransplantation and so it is very important to evaluate the recipients. Presence of these antibodies is the same in the recipients from living donor and deceased donor.¹⁶ Because these allo-antibodies may decrease graft survival significantly,¹⁷ especially anti-human leukocyte antigen-DR,¹⁸⁻²⁰ evaluation of recipient antibodies with highly sensitive assays should result in avoidance of regrafting from suspicious donors or using desensitization methods.¹⁶ Highly sensitized patients to human leukocyte antigen of all potential living donors should be desensitized with high-dose gammaglobulin or low-dose gammaglobulin with plasmapheresis before retransplantation.^{21,22}

Another important point for retransplantation is using immunosuppressive agents at the time of evaluating for retransplantation. Immunosuppressive induction with potent agents should be used in retransplantation, as anti-human thymocyte globulin used for our patients. These patients have a higher risk for acute rejection and taking high dose immunosuppressive agents, and so they receive more potent agents in comparison with those with a first allograft. The appropriate duration and dosage and time interval between courses of potent

immunosuppression is not clear yet.

To the best of our knowledge, our patient is the first case report of the successful 4th kidney retransplantation from Iran. We recommend retransplantation in routine manner in the iliac fossa, because of smaller incision, shorter operation time, easier vascular anastomosis. Retransplantation may have complications similar to those of a primary transplantation that can be managed with same protocols. It is well known that retransplantation is the best option for patients with previous graft loss and can improve survival and quality of life of patients significantly. It does not have more complications in comparison with the first transplantation. Hence, it can be advisable for patients to perform multiple retransplantation without any limitation after appropriate evaluation.

CONFLICT OF INTEREST

None declared.

REFERENCES

- Einollahi B. Iranian experience with the non-related renal transplantation. *Saudi J Kidney Dis Transpl.* 2004;15:421-8.
- Koch MJ. Considerations in retransplantation of the failed renal allograft recipient. *Adv Chronic Kidney Dis.* 2006;13:18-28.
- 2004 Annual Report of the US Organ Procurement and Transplantation Network and the Scientific Registry of Transplant Recipients: Transplant Data 1994-2003. Department of Health and Human Services, Health Resources and Services Administration, Healthcare Systems Bureau, Division of Transplantation, Rockville, MD; United Network for Organ Sharing, Richmond, VA; University Renal Research and Education Association, Ann Arbor, MI.
- Kaplan B, Meier-Kriesche HU. Death after graft loss: an important late study endpoint in kidney transplantation. *Am J Transplant.* 2002;2:970-4.
- Pour-Reza-Gholi F, Nafar M, Saeedinia A, et al. Kidney retransplantation in comparison with first kidney transplantation. *Transplant Proc.* 2005;37:2962-4.
- Gutierrez Banos JL, Rodrigo Calabia E, Rebollo Rodrigo MH, et al. [Surgical aspects in the third and fourth kidney retransplant]. *Actas Urol Esp.* 2005;29:212-6. Spanish.
- Mouquet C, Benalia H, Chartier-Kastler E, et al. [Renal retransplantation in adults. Comparative prognostic study]. *Prog Urol.* 1999;9:239-43. French.
- Rao PS, Schaubel DE, Saran R. Impact of graft failure on patient survival on dialysis: a comparison of transplant-naïve and post-graft failure mortality rates. *Nephrol Dial Transplant.* 2005;20:387-91.
- Ojo A, Wolfe RA, Agodoa LY, et al. Prognosis after primary renal transplant failure and the beneficial effects of repeat transplantation: multivariate analyses from the United States Renal Data System. *Transplantation.* 1998;66:1651-9.
- Magee JC, Barr ML, Basadonna GP, et al. Repeat organ transplantation in the United States, 1996-2005. *Am J Transplant.* 2007;7:1424-33.
- Musquera M, Peri LL, Alvarez-Vijande R, Oppenheimer F, Gil-Vernet JM, Alcaraz A. Orthotopic kidney transplantation: an alternative surgical technique in selected patients. *Eur Urol.* 2010;58:927-33.
- Paduch DA, Barry JM, Arsanjani A, Lemmers MJ. Indication, surgical technique and outcome of orthotopic renal transplantation. *J Urol.* 2001;166:1647-50.
- Meier-Kriesche HU, Port FK, Ojo AO, et al. Effect of waiting time on renal transplant outcome. *Kidney Int.* 2000;58:1311-7.
- Meier-Kriesche HU, Kaplan B. Waiting time on dialysis as the strongest modifiable risk factor for renal transplant outcomes: a paired donor kidney analysis. *Transplantation.* 2002;74:1377-81.
- Stephanian E, Matas AJ, Mauer SM, et al. Recurrence of disease in patients retransplanted for focal segmental glomerulosclerosis. *Transplantation.* 1992;53:755-7.
- Farney AC, Matas AJ, Noreen HJ, et al. Does re-exposure to mismatched HLA antigens decrease renal re-transplant allograft survival? *Clin Transplant.* 1996;10:147-56.
- Muller-Steinhardt M, Fricke L, Kirchner H, Hoyer J, Kluter H. Monitoring of anti-HLA class I and II antibodies by flow cytometry in patients after first cadaveric kidney transplantation. *Clin Transplant.* 2000;14:85-9.
- Thompson JS, Thacker LR, Krishnan G. Human leukocyte antigens DR and AB and kidney retransplantation. *Transplantation.* 2003;75:718-23.
- Cecka JM, Terasaki PI. Repeating HLA antigen mismatches in renal retransplants--a second class mistake? *Transplantation.* 1994;57:515-9.
- Opelz G. Repeated HLA mismatches increase the failure rate of second kidney transplants. Collaborative Transplant Study. *Transplant Proc.* 1995;27:658-9.
- Jordan SC, Vo A, Bunnapradist S, et al. Intravenous immune globulin treatment inhibits crossmatch positivity and allows for successful transplantation of incompatible organs in living-donor and cadaver recipients. *Transplantation.* 2003;76:631-6.
- Montgomery RA, Zachary AA, Racusen LC, et al. Plasmapheresis and intravenous immune globulin provides effective rescue therapy for refractory humoral rejection and allows kidneys to be successfully transplanted into cross-match-positive recipients. *Transplantation.* 2000;70:887-95.

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