

# Outcome of Spousal versus Related Donor Renal Transplantation-A Retrospective Comparative Study

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**Abstract:** ***Introduction:** Kidney transplantation is the treatment of choice for end stage renal disease (ESRD). Living donor transplants contribute to majority of kidney transplants in India. **Objectives of the study:** To assess the graft outcomes of Spousal donor (SD) transplants and to compare that with those of Related Donor (RD) transplants. **Materials & methods:** Adults aged 18 years or more who underwent kidney transplantation from a SD or RD between January 2010 and October 2016 were included in the present study. Patients undergoing deceased were excluded from the study. Similarly, patients undergoing a second renal transplant, those with increased cold ischemia times (greater than 6 h), non-compliant with medications and those with no follow-up were excluded from the study. Outcome data at 6 months post-transplant was collected retrospectively from 2010 to 2016. **Results:** A total of 211 live related renal transplants were performed at our hospital during the study period. Among those with complete follow-up (n=100) SDs constituted 30% and remaining 70 percent were parents. The recipients in the SD group were significantly older than the RD group (mean age SD 42.2 ± 8.3 years, RD 30.0 ± 9.5 years; P < 0.0001). The donors in the SD group were significantly younger (mean age SD 35.6 ± 8.2 years, RD 45.2 ± 11.5 years; P < 0.0001). Acute rejection episodes were higher in the RD group as compared to the SD group (SD 16%, RD 28.3%; P = 0.01). Among SD group, rejection rates were lower in patients who received induction therapy as compared to those who did not; the difference however was not statistically significant (induction-12.3%, no-induction-18.8%; P = 0.28). There was no difference in the incidence of infective complications following transplant, between the two recipient groups. **Conclusions:** Outcomes of SD renal transplants are comparable to those of RD transplants. Better use of induction therapy helps in improving outcomes in these patients.*

**Keywords:** Biologically related donor, Kidney transplantation, Spousal donor

## 1. Introduction

Living donor transplants are the most commonly performed kidney transplants in India. In India, spousal donors (SDs) are important to fill the huge gap between the demand and availability of donors. However, outcomes of transplants from these “biologically unrelated” donors need to be well evaluated before they can be considered to be equal to living related donor (RD) transplants. This study was designed to assess the graft function and patient outcomes of SD transplants and to compare them with those of RD transplants.

## 2. Aims and Objectives

To assess the graft and patient outcomes of SD transplants and to compare them with those of RD transplants.

## 3. Methodology

Type of study : Retrospective study  
Duration of study : February 2010 to February 2016  
Sample size : 100  
Setting : Department of Urology and renal transplantation, Stanley medical college, Chennai

**Inclusion Criteria:** Adults aged 18 years or more who had renal transplantation from a SD or RD between January 2010 and October 2016 were included in the study

**Exclusion criteria:** Patients undergoing deceased (other than SD) transplantation were excluded from the study. Patients undergoing a second renal transplant, those with

longer cold ischemia times (more than 6 h), those non-compliant with medications postop and those lost to follow-up were also excluded from the study.

## 4. Procedure

The study was conducted after the approval of the protocol by the Hospital Ethics Committee. A total of 211 live related renal transplants were performed at our center during the study period. Amongst those for whom complete follow-up was documented (n=100) SDs constituted 30%. Parents constituted 70% of these donors. Data on graft function at 6 months post-transplant was collected from medical records (2010-2016).

### Pre-transplant evaluation and post-transplant management:

Basiliximab 20 mg intravenous (i.v.) was given 2 hour before SD transplantation and at fourth day post transplant. Maintenance immunosuppression was with oral calcineurin inhibitor (tacrolimus was used in all), mycophenolate mofetil (MMF) and Prednisolone. Tacrolimus and MMF were started one day before transplant. Delayed graft function was defined as the need of dialysis in the first week after transplant. Evaluation for rise in serum creatinine level post transplant included ultrasonography with doppler, serum Tacrolimus level and urine culture. If no obvious cause of graft dysfunction was identified, a graft biopsy was performed. Rejection was classified as per Banff 5 classification. Acute cellular rejection (ACR) was treated with three pulses of methyl prednisolone (500 mg each). In case of steroid resistance, ATG was administered (1 mg/kg/d pulses). Antibody mediated rejection (AMR) was treated

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with plasmapheresis (50 ml/kg/session) and IvIg (100 mg/kg after each PP).

## 5. Results

The recipients in the SD group were older than that of the RD group (mean  $42.2 \pm 8.3$  years, RD  $30.0 \pm 9.5$  years;  $P < 0.0001$ ). The donors in the SD group were younger (mean age SD  $35.6 \pm 8.2$  years, RD  $45.2 \pm 11.5$  years;  $P < 0.0001$ ). A significant number of patients in the SD group received induction than the RD group (SD,  $n = 65$ , 43.3%; RD,  $n = 20$ , 11.6%;  $P < 0.001$ ). Delayed graft function occurred in 4.6% of the recipients and was not significantly different in the SD and RD groups.

22.6% of patients had acute rejection episodes. About half of the rejection episodes in each group were acute cell mediated rejection. Most (80.8%) of the rejection episodes occurred within the first 14 days after transplant. Acute rejection rates were higher in the RD group as compared to the SD group (SD 16%, RD 28.3%;  $P = 0.01$ ). Among SD transplant recipients, rejection rates were lower in patients who were given induction therapy than those who did not receive induction. But the difference was not statistically significant (induction-12.3%, no-induction-18.8%;  $P = 0.28$ ).

Poor graft function, defined as serum creatinine  $>1.5$  mg/dl at the end of follow-up, occurred in more number of patients in the RD group compared to the SD group (12.3% vs. 2.8%;  $P = 0.001$ ). Percentage of patients with deranged graft function was less with the use of induction (induction-4.8%, no-induction-9.1%;  $P = 0.2$ ). But the differences were not significant statistically.

Bacterial infections were the most common infections with about 18% of recipients having a bacterial infection during the study period. Urinary tract infections were the commonest bacterial infections in both groups, followed by skin and respiratory tract infections.

## 6. Discussion

Kidney transplantation in India is regulated by the Transplantation of Human Organs and Tissues Act, 1994 and its amendments. As per this act SD is considered near relative, thereby making it much easier for spouses to donate organs than other biologically distant relatives as well as unrelated donors. This significantly increases the pool of available donors and makes SDs the largest donor group at many hospitals.

In the present study, recipients of grafts from RDs were found to have a higher rejection rate and poorer graft function at the end of follow-up as compared to those who received kidneys from SDs. This is in contrary to previous studies, where the incidence of an acute rejection is slightly more in SD transplants than RD transplants [1-8]

Overall patient survival at the end of follow-up was 97.8% in our study. Patient survival was similar in the two study groups. The results of our study are similar to the previous studies where patient survival is statistically similar in the spousal and related transplant recipient groups. [1-9]

## 7. Conclusions

Outcomes of SD renal transplants are similar to those of RD transplants in our institute. Better use of induction therapy helped in improving outcomes at our renal transplant program. The rejection rates were also not significantly different between SD and RD group of donors.

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