

IMMEDIATE OUTCOME AND ONE-YEAR GRAFT SURVIVAL RATE AFTER LIVE RELATED KIDNEY TRANSPLANTATION: EXPERIENCE IN A TERTIARY CARE HOSPITAL OF BANGLADESH

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Abstract

Background: Renal transplantation remains the treatment of choice for end-stage renal disease, as the procedure not only improves quality of life, but also markedly increases patients' survival rates. Organ and patient survival rates are important issues of interest post-transplantation. The aims of this study were to analyze the data for immediate post-procedure outcome and one-year graft survival after live related kidney transplantation.

Methods: A retrospective study was conducted in Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, Dhaka, Bangladesh between November 2004 and September 2019. Data for a total of 132 live related kidney transplant recipients were collected in pre-formed questionnaire from the hospital records.

Results: Total patients were 132 including 97 (73.5%) males. Mean age of recipients was 36.8±10.4 years. Mean post-transplantation hospital stay was 13.6±3.4 (range 9 to 30) days. During post-operative hospital stay, 6 (4.6%) patients required haemodialysis due to delayed graft function and high levels of serum creatinine. During discharge, 117 (88.6%) recipients had normal renal function (mean serum creatinine level 1.15±0.21 mg/dl) and 15 (11.4%) patients showed improvement in serum creatinine levels but did not reach normal value (mean serum creatinine levels 3.25±2.35 mg/dl). All patients were regularly followed-up in post-transplant clinic (3 patients did not complete 1 year) after transplantation. After the first year of kidney transplantation, patient and graft survival rates were 90.7% (117/129) and 82.9% (107/129) respectively.

Conclusions: Eighty-eight percent live related kidney transplant recipients had normal renal function immediate post-surgery and one-year graft survival rate was over eighty percent in this study.

Key words: Live related kidney transplant, graft survival, patient survival.

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Introduction

Chronic kidney disease (CKD) is a global public health problem. The prevalence of end-stage renal disease (ESRD) is increasing with increased life expectancy and raised prevalence of chronic diseases, such as diabetes mellitus and hypertension.¹ CKD is the 9th leading cause of death in the United States.² ESRD patients

need renal replacement therapy (RRT) for survival. Renal transplantation is the treatment of choice for ESRD which is a proven approach to improve quality of life and prolong life expectancy. Following a successful renal transplantation, recipients regain renal function, which typically reaches as high as 60% of donor's previous function after graft stabilization.³ In

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1954, the first successful kidney transplantation was done in identical twins at the Peter Bent Brigham Hospital in Boston by Surgeons Joseph E. Murray and John Hartwell Harrison, in collaboration with nephrologist John P. Merrill.⁴ Though kidney transplantation started in 1982 in Bangladesh⁵, till date, only limited numbers of centers including Bangabandhu Sheikh Mujib Medical University (BSMMU), National Institute of Kidney Diseases and Urology (NIKDU), Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, Kidney Foundation Hospital and Research Institute, CKD & Urology Hospital, perform it regularly and so far, a private center performed over 800 live related kidney transplantation (unpublished data); and overall, around 3000 kidney transplantation have been done. In 2004, the first live related donor renal transplant was conducted at Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital. To date, a total of 134 live related donor kidney transplantations are performed in this institute. As there was lack of data regarding the graft survival after live related kidney transplantation in different centres of Bangladesh, so, the aims of this study were to analyze the data for immediate post-procedure outcome and one-year graft survival after live related kidney transplantation in a tertiary care hospital of Bangladesh.

Methods

A retrospective study was conducted in BIRDEM General Hospital, Dhaka, Bangladesh between November 2004 and September 2019. After each transplant, all the data like medical information, pre and post operative clinical and biochemical parameter were stored with their informed written consent. After discharged of the recipient, post transplant follow-up was carried out in regular basis and the medical records were also kept. During this period, a total of 134 live related kidney transplant operations were attempted. In one patient, there was anastomotic failure and one patient died on 5th post-operative day because of renal vein thrombosis and sepsis. So, complete data of 132 live related kidney transplant recipients were collected in pre-formed questionnaire from the hospital records. All patients received methyl prednisolone followed by oral prednisolone, cyclosporine or tacrolimus and mycophenolatemofetil. Few patients received basiliximab as an induction therapy. Following transplantation, fluid replacement was started with normal or hypotonic saline based on

the serum electrolyte status and urine volume. All the patients are regularly followed-up in post-transplant clinic. During follow-up, patient’s vital parameter and routine investigations done. Statistical analyses of recorded data were performed by Statistical Package for the Social Sciences(SPSS)version 22 and results were expressed in mean value ± standard deviation and percentage, as appropriate.

Results

Total patients were 132 including 97 (73.5%) males and 35 (26.5%) females. Mean age of renal transplant recipients was 36.8±10.4 years and donors was 37.2±10.2 years. Most recipients (54, 40.9%) and donors (45, 33.6%) were in their 4th decades of life(Figures 1 and 2). Among the family members, siblings donated their organs in most of the cases [brothers, 45 (34.1%) and sisters, 23 (17.4%)] (Table I).

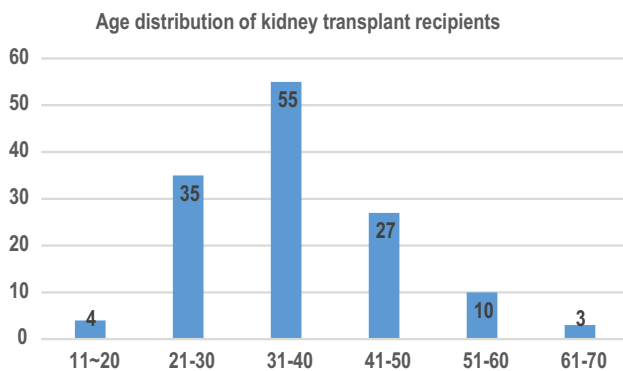


Fig.-1. Age distribution of kidney transplant recipients

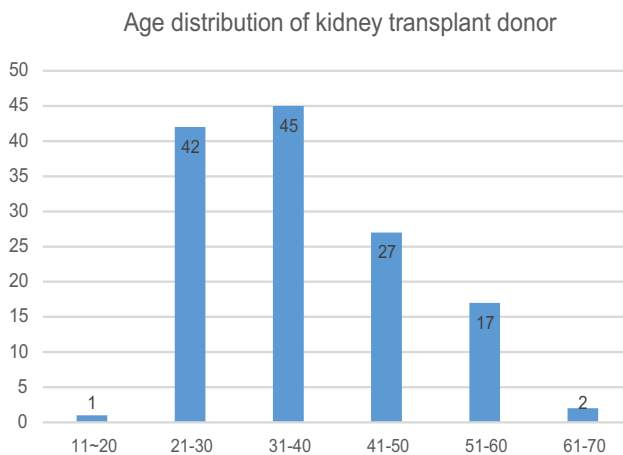


Fig.-2. Age distribution of kidney transplant donor

Table-I
Relationship between donors and renal transplant recipients (N=132)

Donor	Frequency	Percentage
Brother	45	34.1
Sister	23	17.4
Mother	26	19.7
Uncle	20	15.2
Father	3	2.3
Aunt	5	3.8
Wife	5	3.8
Son	3	2.3
Daughter	1	0.8
Cousin	1	0.8

Mean post-transplant hospital stay was 13.6±3.4 (range 9 to 30) days. During hospital stay, 6 (4.6%) patients required haemodialysis due to delayed graft function and high serum creatinine. During discharge, 117 (88.6%) recipients had normal renal function (mean serum creatinine 1.15±0.21 mg/dl) and 15 (11.4%) patients showed improvement in serum creatinine levels but did not reach normal value (mean serum creatinine 3.25±2.35 mg/dl).

All patients were regularly followed-up in post-transplant clinic (3 patients did not complete 1 year upto the study period) after transplantation. After the first year of kidney transplantation, patient and graft survival rates were 90.7% (117/129) and 82.9% (107/129) respectively.

Discussion

The outcome for kidney transplant recipients has markedly improved since its beginning. This improvement of outcome is due to various reasons: first, development of more improved selection criteria of recipients as well as donors; second, development of appropriate immunosuppressive protocol; third, discovery and usage of new and less toxic but efficient immunosuppressive drugs; fourth, introducing induction therapy; and lastly, awareness and development of management strategy about infections and other post-transplant complications of the recipients.⁶⁻¹³

Among the study population, males (97/132, 73.5%) were predominant recipients than females. Mean age of recipients and donors were almost similar and they were in their 4th decades of life. Regarding relation of donor with recipient, siblings were coming forward in

most of the cases. The results of sex, age and relation of donor with recipient were almost similar to other study in different countries including Pakistan.¹⁴

The duration of post-operation hospitalization is an independent variable which had influence on the survival rate. In many studies, it was seen that post-operative hospital stay ranged from 5 to 17 days.^{6,7} In our study, mean post-transplant hospital stay was 13.6±3.4 (range 9 to 30) days. During discharge, most of recipients (88.6%) showed normal serum creatinine levels (mean serum creatinine levels 1.15±0.21 mg/dl) and fewer showed delayed graft function.

All transplant recipients are regularly followed-up in post-transplant clinic and among them 3 patients did not complete 1 year after transplantation at the time of data collection. The graft survival at 1 year ranges from 91% to 98.3% in different transplant centres of the world.^{8-13, 16-20} On the other hand, patient survival of these centres at 1 year ranges from 97% to 99.4%.^{8-13, 15} Our graft and patient survival at 1 year was 82.9% (107/129) and 90.7% (117/129) respectively which is comparable to other centres of both developing and developed world.

Limitation and recommendation

In this study, the sample size was small and data were collected from single center. The relation with different form of immunosuppressive agent and degree of HLA matching with graft survival was not seen. So, the finding derived from the study cannot be generalized to reference population. For further recommendation, multicenter study with large sample size, relation of immunosuppressive agent and HLA matching are needed.

Conclusion

Nearly ninety percent live related kidney transplant recipients had normal renal function post-surgery and one-year graft survival was over eighty percent in this study. Immediate outcome and one-year of patient and graft survival results after live related kidney transplantation were comparable with those from other developing countries

Authors' contributions: MMK has designed the study, collected and analysed the data, drafted the manuscript. MAR revised and edited the manuscript. IJS, RNI, MGH revised the manuscript. MAM was the overall supervisor of the research. All authors have read the final version to be submitted and approved it.

Conflicts of interest: Nothing to declare.

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