



Analysis of Early risk assessment use as a prognostic and diagnostic tool for reduced the morbidity and mortality for renal transplant patients

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Abstract

Background: End Stage Renal Disease (ESRD) requires renal replacement therapy such as hemodialysis and peritoneal dialysis or Kidney transplantation (KTR) for the patient to survive. The purpose of renal replacement therapy is to prolong and maintain the quality of life. The treatment which allows the longest extension of useful life is chosen for a patient. The history of renal transplantation illustrates the successful integration of the fields of surgery, medicine and immunology, reflecting the development of healthcare in modern era which has improved the quality of life of the transplant patients.¹

Low survival rates and a relatively poor quality of life on hemodialysis make kidney transplantation an attractive treatment alternative with good clinical results even in elderly patients with comorbidities

Objectives: 1. To analyse early surgical complications in renal transplant recipients following deceased donor and live donor (ABO compatible or incompatible) kidney transplants and compare it with the contemporary literature.

2. To identify risk factors related to recipient characteristics associated with surgical complications.

3. To find possible methods to prevent surgical complications.

Methods: After standard evaluation and following strict protocols, patient undergoing Transplant was closely followed to diagnose any complication at the earliest and treat at the very behest. This is a prospective study with main focus to assess surgical complications and overall outcome

Conclusions: Total number of surgical complications observed was 44. However total number of patients having surgical complications was 35 (33.9%). 9 (8.7%) patients had multiple complications while 26 (25.2%) patients developed single surgical complication.

Urological complication was seen in 25 (24.3%) patients and they constituted 59% of all surgical complications. Urinary Tract Infection was seen in 24 patients (23.3%).

No patient had ureteric leak at our centre. Ureteric stenosis was seen in 2 (1.94%) patients, lesser than that in literature, may be attributed to refined surgical skills.

Methods

Study site: Jaslok hospital and research centre, Mumbai (Department of Urology)

Study population: All patients who underwent renal transplant from January 2015 to December 2015. Patients of all age groups and either sex were included in the study.

Patients received either live (related or unrelated) ABO blood group compatible or ABO blood group incompatible kidney or deceased donor kidney.

All transplants were performed by one of five senior surgeons highly trained and experienced for kidney transplantation.

All of them used standard surgical techniques for transplantation.

Routine post-operative anti-coagulation therapy was not used, unless clearly, medically or surgically indicated.

After surgery, the patients were monitored clinically and biochemically.

In addition, patients underwent a Colour Doppler flow study, Isotope renal scanning and transplant kidney biopsy, when indicated.

Study design: It is a prospective, observational, cohort study.

Sample size: We have taken 103 cases as the case volume per year at our institute based on the previous 15 years transplant record data.

Time frame: 18 months (January 2015 to June 2016)

Inclusion Criteria: All consecutive patients of ESRD including cadaveric transplants, who were scheduled for Renal Transplant in JASLOK hospital, Urology department were included in the study.

Exclusion Criteria: The patients already immune-compromised (eg: HIV), were excluded from the study.

Treatment and follow up: All enrolled patients underwent Renal Tx as per standard practice and all perioperative parameters were collected. They were also followed at 6 months in the Department of Urology with post transplant USG / Colour Doppler of transplanted kidney and Serum Creatinine reports.

Results

Type of Donor	Frequency	Percent
ABO compatible	74	71.84%
ABO incompatible	19	18.45%
Deceased Donor Kidney	10	9.71%
Total	103	100.00%

Age Recipients	Total	%	ABOC	%	ABOI	%	DDK	%
<15	3		2		1		0	
16-25	13		10		2		1	
26-35	27		22	30%	3		2	
36-45	28	27%	19		8	42%	1	
46-55	22		15		3		4	40%
>55	10		6		2		2	
Total	103		74		19		10	

	%	ABOc/74	%	ABOi/19	%	DDK/10	%
Graft Survival rate	93.2%	72	97.3%	17	89.5%	7	70%
DGF	23.3%	11	14.8%	4	21%	9	90%
ATN	20.4%	9	12%	4	21%	8	80%
ACR/AHR/HUS	22.3%	13	17.5%	5	26.3%	5	50%
Chest Infection	9.8%	5		2		3	
Graft nephrectomy	2.9%	1		2		0	
Second Transplant	3.9%	3		0		1	
Re-explored	18.4%	14		4		1	
Avg duration stay	21	22		19		24	
1 Yr Patient survival	86.4%	67	90.5%	16	84.2%	6	60%

Discussion

Kidney transplantation is the treatment of choice for patients with end stage renal disease since it offers an excellent quality of life.

However, despite improvements in surgical and diagnostic techniques, surgical complications (SCs) following kidney transplantation remain an important problem that may increase morbidity, hospitalization and costs.³

This is a prospective analysis done in a cohort of ESRD patients, who received the transplanted kidneys during the period of January 2015 to December 2015. We collected detailed information from medical records throughout the whole transplant process.

This period was relatively homogeneous in terms of general clinical management following kidney transplantation.

We classified SCs in different categories and analyzed the incidence of SCs and risk factors in each group individually.

Total 103 patients were included in this study. 74 (71.8%) patients received kidneys from ABO blood group compatible (ABOC) donors, while, 19 (18.4%) patients received kidney from ABO blood group incompatible (ABOI) donors, 10 (9.8%) patients received deceased donor kidneys (DDK) during the study period.

Conclusion

Renal transplantation is a safe surgery by an experienced team.

The number of older age transplant recipients is fewer, and our experience with pediatric transplants is also limited. Most common age group of recipients was between 36-45 years (27%) and surgical complications were also more common in this group (31.8%).

73.8% of recipients were male patients, and surgical complications were seen in 59% of all male patients. 76.4% of the live donors were female in the study group. Mothers and wives were the most common donors in study group. Average duration of stay was 22 days.

The graft survival rate was 93.2% in 1 year. The patient survival rate was 86.4% in 1 year.⁶³

A relatively higher incidence of acute humoral rejection was noted in the ABO incompatible group (26.3%) and in DDK group (50%).

A relatively higher incidence of ATN was noted in the deceased donor group (80%) and association was found to be statistically significant.

Delayed graft function was seen in 23.3% of patients.

Graft nephrectomy was seen in 2.9% patients.

Total number of surgical complications observed was 44. However total number of patients having surgical complications was 35 (33.9%). 9 (8.7%) patients had multiple complications while 26 (25.2%) patients developed single surgical complication.

Urological complication was seen in 25 (24.3%) patients and they constituted 59% of all surgical complications. Urinary Tract Infection was seen in 24 patients (23.3%).

No patient had ureteric leak at our centre. Ureteric stenosis was seen in 2 (1.94%) patients, lesser than that in literature, may be attributed to refined surgical skills.

Although routine DJ Stenting of the ureteric anastomosis is not done at our centre, primary DJ Stenting was done in few patients (23) due to difficult ureteric anastomosis / fragile bladder mucosa and as a protocol in deceased donor group.

11 patients had UTI with DJ Stent in situ (45.8%) and 13 patients had de-novo UTI and statistically significant association found between UTI and DJ Stenting.

Vascular events were seen in 3.8% of patients. They were not included as a surgical complication as none of them were primary. Our results are comparable with the published literature, although a longer follow up is required to document the late onset vascular complications, such as renal arterial stenosis (RAS).

Haemorrhagic complications were seen in 3.8% of the patients. Peri-renal haematoma requiring re-

exploration and clot evacuation was seen in 4 patients (3.8%).

Wound related complications (other than lymphocele) were observed in 5.8% of the patients and they accounted for 13.6% of all SCs..

Bibliography

1. Risaliti A; Surgical complications after kidney transplantation; *G ItalNefrol.* 2004 Jan-Feb;21Suppl 26:S43-7.
2. Roodnat JI, Zietse R, Mulder PG et al. The vanishing importance of age in renal transplantation. *Transplantation* 1999; 67: 576–580.
3. Humar A, Matas AJ. Surgical complications after kidney transplantation. *Semin Dial* 2005; 18: 505–510.
4. Hernandez D, Rufino M, Bartolomei S et al. Clinical impact of preexisting vascular calcifications on mortality after renal transplantation. *Kidney Int* 2005; 67:2015–2020.
5. Aneesh Srivastava. Renal transplantation: An update. *Indian J Urol.* 2007 Jul-Sep; 23(3): 270-271.
6. <http://www.livemint.com/2009/02/20002008/India-ranks-2nd-in-kidney-tran.html>.
7. John Maynard Barry, Michael Joseph Conlin. Renal Transplantation In Campbell-Walsh Urology, 10th edition editors- Alan J. Wein, Louis R. Kavoussi Saunders,2011. pages 1226-1253.
8. Acharya VN. Status of renal transplant in India--May 1994. *J Postgrad Med [serial online]* 1994 [cited 2012 May 26];40:158.
9. David Hamilton. Kidney transplantation: a history, in *Kidney Transplantation: Principles and Practice, Sixth Edition.* Editors Peter J. Morris, and Stuart J. Knechtel, Saunders, Elsevier,2008 pages 1-7.
10. Kekre SN., Renal transplantation: challenges ahead.*Indian J Urol.*20072007 Jul-Sep; 23(3): 223.
11. Clavien PA, et al. Proposed classification of complications of surgery with examples of utility in cholecystectomy. *Surgery* 111:518, 1992.
12. Hernandez D, Rufino M, Armas S et al.; Retrospective analysis of surgical complications following cadaveric kidney transplantation in the modern transplant era; *Nephrol Dial Transplant* (2006) 21: 2908–2915.
13. Benedetti E, Hakin N, Perez E, Matas A. Current topics in medicine: renal transplantation. *Acad Radiol* 1995; 2:159–199.
14. Karam G, Maillet F, Parant S et al. Ureteral necrosis after kidney transplantation: risk factors and impact on graft and patient survival. *Transplantation* 2004; 78: 725–729.
15. Maier U, Madersbacher S, Banyai-Falger S et al. Late ureteral obstruction after kidney transplantation. Fibrotic answer to previous rejection? *TransplInt* 1997; 10: 65–68.
16. Mundy AR, Podesta ML, Bewick M, Rudge CJ, Ellis FG. The urologic complications of 1000 renal transplants.*Br J Urol* 1981; 53:397–402.
17. Soltes GD, Rainwater JR, Middlebrook MR, et al. Interventional urology. *World J Urol* 1998; 16:52–61.
18. Fayek SA, Keenan J, Haririan A, Cooper M, Barth RN, Schweitzer E, Bromberg JS, Bartlett ST, Philosophie B. Ureteral stents are associated with reduced risk of ureteral complications after kidney transplantation: a large single center experience. *Transplantation.* 2012 Feb 15;93(3):304-8.