



# Initial Experiences in Starting a Renal Transplant Center: Ab-initio profile of donors we encountered

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## Article History

Received: 23 August, 2023

Accepted: 15 January, 2024

Published: 31 January, 2024

**Funding Sources:** None

**Conflict of Interest:** None

## Online Access



## DOI:

<https://doi.org/10.61122/jkistmc268>

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**Citation:** Mulepati S, Bhandari SD, Budhathoki B, Thapa M, Bhele RL, Koirala S. Awareness and Utilization of Menstrual Cup among Adolescent Nursing Students of a Selected College. KIST Med. Col. 6(11):59-62.

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## Abstract

**Introduction:** Kidney transplantation is the ultimate treatment for people with ESRD. The Donors for such kidney can be either from living or from cadaver donors. The living donors are healthy people who are thoroughly worked up and screened. For the benefit of another person we subject a healthy subject to surgery. For this reason a study on how a donor's health is affected as a result of kidney donation needs evaluation.

**Methods:** This study is a combined retrospective and prospective study. The retrospective data were taken from the case sheet of patients maintained at the urology department of a large tertiary level hospital doing renal transplants. Prospective study of the cases were carried out by following up detail donor workup including history, clinical examination and investigations relevant to donor work up as per the protocol followed in the transplant center. Each prospective case were studied for complications of donor nephrectomy and followed up for a period of up to one year after donor nephrectomy.

**Results:** A total of 36 donors underwent donor nephrectomy during the study period. There were only two laparoscopic nephrectomies and 34 by standard retroperitoneal open surgical method. 13 donors had postoperative complications (36.11%). The duration of stay varied from 5-35 days. Majority of the donors (44%) had a stay within the range of 10-15 days, followed by a stay of 5-10 days (30-56 percent of the donors). The remaining stay ranged from 2.78% to 8.33 %. The average stay in the hospital was found to be 14.17 days with SD of 6.45 days.

**Conclusion:** Living kidney donation with all its advantages still holds the best solution for end stage renal disease. The inconvenience of haemodialysis along with the cost and loss of labour of a patient on haemodialysis makes renal transplant the ultimate replacement of a non-functioning kidney. The advantage of timing of transplantation according to the condition of the recipient makes it far superior than cadaver grafts.

**Key words:** Complications, donor nephrectomy, live donors, outcome, open nephrectomy, renal transplant

## Introduction

Kidney Transplantation is considered as the treatment of choice for patients with end-stage renal disease (ESRD)<sup>1,2</sup>. The kidney donors are of two types namely cadaveric and live donors. Live kidney donors form the backbone of transplant programs in India and other developing countries, accounting for 85% to 100% of donations compared with 1% to 25% in the West<sup>3</sup>.

The concept of removal of an organ for transplantation is unique among major surgical procedures in that it exposes the healthy donor to the risks of surgery solely for the benefit of another individual. The life expectancy of donors are not affected and they have a longer life expectancy than the general population as healthy people are selected for donor nephrectomy<sup>4</sup>.

The use of live donors makes it possible for the surgery to be planned and this approach proves to be approximately one third as expensive as long-term dialysis<sup>5</sup>. And also we can perform the transplant when the recipient is in optimal medical condition.

This study was done to share our experience of starting a transplant center and study the live kidney donors and outcome of donor nephrectomy in our center.

## Methods

This study is a combined retrospective and prospective study. The retrospective data were taken from the case sheet of patients maintained at the urology department of a large tertiary level hospital doing renal transplants. Prospective study of the cases were carried out by following up detail donor workup including history, clinical examination and investigations relevant to donor work up as per the protocol followed in the transplant center. Each prospective case were studied for complications of donor nephrectomy and followed up for a period of up to one year after donor nephrectomy.

The data collection was done by making a proforma which were filled up from the case sheet documents; follow up of donors who visited the Urology department OPD and of donors admitted in wards under Urology department.

### Inclusion Criteria

- All living donors who underwent donor nephrectomy in the Urology department since renal transplant started in the transplant center

### Exclusion Criteria

- Cadaver donors

All the transplants were done by a team of trained Urologists. The donors were then followed up at one month and one year and any complications thereof were noted and recorded. During the follow up general examination, Blood urea, creatinine, 24hours total urinary protein, urine routine and microscopic examination were carried out and recorded.

All data were maintained in a tabular format on a standard Excel™ sheet and thereafter statistical analysis was done using MINITAB-13®. Categorical variables were tested for

statistical significance with chi-square analysis. Continuous variables were tested with the t-test. A 'p' value of <0.05 was taken as significant.

## Results

A total of 36 donors underwent donor nephrectomy during the study period. There were only two laparoscopic nephrectomies and 34 by standard retroperitoneal open surgical method. 13 donors had postoperative complications (36.11%). The duration of stay varied from 5-35 days. Majority of the donors (44%) had a stay within the range of 10-15 days, followed by a stay of 5-10 days (30-56 percent of the donors). The remaining stay ranged from 2.78% to 8.33 %. The average stay in the hospital was found to be 14.17 days with SD of 6.45 days.

Table 1 shows the patient distribution age wise. The majority of donors were in the age segment 30-60 (30 of the 34 studied).

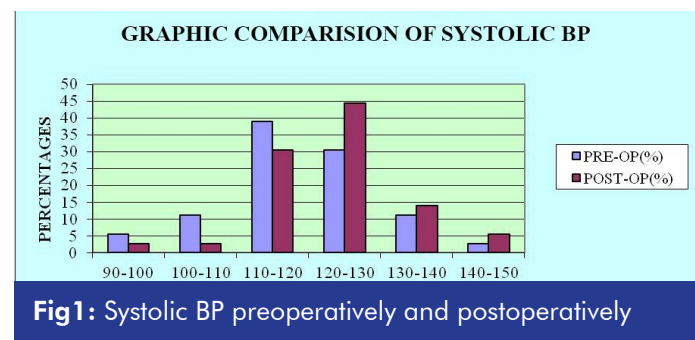
**Table 1:** Patient Distribution by Age (Years)

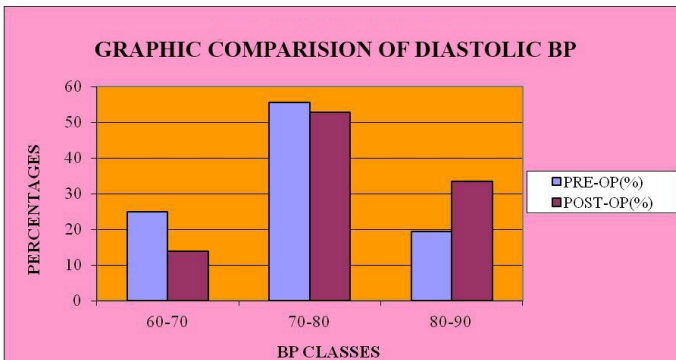
Age	Count	Percent
20-30	5	13.89
30-40	7	19.44
40-50	14	38.89
50-60	9	25.00
60-70	1	2.78
Mean=43.92	SD=10.55	

An analysis of the donors by relationship is as depicted in Table 2. Females accounted for approximately 75% of the donors.

**Table 2:** Distribution by Relation

Relation	Count	Percent
Brother	3	8.33
Father	5	13.89
Husband	4	11.11
Mother	12	33.33
Sister	2	5.56
Wife	10	27.78





**Fig 2.** Diastolic BP preoperatively and postoperatively

We compared the Systolic BP preoperatively and postoperatively by using a 2 sample T test (Chart 1). The difference between the average values of pre and post operative blood pressures are statistically not significant ( $T=-1.54$ ,  $P=0.0128$  NS). Comparison was done using a 2 sample T Test between diastolic BP preoperatively and postoperatively (Chart 2). On an average the mean diastolic blood pressure preoperatively and postoperatively also do not differ significantly statistically ( $T=-1.89$ ,  $P=0.062$  NS).

**Table 3:** Two-Sample T-Test: Creatinine

	N	Mean	SD	SE Mean
Creatinine (preop)	36	0.897	0.244	0.041
Creatinine(postop)	36	1.003	0.247	0.041

Serum creatinine values pre and post operatively are as depicted in Table 3. Statistically mean preoperative and post-operative creatinine values show no significant difference ( $T=-1.82$ ,  $P=0.072$  NS). The correlation between each pair of the following characters; Surgery, blood loss and hospital stay were done. None of the pairs has any significant correlation ( $T$ -Value =  $-1.82$ ,  $P$ -Value =  $0.072$ , NS)

## Discussion

This study was done in a tertiary care hospital over a period of 2 years. The youngest donor was 23 years and the oldest donor was 65 years. The maximum numbers of donors are in the age group of 40-60 years and this correlates with the maximum donors being mothers. The mean age of the donors was 43.92 years with a standard deviation of 10.55 years which compares with the mean age of donors of  $42.11 \pm 11.53$  years (range 19-72 years) in a study of 500 renal donors in a transplant centre in India<sup>6</sup>. The mothers (33.33%) constituted the highest number of donors amongst the study group followed by wives. This can be compared with a study where mother constituted 28% as donors<sup>7</sup>. Wife as donor accounted for 27.78% of our cases, a figure similar to that reported by many centers in India<sup>8</sup>.

Out of the total of 36 donors, female donors constituted 24 (66.66%) which can be compared to the 59.4% in a study of 500 patients in a transplant centre in India<sup>6</sup>.

Blood pressure greater than 140/90 mmHg was taken as hypertension for this study. Only two donors had a BP of 148/90 and 148/90 preoperatively and was on antihypertensive. The mean preoperative systolic BP was 121.50 mmHg and the postoperative mean systolic blood pressure was 125.36 mmHg. Postoperatively only one donor had isolated systolic hypertension. We can compare this with the meta-analysis by Kasiske et al.<sup>9</sup> who found in 1896 patients with unilateral nephrectomy an increase of systolic blood pressure of 2-3 mmHg which rose a further by 1 mm Hg per decade of follow up. The mean preoperative and postoperative diastolic BP were 76.90 and 79.97 mmHg respectively. Postoperative diastolic BP shows on an average slight increase rising to 79.97 mmHg and SD of 6.12 mmHg. It was found in a study that the diastolic blood pressure was 3 mm Hg higher after nephrectomy without any further increase<sup>10</sup>. We compared the Systolic and the diastolic BP preoperatively and postoperatively using a 2 sample T test and are statistically not significant.

The mean creatinine value preoperatively and postoperatively were 0.897 and 1.003 which shows an increase in the creatinine value in the postoperative period but there was no significant statistical difference. Goldfarb et al, found the serum creatinine to be increased postoperatively by approximately 30%<sup>11</sup>. They are also comparable to the only other report on renal donors greater than 20 years after nephrectomy, which at 23.7 years after nephrectomy, the creatinine clearance of 57 subjects was 82% of the value before donation<sup>12</sup>.

The duration of surgery in our study ranged from 135 mins to 420 mins mean 4.38 hours, SD of  $\pm 0.85$  hrs statistically NS). This duration can be compared to the  $98.38 \pm 8.13$  for open method and  $80.35 \pm 15.05$  minutes for LDN minutes in a study by Genc V, Ozgencil E, Orozakunov et al<sup>13</sup>. The mortality rate was nil during the study period .which matches well with the mortality rate of 0.02-0.04% recorded in the literatures<sup>14-17</sup>.

## Conclusion

Living kidney donation with all its advantages still holds the best solution for end stage renal disease. The inconvenience of haemodialysis along with the cost and loss of labour of a patient on haemodialysis makes renal transplant the ultimate replacement of a non-functioning kidney. The advantage of timing of transplantation according to the condition of the recipient makes it far superior than cadaver grafts.

The result of our study basically conforms to the world

literature but further long term studies with a larger sample size need to be carried out to validate these findings.

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