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Clinical Profile of Renal Donor Undergoing Donor Nephrectomy in A Tertiary Care Hospital in India

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Abstract

Living kidney donation(LKD) is increasing in frequency reflecting and overall increase in transplantation activity in India. However, the frequency varies in different parts depending on scientific, cultural, and ethical factors. Clinical data regarding the clinical profile of renal donor in India is less compared to western literature. The study aims to increase the knowledge regarding the clinical profile of the donor coming to a tertiary care centre in India. Renal donor presenting to Mahatma Gandhi hospital Jaipur from June 2022 to April 2023 for renal transplant surgery were included in the study which were 300 in number. Detailed clinical history and investigations were done and analysed. Demographic and clinical parameters were analysed. Results showed a predominant female preponderance (78%) showing a cultural trend in India. Most donors were between the 41-50 age group with BMI being most common between 23.5-30 kg/m2. Mother were the most common donor followed by wife ,whereas in males ,father were the most common donor. Average Gfr of right kidney being 50 ml/min and 49 ml/min being of left kidney. More than 20 % of renal donor had double or more renal vessels highlighting the prevalence of multiple vessels in Indian population. This study gives a insight about the renal donors in India which can help us expanding the donor pool further by increasing the knowledge about them,

Keywords: Renal Donor, Clinical Profile, Tertiary care Centre

Introduction

The first successful living kidney transplantation (LKT) was performed in Boston in 1954, on identical twins. Since then, living kidney donation (LKD) has become a reality, reaching over half a million cases of LKT worldwide more than a decade ago[1]. The increasing frequency of LKD, in part, reflects an overall increase in transplantation activity. The frequency of living donor transplants varies greatly, however, between countries depending on scientific, cultural, and ethical factors.[2]

More recently, acceptance criteria at some transplant centres have relaxed to allow living kidney donation by older individuals, and by donors with some known risk factors for the eventual development of CKD including obesity, glucose intolerance and treated hypertension [3,4]. These newer donor acceptance practices may be partially explained as the continuation of previous acceptance criteria that were based upon older and less

stringent definitions of glucose intolerance, diabetes mellitus and hypertension.

Clinical profiling of the Renal donors in today's current scenario is required to give an insight regarding the trends associated with kidney donation. It will help in better understanding of the criteria used for donor selection used at present and creating awareness regarding newer donor acceptance practices in smaller transplant centre.

Aims and Objectives

Kidney donation landscape has changed in India as a very high percentage of Renal transplant involve live kidney donor due to scarcity of deceased donor. In this scenario more data needs to be available to help the clinicians to better select live donor meeting the current donor selection guidelines along with it the expanded donor criteria guidelines so as to increase the donor pool for renal transplant. Clinical profile of Indian donors at a large transplant center will increase the knowledge about the current trends associated with renal donation in India

Materials and Methods

Study design: A prospective study on renal donor presenting for renal transplant surgery with detailed history, examination and investigation will be done.

Study setting and time period: Study will be conducted from June 2023 to April 2024 in Mahatma Gandhi medical College Jaipur ,India

Inclusion criteria:

1. Patients above 18 years old
2. Patients satisfying the legal and medical parameters to be fit for renal donation

Exclusion criteria:

1. Patients less then 18 years of age
2. Patient deemed medically unfit for renal donation
3. Donor deemed ineligible by ethical committee

Results

A total of 300 renal transplants occurred during the defined period and the donor details from the same were recorded and analysed

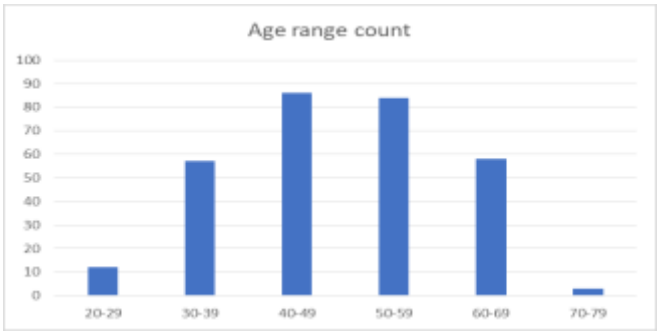

Figure 1: Renal donor age distribution curve

Fig 1 demonstrates the age distribution of the renal donor 's with predominantly being in 40-60 years of age, with the highest number of donor being in 40 -49 years of age group.

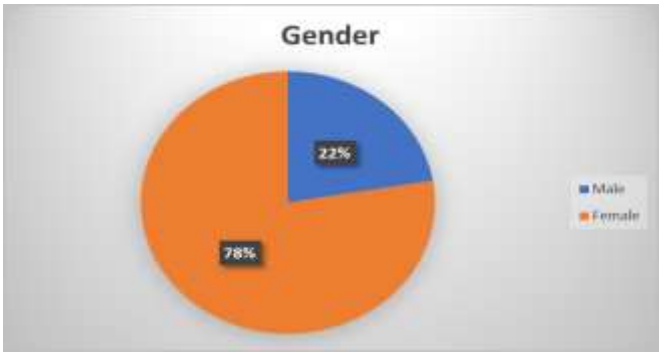

Figure 2: Gender distribution of Renal donor

Figure 2 demonstrates that 78% of the renal donor in our study were female and 22% were male, showing a largely female preponderance.

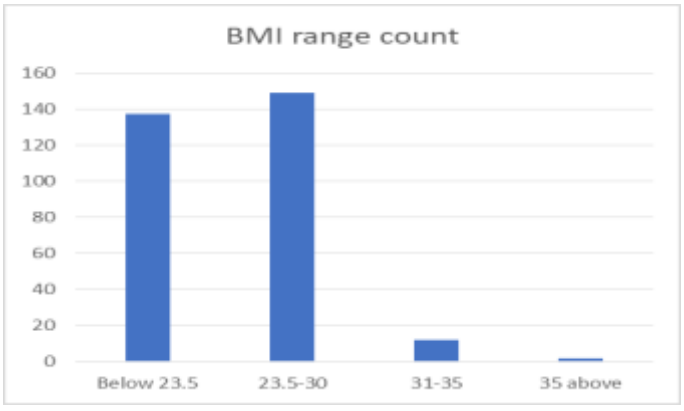

Figure 3: Body mass index in Renal donors

Figure 3 demonstrates the distribution of Body mass index(BMI) in renal donors.137 renal donor had a BMI of less than 23.5kg/m2 , 149 had BMI in the range between 23.5 -30 kg/m2). Very few donors were above the range of BMI 30 kg/m2.

Table 1: Donor Relationship with recipient

Relationship	Number
Mother	119
Father	31
In-laws(mother/father/sister)	8
Husband	16
Wife	79
Brother	13
Sister	18
Distant relatives	16

Table 1 describes the distribution of the donor according to their relationship with the recipient, highest percentage being of mother, followed by wife. In terms of male donors' fathers were the predominant group.

Table 2: Blood group Distribution among renal donor

Blood Group	Number of donors
O+ve	113
B+ve	99
B-ve	6
A+ve	49
A-ve	2
AB+	23
O-	8

Table 2 enumerates the frequency of the blood group in the renal donor involved in the study. Most common blood group being O +ve blood group followed by B+ve blood group with A-ve being the rarest of all the blood group among the donors

Table 3: Comorbidities in Renal donors

Comorbidities	Percentage
Hypertension	10%(31 cases)
Diabetes	3%(9 cases)
Others	4%(12 cases)

Table 3 shows the percentages of comorbidities in the renal donors. 10 % donors had hypertension and 3% cases had diabetes at the time of transplantation. 4% donors had other comorbidities including hypothyroidism, anaemia, hyperlipidaemia.

Table 4: Lab Parameters for Renal donors

Lab Parameter	Mean Observation
Haemoglobin	13mg/dl
Creatinine	0.75mg/dl
DTPA right kidney Gfr	50 ml/min
DTPA left kidney Gfr	49 ml/min

Table 4 shows few basic parameters for the renal donors. Mean haemoglobin for the renal donors were 13mg/dl ,while mean creatinine at the time of transplant was 0.75mg/dl. Average DTPA of right kidney was 50 ml/min and of left kidney was 49 ml/min.

Table 5: Renal Blood vessels in Renal donor

	Right Artery	Left Artery	Right Vein	Left Vein
Single	232	219	253	296
Double	65	74	45	4
Triple	3	7	2	0

Table 5 demonstrates the distribution of Renal artery and vein in the renal donors. Predominantly Single artery and vein were seen. 21.6 % donor had a double right renal artery and 24.6 % had a double left renal artery. Among these 9 % cases had both double right and left renal artery. In terms of venous anatomy 15% had a double

right renal vein however only 1.3% had a double left renal vein.

Discussion

The study analyzed the data of 300 renal donors who underwent donor nephrectomy in a tertiary care center in India. The results showed a high female preponderance (78%) in the renal donor reflecting the current social trend in the society. Predominant donor age group was found to be in between 40-60 years of age . In terms of the relation of the renal donor to the recipient , mothers were the highest in number followed by female spouse. Male donors were comparatively less with father being the highest in number followed by husband demonstrating the imbalance prevalent in the society. The study also shows that the donor with comorbidities hypertension(10%) and diabetes (3%) are able to donate kidney subject to necessary medical clearance. Increasing the knowledge about the evaluation and eligibility of these donors can potentially help to increase the donor pool to bridge the large gap of donors required in renal transplant. This study also shows that the prevalence of multiple vessels (artery/vein) is quite significant which can pose a challenge for the renal surgeon where some time donor might be refused due to complex vascular anatomy. Since the prevalence is not low ,improved training of the transplant surgeons along with techniques can again help us to increase the donor pool for renal transplant.

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