Guest Editorial

Current trends in kidney transplantation in India

Sunil Shroff

Senior Consultant Urologist and Transplant Surgeon, Madras Medical Mission Hospital, and Managing Trustee, Mohan Foundation, Chennai, Tamil Nadu, India. E-mail: shroff@mohanfoundation.org

The living kidney transplantation program in India has evolved in the past 45 years and is currently the second largest program in numbers after the USA. Transplantation from deceased donation where neurological criteria are used for determination of death has been possible since 1995 after the Indian parliament passed the law related to transplantation.[1] It is estimated that globally, chronic kidney disease is associated with approximately 735,000 deaths annually.[2] The prevalence of end-stage renal disease requiring transplantation in India is estimated to be between 151 and 232 per million population.[3] If an average of these figures is taken, it is estimated that almost 220,000 people require kidney transplantation in India. Against this, currently, approximately 7500 kidney transplantations are performed at 250 kidney transplant centers in India. Of these, 90% come from living donors and 10% from deceased donors. The data are not as accurate as would be desirable due the absence of a national transplant registry.

The early challenges of medical and surgical complications of kidney transplantation have now been overcome and currently, there has been a gradual shift toward more transplant centers offering laparoscopic donor nephrectomy with a few also offering robotic kidney transplantation.[4,5] However, there are currently no long-term studies looking at the safety of the kidney donor's health in India. The rising incidence of lifestyle diseases such as diabetes and hypertension makes long-term follow-up of kidney donors in India an urgent consideration.[6] A University of Minnesota study has clearly shown that donors who develop diabetes or hypertension postdonation have a 4-fold higher risk of proteinuria and a >2-fold higher risk of end-stage renal disease.[7] Rizvi's model from Pakistan on the long-term follow-up of kidney donors is worth emulating in India.[8] At his center, early identification of nonsentinel events in donors helps in preventing kidney failure in them. Their program is based on a unique community-government partnership and has provided dialysis and transplant services as well as free lifelong postdonation follow-up to living kidney donors in Pakistan since 1985.

With the advent of better immunosuppressive drugs and induction agents to stop early rejection episodes, there has been a shift from using high-dose steroids to prevent graft rejection, and this has resulted in lower incidence of postoperative complications after transplant surgery. Minimally invasive methods for managing transplant surgery complications have been possible due to the advances made in the field of urology over the past few decades.

As per the Indian law and amendments to it in 2011, there is a provision of "required request" available to the intensive care doctors to ask for organ donation in the event of brain death. It also makes it mandatory to have a national registry to look at outcomes and appointment of a trained transplant coordinator for the purpose of counseling relatives for organ donation. This has been done with the idea of improving the deceased donation rate in India.[9] The key to the success of this program is early identification, followed by certification and maintenance of potential donors in the intensive care units. The onus of making donations happen lies with the hospitals. Currently, most donations happen in private sector hospitals with few public hospitals participating in the program. However, the potential of this program is more in public sector hospitals as most victims sustaining severe brain injury due to road traffic accidents land up in these public hospitals, as these are medico-legal cases.

The deceased donation program has generally done relatively better in states from the South such as Tamil Nadu, Puducherry, Kerala, and Andhra Pradesh.[10] In the North, Chandigarh as a union territory has done well in terms of donors per million population as shown in Table 1. The overall deceased donation rate in India was 0.5 per million population in 2015. It is heartening to note that since 2012, this rate has increased three times as shown in Figure 1. Past year (2015), there were over 1600 organs in the pool from deceased donors.[11] Currently, many donors are being lost due to lack of early identification and poor maintenance. Articles on this subject in this issue of the journal are very appropriate and have captured all the essential requirements for a successful program.

The burden of kidney disease in India requires two strategies; on the one hand, there is a need to look at prevention and early identification of kidney disease and on the other, there is a requirement to increase the deceased donation rate. Concerted efforts from government, public and private

Table 1: Deceased organ donation statistics - 2015

State	Number of donors	Organ donation rate (per million)	Kidney	Liver	Heart	Lung	Pancreas	Intestine	Hand	Larynx	Total organs
Tamil Nadu	155	2.1	290	149	51	28	0	1	0	0	519
Kerala	76	2.3	132	61	14	2	1	1	4	1	216
Maharashtra	60	0.5	106	51	5	0	0	0	0	0	222
Telangana and Andhra Pradesh	98	1.2	168	99	19	7	0	0	0	0	391
Karnataka	60	1.0	91	55	11	0	1	0	0	0	158
Gujarat	45	0.7	77	45	0	0	0	0	0	0	167
Madhya Pradesh	3	0.03	6	2	1	0	0	0	0	0	9
Uttar Pradesh	4	0.01	8	0	0	0	0	0	0	0	8
Delhi-National Capital Region	14	0.3	28	14	6	0	0	0	0	0	48
Puducherry	9	7.2	18	2	1	0	0	0	0	0	30
Chandigarh	39	37	69	25	1	0	2	0	0	0	97
Rajasthan	7	0.1	14	7	1	0	0	0	0	0	22
Total	570	0.5*	1007	510	110	37	4	2	4	1	1675

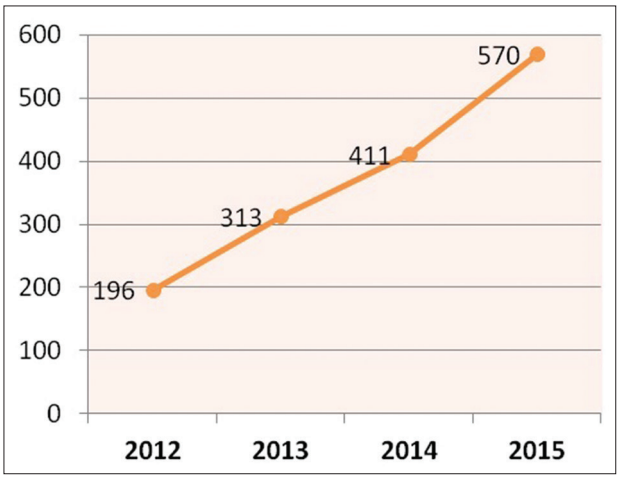

Figure 1: Number of deceased donors from 2012 to 2015

sector hospitals along with nongovernment organizations are required to give momentum to improve the donation rate and take care of organ shortage.

REFERENCES

1. Shroff S. Legal and ethical aspects of organ donation and transplantation. Indian J Urol 2009;25:348-55.
2. Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, Aboyans V, *et al.* Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: A systematic analysis for the global burden of disease study 2010. Lancet 2012;380:2095-128.
3. Modi G, Jha V. Incidence of ESRD in India. Kidney Int 2011;79:573.
4. Bhattu AS, Ganpule A, Sabnis RB, Murali V, Mishra S, Desai M. Robot-assisted laparoscopic donor nephrectomy vs standard laparoscopic donor nephrectomy: A prospective randomized comparative study. J Endourol 2015;29:1334-40.
5. Sood A, Ghosh P, Menon M, Jeong W, Bhandari M, Ahlawat R. Robotic renal transplantation: Current status. J Minim Access Surg 2015;11:35-9.
6. Unnikrishnan R, Anjana RM, Mohan V. Diabetes mellitus and its complications in India. Nat Rev Endocrinol 2016;12:357-70.
7. Ibrahim HN, Foley RN, Reule SA, Spong R, Kukla A, Issa N, *et al.* Renal function profile in white kidney donors: The first 4 decades. J Am Soc Nephrol 2016. pii: ASN.2015091018.
8. Rizvi SA, Zafar MN, Jawad F, Aziz T, Hussain Z, Hashmi A, *et al.* Long-term safety of living kidney donation in an emerging economy. Transplantation 2016;100:1284-93.
9. Available from: http://www.mohanfoundation.org/THO-amendment-act-2011.pdf. [Last accessed on 2016 Jun16].
10. Indian Transplant Newsletter. Vol. 12. March 2013 – June 2013. Available from: http://www.mohanfoundation.org/newsletters/itns/details.asp?id=93. [Last accessed on 2016 Jun16].
11. Indian Transplant Newsletter. Vol. 15. November 2015 – Feburary 2016. p. 1.

Access this article online

Quick Response Code:

Website: www.indianjurol.com

DOI: 10.4103/0970-1591.185092

How to cite this article: Shroff S. Current trends in kidney transplantation in India. Indian J Urol 2016;32:173-4.