

Fifteen Years of Liver Transplantation in India

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The first successful liver transplantation (LT) was performed by Dr T E Starzl in 1963 [1]. Since then, LT has evolved and matured into an established therapy for liver failure that involves a multidisciplinary and dedicated team of transplant surgeons, pediatric hepatologists, intensivists, anesthesiologists, nurses and other support staff. With excellent results, the indications for LT have expanded and include acute liver failure, chronic liver failure, and metabolic conditions where there is no liver failure but damage to other organs is prevented such as Crigler Najjar Syndrome, hyperoxaluria and hypercholesterolemia [2]. Multi-organ transplantation is also now well established [3].

The need for pediatric LT is estimated to be 1-2 per million population as per data from the West. Extrapolating that data to India, there is a need for 2500 transplants in children per year. As many as 30% of children with liver diseases seen in a referral centre in North India were reported to be candidates for LT [4].

In November 1998, the first successful LT in India was performed in an 18-month-old child with biliary atresia [5]. The child's father became the first living related donor in India. This child remains well 15 years post LT. The need for developing a LT program in India has been debated for long [4,6].

While the first successful LT provided the impetus to establish transplantation in India, the first few years posed several challenges [7]. Many children who needed a transplant were often referred late, as there were very few guidelines on when to refer a patient to a specialized centre. The vast majority of children who needed a transplant came from a low socioeconomic status with resource constraints. In addition, a bias against the girl child and lack of cadaveric donor livers also limited the number of transplants performed. In the absence of cadaver donation, the only realistic option was developing a living related liver transplantation program (LRLT).

The last five years; however, have seen a dramatic growth in LT in India. There are six well-established pediatric liver transplant programs in the country. Two programs perform more than 30 transplants each year. The total number of pediatric liver transplants performed in India has now exceeded 350. Pediatric patients constitute about 10% of the total liver transplants being performed at the two busiest programs. More than 95% of these transplants are living related. About 75% of LT are for cholestatic liver diseases, mainly biliary atresia [8].

The success of the liver transplant programs in the country can be attributed to various factors. Our surgeons after having been trained in various centers in the West have replicated and indeed improved upon the surgical techniques that they learnt there. With time, the quality of the intensive care provided to these patients has improved tremendously. This is in parallel to the general improvement in pediatric intensive care in the country. With increasing experience, the quality of post-transplant care has also become standardized. The armamentarium of drugs used for immunosuppression has improved with the newer drugs, which are less toxic and more effective. This has led to a better management of the immunosuppression and thus improved survival.

With increasing experience, LT is now offered for complicated cases, for metabolic diseases and other rare disorders. In 2008, the first successful transplant in India for Crigler-Najjar syndrome was performed [9]. Excellent results have also been reported in younger children. Hundred percent survival for both graft and recipient in infants with weight less than 7.5 kgs was reported in 2010 [10]. The success of both pediatric liver and kidney transplant programs in the country has spurred the development of programs for combined liver and kidney transplants. Combined liver and kidney transplants are now being performed in increasing numbers. Another achievement from India is the world's youngest domino liver transplant [11]. A welcome development has been the increasing numbers of fathers

willing to come forward as donors [12]. The availability of generic immunosuppressant drugs and consumables has greatly aided in bringing down costs. The average cost of a transplant in India is 12-15 lakhs INR. This is only about 1/5th to 1/10th the cost in the West. Another positive aspect is the involvement of the community in arranging for funds for those who cannot afford LT [13].

The lack of facilities for LT in several regions of the world has prompted many foreign nationals to come to India for liver transplants. India has now become a major center for LT for international patients because of the high quality – low cost value proposition. Children from over 20 countries have now received a LT in India (personal communication). With increasing number of children crossing the 5 and 7-year post LT landmarks, 10-year survival data from India is now awaited and will become available in the next couple of years.

In summary, living related LT as a treatment option is now firmly established in India. The success of several programs in India has shown that this model is reliable, replicable and affordable. No significant donor complications have been reported so far in India in pediatric LT.

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