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Original Article

# Donor outcome in live-related liver transplantation

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ABSTRACT

*Background:* Live donor liver transplant has become an accepted, effective and lifesaving alternative to deceased donor transplant. The effect on donor and his safety remains a cause of concern. The donors are all in productive age and in our setting may have to go back to active service. This study is aimed at knowing the results of donor hepatectomies at our centre.

*Methods:* Data of all donor hepatectomies done at our centre from Apr 2007 to Jun 2013 reviewed. This included the preoperative workup, operative details and postoperative follow-up.

*Results:* 35 Donors of age between 20 and 50 years were taken up for procedure of which one was abandoned due to haemodynamic instability after intubation. In the 34 procedures done the percentage of the residual liver was at least 30%. No donor required blood transfusion. The overall complication rate was 26.5% which was stratified according to the modified Clavien classification of postoperative complications. There was transient rise of bilirubin and liver enzymes in all which returned back to normal with time. Infections were the most common cause of complication. All the donors had gone back to their work after a mean of 42 days after surgery. All donors were willing to donate again if needed.

*Conclusion:* Living donor liver transplant a widely practiced modality for end-stage liver disease. It is a safe procedure with good recovery and results. Our study shows that meticulous selection criteria and strict adherence to protocols leads to good outcome.



## Introduction

With the organ shortage due to various reasons, live donor liver transplantation (LDLT) is the only lifesaving alternative to deceased donor liver transplantation (DDLT) for patients with end-stage liver disease.[1] We at our centre perform both DDLT and LDLT with similar and satisfactory recipient outcome. The primary concern of LDLT programs remains donor hepatectomy outcome being an ultra-major surgery in a healthy individual. Donors are in their productive age and some of them are serving personnel who have to go back to active service. Several studies have reported outstanding

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outcomes of LDLT donors. This article reviews the profile, preoperative workup, postoperative results and follow-up of donor hepatectomies done by us. Intention of study was to compare our results with others and based on this define the employability restrictions till they return to fully active life.

## Materials and methods

Between Apr 2007 and Jun 2013, 34 LDLT procedures were performed at our institution. All donor and recipient data maintained at the centre were reviewed and studied.

The donor selection was strictly followed as per the protocol of our centre. We accepted donors between ages of 20–50 years who were medically, psychological fit. All were evaluated preoperatively for qualitative, anatomical and quantitative status of liver. For this all were subjected to triple phase computed tomography scan of abdomen and magnetic resonance cholangiopancreaticography (MRCP). Those with focal or diffuse liver disease and anatomical variation thought to be detrimental to donor safety were rejected. Steatosis was assessed by calculating liver attenuation index (LAI). LAI between 5 and 15 was accepted and those with LAI of −5 to 5 were subjected to liver biopsy. Steatosis of less than 20% was accepted. A minimum remnant liver volume of 30% on volumetry is mandatory.

During the operative procedure care was taken to adhere to standard steps. The procedure is started with cholecystectomy and intraoperative cholangiography. Parenchymal transection was done without any hepatic vascular occlusion (Fig. 1). After resection minor and major bile leak was detected with saline test and repaired. Before closure an intra op cholangiogram was repeated to see the anatomy of the remaining biliary tree. Postoperatively all patients were empirically given antibiotics for 5 days.

The follow-up included fortnightly visits for first two months, then monthly visits for the subsequent 4 months, and then yearly recheck. Additional visits outside the routine follow-up were done as and when required. During each visit routine haemogram, liver function test were done. Sonography was performed on all donors at 6 weeks postoperatively to see the status of the residual liver. Early complications were taken as those occurring within 30 days post surgery. We classified postoperative complications among liver donors according to the widely accepted Clavien system.[1–3] At the end of 6 months donor was asked whether they were willing to donate again if required. This was done with assumption that it will act as a surrogate marker of their experience.

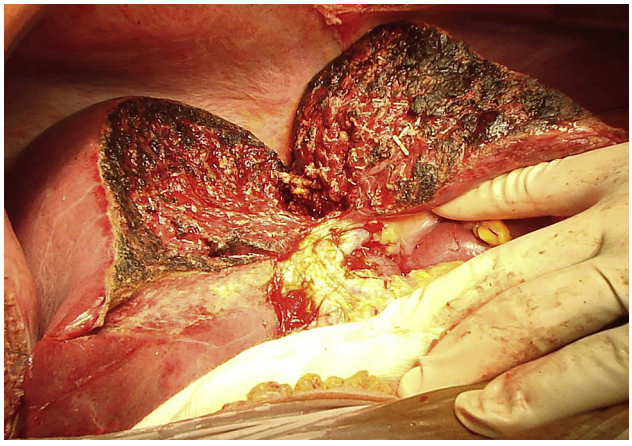

**Fig. 1 – Donor parenchymal resection without vascular occlusion.**

**Table 1 – Preoperative donor details.**

| Data | Numbers/ Mean | Percentage/ Range |
|---|---|---|
| No. of persons underwent surgery | 35 | 80% |
| Procedure abandoned | 1 | 3% |
| Age | 44.4 | 23–51 |
| **Sex** | | |
| Male | 8 | 23.5% |
| Serving personnel | 5 | 17.5% |
| Female | 26 | 76.5% |
| **Donor relationship to the recipient** | | |
| Biologically related | 22 | 64.7% |
| Parent | 18 | 52.9% |
| Child | 2 | 5.8% |
| Sibling | 2 | 5.8% |
| Non biologically related | 12 | 35.3% |
| Wife | 12 | 35.3% |
| Husband | Nil | – |
| **Investigations** | | |
| Bilirubin | 0.8 | 0.2–1.3 |
| Alkaline phosphatase | 68 | 36–96 |
| Liver attenuation index | 6.6 | −3 to 12.3 |
| Total liver volume (ml) | 1036 | 946–1234 |
| **Residual liver volume (%)** | | |
| Rt. Without MHV | 31.6% | 30–36.4% |
| Rt. With MHV | 30.3% | 30.3% |
| Lt. lobe | 46.7% | 42.1–49.5% |
| Lt. lateral | 70.4% | 68.6–75.0% |

## Results

A total of 35 donors were taken up for hepatectomy at our centre. In one the procedure has to be abandoned after intubation because intraoperative haemodynamic instability. We had no donor mortality and all donors are well at the endpoint of follow-up. The mean follow-up of 34 donors is 9 months (range 3–36 months). The preoperative profile of the donors is as per Table 1. The total volume of liver resected from donor ranged from 946 to 1234 mL and range of remnant liver was

**Table 2 – Intraoperative data of donor surgery.**

| Data | Numbers/ Mean | Percentage/ Range |
|---|---|---|
| **Surgery** | | |
| Left lateral segmentectomy | 9 | 26.5% |
| Left hepatectomy | 6 | 17.6% |
| Right hepatectomy with MHV | 1 | 2.9% |
| Right hepatectomy without MHV | 18 | 52.9% |
| Operative time (mins) | 410 | 366–512 |
| Blood loss (ml) | 215 | 0–600 |