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Original Article

Living donor hepatectomy: Study of donor profile and perioperative complications

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ABSTRACT

Introduction: Donor morbidity is of prime concern in living donor liver transplant (LDLT). Several centers in India have reported outstanding outcomes of LDLT. This study intends to reiterate the importance of donor safety in liver transplantation.

Aims and objectives: To review the outcome of donor hepatectomies in LDLT at our center.

Materials and methods: This study retrospectively analyzes the outcomes of 34 consecutive living donor hepatectomies performed between Apr 2007 and Jun 2013. Complications following major donor hepatectomy were stratified according to Clavien classification of postoperative surgical complications.

Results: Nine living donors had perioperative complications. Grade 1 complications were most frequent (20.6%); grade 2 in 6%; while none had any higher grades of complications. No donor mortality was present.

Conclusion: Meticulous preoperative donor selection criteria and adherence to predefined surgical protocols can ensure minimal donor morbidity.

1. Introduction

With shortage of deceased donors, living donor liver transplant (LDLT) is being commonly performed in India and other Asian countries.[1] Unlike kidney transplantation, LDLT being a more complex procedure, donor morbidity and mortality is of prime concern. Several large centers in India have reported outstanding outcomes of LDLT.[2] However, the complications following donor hepatectomy are not well stratified and documented in India.[2] We intend to review the donors of LDLT done at our center and grade the postoperative complications based on the Clavien Classification.[3,4]

2. Aims and objectives

The aim of this study was to retrospectively review the outcome of our donor hepatectomies and analyze the preoperative workup and postoperative morbidity of all donors for LDLT at our center.

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3. Materials and methods

Between Apr 2007 and Jun 2013, 34 LDLT procedures were performed at our institution. All donor and recipient data were maintained in Microsoft Access© (Microsoft Office 2000) software at our center. These data were retrospectively reviewed.

3.1. *Inclusion criteria for selection of prospective donor*

1. Age 20–50 years.
2. Only first degree relatives were taken up for evaluation.
3. Preoperative imaging with contrast enhanced computed tomography (CECT) with computer aided CT volumetry (Fig. 1) and magnetic resonance cholangiopancreaticography (MRCP) of the donor was done to
   (a) exclude focal or diffuse liver disease.
   (b) assess total liver/right with or without middle hepatic vein (MHV)/left/left lateral segmental volume.
   (c) calculate graft recipient weight ratio (GRWR). Minimum of 0.8 was accepted.
   (d) calculate residual volume. Minimum of 30% remnant was accepted.
   (e) liver attenuation index (LAI) was calculated (Fig. 2). LAI 0–15 was accepted.
   (f) LAI of −5 to 0 were subjected to liver biopsy. Fat changes less than 25% were accepted.
   (g) Variations in biliary and vascular anatomies were noted. Any variations
   Considered detrimental to donor safety were rejected.
   i. Crossover of portal vein to the opposite side.
   ii. More than 2 bile ducts in the donor segment.
   iii. More than 2 arteries in the donor segment.

3.2. *Exclusion criteria for prospective donor*

1. BMI >30.
2. Transmissible viral infections (HIV, HBV, HCV).
3. Severe or disabling psychiatric disorders.

3.3. *Pre defined operative protocols*

1. The donor procedure began with a Mercedes Benz incision. Initially a cholecystostomy is done followed by intraoperative cholangiography to delineate the biliary anatomy in all cases (Fig. 3)
2. Parenchymal transection was done with Cavitron Ultrasonic Suction and Aspirator (CUSA), Integra, USA and without any hepatic vascular occlu sion to ensure minimal ischemic injury to the parenchyma.
3. All veins more than 5 mm were reconstructed in the bench with portal vein from the recipient and drained into the IVC of the recipient.
4. Following hepatic parenchymal resection bile leak were detected and repaired with 5–0 prolene/PDS over the transected surface.
5. At the end of the donor surgery an intraoperative cholangiogram was repeated to see the anatomy of the remaining biliary tree.
6. Intra peritoneal sub hepatic tube drain was placed in all cases.

3.4. *Postoperative protocols*

1. Drain fluid bilirubin was done on postoperative day 3. A value more than 3 times the normal serum bilirubin value was considered as bile leak.
2. Postoperatively all patients were given 3rd generation cephalosporins for 5 days and discharged subsequently on normalization of all parameters.
3. Follow-up protocols included fortnight visits over the first two months, monthly visits for the subsequent 4 months, and then yearly visits with ultrasound of the abdomen and liver function tests.
4. During each visit routine hemogram, liver function test were done.
5. Sonography was performed on all donors at 6 weeks postoperatively to see the size of the residual liver.

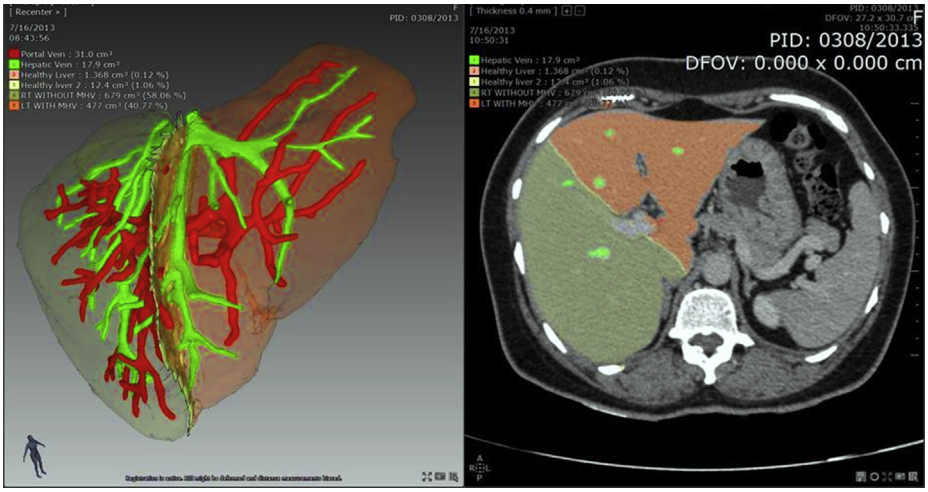

Fig. 1 – Preoperative 3D CT volumetry being done to decide the plane of resection.