Outflow vein venoplasty of left lateral section graft for living donor liver transplantation in infant recipients

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Background: The size of the orifice of the left hepatic vein (LHV) trunk in left lateral segment (LLS) grafts is often too small for direct anastomosis. Several methods were developed to enlarge the graft and recipient hepatic vein orifices. This study described our surgical techniques for secure hepatic vein reconstruction in infant recipients and analyzed their patency outcomes.

Methods: Twelve infants undergoing pediatric living donor liver transplantation (LDLT) were selected during a 2-year study period between January 2018 and December 2019. Surgical techniques and vascular complications of graft hepatic vein outflow in these recipients was analyzed.

Results: The mean recipient age was 12.5 ± 4.5 months; mean body weight was 9.4 ± 1.0 kg; and mean graft-recipient weight ratio was $2.8\% \pm 0.6\%$. Primary diseases were biliary atresia in six patients, metabolic disease in two, hepatoblastoma in two, and acute liver failure in two. Eight LLS grafts were recovered through an open method, and four LLS grafts were recovered through a laparoscopic method. A small superficial LHV branch was present in five of 12 LLS grafts and used to widen the graft hepatic vein orifice. Incision-and-patch venoplasty was performed in 10, incision venoplasty in one and no venoplasty in one. All four LLS grafts recovered through a laparoscopic approach required circumferential vein patch because of very short hepatic vein stump. No patient experienced graft hepatic vein-associated vascular complications.

Conclusions: Our surgical techniques with incision-and-patch venoplasty for LLS grafts is beneficial to reduce the risk of hepatic vein outflow obstruction in recipients receiving LLS grafts.

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