



Title	Living Donor Liver Transplantation in Children
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Aim

To evaluate the published evidence on the safety, efficacy, and current status of living donor liver transplantation (LDLT) for treating end stage liver disease in children.

Conclusions and results

Donors: The LDLT donor operation is lengthy, but rarely results in the need for blood transfusion. On average, donors remain in hospital for at least 5 days. The mortality rate for live donors was 0.15%, and up to 1 in 10 donors experience adverse effects. As many as 4% of donors will undergo another operative procedure because of complications related to LDLT.

Recipients: The overall patient and graft survival rates were similar for cadaveric whole liver transplantation and LDLT. There was no clear benefit conferred by either graft type with respect to vascular complications, bile leak, reoperation, or graft dysfunction. However, subgroup analysis of registry data suggested that LDLT resulted in significantly lower mortality and graft failure rates, compared to cadaveric whole grafts, in children younger than 2 years. The opposite was the case for children aged between 2 and 16 years. Children undergoing reduced size liver transplantation (RSLT) generally fared worse than those who underwent LDLT. Graft and patient survival rates declined over time after RSLT and were much lower than those for LDLT at 5 years. RSLT recipients were also more likely to experience vascular complications.

LDLT produced better actuarial graft and patient survival rates at 1 year than split liver transplantation, but by 5 years there was no difference between the two graft types. The risk of graft dysfunction and bile leak or bleeding from the cut liver surface was similar for both procedures.

Recommendations

The evidence base for LDLT is incomplete. Limited evidence suggests that LDLT is superior to all forms of cadaveric liver transplantation in children younger

than 2 years. However, the safety and efficacy of LDLT was equivalent to, and in some cases worse than, split liver transplantation and whole liver cadaveric donation in older children. Despite its limitations, LDLT is a life saving procedure for some individuals where alternative transplant options are not available, eg, very small children or elective patients whose condition is likely to deteriorate before a cadaveric graft becomes available.

It is unlikely that LDLT would be performed at centers with an abundant supply of cadaveric organs. Future initiatives in LDLT must aim to achieve minimal morbidity and zero mortality for donors. Centers performing LDLT must adhere to an extremely high standard of care that includes standard protocols for preoperative evaluation of potential donors, postoperative followup of donors and recipients, and strong psychosocial evaluation and support programs.

Methods

Data were collected on children (aged <18 years) undergoing liver transplantation for any indication. All original, published systematic reviews, comparative studies with at least 10 recipients in each study arm, or case series studies reporting outcomes for at least 10 donors were identified by searching electronic literature databases and websites of health technology assessment agencies, research registers, and guidelines sites from 1995 to June 2004. No language restriction was applied.

Further research/reviews required

Initiatives are under way in some countries to prospectively collect and analyze data on pediatric liver transplants to quantify recipient and graft survival rates, identify potential prognostic factors, and ascertain how liver transplantation and immunosuppression affect the growth of children. These initiatives, together with an ongoing audit of graft donor outcomes, form an essential part of the requisite evaluation of LDLT.