

Edging Closer to Commonplace: Assessing the Growth of Living Donor Liver Transplantation in the United States

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More than 13,000 patients are added to the waiting list for life-saving liver transplants across the United States each year. Despite the need, the demand for liver allografts outpaces supply, with nearly 1200 patients dying annually while awaiting a liver transplant.⁽¹⁾ This disparity is likely multifactorial, including donor availability and quality, changes in the epidemiology of liver disease, and liver transplantation allocation policy.⁽²⁻⁴⁾ In this issue of *Liver Transplantation*, we gain insight into a potential solution to the lack of donor livers—living donor liver transplantation (LDLT). Although deceased donor liver transplantation (DDLT) makes up the vast majority of transplants conducted in the United States, LDLT is growing and may address the needs of a population not currently served by our DDLT allocation system.

In the article by Cotter et al., we gain a contemporary snapshot at LDLT practices and outcomes in the United States.⁽⁵⁾ Using data obtained from the United Network for Organ Sharing, the authors review national trends, recipient survival rates, and donor outcomes in LDLT during the past 10 years. Expanding on the previous work done by the Adult-to-Adult Living Donor Liver Transplantation Cohort,⁽⁶⁾ the authors find

that the number of LDLTs doubled during the study period, reaching a peak of more than 400 transplants in 2019. The survival rates compared favorably to DDLT at 1 and 5 years and confirmed previous literature that suggested a steep center-specific learning curve, with the best outcomes in centers that performed more than 20 LDLTs annually.

This analysis contributes to our understanding of LDLT in several important ways. First, it shows that LDLT is a scalable intervention with acceptable recipient outcomes and overall favorable donor outcomes, even in centers that recently opened LDLT programs. Second, it shows the volume-based learning curve necessary to obtain the best recipient outcomes, which allows for programs to set benchmarks for volume and outcomes. Third, it shows relevant mediators for worse recipient outcomes that could help with better donor-recipient selection. These include older donor age, recipient diabetes mellitus, higher recipient body mass index, and need for recipient ventilator support. Finally, the analysis shows similar outcomes between unrelated and related LDLT donor-recipient pairs, allaying concerns about the impact of relatively rare immune-mediated events, such as graft-versus-host disease in related LDLT pairs.

There are contextual factors to consider when interpreting these data. First, this is a national analysis using data that lack granularity on mediators of outcomes, and given the complexity of donor and recipient selection, unmeasured confounding may play a role. The center experience is only volume based and lacks salient factors, such as individual surgical experience or other components of the LDLT team, which may impact outcomes. We only have limited follow-up reflecting outcomes in the most recent LDLT population, so ongoing assessment will be important, especially as the increases in LDLT volume are more concentrated in the future. Finally, beyond survival and hospitalization, more comprehensive donor outcomes are needed to ensure there are not long-term adverse sequelae of living donation such as impairment in functional ability or patient-reported outcomes.

Abbreviations: DDLT, deceased donor liver transplantation; LDLT, living donor liver transplantation.

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The Future of LDLT in the United States

As LDLT becomes more commonplace across the United States, transplant centers that wish to increase the number of living donors must be innovative in their solutions to tackling the learning curve. Mentorship and collaboration between high-volume centers and those that seek to grow their LDLT programs are pragmatic ways to transfer knowledge and skill. Quality improvement collaboratives offer the opportunity for ongoing assessment and real-time tracking of programmatic outcomes.

The liver transplantation community is primed for the growth of LDLT. Across the country, initiatives to support living liver donors in financial hardship are finally coming to fruition. Organizations such as the National Living Donor Assistance Center recently received a boost when the US Health Services and Resources Administration expanded the final rule to allow for additional financial support for living donors.⁽⁷⁾ Similarly, some states have passed or are considering legislation to provide financial support for donors for expenses or missed time from work related to living donation in the form of tax credits or employer reimbursement.⁽⁸⁾

Removing barriers to donation, sharing best practices in donor and recipient selection along with the technical aspects of LDLT, and appropriate tracking of granular outcomes as centers start or grow their programs will be paramount as we enter a new era of LDLT in the United States.

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