

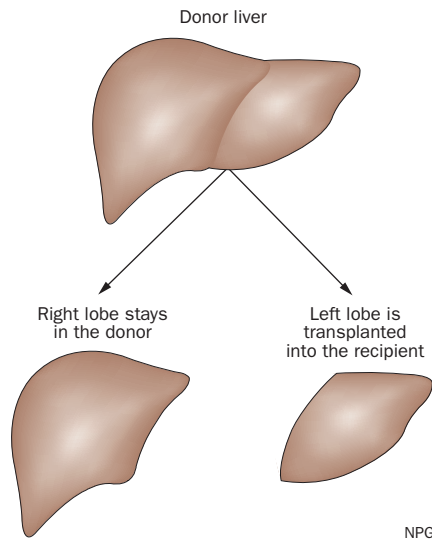
LIVER TRANSPLANTATION

Left lobe living donor liver transplantation could improve donor outcomes

The findings of two recent studies suggest that left lobe living donor liver transplantation (LDLT) could reduce the risk of death and complications in the donor, while maintaining good outcomes for the recipient. Liver transplants in adults usually involve the right lobe being taken from the donor, as this strategy is generally thought to offer the best outcomes for recipients. However, right lobe LDLT has a higher donor mortality rate than left lobe LDLT (0.5% versus 0.1%). Yet, “one has to get the size ratio between donor and recipient right otherwise the graft does not function; small-for-size syndrome is well documented,” explains Andrew Burroughs, Professor of Hepatology at the Royal Free Hospital, UK.

In the first study, Yuji Soejima (Kyushu University, Fukuoka, Japan) and colleagues assessed the feasibility of left lobe LDLT in adults; they compared the outcomes of 200 donor–recipient pairs who underwent left lobe LDLT to those of 112 pairs who underwent right lobe LDLT. The researchers found that recipient survival (assessed at 1, 5 and 10 years after surgery) was similar for the two types of LDLT, as were overall donor morbidity rates. Left lobe donors had better liver function after surgery than right lobe donors, and tended to have a shorter stay in hospital (12.2 days versus 17.3 days, respectively). However, small-for-size syndrome was more common in recipients of a left lobe than in those who received a right lobe (19.5% and 7.1%, respectively).

Soejima and colleagues note that their results support the increased use of left lobe grafts, as they reduce the risks for the donor and the outcomes for the recipient are similar to those achieved with a right lobe graft. “Left lobe LDLT could be the first choice, even in Western countries,” concludes Soejima. However, “prevention of small-for-size syndrome is the key to further promote this modality.” In addition, Soejima and co-workers caution



that left lobe LDLT should not be used in very ill recipients who have a MELD score ≥ 30 .

The second study looked at whether the use of left lobe LDLT could be increased if the graft size requirement could be decreased without detrimental effects on the outcomes for donors and recipients. The researchers used CT volumetry to measure graft volume, which enabled them to calculate the graft weight of 361 LDLTs (95% of which were right lobes). Using these figures, the researchers then estimated how many more left liver transplants would have been feasible if the graft-weight-to-standard-liver volume ratio was lowered to 40%, 35%, 30% and 25%. A graft with a ratio of 50% is usually considered as a full-sized graft, whereas a graft with a ratio $< 40\%$ is a small-for-size graft that could increase the risk of graft failure.

They found that roughly double the number of left lobe grafts would have been possible with every 5% reduction in the graft-weight-to-standard-liver volume ratio (5.8%, 12.5%, 29.1% and 62.3%). The authors conclude that lowering the graft size requirement will enable left lobe LDLTs to be carried out

more often, resulting in a reduced risk for donors. However, reducing the graft size will only be possible as a result of innovations in surgical techniques and improved after-surgery care to prevent small-for-size syndrome in the recipient. James Neuberger (University Hospitals Birmingham NHS Foundation Trust, UK) notes that the skills of the surgical team will also be important in determining whether a left lobe LDLT can be carried out successfully.

“These papers signify a desire to re-evaluate adult-to-adult living donation,” explain Ronald Busuttill and Ali Zarrinpar from the David Geffen School of Medicine UCLA, USA. “In some ways this is a zero sum game balancing the risk to the donor with the risk and benefit to the recipient. A ‘smaller’ operation on the donor might be safer for the donor but it might lead to worse outcomes for the recipient. What these studies do is provide more data for those making the risk–benefit calculation.” Busuttill and Zarrinpar note that increasing the safety of the donor operation—regardless of whether the left or right lobe is taken—is key to improving the risk:benefit ratio. In addition, centers should be willing to consider both options and assess each donor–recipient pair on an individual basis.

“Worldwide studies of left lobe LDLT are warranted,” says Soejima. If the findings of these two studies are confirmed in other cohorts, left lobe LDLT could prove to be a viable option for some patients undergoing liver transplantation, balancing reductions in the risks for the donors and long-term positive outcomes for the recipients.

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Original articles Soejima, Y. *et al.* Left lobe living donor liver transplantation in adults. *Am. J. Transplant.* doi:10.1111/j.16006143.2012.04022.x | Chan, S. C. *et al.* Increasing recipient-benefit to donor-risk ratio by lowering the graft size requirement for living donor liver transplantation. *Liver Transpl.* doi:10.1002/lt.23433