

Splitting liver grafts for two adults: suboptimal grafts or suboptimal matching?

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Abstract: Liver splitting in order to offer liver transplant to two adult candidates is an attractive strategy in order to expand the donor pool, however, results have limited the widespread of this option. Some of the most relevant aspects of graft allocation and recipient selection are discussed in this editorial, based on the most recent Italian experience.

Keywords: Liver; transplant; split; allocation



Submitted May 25, 2013. Accepted for publication Jun 02, 2013.

doi: 10.3978/j.issn.2304-3881.2013.08.05

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An increasing pressure on the waiting list causing unacceptable mortality rates for liver transplantation candidates, forces us to expand the donation pool by means of the extreme use of our resources. Different options have been explored in this setting, including the so called extended criteria donation. This donor category was defined in the 2008 Paris Conference (1), on the basis of the observation of worse results, in terms of graft and patient survival, when compared with the conventional liver donation and transplantation. The potential negative impact of the use of this grafts on patient outcomes, should be counterweighed, against the risk of dying because of not being transplanted on.

In the setting of extended criteria donation, split liver transplant actually increases the accessibility to transplant, but for sure entails a higher complexity, involving two liver transplant recipients in the process. Adult/child split liver transplant has proven to offer a reasonable option for the two candidates, with acceptable results for both adult and child recipients, and a measurable superior global benefit, if accumulated survivals for the two grafts are added, and compared with those observed for those organs that have not been divided, as it has been suggested (2).

On the basis of the good results observed for adult/child split liver transplant, it seems reasonable to expand this technique a step beyond, to divide an organ for two

adult liver transplant candidates, with the intention to achieve the same benefits (3). However, data are scarce and only relatively short sample size series have been reported. Lower survivals with higher complication rates have led to consider liver bipartition for two adult liver transplantation candidates under very restrictive conditions and after a thorough donor and candidate selection and matching.

In spite of all the surgical refinements that have been developed lastly, with a deep knowledge of partial liver graft behavior (mainly due to a more extensive use of live liver donation and adult/child liver splitting), plus a restrictive donor selection and recipient matching, results have been generally under the standards offered with conventional grafts, pointing at the need of further investigation, to offer a safe procedure with good results for both adult recipients.

The fact that a calculated graft/recipient weight ratio based allocation, under MELD/UNOS scores prioritization models, would be the most suitable policy, should be questioned, in the light of the results observed for this particular liver transplant setting.

In terms of candidate severity of disease, some authors have observed good results with the use of split grafts, even in the high MELD score scenario (4), but these observations should be interpreted in the adult/adult split liver transplant cautiously. MELD based allocation policies have proven to

be a reliable and useful tool, in order to establish a justice and utility based system, but some limitations from its strict application for certain graft and candidate groups, have been ruled out (5); The fact that these grafts would be allocated, irrespective of the presence of severe portal hypertension, could increase the risk of small for size syndrome, as this study suggests. Relevant differences have been ruled out in terms of candidates' severity of the disease, identifying lower UNOS status as a risk factor for worse graft survivals for those patients who were transplanted on with a split graft, leading us to reconsider again DRGWR matching as a single and independent element to perform the most adequate donor-recipient matching.

New allocation systems, considering integrated relevant information from both graft and candidate, should be developed in order to offer a safe and useful use of this resource. Even though adult/adult split liver transplant could be considered as an experimental option, as the authors describe, further studies, with higher sample sizes, will identify factors that will improve split liver transplant outcomes for two adults, resulting in a safe and effective expansion of the donor pool.

Cite this article as: Abradelo M, Jiménez C. Splitting liver grafts for two adults: suboptimal grafts or suboptimal matching? *Hepatobiliary Surg Nutr* 2013;2(5):242-243. doi: 10.3978/j.issn.2304-3881.2013.08.05

Acknowledgements

Disclosure: The authors declare no conflict of interest.

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