Is remnant liver volume ratio less than 30% still contraindication for living donor right hepatectomy?

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Background: The lowest limits for a safe remnant/total volume ratio (RTVR) for living donor right hepatectomy (LDRH) is still not clear. Most centers have followed at least 30% for RTVR based on their experiences to keep donor safety. Recently, some centers reported that extended resection with RTVR less than 30% for LDRH and therefore, we describe our center's experience for LDRH with RTVR<30% and evaluate the outcomes of living liver donors under these extended criteria.

Methods: We retrospectively reviewed the outcomes of 473 LDRHs which performed at our institution from January 2010 to December 2020. We performed right hepatectomy for 41 living donors with RTVR <30% under the following criteria: age ≤40, preservation of middle hepatic vein, no or minimal fatty changes (<15%), flat fish shaped left hemiliver, and RTVR>25% and future remnant liver volume/body weight ≥0.45. The outcomes in these extended living donors were compared with those in living donors under conventional criteria.

Results: The mean RTVR is 27.6%±1.2% (25.5%–28.9%) in extended donor group and posthepatectomy liver failure (PHLF) occurred in 50 donors (10.6%) and most cases were grade A except one case and no clinically significant PHLF was not evident for these extended criteria group. PHLF and major complications were not more frequent in living donors with RTVR <30%. In multivariate analysis, the only event for major complications was associated with PHLF but RTVR less than 30% was not related to PHLF. Moreover, in subgroup analysis with conventional donor group with same age and steatosis criteria, the evidence for PHLF and major complication rate were not different between the two groups.

Conclusions: LDRH under our extended criteria could be performed safely in donors with RTVR <30% under our strict criteria when no other donors are available.

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