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Effect Of Weight Reduction On Liver Volume In Living Liver Donor With Steatosis

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Background : If potential live liver donors are accompanied by steatosis, the donation will proceed after weight reduction. Weight reduction can reduce liver volume, affecting the graft-to-recipient ratio. Therefore, this study aims to evaluate a decrease in liver volume after weight reduction and analyze the risk factors affecting liver volume reduction.

Methods : From January 2016 to December 2020, we conducted a retrospective medical chart review of 147 potential liver donors with steatosis who participated in a weight reduction program due to living donor liver transplantation at Seoul National University Hospital.

Results : Ninety-seven (66%) donors underwent donor hepatectomy after weight reduction. After weight reduction, liver volume showed a statistically significant decrease (from 1399.6 ± 315.4 to 1283.6 ± 171.2 ml, $P < 0.05$). The weight reduction in the large liver volume reduction ($\geq 10\%$) was more significant than that in the group with small liver volume reduction (5.8 ± 5.2 vs. 9.4 ± 4.3 %, $P < 0.05$), and AST (from 23.5 ± 9.7 to 22.2 ± 18.5 vs. from 27.2 ± 15.8 to 17.7 ± 4.4 U/L, $P < 0.05$), ALT (from 23.5 ± 9.7 to 22.2 ± 18.5 vs. from 27.2 ± 15.8 to 17.7 ± 4.4 U/L, $P < 0.05$). As a result of analyzing the risk factors for large liver volume reduction, weight reduction (%), and an ALT abnormality were analyzed (odds ratio [OR] = 1.184; 95% CI 1.054-1.329, OR = 5.502; 95% CI 1.660-18.229; all $P < 0.05$). There were more cases in potential liver donors with risk factors in which large liver volume reduction after weight reduction and a considerable reduction in GRWR was reported.

Conclusions : Potential liver donors with 7% or more weight reduction or an ALT abnormality required re-measurement of liver volume after weight reduction for re-measurement of graft-to-recipient ratio.

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