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A comparison study of liver regeneration in laparoscopic versus open right hemihepatectomy for adult living donor liver transplantation

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Introduction : This study aims to compare differences between laparoscopic donor right hemihepatectomy (LDRH) and open donor right hemihepatectomy (ODRH) in the quality of the operation, postoperative complications, and liver regeneration measured via volumetry.

Methods : This study included 119 patients who underwent living donor right hemihepatectomy at Samsung Medical Center from January 2016 to December 2017. We compared several aspects of LDRH and ODRH and analyzed the results using the independent t-test, chi-square test and Fisher's exact test.

Results : Among 119 enrolled patients, 66 patients (55.5%) underwent open surgery, and 53 patients (44.5%) underwent laparoscopic surgery. The mean operation time was significantly shorter for ODRH (290.57 ± 54.04 minutes) than LDRH (312.28 ± 53.5 minutes). ($p = 0.031$). Estimated blood loss was significantly less in LDRH (258.49 ± 119.99 ml) than ODRH (326.52 ± 157.68 ml) ($p = 0.011$). The remnant liver recovered to $83.35 \pm 10.71\%$ of the preoperative estimate whole liver volume (pre-EWLV) in the ODRH group and $84.04 \pm 8.98\%$ of the pre-EWLV in the LDRH group ($p = 0.707$). The percentage of increased estimated liver volume to postoperative estimate remnant liver volume (post-ERLV) was $137.62 \pm 40.34\%$ in the ODRH group and $130.56 \pm 36.78\%$ in the LDRH group, and there was no statistically significant difference between the two groups ($p = 0.326$). An analysis of postoperative complications showed no significant differences.

Conclusions : LDRH is safe, and there is no significant difference in hepatic regeneration compared with ODRH. Therefore, LDRH can be applied for living donation of liver.

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