

# Laparoscopic Versus Open Anatomical Liver Resection For Hepatocellular Carcinoma: A Systematic Review And Meta-Analysis

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**Background :** To compare the short- and long-term outcomes of laparoscopic anatomical liver resection (LALR) and open anatomical liver resection (OALR) for hepatocellular carcinoma (HCC). OALR has been accepted as an effective and oncologically safe treatment for HCC, but more studies on LALR are required.

**Methods :** Electronic databases were searched from January 2000 to September 2021. Pooled risk ratios (RRs), weighted mean differences (WMDs), and hazard ratios (HRs) with 95% confidence intervals (CIs) were calculated using the fixed- or random-effects model.

**Results :** Eighteen retrospective studies comprising 1750 patients (LALR 741, OALR 1009) were included. Regarding short-term outcomes, LALR had a longer operation time (WMD 64.14, 95% CI [30.70, 97.57],  $p=0.0002$ ) but less blood loss (WMD -143.46, 95% CI [-229.34, -57.57],  $p=0.001$ ), overall morbidity (RR 0.58, 95% CI [0.49, 0.69],  $p<0.00001$ ), severe morbidity (RR 0.50, 95% CI [0.31, 0.79],  $p=0.003$ ), and hospital stay (WMD -3.25, 95% CI [-4.73, -1.77],  $p<0.0001$ ) than OALR. There were no significant differences between the two groups in transfusion, tumor size, resection margin, and R0 resection rate. For long-term outcomes, LALR had better 3-year overall survival (OS) (HR 0.68, 95% CI [0.49, 0.95],  $p=0.03$ ), 5-year OS (HR 0.74, 95% CI [0.57, 0.95],  $p=0.02$ ), 3-year disease-free survival (DFS) (HR 0.82, 95% CI [0.69, 0.98],  $p=0.03$ ), and 5-year DFS (HR 0.81, 95% CI [0.67, 0.96],  $p=0.04$ ) than OALR but without significant differences in 1-year OS and DFS.

**Conclusions :** LALR seems feasible for the treatment of HCC considering the clinical advantages regarding short- and long-term outcomes.

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