P75

## Long-Term Survival After Minimally Invasive Resection versus Open Resection for Hepatocellular Carcinoma: A Systematic Review, Meta-Analysis and Meta-Regression

Rohan R Gujjuri, Sivesh K Kamarajah, Moh'd Abu Hilal, Derek M Manas, Steven A White

*College of Medical and Dental Sciences, University of Birmingham, Birmingham, United Kingdom*

Corresponding Author: Mr. Rohan R Gujjuri (rgujjuri@gmail.com)

**Introduction:** Minimally invasive liver surgery (MILS) for hepatocellular carcinoma (HCC) has gained widespread interest as an alternative to conventional open liver surgery (OLS). However, long-term survival benefits of this approach seem unclear. This meta- analysis was conducted to investigate long-term survival following MILS.

**Methods:** A systematic review was performed to identify studies comparing long-term survival after MILS and OLS until January 2020. The I2 test was used to test for statistical heterogeneity and publication bias was assessed using Egger test. Random-effects meta-analysis was performed for all-cause 5-year (main outcome) and 3-year mortality, and disease-specific 5-year and 3-year mortality. Meta-regression was performed for the 5-year and 3-year survival outcomes with adjustment for study factors (region, design), annual center volume, patient factors (ASA grade, gender, age, BMI, cirrhosis, tumor size and number), and resection extent. Sensitivity analyses were performed on studies by study year, region, annual centre volume, resection type.

**Results:** The review identified 50 relevant studies including 13,731 patients undergoing liver resection for HCC of which 4,071 (25.8%) underwent MILS. Pooled analysis revealed similar all-cause (OR: 0.83, 95% CI: 0.70 - 1.11, $p = 0.3$) and disease-specific (OR: 0.93, 95% CI: 0.80 - 1.09, $p = 0.4$) 5-year mortality after MILS compared with OLS. Sensitivity analysis of published studies from 2010 to 2019 demonstrated a significantly lower disease-specific 3-year mortality (OR 0.75, 95% CI: 0.59 - 0.96, $p = 0.022$) and all cause 5-year mortality (OR 0.63, 95% CI: 0.50 - 0.81, $p = 0.002$). Meta- regression identified no confounding factors in all analyses.

**Conclusions:** Improvement in MILS techniques over the past decade appears to demonstrate superior disease-specific mortality with MILS compared to OLS. Therefore, MILS can be recommended as a standard surgical approach for HCC.