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## Robotic Major Liver Resections: Surgical Outcomes Compared With Open Major Liver Resections

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**Background** : Laparoscopic major liver resections are still considered innovative procedures despite the recent development of laparoscopic liver surgery. Robotic surgery has been introduced as an innovative system for laparoscopic surgery. In this study, we investigated surgical outcomes after major liver resections using robotic systems.

**Methods** : From January 2009 to October 2018, 70 patients underwent robotic major liver resections, which included conventional major liver resections and right sectionectomy. The short-term and long-term outcomes were compared with 252 open major resections performed during the same period.

**Results** : Operative time was longer in the robotic group (472 min vs. 349 min,  $p < 0.001$ ). However, estimated blood loss was lower in the robotic group compared with the open resection group (269 ml vs. 548 ml,  $p = 0.009$ ). The overall postoperative complication rate of the robotic group was lower than that of the open resection group (31.4% vs. 58.3%,  $p < 0.001$ ), but the major complication rate was similar between the two groups. Hospital stay was shorter in the robotic group (9.5 days vs. 15.1 days,  $p = 0.006$ ). Among patients with HCC, cholangiocarcinoma, and colorectal liver metastasis, there was no difference in overall and disease-free survival between the two groups. After propensity score matching in 37 patients with HCC for each group, the robotic group still showed a shorter hospital stay and comparable long-term outcomes

**Conclusions** : Robotic major liver resections provided improved perioperative outcomes and comparable long-term oncologic outcome compared with open resections. Therefore, robotic surgery should be considered one of the options for minimally invasive major liver resections.

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