

Improving Patient Centered Outcomes with Robotic Hepatic Resection for Liver Tumors in a Tertiary Academic Transplant Center

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Background

The growth of laparoscopic liver resections has been hampered by a steep learning curve due to the inherent complex nature of the liver hilum and retrohepatic anatomy, multiplicity of hepatic vascular systems, and limitations of laparoscopic limitations. Robotic surgery is emerging as a feasible surgical technique to enable invasive resection of the liver and can improve patient centered metrics in hepatic resection.

Methods

This is a retrospective cohort study at a tertiary care academic transplant center comparing open versus robotic hepatic resection. Analysis of data from consecutive robotic liver resections (RLR) since the initiation of our HPB robotic program in 2017 were analyzed and compared to consecutive open resections (OLR) from 2016. Exclusion criteria included combined liver and bowel resection, liver resection requiring biliary reconstruction, hepatectomy for living donation, and cyst fenestration.

Results

Twenty-seven liver resections were performed in 2016 (89% open, 11% laparoscopic, 0% robotic) and 34 in 2017 (53% open, 0% laparoscopic, 47% robotic). A total of 24 OLR were compared to 16 RLR. Mean patient age and BMI were similar between the two groups. Robotic patients had a higher proportion of Childs A cirrhosis (RL 50%, OL 8.3%; $p=0.003$). Resection rates for malignancy were similar (RL 81%, OL 83%). Procedural time was significantly longer in robotic cases (246 vs 153 minutes; $p=0.003$). Duration of postoperative narcotic requirement (epidural and intravenous) was shorter in RL patients (40 vs 82 hours; $p=0.012$). Correspondingly, length of stay in RL patients was shorter (4.5 days) compared to OL patients (7.3 days). Clavien III-V complications (16.7% OL vs 6.2% RL; $p=0.212$) and readmission rates were similar.

Conclusions

Utilization of robotic techniques for liver resection offers patients a significant benefit in the immediate postoperative period with diminished narcotic requirements and shortened length of stay without compromising complication and readmission rates.