



ASO Author Reflections: Robotic Radical Surgery for Incidental Gallbladder Cancer is on the Rise

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Past

Cancer of the gallbladder is the most common cancer of the biliary tract worldwide. However, appropriate surgical treatment is performed in less than 20% of cases.¹ Patients with incidental tumors who undergo radical surgery have the best survival rates.²⁻⁴ Although cholecystectomy is an appropriate treatment for T1a patients, radical resection has been shown to be beneficial for survival in more advanced stage patients.^{5,6} Early diagnosis, careful perioperative evaluation, and precise surgery are essential factors to achieve good outcomes in the treatment of incidental gallbladder cancer. In one systematic review, the pooled proportion

of patients with unresectable disease attempting reoperation was 23%.⁷ When feasible, further surgery with radical resection offers the only chance of cure. The standard treatment is radical resection consisting of liver resection with lymphadenectomy performed through an open approach. Since 2010, some reports on the use of minimally invasive techniques in the treatment of incidental gallbladder cancer have appeared in the literature, especially laparoscopy. Most with limited resections of the gallbladder bed.^{8,9} From 2015, when we published the hepatic bisegmentectomy technique³ (4b +5), more reports appeared and the number of publications increased.^{4,5}

Present

Minimally invasive surgery is not yet routine in the treatment of gallbladder

cancer. In cases of incidental gallbladder cancer, laparoscopy has been used for staging and to avoid unnecessary laparotomy and has increased the curative resection rate. The continued development of minimally invasive surgery of the liver and biliary tract suggests that the role of minimally invasive surgery in gallbladder cancer

should be further explored.² Indeed, there is increasing interest in the use of laparoscopy and robotic-assisted procedures for the treatment of incidental gallbladder cancer.^{10,11} Increasing experience with minimally invasive surgery have led to an exponential increase in the number of laparoscopic

hepatobiliary resections. The robotic platform, with its additional degrees of stability and freedom, may be useful to perform more complex hepatobiliary resections. However, the use of the robot has not yet spread worldwide, and only a few centers routinely use this technique.¹⁰⁻¹²

Future

Robotic hepatobiliary surgery has been reported to improve surgeon ergonomics, surgical accuracy due to 3-D visualization, and increased range of motion. This approach facilitates extended hilar lymphadenectomy by identifying and controlling individual structures from the hepatoduodenal ligament. However, as with open surgery, there are some limitations to this approach in terms of anatomic segment-based liver resections.

Unlike open surgery, the minimally invasive complexity for completion radical cholecystectomy relies on prior dissection of the hepatic hilum, which may hinder precise dissection and adequate

lymphadenectomy, as well as the need to remove segments 4b and 5. In this situation, the robotic platform may be useful. Recently, we also described the use of the Glissonian approach for robotic liver resection.^{13,14} The use of the Glissonian approach is useful in patients with previous manipulation of the hepatic hilum and in patients requiring anatomic bisegmentectomy 4b and 5.

In conclusion, the robotic approach is safe and feasible for radical surgery for incidental gallbladder cancer. The number of cases using the robotic platform is rapidly increasing.^{10,15}

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