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**Robotic extended cholecystectomy in gallbladder cancer
: An experience of 5 case series in a single institution**

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Purpose: Previously, a minimally invasive approach to gallbladder carcinoma (GBC) has been regarded as a very dangerous attempt. However, nowadays, there are many reports about the cases that minimally invasive surgery (MIS) has been performed in GBC and its results are not inferior to those of the conventional open surgery. In addition, we performed the extended cholecystectomy in GBC using robot, which is one of the MIS which has recently been utilized.

Methods: We reviewed retrospectively 5 patients who underwent robotic extended cholecystectomy in Seoul national university hospital (SNUH) from Feb to Jul 2018. All patients took a 3D computed tomography (CT) and a high resolution ultrasonography (HRUS), and the clinical stage exceeded T1a.

First of all, the 5 trocars were placed for this procedure (Figure 1). The hepatoduodenal ligament were dissected until the common bile duct (CBD), the common and proper hepatic artery (PHA), and the portal vein (PV) were completely skeletonized to obtain the sufficient regional lymph nodes. And, the liver parenchyma was dissected with the energy device, apart 2cm from the gallbladder. After the meticulous hemostasis at resection site, the Jackson-Pratt (JP) drain tube was placed.

Postoperative abdominal CT scan was checked at the postoperative day 4, the JP drain tube was removed, if there was no any postoperative problem. After the discharge, the patient visited the outpatient clinic at 2 weeks, 3 months later.

Results: All five patients were male and the median age was 64 (range 58 to 72) years. The median time of operation was 200 (range 180 to 210) min, and the estimated blood loss (EBL) was 200 (range 50 to 400) ml. In a view of pathologic results, all had different pT stage results; Low grade dysplasia, Tis (Carcinoma in situ), T1a, T2a, and T3, respectively. The median number of retrieved lymph nodes was 5 (range 3 to 8). The median duration of hospital stay was 5 (range 5 to 11) days.

Conclusion: There are some concerns about MIS in GBC; Tumor dissemination due to laparoscopic manipulation, Trocar site recurrence, Burden of laparoscopic liver resection, and insufficient regional lymph node dissection. According to recently published studies, these concerns seem to be insignificant. However, the exquisite work in regional lymph node dissection and the management of microstructures in hepatic resection seems to be an important

part of microinvasive extended cholecystectomy in GBC, and the widely known advantages of the robot may be helpful in this regard.

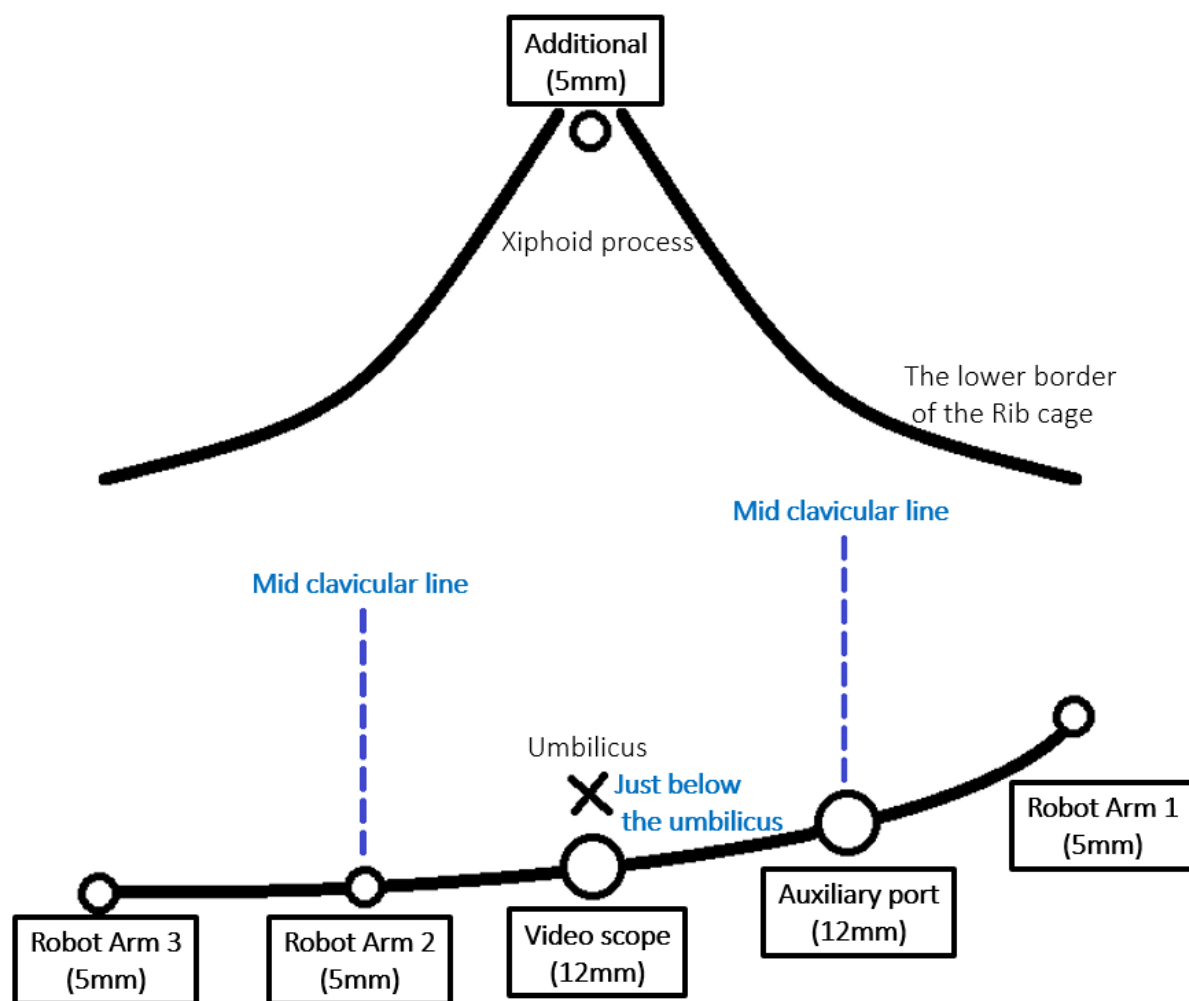


Figure 1 the schematic image about the location of trocars