Laparoscopic Anatomical Subsegmentectomy for Hepatocellular Carcinoma using Indocyanine Green Fluorescence Imaging

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Introduction: Recently, various types of laparoscopic anatomical liver resection for hepatocellular carcinoma has been actively performed in many centers. Indocyanine green (ICG) fluorescence imaging technique has been increasingly used to visualize biliary anatomy and demarcation of the transected area. We demonstrate laparoscopic anatomical subsegmentectomy for hepatocellular carcinoma using indocyanine green fluorescence imaging technique.

Methods: A 70-year-old female patient with chronic hepatitis B virus-associated hepatocellular carcinoma underwent laparoscopic S5 subsegmentectomy. We identified and divided the Glisson’s pedicle to the tumor with intraoperative ultrasonography. Then, ICG 5mg (0.1 mg/kg) was administered via the intravenous route. After several seconds, future liver remnant territory was counterstained under a fluorescent microscope (Olympus, Tokyo, Japan). Then, the ventral portion of S5 was transected along with the demarcation line.

Results: ICG fluorescence was well accumulated in the future liver remnant. It provided clearer demarcation than the conventional demarcation technique. The operation time was 200 minutes, and intraoperative blood loss was negligible. All surgical resection margins were confirmed to be negative for tumor cell. She was discharged on the seventh postoperative day without any complication.

Conclusions: Laparoscopic anatomical subsegmentectomy using indocyanine green fluorescence imaging was a feasible procedure. It could contribute to better identification of subsegment indicated by conventional demarcation technique.

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