

HCC extending to the right atrium

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Lecture : Background: Hepatocellular carcinoma (HCC) characteristically invades hepatic veins and develops tumor thrombus (TT) in the inferior vena cava (IVC). The IVC-TT occasionally extends to the right atrium, causing pulmonary embolism and edema of the legs, and makes surgical treatment difficult. In this presentation, surgical technique and outcomes of HCC with IVC-TT extending to the right atrium is discussed.

Patients: Eight out of 986 patients, who had undergone hepatic resection for HCC (April 2000 ~ August 2018), had IVC-TT. There were 5 male and 3 female patients with a median age of 69 years. The median ICG15 value was 11%.

Surgical techniques: The J-shape incision was employed for opening the abdomen and thoracic cavity. Supra-hepatic IVC was encircled by opening the pericardial cavity and infra-hepatic IVC was encircled at the site cranial to the entrance of renal veins. After dividing the liver under Pringle's maneuver, the anterior surface of IVC and the right or left hepatic vein containing TT were exposed completely. Intraoperative ultrasound demonstrated IVC-TT extending to the right atrium. By pulling the resected liver towards the caudal side, the IVC-TT was withdrawn from the right atrium to the IVC and the caudal part of the right atrium could be clamped by a forceps. The infra-hepatic IVC was also clamped. Under total clamping, the IVC was incised and the TT was removed. The IVC was closed by using a patch or by direct suture. 3 videos will be demonstrated.

Results: Seven patients successfully underwent hepatic resections with removal of IVC-TT without employing heart-lung machine and one patient required heart-lung machine. Lt hemihepatectomy was performed in one patient, rt trisectionectomy in 1, lateral sectionectomy in 1, S7 subsegmentectomy in 1, rt hemihepatectomy in 2 and posterior sectionectomy in 2. Median Pringle time was 53.5 min, IVC clamp time 16 min, operation time 465.5 min and bleeding amount 2558 ml. The median postoperative stay was 42.5 days. In all 5 patients with R0, HCC recurred and seven of the 8 patients died due to HCC. The median OS and RFS were 371 days and 179 days, respectively.

Conclusion: Although hepatic resection with removal of IVC-TT could be performed safely, the results were not satisfied and therefore adjuvant treatment is mandatory.

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