



Hybrid-ALPPS followed by Ante Situm with Cardiopulmonary Bypass: Rapid Liver Augmentation and Complex Surgery

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ABSTRACT

Background. Tumors invading the inferior vena cava (IVC) and hepatic veins pose a challenge for surgeons. Hannoun et al.¹ were able to show that the resection of these tumors can be done under hypothermia in the Ante-Situm position. Additionally, not only the localization of the tumor but the remaining volume of the remnant liver (FLR) needs to be considered. Schnitzbauer et al.² were able to induce massive liver hypertrophy in a short period, combining an in-situ split with a portal vein ligation (ALPPS). As this controversial technique has evolved, a safe ALPPS can be performed nowadays.³ To our knowledge, this is the first case that combines a laparoscopic partial ALPPS with an extended resection requiring cardiopulmonary bypass (CPB).

Methods. A 58-year-old female presented with a known chronic hepatitis C suffered from a pulmonary embolism, caused by a large, central hepatocellular carcinoma (HCC) with invasion of the suprahepatic IVC and continuous growth into the right atrium (RA). Due to the small FLR, we performed a laparoscopic hybrid-partial-ALPPS with an embolization of the right portal vein. We were able to remove the mass with an Ante-Situm position and resection of the RA under CPB.

Results. The postoperative course was complicated by posthepatic liver failure and bleeding. However, after 28 days the patient was discharged in a good medical condition.

Conclusions. Although tumors invading the suprahepatic IVC and RA pose a surgical challenge, patients can be treated adequately with multidisciplinary management. Advanced HCCs have high recurrence rates; however, a R0 resection might improve overall survival. Wakayama et al. showed in their retrospective study with 13 patients a median survival of 30.8 months when a complete resection was performed.⁴ Our patient had a disease-free survival of 11 months and is still alive after 24 months. Taking the complexity of the operation and the oncological prospect with a probable recurrence into account, indication for surgery needs to be considered on an individual basis.

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