

Splenic artery embolization as a salvage procedure after liver failure following associated liver partition and portal vein ligation for staged hepatectomy: case report

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Introduction

Associating liver partition and portal vein ligation in staged hepatectomy (ALPPS) is an advanced salvage two-stage surgery in extensive colorectal liver metastases and inoperable advanced hepatocellular carcinoma (HCC) with limited future liver remnant (FLR). ALPPS is designed to rapidly induce hypertrophy of FLR, mitigate the risk of post-hepatectomy liver failure and ensure the achievement of R0 resections. Nevertheless, few studies have discussed the management of post-ALPPS liver failure. The principle of post-hepatectomy liver failure (PHLF) focuses on early recognition and goal-directed resuscitation with portal flow modulation techniques. Here, we present the first patient applying splenic artery embolization as a rescue strategy for post-ALPPS liver failure.

Case report

A 65-year-old male with hepatitis C virus infection and right lobe HCC with small FLR was referred to our hospital. HCC was around 4.12*3.61cm close between the right and middle hepatic vein, diagnosed as T1bN0M0, stage 1B, MELD score 7, child score A, AFP 5.15ng/mL, PIVKA-II 33.95 mAU/mL, with ICG 3.0%. However, CT volumetry showed FLR was counted as 33.01% (476.425cm³) and irregular liver surface with diffused decreased attenuation in liver parenchyma was detected as a sign of liver cirrhosis. The case was discussed in a multidisciplinary meeting, and a two-staged ALPPS was recommended, considering the insufficient FLR. Following the first stage of ALPPS, FLR increased to 44%, and the second stage was performed smoothly on postoperative day 13. Nevertheless, postoperative liver failure manifested with persistent massive ascites and elevated liver enzymes. The decision of splenic artery embolization was made on postoperative day 18 to rescue post-hepatectomy liver failure, and ascites markedly improved in the following three weeks. CT revealed no further complications three months postoperatively except for the loculated fluid collection in the spleen. Histopathology of the tumor was reported as hepatic lymphoepithelioma-like carcinoma at S8 without vascular invasion and was arranged regularly for follow-up examinations.

Discussion/ Conclusion

Patients undergoing hepatic resection necessitate a future liver remnant comprising a minimum of 25-30% of the standard liver volume to mitigate the risk of post-hepatectomy liver failure and its concomitant high mortality. In instances characterized by liver cirrhosis or severe fibrosis, a FLR threshold of at least 35-40% is imperative. The ALPPS technique has demonstrated significant efficacy in enhancing the resectability of previously deemed inoperable liver tumors. The most common postoperative complications of ALPPS include biliary fistula and infection. There has been a scarcity of studies focused on post-ALPPS liver failure. In our case, postoperative liver failure manifested immediately, prompting the implementation of splenic artery embolization on postoperative day 5. This intervention proved feasible, with noticeable symptom improvement observed within one week—no long-term complications except residual fluid collection change of spleen after three months follow-up. Notably, the severe complications after embolization are not uncommon after the procedure in cirrhotic patients. In this specific case, splenic artery embolization emerged as a practicable intervention to effectively manage and mitigate liver failure after ALPPS.

Figure 1.

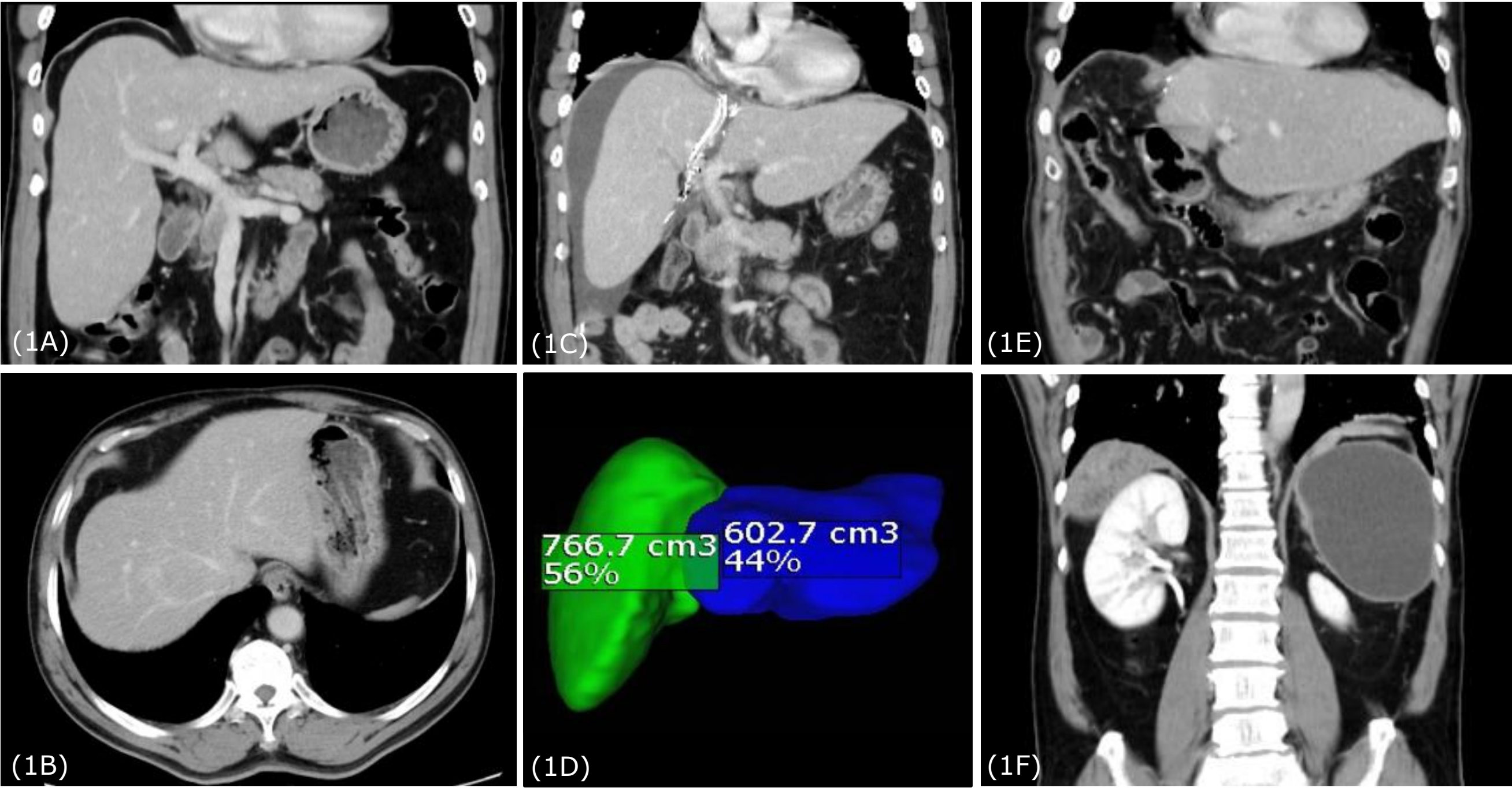


Figure 1A,1B. CT volumetry before ALPPS and FLR showed by 33% with liver cirrhotic change
Figure 1C,1D. CT volumetry 10 days after ALPPS and FLR increased to 44%
Figure 1E,1F. Follow-up CT image 3 months after ALPPS