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Compression Radiofrequency Ablation(RFA) Adjacent Major Hepatic Vein In Cirrhotic Liver

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Background : Hepatocellular carcinoma (HCC) is the fifth most common tumor worldwide and is the third most common cause of cancer-related death. Traditionally, hepatic resection and transplantation have been considered the treatments of choice for curative purposes. However, radiofrequency ablation (RFA) is emerging as an effective local treatment for curative intent in patients with cirrhosis and HCC smaller than 3 cm in diameter. The main limitations of current RFA technology in hepatic ablation include 1) limitation of ablation volume, 2) technically infeasible in some tumors due to conspicuity and dangerous location, and 3) the heat-sink effect. This case report will introduce a case of overcoming the limitations of RFA for HCC adjacent to major hepatic veins ('heat sink' effect).

Methods : A 75-year-old female patient, with cirrhosis and HBV carrier, had a history of surgery for HCC rupture in 2012. Then, in 2016 and 2017, intra operative RFA was performed for HCC recurrence, respectively. During the routine follow up, recurrent HCC was found in MRI, 2021. This lesion was located at S8, 2.5cm in size and abutting intrahepatic RHV, MHV. Since hepatic resection was impossible due to severe cirrhosis, intraoperative RFA was planned.

Results : During laparotomy, the location of HCC was confirmed by ultrasound. Since the cancer was in contact with the hepatic vein, liver compression was performed to collapse the hepatic vein, thereby preventing the 'heat sink' effect. After RFA, CT on POD #1 showed the RFA was successfully performed.

Conclusions : Although RFA has been reported to be ineffective for HCC adjacent to major hepatic veins due to the heat sink effect, it has been shown that RFA can be effective if the heat sink effect is prevented through liver compression.

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