**Background:** Laparoscopic radiofrequency ablation (LRFA) is used to treat hepatocellular carcinomas (HCCs) that are relatively inaccessible otherwise, and is more accurate than percutaneous RFA (PRFA). However, only a few studies have compared survival outcomes between LRFA and PRFA in patients with HCC.

**Aims:** This study aimed to compare the efficacy of LRFA and PRFA for HCC treatment.

**Methods:** Patients who underwent PRFA or LRFA as an initial treatment modality between April 2005 and April 2016 were enrolled in the study. The overall and recurrence-free survival rates were examined for each patient. Additionally, propensity score matching was performed for the 2 groups.

**Results:** The baseline characteristics of patients in the PRFA and LRFA groups showed several minor differences. Multivariate analysis showed that the RFA method was not a critical determinant of recurrence-free or overall survival (p=0.069 and p=0.406). Among patients who underwent RFA as the initial treatment modality, there was no significant effect of the RFA method on survival. After propensity-score matching, univariate analysis showed a significant difference in overall survival between PRFA and LRFA (p=0.031). Multivariate analysis showed that LRFA could be one of the strongest factors contributing to improve overall survival in HCC patients (hazard ratio: 0.108, p=0.040). Furthermore, our data were shown that LRFA limited multiple intrahepatic recurrences and prevented marginal recurrence.

**Conclusions:** LRFA appears to be superior to PRFA, and can help reduce mortality in HCC patients.

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**DEVELOPMENT OF NEW SOFTWARE ENABLING AUTOMATIC IDENTIFICATION OF OPTIMAL HEPATIC RESECTION AREA, INCORPORATING PREOPERATIVE LIVER FUNCTION**

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**Aim:** Deciding the area for hepatectomy is one of the most important factors upon conducting hepatic subsegmentectomy for the treatment of HCC. Common method implemented today is to utilize 3D simulation software such as Synapse Vincent and manually determine the hepatectomy area. In cases such as hepatic cirrhosis, the resectable area will be limited due to lower liver function, and determining hepatectomy area becomes more challenging. We have developed an additive function to our original 3D HSS simulation software which automatically simulates optimal hepatectomy area under limited resectable hepatic volume.

**Material and methods:** Six patients with independent case of HCC scheduled to undergo hepatic subsegmentectomy were accrued in this study. We have quantified the influence of the tumor to each of the portal vein points in accordance to the “Tumor Domination Ratio (TDR)”, and determined the hepatectomy area so that the sum of TDR was maximized under limited resectable hepatic volume

**Results:** S7 HCC patients are shown. Figure 1 shows the effect of tumor based on “TDR”. The color depicts the degree of TDR, starting with Grey (< 1%), Yellow (~ 50%), and Red (100%). Figure 2 shows the results of automatic depiction of optimal resection area under limited hepatic volume. Due to limited hepatic volume, the areas with high TDR (red + yellow = purple) were depicted as resection area, and the areas with low TDR (grey) were clearly omitted.

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**INCIDENTAL INTRAOPERATIVE MULTIPLE BILE DUCT ADENOMAS FOUND IN CONJUNCTION WITH HEPATOCELLULAR CARCINOMA**

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**Literature reviews from 1999-2016 determined bile duct adenoma (BDA) to be a very rare benign tumor. BDA usually presents as a single nodular lesion, most often found incidentally and is very difficult to distinguish from hepatocellular carcinoma (HCC) on imaging. We present a case of multiple BDAs in a patient with a known HCC.**

**Patient** is a 65-year-old male, non-cirrhotic, cured hepatitis C after Harvoni treatment, with one 4.0 cm lesion found on CT in segment 6. Due to the difficulty of diagnosis based on CT and MRI, biopsy was performed and confirmed HCC. Intra-operatively four other nodular lesions, in addition to the 4.0 cm HCC, were found involving both lobes of the liver surface. Sizes varied from 3 to 7 mm, intraoperative ultrasound did not view other lesions. Intraoperative diagnosis was one HCC with four other small HCCs, possible HCC intrahepatic metastasis. Partial liver resection with several liver wedge resections was performed, all lesions were resected and the patient recovered well.

Pathology results showed 4cm HCC in segment 6 and four small (< 1cm) BDAs of segments 2, 3, 6, and 7.

BDA is a rare benign liver tumor, usually a small (< 5mm) singular lesion and rarely presents together with HCC. Our case showed multiple BDAs can coexist with HCC. From our literature search, this has never been reported. This is the first case of multiple BDAs in conjunction with HCC. Increased knowledge and awareness is essential to appropriately diagnose and treat patients.