
Inadequacy of Couinaud's Hepatic Segmentation for Right Anterior Sectionectomy

Division of Hepato-Biliary & Pancreas Surgery, University of Ulsan
College of Medicine, Asan Medical Center, Seoul, Korea

Julian Choi, Young-Joo Lee, Dae Wook Hwang, Sang-Hoon Chon, Kwang-Min Park

Background: Accurate preoperative localisation is essential in planning of surgical treatment for hepatocellular carcinoma (HCC). However, preoperative liver segmentation based on hepatic veins on CT scans is not always consistent with portal inflow based hepatic segmentation. The present study examined a rate of mismatch between hepatic vein based and portal vein based liver segmentation, in patients following right anterior sectionectomy for HCC.

Materials & Methods: 150 patients (118 males, 32 females; mean age, 53.4 years old \pm 8.99) underwent right anterior sectionectomy using Glisson transection method for HCC between January 2004 and August 2009 at a tertiary teaching hospital. Preoperative multidetector CT scan was analysed for location of HCC in terms of hepatic vein based Couinaud's segments and portal vein based segments.

Result: The average size and number of HCC was 4.5cm (\pm 2.60) and 1.09 (\pm 0.326). The rate of hepatitis B, hepatitis C and combined B and C was 127, 8 and 3 patients respectively. 146 patients were Child Pugh class A and 4 were Child Pugh class B. The rate of R0, R1 and R2 resection was in 137, 11, 2 patients respectively. The blood transfusion was required in 16 patients (10.7%). There was no 60 days mortality and 42 patients developed morbidity (28%). 15 patients were initially diagnosed with HCC in segment 7 according to outflow based Couinaud's segment. When they were re-analysed according to portal vein inflow, they received portal inflow from a branch of anterior portal vein.

Conclusion: Amongst patients with right anterior sectionectomy, 10% of patients had inaccurate preoperative localisation based on Couinaud's segmentation. Inflow (or portal vein) based liver segmentation should be considered prior to anatomical liver resection.