patients: 11.7% vs 3.9%; p=0.047). Operative morbidity and mortality did not differ between patients with and without portal hypertension (36.9% vs. 47.1%; p=0.123, 3.3% vs. 5.8%; p=0.358). The 5-year survival rate was higher in patients without portal hypertension but showed no statistical difference between the two groups (46.5% vs. 36.2%; p=0.757). Also, the 5-year disease Free Survival rate was no significant difference according to the presence of portal hypertension (41.2% vs. 40.5%; p=0.426). The predictive values of postoperative hepatic insufficiency were extent of hepatectomy, plasma transfusion (p=0.000), number of tumor in multivariate analysis. Multivariate analysis identified size of tumor, RBC transfusion as independent predicting factors for survival.

Conclusion: Presence of portal hypertension should not be considered as a contraindication for hepatic resection in cirrhotic patients. Child-Pugh A and B patients with portal hypertension have surgical outcomes similar to patients without portal hypertension.

IV-3

Risk Factors of Peritoneal Recurrence and Outcome of Resected Peritoneal Recurrence Following Liver Resection in Hepatocellular Carcinoma: Reviewing 1,222 Cases of Hepatectomy in a Tertiary Instutition

[1]Departments of HPB and Liver Transplantation, University Surgical Cluster, National University Health System, Singapore, [2]Transplantation Surgery, General Surgery, Samsung Medical Center, Seoul, Korea.

AWC Kow[1], CHD Kwon[2], SH Song[2], MJ Shin[2], JM Kim[2], JW Joh[2]

Background: Liver resection is one of the main treatment modalities for hepatocellular carcinoma (HCC). Peritoneal recurrence (PR) after liver resection is uncommon and reports on the long term outcome of resected PR is lacking. In this study, we report the risk factors of PR after hepatectomies and long term outcome of resected PR in a tertiary institution.

Methods: We retrospectively reviewed the data of 1222 patients who underwent hepatectomies for HCC in Samsung Medical Center from January 2006 to August 2010. We identified patients with PR and documented the data of resected PR and their long term outcome. We defined Group A as patients without PR and Group B as patients with PR. Subgroup analysis was performed for patients with irresectable and resectable PR in Group B. Kaplan-Meier analysis and Cox proportional regression was used to study the risk factors and survival of PR in this cohort.

Results: The rate of peritoneal recurrence was 3.0% (n=36) in this study. The mean age of patients was 54.0±10.2 years. Amongst those with PR, 23 patients (1.964%) were irresectable and 13 patients (1.136%) were resectable. On univariate analysis, the median tumour size of HCC (p=0.001), higher T-stage (p=0.008), rate of microvascular invasion (MVI) (p=0.007), bile duct invasion (BDI) (p=0.002), portal vein invasion (PVI) (p=0.022), serosal involvement (SI) (p=0.014), proportion of totally necrotic nodule (p=0.002) and involved resection margin ($p<0.001$) were significantly higher in Group B compared to Group A. Using multivariate analysis, tumour size >50 mm, presence of MVI, BDI and involved resection margins were significant predictors of peritoneal recurrence following liver resection for HCC. On subgroup analysis between resectable and irresectable PR, the pre-hepatectomy PIVKA-II level (p=0.001), proportion of PIVKA-II level >200 mg/dL (p=0.009), the AFP (p=0.032) & PIVKA-II level (p=0.034) at detection of PR, median tumour size of HCC ($p<0.001$), proportion of tumour >60 mm (p=0.014) and T-stage of the tumour (p=0.033) were significantly higher in the irresectable group. In addition, the median interval between hepatectomy and detection of PR was significantly longer in the resectable PR (p=0.009). At the time of detection of PR, the median number of lesion was statistically higher in the irresectable group (p=0.044). The proportion of solitary lesion in the resectable group was doubled that in the irresectable group (p=0.096). The overall survival (OS) of patients with resectable PR was significantly better compared to the irresectable patients. The 1-year, 3-year and 5-year OS of patients with resectable PR was 81.0%, 58.0% and 29.0%, as compared to 30.0%, 6.0% and 6.0% for patients with irresectable PR ($p<0.001$). Using Cox Proportional Hazard regression, only interval between hepatectomy and peritoneal recurrence (p=0.016) and level of AFP at detection of peritoneal recurrence (p=0.045) was found to be significant negative predictive factors of OS.

Conclusion: Peritoneal metastases of HCC are rare. Selected patients with peritoneal recurrence following HCC may enjoy the benefit of surgical resection to

prolong the overall survival.

IV-4

A Pitfall of Hanging Maneuver in Central Bisectionectomy for the Giant HCC Located on Hepatic Hilar Area

Department of Surgery, Keimyung University School of Medicine, Daegu, Korea

Koo Jeong Kang, Yong Hoon Kim, Keun Soo Ahn, Tae Jin Lim

Introduction: A central bisectionectomy of the liver removes segments 4, 5, and 8, and this is a technically demanding operation because it requires two transection planes. For preservation of remnant right posterior and left lateral Glissonian pedicles, right hepatic vein and left hepatic vein, exact anatomical resection is necessary. However, in large tumor which is hanged on hilar area, it is difficult to determine exact resection plane because of difficult to approach the Glissonian pedicle. We report on performing central bisectionectomy with hanging maneuver for giant tumors located on hilar area to evaluate whether this procedure represent a valuable technique in this situation.

Patients and Methods: From October 2004 to February 2011, 670 patients underwent liver resection in Dong-San medical center and ten patients of them (nine of hepatocellular carcinoma and one of mass forming cholangiocarcinoma), central bisectionectomy was performed. In 3 patients (group 1), masses were located on hilar area with abutting and compromising of right posterior and left lateral Glissonian pedicles. Remaining 7 patients (group 2), masses were not contact with hilar structure. In all patients of group 1, preoperative MRCP was taken. We reterospectively analyzed surgical technique and postoperative outcome in two groups.

Results: In group 2, resection line was determined by inflow control of Glisson of right anterior section and S4. In contrast, in group 1, inflow control was impossible due to contacting mass with hilar structure, so resection line was guided by hanging maneuver. In both group, mean tumor size (8.8 vs 7.0cm), operative time (376.7 min Vs 350.5 min), resection margin (3.0mm Vs 6.4mm) were not significantly different. In contrast to a case of postoperative complication in group 2 (ascites), bile leakage was occurred in all three patients of group 1, including a case of transaction of left lateral duct (B2&3).

Conclusion: In central bisectionectomy for giant tumor located on hilar area, hanging maneuver can guide to transect easily and safely with keeping enough resection margin bilaterally and posteriorly. However, this procedure can accompany bile duct injury, because those are not dilated and collapsed by compressing the ducts while hanging. Therefore, very careful evaluation of the biliary tree and careful transaction is demanded (This presentation includs video clip).

IV-5

What We Learned from Difficult Hepatectomy for Advanced Hepatic Malignancy

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

Kwang-Min Park, Dae Keun Song, Jae Hoon Lee, Sang Yeop Lee, Dae Wook Hwang, Young-Joo Lee

Purpose and Method: It is difficult to resect a primary hepatic malignancy which is huge and tightly invaded or adhered to the surrounding structures, especially inferior vena cava (IVC), hepatic vein, diaphragm etc. The aim is to present five cases with favorable outcome that we have experienced as difficult resection for advanced tumor with multiple metastases, with invasion of surrounding structures, and with pulmonary embolism, and to discuss about extension of indication of hepatectomy in advanced tumor.

Results: (Case 1) a 53-year-old woman had a 16cm sized mass in the segment VIII in the imaging studies. Diagnosis is intrahepatic cholangiocarcinoma (IHCC) with left portal vein invasion. We performed a right hemihepatectomy and bile duct and left portal vein resection. At the 34-months after surgery, she is still alive without any evidence of tumor recurrence or metastasis. (Case 2) a 74-year-old man had multi-