Hepatobiliary Pancreatic Surgery Division

Introduction

Hepatobiliary and Pancreatic (HBP) Surgery Division deals with malignant neoplasms arising from the liver, biliary tract and the pancreas. Borderline malignancies, such as biliary cystadenoma, pancreatic endocrine tumor, and mucinous cystic tumor of the pancreas as well as secondary hepatic neoplasms from various primary sites are also candidates for surgical resection. In addition, we sometimes conduct multidisciplinary treatment in cooperation with Diagnostic Oncology Division, HBP Oncology Division and Radiation Oncology Division.

Routine Activities

HBP Surgery consists of four staff surgeons, one chief resident, and four residents. Occasionally, several trainees from Japan and overseas join our group.

Operation and perioperative care

Five to six major operations for hepatobiliary and pancreatic malignancies are performed every week. One staff surgeon and one resident are in charge for each patient, conducting the operation and postoperative care. Chief resident attends all the operation, supervises the four residents and trainees and manages the care of all HBP surgical inpatients. Ward round is performed twice daily.

Conferences

"Ward Conference" is held every evening. Clinical condition of the postoperative patients and surgical strategy for preoperative cases are discussed. Two weekly conferences are held. 1) "Cherry Conference," named after the similarity of the hepatic lobulation and a bunch of cherries, is a diagnostic imaging case conferences, which surgeons and radiologist attend on Wednesday morning. 2) "HBP Case Conference" is held by surgeons and medical oncologists on Friday evening to discuss clinical course of both surgical and medical patients as well as common issues among HBP malignancies. There are two biweekly conferences. 1) "Micro Conference" is a pathological conference of postoperative cases, which surgeons, radiologists, and pathologists participate in the discussion. 2) In "Journal Club, " latest articles of pancreatic disease are reviewed by surgeons, medical oncologists and pathologists. Occasionally, "Surgico-Anesthetic Conference" is held to refine intraoperative management of HBP surgery.

Surgical strategies for HBP malignancies

Hepatocellular carcinoma (HCC): Treatment for HCC is always determined by the balance between tumor condition and hepatic functional reserve. Surgical resection is usually indicated in patients with solitary or several numbers of tumors and with favorable hepatic function (Child-Pugh grade A or B). Large HCCs or HCCs with tumor thrombus are good candidate for surgical resection and aggressive surgical resection can be proposed, since other treatments are usually ineffective for these conditions. Patients with limited disease but with poor hepatic functional reserve are enrolled for percutaneous ethanol injection therapy (PEIT) or radiofrequency ablation (RFA). For patients with widespread tumors (i.e., multiple intrahepatic metastasis), transcatheter arterial chemoembolization (TACE) is another option. These alternative treatments are performed in cooperation with medical oncologists and radiologists.

Pancreatic cancer: Pancreatic cancer can be roughly divided into invasive ductal carcinoma, endocrine tumors, mucin-producing tumors, such as intraductal papillary mucinous tumor (IPMT) or mucinous cystic tumor (MCT). The prognosis of patients with invasive ductal carcinoma is poor even with aggressive surgical resection. Multidisciplinary treatments including intraoperative radiation therapy (IORT) and adjuvant chemotherapy in a form of clinical trials have been applied for this potentially noncurative disease. On the other hand, endocrine tumors and mucin-producing tumors are borderline malignancies and have favorable prognosis by surgical resection.

Biliary cancer - cholangiocarcinoma & gall bladder cancer: Based on careful preoperative evaluations of cancer extension, wide variety of surgical resection is applied for biliary cancer. Pancreatoduodenectomy is conducted for middle to distal bile duct cancer and advanced gallbladder cancer. Extended hemihepatectomy with extrahepatic bile duct resection is considered as the first line procedure for hilar cholangiocarcinoma. En bloc gallbladder resection, liver bed resection with regional lymph node dissection is performed for patients with gallbladder cancer. In patients with widespread bile duct cancer, extended hemihepatectomy combined with pancreatoduodenectomy can be indicated for selected patients with favorable general condition and good functional reserve of the liver. Preoperative biliary decompression, portal vein embolization, and other surgical techniques have increased the safety of extensive surgical resection. Our group has achieved mortality rate of 0% in the treatment of hilar cholangiocarcinoma since 1990.

Research Activities

Hepatic left trisectionectomy for cholangiocarcinoma is a challenging operation, which requires concrete anatomical knowledge and meticulous perioperative treatment. Shimada et al. reviewed their experiences of 12 patients who underwent left trisectionectomy for cholangiocarcinoma with no mortality. Preoperative biliary decompression, portal vein embolization and appropriate surgical resection are essential in order to prevent postoperative liver failure associated with extensive hepatectomy.

A retrospective analysis of the prognostic significance of ductal and radial margin in the treatment of middle to distal bile duct cancer was performed using the clinicopathologic data of 55 patients who had undergone surgical resection in the two decades. This historical study revealed that it was of importance to secure a negative radial margin *(rm)*, while it may be less beneficial to obtain a negative hepatic-side ductal margin *(hm)*. (Sakamoto et al.)

Celiac axis stenosis is not a rare anomaly found in 2-24% of general populations. Pancreatoduodenectomy in patients with celiac axis stenosis may require hepatic arterial reconstruction. Nara et al. reviewed seven patients who underwent pancreatoduodenectomy with celiac axis stenosis and analyzed the short-term outcome. They concluded that the necessity of hepatic artery reconstruction should be determined by evaluation of arterial flow by intraoperative Doppler ultrasonography.

Clinical Trials

A multi-institutional prospective randomized trial is now ongoing, designed to evaluate the prognostic significance of postoperative adjuvant chemotherapy using gemcitabine for pancreatic invasive ductal cancer. The randomized clinical trial on the duration of intermittent inflow occlusion during liver resection (15 versus 30 minutes clamping of the hepatic hilum) was completed on October 2004.

Patient Statistics

There was no in-hospital mortality in 2004. The median hospital stay of patients who underwent hepatectomy was 14 (8-60) days. Accordingly, the median was 25 (12-63) days in patients who underwent pancreatic resection.

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Table 1. Number of patients

Hepatocellular carcinoma	64
Cholangiocellular carcinoma	16
Metastatic tumors	50
Other hepatic neoplasms	7
Invasive ductal cancer	53
Other pancreatic neoplasms	30
Gallbladder cancer	20
Bile duct cancer	27
Vater or duodenal cancer	15
Total	282

Table 2. Type of procedure

Hepatectomy	127
Hepatectomy with biliary reconstruction	26
Major hepatectomy with PD	2
Pancreatoduodenectomy (PD)	67
Distal pancreatectomy	25
Total pancreatectomy	3
Extended gallbladder resection	14
Ohters	18
Total	282

Table 3. Operative morbidity and mortality

Bile leakage	5%
Liver failure	1%
Pancreatic leakage (major + minor)	30%
Operative death within 30 days	0%
Postoperative hospital death	0%

Table 4. Survival rates

Hepatocellular carcinoma

Stage	No. of pts.	5yr survival (%)
I	68	72.2
II	360	65.8
III	299	37.9
IV	109	20.1
Total	836	50.7

Stage: Japanese classification (3rd)
Op. year: 1980-2002

Pancreatic invasive ductal carcinoma

Stage	No. of pts.	5yr survival (%)
I	2	-
II	6	55.6
III	55	33.5
IV	141	8.7
Total	206	17.1

Stage: Japanese classification (5rd)
Op. year: 1990-2002