

POSTER PANEL [HPB]

PPH24-001

FASTER, SAFER AND MORE COST-EFFECTIVE CARE FOR PATIENTS WITH PANCREATIC CANCER AFTER IMPLEMENTATION OF A PREOPERATIVE PATHWAY COORDINATED BY NURSE SPECIALIST

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Introduction: For patients with pancreatic cancer, surgical treatment is the only chance of long term survival. The multi-disciplinary pre-operative diagnosis and staging is complex and frequently results in biliary drainage due to logistical constraints and increasing jaundice in affected patients. Since publication of the DROP-trial, biliary drainage has been proven to result in more post-operative complications. The current study examines whether the establishment of a preoperatively pathway coordinated by a nurse specialist resulted in faster, safer and more cost-effective care.

Method: To study the effect, the medical charts of all patients operated 18 months before and 18 months after implementation of the pathway (June 2011) were reviewed. Main outcome measure was the proportion of patients without pre-operative biliary drainage. Secondary outcome measures were duration of referral to surgery, duration of 1st outpatient visit to final treatment and the number of preoperative outpatient visits prior to treatment.

Results: A total of 146 patients were enrolled: 66 before and 80 after implementation of the care pathway. Both groups were comparable with regard to demographic characteristics. After implementation of the pathway, there was a significant decrease in time of referral to surgery (3.6 vs. 4.7 weeks) of the diagnostic process (2.2 vs. 3.0 weeks) and the number of preoperative outpatient visits (1.4 vs. 2.0 times). Most relevant was the decrease in the number of patients in whom biliary drainage was required: from 40% to 18% after implementation of the care pathway.

Conclusions: Implementation of a preoperative pathway coordinated by a nurse specialist has resulted in faster, safer and more cost-effective care for patients with pancreatic cancer. The number of patients requiring pre-operative biliary drainage decreased more than half. Implementation of a pre-operative pathway is highly recommended.

PPH24-002

LAPAROSCOPE TOTAL LEFT LOBECTOMY WITH GLISSONIAN AND ANTERIOR APPROACH FOR RUPTURED HEPATOCELLULAR CARCINOMA AFTER EMBOLIZATION

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Introduction: We report a case of ruptured HCC after resuscitation and transarterial embolization (TAE), who underwent laparoscope left lobectomy by control of left side Glissonian pedicle and anterior approach 1 week later.

Method: Pneumoperitoneum was established at a pressure of 12 mm Hg. The other 4 trocars are located. The massive blood clot was encountered due to the previous rupture of HCC. These were removed and irrigated by suction. The round ligament was transected using laparoscopic coagulation shears (LCS; Ethicon Endo Surgery Industries, Cincinnati, OH), and the falciform and coronary ligaments are then dissected to expose the suprahepatic inferior vena cava (IVC). Cholecystectomy was done by laparoscope method as usual, followed by extrahepatic access to the left side of Glissonian pedicle (containing branches of segments 2–4). After fully encircle of left side of Glissonian pedicle by silk, a laparoscopic vascular stapler was introduced into the pedicle, resulting in ischemic delineation of left liver. After the stapler was fired, liver parenchyma was dissected and divided with harmonic scalpel combined with vascular stapler. The left and middle hepatic veins were transected with vascular stapler. Finally the specimen of left lobe was detached from coronary ligament and pull out through the suprapubic incision. The abdominal cavity was drained after bleeding check. Operative time was 240 min, with blood loss estimated at 250 mL excluding the blood clot content due to tumor rupture, without need for transfusion.

Results: Postoperative recovery was uneventful and the patient was discharged on the fifth postoperative day.

Conclusions: Staged laparoscopic liver resection with Glissonian and anterior approach for ruptured HCC after arterial embolization is a feasible and safe procedure.

PPH24-004

ENDOSCOPIC DOUBLE METALLIC BILIARY AND DUODENAL STENTING FOR MUTIGNANI TYPE I AND II LESIONS

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Introduction: Periapillary tumors can cause biliary and gastric outlet obstruction simultaneously. Endoscopic Double Metallic Biliary and Duodenal Stenting (EDMBDS) is technically difficult however it is apparently the least invasive and more efficient palliative option compare to surgical bypass or other percutaneous radiological interventions. Here we are presenting two proto-type cases consistent with Mutignani type I and II in which our intervention improved the quality of life of the patients.

Method: EDMBDS was performed in two consecutive patients using conventional procedure techniques and under general anesthesia. Pyloric dilatation was required in one patient to negotiate the duodenoscope, while duodenal dilation was required in other to reach the ampulla.

Results: Case 1: This middle aged gentleman had biopsy proven ampullary tumor consistent with Mutignani type II causing both biliary and duodenal obstruction. After duodenal dilation biliary stent (10 X 60 mm) was deployed first, followed by duodenal stent (22 x 90 mm). The expansion of Nitinol duodenal stent was not satisfactory so another steel based stent was deployed which showed satisfactory expansion. Post procedure course was uneventful. Both Jaundice and gastric outlet obstruction relieved gradually. He was able to tolerate soft diet. Later he developed metastasis and died after 2 months.

Case 2: This 35 year old lady was diagnosed as carcinoma head of Pancreas with local extension consistent with Mutignani type I. After pyloric dilatation double stenting (10 x 80 mm in cbd, 22 x 60 mm in duodenum) was performed easily. The patient's jaundice resolved and she soon started taking regular diet. She is still alive 3 months post procedure with a relatively good quality of life.

Conclusions: EDMBDS may be technically difficult but safe and less invasive. It has potential to improve quality of life and decrease morbidity.

PPH24-005

APPLICATION OF VOLUMETRY ON 3D CT FOR LIVING DONOR LIVER TRANSPLANTATION

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Introduction: The purpose of this study was to evaluate 3D CT volumetry in the assessment of living donor livers for transplant and to compare this technique with manual volumetry.

Method: Liver CT scan of 16 consecutively prospectively liver donors were obtained under a liver transplant protocol. We compared Rt. liver volume on the 3D CT volumetry and Rt. liver volume calculated on 2D CT with actual Rt. liver volume after hepatectomy.

Results: Error was calculated by a formula which was (measured volume – actual volume)/actual volume. The average error of volumetry on 3D CT was smaller than that on 2D CT (8.1% vs. 9.4%). Remnant left liver

volume on 3D CT was bigger than that on 2D CT, average 12%.

Conclusions: Measured volumetry on 3D is more accurate for measuring Rt. liver volume for donation. However, careful application of volumetry on 3D CT is needed for possibility of overestimating remnant liver volume.

PPH24-006

ROLE OF SURGERY IN THE MANAGEMENT OF BILIARY COMPLICATIONS AFTER LIVING DONOR LIVER TRANSPLANTATION: NATIONAL LIVER INSTITUTE EXPERIENCE

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Introduction: The purpose of this work was to study the role of surgery in the management of biliary complications after living donor liver transplant.

Method: A retrospective analysis that was done on recipients who underwent living donor liver transplant at the National Liver Institute, from April 2003 to August 2012 (185 cases).

Results: Biliary complications occurred in 69 cases (37.3%). Bile leak was in 39 cases (21.1%) and biliary stricture was in 40 cases (21.6%). The first line treatment of biliary leak was conservative management in 23.1% while pigtail was placed in 76.9% of the cases with biliary leak. The condition resolved in 33.3% while 15.5% died receiving no further management. ERCP was done in 33.3% while surgical intervention was done in 17.9% of the cases as a second line treatment. The first line treatment of biliary stricture was ERCP in 95% while no treatment in 5% of the cases with biliary strictures. The number of ERCP sessions ranged from 1–4 times with the mean of 1.5 times. The condition resolved in 67.5% while 5% died receiving no further management. Surgical intervention was done in 27.5% of the cases as a second line treatment. Surgical intervention was done in 26% of cases that had biliary complications. The mean timing of surgical intervention was 13.33 months. The outcome was recovery in 72.2% and mortality in 27.8% of the cases.

Conclusions: Endoscopic and radiological management can't be considered to be the standard of care for all cases across the board; the management of each patient and their biliary complication must be considered on an individual basis. Thus, it shouldn't be taken for granted that surgical intervention is indicated when all endoscopic and radiological management fail and surgical intervention as an early line of treatment should be taken into account in the future management of biliary complications.

PPH24-007

IDENTIFICATION ASSISTANCE USING THREE DIMENSIONAL PORTAL BRANCH MAPPING IN PORTAL VEIN EMBOLIZATION

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Introduction: Portal vein embolization (PVE) is widely used for the purpose of preventing liver insufficiency after major hepatectomy. In technical point of view, it is required that embolization starts from the second- or third-order portal veins (PVs) to avoid coil dislocation and thrombosis expansion to main PV. However, overlapping PVs on direct portography disturb to identify each third-order PVs and prevent leading of the catheter straightly into the target branch. In our institution, we prepare three dimensional portal branches map (3D-PVmap) reconstructed preoperative computer tomography (CT). This map is three-dimensionally visualized by shading rendering technique. It is simulated and output as the same angle obtained in direct portography for reference. We will introduce the 3D-PVmap and evaluate its usefulness by measuring the angle of right second-order PVs.

Method: From April 2007 to April 2010, 105 patients underwent PVE. The angle of the anterior (a°) and posterior (b°) portal trunk from coronal plane was measured by CT images. When the branches observed from an angle of c° with right anterior oblique (RAO), the anterior and posterior trunk is observed as $a+c^\circ$ and $b-c^\circ$ respectively. Logically, the closer to zero these angles become, the longer the portal trunk can be seen. The number of patients whose portal trunk angle becomes less than 45° , which is defined as "better angle".

Results: Ninety-nine patients (94%) had better angle of anterior portal trunk on anteroposterior (AP) view. Nineteen (18%) had better angle of posterior trunk on AP. When the view angle is shifted to RAO 30° , totally 67 patients (64%) had better angle of posterior trunk.

Conclusions: In present study, one-third of the patients failed to show better angle of posterior branch even when practical angle of RAO view is taken. Therefore, 3D-PVmap can complement direct portography in identifying not only third-order PVs but also second-order PVs.

PPH24-008

CO-EXISTING TUBERCULOSIS LEADS TO OVERESTIMATION OF NODAL STATUS BY PET SCAN

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Introduction: Staging and monitoring of recurrence for biliopancreatic cancer may be done using ^{18}F FDG- PET scanning. Inflammatory conditions mimic malignant deposits. Identification of this is crucial in appropriate tumour staging. As co-existent tuberculosis is common in developing countries, we evaluated the overstaging of nodal status by PET scan.

Method: Retrospective review of patients undergoing ^{18}F FDG PET scan for tumour staging or recurrence for biliopancreatic malignancies between 2010 and 2012. All tumours were biopsy proven. Nodes which were at unusual locations or which failed to resolve with chemotherapy were subjected to biopsy.

Results: Three patients were identified- one with locally advanced cancer of the gallbladder had a positive right supraclavicular lymph node, a patient with cancer gallbladder had extensive abdominal lymphadenopathy that did not respond to chemotherapy inspite of near resolution of gallbladder mass and a patient with resected T2N1 cancer of head of pancreas developed bilateral iliac lymph nodes which were PET avid 2 months after completion of 6 cycles of adjuvant chemotherapy. In all cases the nodes were biopsied and found to have tuberculosis. All received appropriate treatment with good symptom response and the patient with gall bladder cancer was subjected to radical cholecystectomy where it was confirmed that all the nodes had tuberculosis and no evidence of malignancy.

Conclusions: Tuberculosis can mimic malignancy on ^{18}F FDG PET scan and can lead to false indication of inoperability or recurrence of disease. Due precaution must be taken in interpretation of PET scans in patients from developing countries where tuberculosis is endemic.

PPH24-009

SEVERE COMPLICATIONS WITH HEMOBILIA IN PATIENT ON ASPIRIN REGIMEN AFTER EUS-FNA FOR PANCREATIC HEAD CANCER

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Introduction: EUS-FNA is a vital procedure in the accurate diagnosis of pancreatic tumors and its safety has recently been well-recognized all over the world. Actually, many hospitals in Japan have been performing it since 2010. And now, anti-thrombotic therapy is widely used for the prevention of heart attacks and strokes. In the following paragraphs, we will explore a case of hemobilia in a patient, after EUS-FNA.

Method: A case report.

Results: A 73-year-old man was introduced to our hospital after endoscopic retrograde biliary drainage (ERBD) with plastic stent for obstructive jaundice. He was on an aspirin because of previous lacunar cerebral infarction.

CT revealed a pancreatic head tumor. EUS-FNA was performed from the duodenal bulb after halting aspirin for 7 days. Three needle passes were performed without any sign of acute bleeding such as fluid collection or continuous intraluminal bleeding. The on-site cytological specimen revealed adenocarcinoma.

Because his general state and laboratory tests after EUS-FNA showed no abnormalities, aspirin was restarted the next day. However, after 5 days of the procedure, he suddenly complained of strong abdomi-

nal pain and developed a high fever. A laboratory test revealed elevated serum hepatobiliary enzymes suggesting obstructive jaundice by stent occlusion. A duodenoscope showed that blood was blocking the ERBD stent. A fully covered expanding metallic stent was placed in the bile duct for hemostasis of hemobilia and biliary drainage. He had septic shock with DIC due to acute cholangitis for a few days but recovered by following conservative therapy.

Conclusions: We restarted an anti-thrombotic therapy according to Japanese guideline, but we experienced this case. We should continue to study the effects of anti-thrombotic therapy on post EUS-FNA patients in order to discover any correlation between the medication and the procedure.

PPH24-010

COST-EFFECTIVENESS OF DIAGNOSTIC LAPAROSCOPY FOR ASSESSING RESECTABILITY IN PANCREATIC AND PERIAMPULLARY CANCER

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Introduction: Surgical resection is the only curative treatment for pancreatic and periampullary cancer, but a significant proportion of patients undergo unnecessary laparotomy because of understaging of the tumours by computerised tomography (CT) scanning. A recent Cochrane Review found that diagnostic laparoscopy can decrease unnecessary laparotomy. We compared the cost-effectiveness of diagnostic laparoscopy versus direct laparotomy in patients with pancreatic and periampullary cancer who were resectable based on CT scanning.

Method: Model based cost-utility analysis estimating mean costs and quality-adjusted life years (QALYs) per patient from the perspective of the UK National Health Service over a 6 month time horizon. A decision tree model was constructed and populated with probabilities, outcomes and cost data from published sources. One-way and probabilistic sensitivity analyses were undertaken.

Results: Diagnostic laparoscopy did not increase costs compared with direct laparotomy (mean cost per patient £7470 vs. £7480); the cost of the diagnostic laparoscopy (£995) was offset by avoiding the costs of unnecessary laparotomy. Diagnostic laparoscopy produced more QALYs (mean QALYs per patient 0.346 vs. 0.337). Results were sensitive to key model parameters for test accuracy. Diagnostic laparoscopy had a 60–65% probability of being cost-effective at a maximum willingness to pay for a QALY of £20 000 to £30 000.

Conclusions: Diagnostic laparoscopy in patients with CT resectable pancreatic and periampullary cancer appears to be cost-effective, producing a small improvement in health outcomes at no extra cost.

PPH24-011

COST-EFFECTIVENESS OF PREOPERATIVE BILIARY DRAINAGE FOR OBSTRUCTIVE JAUNDICE IN PANCREATIC AND PERIAMPULLARY CANCER

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Introduction: There is controversy as to whether preoperative biliary drainage (PBD) is beneficial to patients with obstructive jaundice. A recent Cochrane Review found that PBD in patients undergoing surgery for obstructive jaundice is associated with similar mortality but increased serious morbidity compared with no PBD. The Cochrane Review concluded that PBD should not be used routinely. We compared the cost-effectiveness of PBD versus direct surgery for obstructive jaundice in patients with pancreatic and periampullary cancer.

Method: Model based cost-utility analysis estimating mean costs and quality-adjusted life years (QALYs) per patient from the perspective of the UK National Health Service over a 6 month time horizon. A decision tree model was constructed and populated with probabilities, outcomes and cost data from published sources. One-way and probabilistic sensitivity analyses were undertaken.

Results: PBD was more costly than direct surgery (mean cost per patient £10 775 vs. £8221) and produced fewer QALYs (mean QALYs per patient 0.337 vs. 0.343). PBD had a 10% probability of being cost-effective at a maximum willingness to pay for a QALY of £20 000 to £30 000.

Conclusions: PBD for obstructive jaundice in patients with pancreatic and periampullary cancer is not cost effective. Not performing PBD would result in cost savings of approximately £2500 per patient.

PPH24-012

LAPAROSCOPIC APPROACH IS SUITABLE FOR TREATMENT OF PANCREATIC NEUROENDOCRINE TUMOR

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Introduction: Pancreatic neuroendocrine tumor (pNET) is considered to be a good candidate for laparoscopic surgery. However, there has been a few reports about laparoscopic approach for pNET tumors derived from pancreas and considered to be a good candidate for laparoscopic surgery. However, there has been a few reports about laparoscopic approach for pNET to date. Therefore, we report laparoscopic surgical technique for pNET and our results of this method.

Method: Indication for laparoscopic approach is tumor in diameter less than 2 cm without distal metastasis and gastrinoma is excluded. Laparoscopic distal pancreatectomy (LDP) is performed for the tumor which is close to the main pancreatic duct (MPD) and located at the pancreatic body or tail, and currently laparoscopic spleen preserving distal pancreatectomy (LSPDP) has also been introduced, and is carried out with the splenic vessels preservation in all the cases. Laparoscopic enucleation (LEn) is performed using electric cautery for the tumor which is far enough away from the MPD.

Results: Between January 2000 and December 2012, 25 cases with pNET underwent laparoscopic pancreatic surgery (LDP: 12 cases, LSPDP: 5, LEn: 8). Among these three groups, tumor size in the LEn group was significantly smaller compared with the LDP group, and fasting period after operation was significantly shorter in the LSPDP group than in the LEn. In comparison with open approach, sex ratio, age, and tumor size were not significantly different, but all the patients with simultaneous metastasis had undergone open surgery. There was no significant difference in recurrence-free survival rate between open and laparoscopic approach.

Conclusions: Our criteria for laparoscopic surgery for pNET are appropriate, and laparoscopic resection is recommended to the tumor suitable for this criteria.

PPH24-013

MR IMAGING IN DIFFERENTIAL DIAGNOSIS AND STAGING OF EXTRAHEPATIC CHOLANGIOCARCINOMA (SINGLE CENTER EXPERIENCE)

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Introduction: Cholangiocarcinoma is the most frequent biliary malignancy. It is difficult to diagnose owing to its anatomic location, growth patterns and lack of definite diagnostic criteria.

Method: The aim of our study was to measure sensitivity and specificity of magnetic resonance imaging (MRI), multi detector computer tomography (MDCT), ultra sound (US) in detection, differential diagnosis and staging of extrahepatic cholangiocarcinoma (ECC). MRI were performed for 27 patients, which was directed after US & MDCT with suspected diagnosis extrahepatic cholangiocarcinoma with obstructive jaundice, for differential diagnosis and staging. For all patients were performed MRI with dynamic bolus enhancement.

Results: Of the 27 patients which were examined diagnosis of extrahepatic cholangiocarcinoma with MRI was confirmed in 21 cases (78%). The remaining 6 cases were 1 liver abscesses, 1 choledocholithiasis, 4 tumors of the pancreas. In the following control group included 14 cases where conducted subsequent surgical treatment. We have determined that MRI allowed to deliver the correct extension stage of the process for

Bismuth-Corlette with a sensitivity of 95%, as opposed to 65% of MDCT and ultrasound 60%. By identifying lymph nodes, we have almost identical MRI and MDCT data 85% and 80%, and 70% of the US. MRI showed a sensitivity to the determination of the involvement of the hepatic vessels 80% as opposed to 90% of the MDCT.

Conclusions: Imaging tools, mainly magnetic resonance imaging and multi detector computer tomography, allow full assessment of the extension of the tumor. They are especially useful in establishing the correct diagnosis, staging and determining of resectability.

PPH24-014

THE UTILITY OF 99MTC-LABELLED GALACTOSYL-HUMAN SERUM ALBUMIN LIVER SCINTIGRAPHY FOR PREOPERATIVE ESTIMATION OF REMNANT LIVER FUNCTION OF HCC PATIENTS

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Introduction: Hepatocellular carcinoma is often accompanied by chronic liver disease that is deteriorating liver function. The aim of this study was to assess preoperative estimation of remnant liver function using 99mTc-labelled galactosyl-human serum albumin liver scintigraphy and computed tomography.

Method: Thirty-nine patients with hepatectomy performed in Jichi Medical University were studied. Liver function was estimated by both liver 99mTc GSA SPECT and computed tomography (CT). Preoperative remnant liver function was defined by hepatic regional 99mTc GSA clearance using SPECT and CT fusion image. Posthepatectomy liver failure (PHLF) was defined following as the definition of International Study Group of Liver Surgery.

Results: Ten patients (25.6%) of 30 patients developed liver failure. Patients with remnant liver function less than 140 mL/min developed liver failure after hepatectomy. Regression analysis of remnant liver GSA clearance correlated with postoperative total bilirubin ($R = 0.62$, $p < 0.01$) and PT-INR ($R = 0.53$, $p < 0.01$). Areas under the ROC curves for remnant liver GSA clearance, remnant liver functional volume, and LHL15 for the estimation of PHLF were 0.98, 0.94, and 0.74 respectively.

Conclusions: Remnant liver GSA clearance is useful in evaluating the risk of postoperative liver failure, which is assistance in the appropriate decision of surgical indication.

PPH24-015

EFFECTS OF IMMUNONUTRITION ON INFLAMMATORY RESPONSES AND RESOLVIN E1 IN PATIENTS UNDERGOING MAJOR HEPATOBIILIARY RESECTION

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Introduction: Although several studies have reported the effects of immunonutrition on clinical outcome, the detailed mechanisms of immunonutrition after surgery are not yet clear. It has been recently reported that resolvin E₁ (RvE₁), which is one of the novel lipid mediators generated from eicosapentaenoic acid (EPA), activates inflammation-resolution programs. This study was designed to investigate the effect of preoperative immunonutrition on surgical complications, and the participation of RvE1 on inflammatory responses in patients undergoing major hepatobiliary resection.

Method: Forty patients who underwent major hepatobiliary resection were divided into two groups. Twenty patients received oral supplementation enriched with EPA, arginine, and RNA for five days before surgery (group IN). As the control group, twenty patients received no artificial nutrition and were allowed to consume regular food before surgery (group C).

Results: The rate and severity level of complications (Clavien-Dindo classification) was significantly lower in group IN than in group C. The length of hospital stay was shorter in group IN than in group C. The plasma level of RvE1 was significantly higher in group IN than that in group C immediately after surgery. The plasma level of IL-6 was significantly lower in group IN than that in group C immediately after surgery and on postoperative day 1. The serum level of EPA was significantly higher in group IN than in group C during perioperative periods. The preoperative level of serum EPA was correlated with the plasma level of RvE1 immediately after surgery. The plasma level of RvE1 was inversely correlated with the plasma level of IL-6 immediately after surgery.

Conclusions: Preoperative immunonutrition reduced inflammatory responses and protect against the aggravation of surgical complications in patients undergoing major hepatobiliary resection. RvE1 may play an important role in these effects of immunonutrition.

PPH24-016

USEFULNESS OF MEASURING FUNCTIONAL LIVER VOLUME BY USING 99MTC-GALACTOSYL HUMAN SERUM ALBUMIN SCINTIGRAPHY SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY

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Introduction: Preoperative assessment of hepatic function of future remnant liver is still a major issue in hepatobiliary surgery. We investigated the usefulness of measuring functional liver volume using 99mTc-galactosyl human serum albumin (GSA) scintigraphy single-photon emission computed tomography/computed tomography (SPECT/CT) imaging.

Method: We performed a prospective analysis of 25 patients with colorectal liver metastases or hepatocellular carcinomas, underwent hepatic resection after portal vein embolization (PVE), and evaluated their functional liver volume perioperatively with GSA SPECT/CT. The percentage of the non-tumorous remnant liver volume (%LV) and the percentage of functional remnant liver volume (%FLV) were estimated. We have been using the prediction score (PS) (Yamanaka et al. Ann Surg. 1994; 219(4): 342-6) which was consists of %LV, indocyanine green retention rate, and patient's age for predicting postoperative liver failure. We compared the PS and modified PS (mPS) which adopted %FLV instead of %LV for prediction of postoperative liver failure using Area under receiver operatorating characteristic curve (AUC).

Results: The %LV increased significantly, from 39.6 to 53.5%, and the increment was 13.9% ($p < 0.01$). The %FLV was also increased significantly, from 43.1 to 62.4%, and the increment was 19.3% ($p < 0.01$). The increment was 5.4% greater for the %FLV compared to that of the %LV ($p = 0.01$). All patients were received subsequent operation following PVE. Postoperative liver failure of grade B and C (ISLGS definition) occurred in 2 cases. AUC of PS and mPS were 0.674 and 0.913, respectively.

Conclusions: Increment of %FLV was greater than that of %LV between before and after PVE. Accuracy of the prediction of the postoperative liver failure may be improved by FLV using GSA SPECT/CT.

PPH24-017

NONINVASIVE DIAGNOSIS OF COMPENSATED CIRRHOSIS BY ANALYSIS OF TIME INTENSITY CURVE PORTAL VEIN SLOPE GRADIENT USING CONTRAST-ENHANCED ULTRASONOGRAPHY

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Introduction: We measured vascular time intensity curves (TIC) as slope gradients (SG) of intrahepatic vessels via contrast-enhanced ultrasonography (CEUS). The aims were to assess the diagnostic accuracy of the SG of each hepatic vessel, particularly of the portal vein (PV), for cirrhosis, and to compare this method with conventional modalities.

Method: Fifty-one preoperative patients underwent CEUS, and TIC was plotted. The SG of the hepatic artery (HA), PV and hepatic vein (HV) were obtained from the linear functions between the slope of the arrival time of the contrast agent and the peak enhancement time of each vessel. Transit times and biochemical markers were also measured. Patients were divided into three groups according to Metavir score: F0/1 group (n = 14), F2/3 group (n = 21) and F4 group (n = 16).

Results: The PVSG was decreased significantly in the F4 group (F0/1: 29.1 ± 2.27 , F2/3: 23.1 ± 1.86 , F4: 14.7 ± 2.13). The PVSG showed high accuracy in diagnosing cirrhosis and was correlated with ICG-R15 and hyaluronic acid (Spearman rank correlation; $\rho = -0.5691$, $p < 0.001$ and $\rho = -0.4652$, $p = 0.0006$).

Conclusions: The PVSG has the potential to be a diagnostic tool to identify well-compensated cirrhosis.

PPH24-018

THE GOOD IDEA FOR ADDITIONAL INDICATION FOR SAFETY LAPAROSCOPIC LIVER RESECTION

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Introduction: Laparoscopic liver resection has been reported as a safe and effective approach to the management of liver cancer. The aim of this study was to analyze the operation outcome of laparoscopic liver resection versus open liver resection.

Method: Between 1999 and 2012, 75 patients underwent laparoscopic liver resection. Fifty eight patients underwent pure laparoscopic liver resection, 3 patients underwent hand assisted liver resection and 14 patients underwent hybrid liver resection. Forty five patients diagnosed of hepato-cellular carcinoma, 18 patients metastatic liver tumor from colorectal cancer and 12 patients others. Patients received open liver resection (n = 480) were included for comparison. Immediate operation outcomes were compared between two groups.

Results: With the laparoscopic group compared with the open resection group, operation time was 310 minutes versus 320 minutes, blood loss was 392 mL versus 1075 mL, hospital stay after operation was 10 days versus 14 days. There were significant differences in blood loss and hospital stay between two groups. Postoperative complication was 10 (13.3%) versus 74 (15.4%).

Conclusions: Laparoscopic liver resection is associated with less blood loss, shorter hospital stay.

PPH25-001

USE OF RETRIEVAL-BALLOON-ASSISTED ENTEROGRAPHY FOR

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Introduction: Endoscopic retrograde cholangiopancreatography (ERCP) is efficacious in patients with a Billroth II gastroenterostomy, but the success rate decreases in patients who also have a Braun anastomosis. In the present retrospective study, we aimed to describe the use of retrieval-balloon-assisted enterography for endoscope insertion in challenging patients with a Billroth II gastroenterostomy and Braun anastomosis.

Method: In total, 109 and 20 patients who received Billroth II gastroenterostomy, and Billroth II gastroenterostomy and Braun anastomosis, respectively, between January 2009 and May 2013 were included in our study.

Results: The overall success rate of enterography was 85% for the patients who had a Billroth II gastroenterostomy and Braun anastomosis, and the therapeutic success rate was 80%. Afferent loop perforation occurred in 1 patient, which was detected during the procedure. None of the patients had hemorrhage. For simple Billroth II gastroenterostomy, ERCP was unsuccessful because of failure in accessing the papilla in 15 patients (6 due to tumor infiltration and 9 due to a long afferent loop) and failure in cannulation in 4 patients. The overall enterography success rate was 86.2%, and the therapeutic success rate was 82.6%. Hemorrhage developed in 1 patient 2 hours after ERCP.

Conclusions: We recommend that the duodenoscope should be extended along the greater curvature of the stomach, and then advanced through the "efferent loop entrance" at the site of the gastrojejunal anastomosis, along the efferent loop, and through the "middle entrance" at the site of the Braun anastomosis to reach the papilla of Vater. We believe that this is the optimal enterography route for ERCP in patients who have Billroth II gastroenterostomy and Braun anastomosis. Retrieval-balloon-assisted enterography might improve the enterography and therapeutic success rate in such patients.

PPH25-002

HEPATO-BILIARY PANCREATIC TUBERCULOSIS

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Introduction: Isolated hepatobiliary and pancreatic tuberculosis (TB) is rare and preoperative diagnosis is difficult. We report our experience of this rare site of tuberculosis.

Method: Records of patients with proven histological diagnosis of hepatobiliary and pancreatic tuberculosis were reviewed retrospectively. The demographic features, sign and symptoms, imaging, cytology/histopathology, procedures performed, outcome and follow up data were obtained. The diagnosis of tuberculosis was based on granuloma with caseation necrosis on histopathology or presence of acid fast bacilli.

Results: Hepatic Tuberculosis: 44 year old patient, presented with jaundice and ascites. A clinical diagnosis of autoimmune hepatitis was considered. Her AMA and ANCA test for autoimmune hepatitis were negative. Liver Biopsy performed revealed presence of granuloma with caseation. She was started on 4 drugs AKT for six months. At the end of three months her jaundice subsided, with subjective improvement in increased weight and appetite.

Biliary Tuberculosis: 16 year old presented with cholangitis. Her imaging showed dilated CBD hence diagnosis of Choledochal cyst was made. She was subjected to surgery, when Hepatico-cholejejunostomy was done. Histopathology of excised CBD revealed granuloma with presence of caseation. Liver Biopsy done post operatively was normal. Patient was started on 4 drug AKT for six months, and patient is doing well.

Pancreatic Tuberculosis: 50 year patient presented with a palpable lump in the supraumbilical region. Imaging showed the lump in relation to the body of pancreas. Patient was subjected to exploratory laparotomy with excision of the lump. The lump contained pus, which was positive for AFB culture. Patient was started on 4 drug AKT, and patient is doing well.

Conclusions: Tuberculosis should be considered as a differential diagnosis, particularly in young patients with atypical signs and symptoms coming from areas where tuberculosis is endemic and preoperative tissue and/or cytological diagnosis should be attempted before labeling them as hepatobiliary and pancreatic tuberculosis.

PPH25-003

EUS-GUIDED CORE BIOPSY IMPROVES DIAGNOSTIC ACCURACY IN THE EVALUATION OF GASTROINTESTINAL STROMAL TUMORS

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Introduction: Gastrointestinal stromal tumors (GIST) are stratified by mitotic index and diagnosed by immu-

nohistochemical staining. Endoscopic ultrasound (EUS) permits the physician to precisely identify the submucosal lesion and provide tissue for pathology.

EUS-guided fine needle aspiration (FNA) provides a diagnostic accuracy of 60 to 90% with a false positive rate of 5% to 7%. GISTs are diagnosed by immunohistochemical staining of cellular elements that are not always obtained by FNA. A novel EUS histology needle (FNB) was developed to obtain core specimens. This study represents a secondary analysis comparing the GIST diagnostic accuracy of EUS guided FNA and FNB on samples procured from the same patient.

Method: Eight GIST lesions were identified in our larger prospectively compiled database of 75 patients referred for EUS evaluation of upper GI lesions. Cook and Boston Scientific FNA (22 g or 25 g and Echotip ProCore Cook Medical FNB needle (19 g, 22 g) were used by experienced endosonographers. Tissue was obtained using both the FNA and FNB needle on the same lesion without on-site cytopathology. The sample acquisition technique, needle gauge and number of passes were determined by the echoendosonographer.

Results: The patients had an average age of 73 years, 88% female 88%, 75% black without any complications. The average lesion size was 2.6 cm located in the gastric fundus and body. The average number of needle passes was greater for the FNA (4 vs. 2). Sample adequacy was greater for the FNB needle (88% vs. 75%) as was the diagnostic yield (86% vs. 71%). Sensitivity values were comparable (FNA 83% and FNB 86%).

Conclusions: GIST lesions are often better diagnosed using immunohistochemical staining. The novel FNB needle provides the ability to extrude cellular elements necessary to assist in this diagnosis. This study demonstrates increased sample adequacy and diagnostic yield for GIST tumors with the FNB needle.

PPH25-004

LAPAROSCOPIC SPLENECTOMY FOLLOWING EMBOLIZATION FOR BLUNT SPLENIC RUPTURE

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Introduction: In trauma surgery, laparoscopy has had only limited established applications, but improved equipment and advanced surgical skill have created greater opportunities for surgeons to apply minimally invasive techniques to the surgical management of the injured patient. We report a case of laparoscopic splenectomy following embolization for blunt splenic rupture in a patient, who could not be treated conservatively.

Method: A 45-year-old man was transported to our hospital after abdominal trauma that was injured by a fall. CT scan revealed a complex type of splenic rupture (Grade IV) and intra-abdominal bleeding. Central splenic artery embolization was performed due to progress anemia. However, Laparoscopic splenectomy following embolization might be necessary in this case because of the potential risk to repeat bleeding and develop splenic

infarction with abscess formation. The patient was in the right lateral position and laparoscopic splenectomy was carried out with a laparoscopic coagulating shears and a 60-mm endostapler.

Results: The surgical time was 194 minutes and operative blood loss was 400 mL. The postoperative course was uneventful and the patient was discharged 11 days after operation without any complications.

Conclusions: We believe that laparoscopic management for blunt splenic rupture is one of the therapeutic strategies available, and embolization may serve as a bridge to operative therapy and make laparoscopy a safe.

PPH25-005

ENDOSCOPIC NASO-GALLBLADDER DRAINAGE FOR THE TREATMENT OF ACUTE CHOLECYSTITIS: TECHNICAL AND CLINICAL RESULTS

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Introduction: Percutaneous transhepatic gallbladder drainage (PTGBD) and percutaneous transhepatic gallbladder aspiration (PTGBA) were performed in patients with acute cholecystitis. However, percutaneous drainage techniques were prohibited for patients receiving anticoagulant or antiplatelet drugs, those with bleeding tendency, and those with suspected gallbladder complications. We retrospectively studied the technical and clinical results of endoscopic naso-gallbladder drainage (ENGBD) for acute cholecystitis.

Method: A total of 55 consecutive patients with acute cholecystitis who received ENGBD from 2009 to 2013 were enrolled in the present study. The median age of the patients was 76 years (range 53–96 years). The frequency of success, tube placement period and complications of ENGBD for acute cholecystitis were measured.

Results: Technical success was achieved in 48 of 55 patients (success rate 87.3%). Clinical success was achieved in 42 of 48 patients (success rate 87.5%). Cholecystectomy was performed in 49 patients; the other six patients were treated by only ENGBD because of their advanced age or complications. The median tube placement period was 8 days (range 2–20 days). The complications were injury to the cystic duct in four (7.3%) patients and acute pancreatitis in two (3.6%) patient. Six (10.9%) patients accidentally removed the ENGBD tube.

Conclusions: ENGBD seems feasible and effective in treating acute cholecystitis. Further advancement of the relevant skills is required for a higher technical success rate.

PPH25-006

EXPERIMENTAL STUDY OF LASER SPECKLE CONTRAST IMAGING IN MONITORING LIVER MICROCIRCULATION OF RATS AFTER ISCHEMIA AND REPERFUSION

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Introduction: The aim of the present study was to evaluate the use of laser speckle contrast imaging (LSCI) in assessing liver microcirculation blood flux (LMBF) before and after liver blood inflow clamping in rats.

Method: Male Wistar rats were assigned into sham operation group (n = 5) and liver blood inflow clamping group (n = 8). The blood inflow to the left, median and right liver lobes was clamped except the caudal lobe which was kept as a bypass of the splanchnic blood. LMBF was measured with LSCI before and after the blood inflow clamping and reperfusion. Histopathological analysis on the liver tissue was also performed.

Results: The baseline LMBF of sham operation group and clamping group were 882.11 ± 103.78 and 855.61 ± 117.58 LSPU respectively ($p > 0.05$). While keeping the normal LMBF level in the sham operation group, the LMBF of clamping group decreased to 464.97 ± 92.20 LSPU ($p < 0.05$) after clamping the liver blood inflow and remained at the same level after 2 h of clamping. After reperfusion of liver blood the LMBF further decreased to 336.46 ± 29.33 LSPU ($p < 0.05$). When comparing the LMBF of the left, left median and right median liver lobes of rats in clamping group, only the left lobe's LMBF was significantly lower than that of the left median and right median lobes after liver blood inflow clamping. Histopathological examination revealed severe hepatic sinus congestion, nuclei pyknosis and necrosis of hepatocytes in the rat liver of clamping group after reperfusion.

Conclusions: LSCI was able to assess the changes of LMBF induced by liver blood inflow clamping and reperfusion, and reflect the ischemia reperfusion induced liver microcirculation dysfunction. These results suggested the possible application of LSCI not only in liver microcirculation study but also in liver surgery.

PPH25-007

COST EFFECTIVENESS OF A PROSPECTIVE STUDY REDUCING FRESH FROZEN PLASMA IN LIVER RESECTION

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Introduction: The fresh frozen plasma (FFP) has been transfused without adequate supporting evidence in liver resection. It leads to FFP unnecessary usage and arises medical costs.

Method: Prospective study was performed on a phase I dose-escalation, "3 + 3" cohort expansion design, mod-

ified for FFP transfusion. All eligible patients had Child-Pugh A liver function and an intraoperative blood loss of less than 1000 mL. A serum albumin level of 3.0 g/dL (step 1) as the starting limit for non-transfusion and reduced the level in 0.2-g/dL steps. Advancement to the next step was permitted when the albumin level equaled the target value for the previous step in three patients. The study continued until high-grade postoperative complications occurred without transfusion. If one of three patients had Clavien–Dindo grade II or higher complications, three more patients (“3 + 3” cohort) were added to the same step.

Results: Of the 213 consecutive patients with liver cancer enrolled, 172 (81%) fulfilled the inclusion criteria. Step progression proceeded until step 5 (albumin, 2.2 g/dL) without high-grade complications, but step 2 (2.8 g/dL) required 63 patients to complete because one patient had grade II complications (massive ascites). Step progression was broken off at step 5 in the 172nd patient because the POD2 albumin value did not fall below the step 4 level (2.4 g/dL), defined as the goal limit. The FFP transfusion rate was significantly reduced from 48.6% in a previous series involving 222 patients to 0.6% (1/172 patients) in present study ($p = 0.001$). The postoperative hospital stay in the present study was significantly shorter than that in our previous series (13 vs. 16 days, $p = 0.012$). Total medical costs were significantly reduced from median \$21,061 USD [range 10,032–59,410] to \$17,267 USD [11,823–35,785] ($p = 0.001$).

Conclusions: Significant cost reduction was demonstrated by prospective study in liver resection.

PPH25-008

PERCUTANEOUS TRANSHEPATIC BIOPSY BY CHOLEDOCHOSCOPE IN INTRAHEPATIC BILIARY TUMORS

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Introduction: Intraductal papillary mucin-producing neoplasm (IPMN) of the bile duct is a rare disease. The precise diagnosis of biliary IPMN is not easy, especially in intrahepatically located, by conventional endoscopic retrograde cholangiopancreatography.

Method: A female-63 year old patient admitted to our hospital complaining of right upper quadrant abdominal pain and fever. Abdominal computed tomography (CT) scan showed both common bile duct and both intrahepatic bile duct dilatation and endoscopic retrograde cholangiopancreatography showed a mucin like soft mass projection after endoscopic sphincterotomy yet biopsy did not reveal malignancy. Further evaluation with magnetic resonance imaging (MRI) suggested biliary IPMN or distal CBD cancer involving the right hepatic duct. Percutaneous transhepatic biliary drainage (PTBD) catheter was inserted and choledochoscopic

ic biopsy was done revealing adenocarcinoma in the peripheral right hepatic and common hepatic duct.

Results: A 52 year old man admitted to our hospital due to intrahepatic duct dilatation on annual abdominal sonographic check-up. Liver CT scans revealed distal CBD narrowing near the ampulla and there were longitudinal filling defects on both IHD and CHD on ERCP, after EST pus like discharge was found. Biliary parasitosis was suspected due to his history of ingestion of raw fish liver and praziquantel trial was started. After a follow loss of 20 months the patient was readmitted due to jaundice. Liver CT and ERCP showed mass like findings at the common hepatic duct with both intrahepatic duct dilatation. MRI findings suggested biliary IPMN or atypical cholangiocarcinoma. Choledochoscopic biopsy after PTBD was done revealing intraductal tumor in the peripheral right hepatic duct.

Conclusions: Before operation, the pathology and the extent of the tumor were confirmed and surgical strategy was easy to set up to right hemihepatectomy with caudate lobectomy. Both patients were discharged with no postoperative major complication.

PPH25-009

LAPAROSCOPIC SURGICAL BOX MODEL TRAINING FOR SURGICAL TRAINEES WITH NO PRIOR LAPAROSCOPIC EXPERIENCE

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Introduction: The role of box training in surgical trainees with no prior laparoscopic experience is not fully understood.

Method: A systematic review of literature was performed by searching the Cochrane Library, MEDLINE, EMBASE and Science Citation Index Expanded for randomized controlled trials reported until May 2013. Two authors independently identified trials and collected data. Standardized mean difference (SMD) with 95% confidence intervals (CI) was calculated based on an intention-to-treat basis using RevMan software.

Results: Box-model training versus no supplementary training: Sixteen trials (464 participants) provided data for the analysis. The time taken for task completion was significantly shorter (SMD -0.48 s; 95% CI -0.74 s to -0.22 s), the error score significantly lower (SMD -0.69 ; 95% CI -1.21 to -0.17), accuracy score significantly higher (SMD 0.67 ; 95% CI 0.18 to 1.17), and the composite performance score significantly better (SMD 0.65 ; 95% CI 0.42 to 0.88) in the box-trainer group than the control group. Different methods of box training: Overall, 14 trials (382 participants) provided data for quantitative comparison of different methods of box training. None of the methods of training were consistently superior to other methods of training.

Conclusions: Laparoscopic box-model training appears to improve technical skills compared to standard surgical training (no training in this population) in trainees with no previous laparoscopic experience. The impact of this decreased time on patients and healthcare funders in terms of improved outcomes or decreased costs is not known. There appears to be no significant differences in the improvement of technical skills between different methods of box model training. Further well designed trials of low risk of bias and random errors are necessary. Such trials should assess the impact of box-model training on clinical outcomes when the trainee becomes competent to operate on patients.

PPH25-010

LAPAROSCOPIC SURGICAL BOX MODEL TRAINING FOR SURGICAL TRAINEES WITH LIMITED PRIOR LAPAROSCOPIC EXPERIENCE

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Introduction: The role of box training in addition to standard apprenticeship model training is not fully understood.

Method: A systematic review of literature was performed by searching the Cochrane Library, MEDLINE, EMBASE and Science Citation Index Expanded for randomised controlled trials reported until May 2013. Two authors independently identified trials and collected data. Risk ratio (RR), mean difference (MD), or standardised mean difference (SMD) with 95% confidence intervals (CI) were calculated on an intention-to-treat basis using RevMan software.

Results: Seven trials (249 surgical trainees) comparing supplementary box model training and standard training met the inclusion criteria. Only one trial (50 trainees) was at low risk of bias. The final assessments were made on a single operative procedure in humans. There was no mortality in any of 168 patients operated by the trainees belonging to either group. There was no significant difference in the serious adverse events proportion (RR 0.36; 95% CI 0.02 to 8.43). None of the trials reported patient quality of life or trainee satisfaction. The operating time was significantly shorter (MD -6.50 minutes; 95% CI -10.85 to -2.15), the proportion of patients discharged as day-surgery significantly higher (RR 1.71; 95% CI 1.23 to 2.37) and the operating performance significantly better (SMD 0.84; 95% CI 0.57 to 1.10) with supplementary box model training compared to standard training.

Conclusions: Laparoscopic box-model training appears to improve technical skills compared to standard surgical training in trainees with limited previous laparoscopic experience. However, the duration of the benefit of box model training is not known. Further well designed trials of low risk of bias and random errors are necessary. Such trials should assess the long-term impact of box model training on clinical outcomes and compare box training with other forms of training.

PPH25-011

EXPERIENCE OF SINGLE UMBILICAL PORT LAPAROSCOPIC IN THE SPLEEN, LIVER AND GALLBLADDER

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Introduction: Explore the feasibility of clinical application of laparoscopy in hepatobiliary surgery through the umbilical approach single hole.

Method: d in 10 mm, 10 mm trocar and a 5 mm trocar core right-to-left, side-by-side. Electricity hook, ligasure, straight cut intraperitoneal closure devices and other equipment successfully completed surgery.

Results: 30-240 min successful completion of the surgery, less bleeding, 2-10 days after hospital discharge, and follow-up with no complications.

Conclusions: After the umbilical single port laparoscopic surgery is feasible and safe, minimally invasive, quick recovery, beauty.

PPH25-012

BALLOON CATHETER COULD BE SAFELY ADOPTED IN TACE FOR PATIENTS WITH HYPOVASCULAR LIVER CANCER, A RANDOMIZED, SINGLE-BLIND AND CONTROL TRIAL WITH 178 CASES

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Introduction: As the poor results of conservative TACE treatment for patients with hypovascular liver cancer, we tried to adopt balloon catheter to gain more chemotherapeutic and embolic agents into the lesions. This is the investigation on the safety of the original approach.

Method: Patients were divided into the experimental and control group randomly. The experimental group was treated with TACE by balloon catheter, while the control group by the conventional catheter. The enhanced CT or MRI examination and the laboratory tests were adopted to evaluate its safety and efficacy by the occurrence of adverse reactions and treatment response during the follow-up.

Results: There were 89 cases in either group, showing balanced baseline. The incidence of the gastrointestinal adverse reactions in the control group was significantly higher than that in the experimental group ($p = 0.011$), which showed close relation to the bilateral embolization and drug reflux, but had nothing to do with the dose of lipiodol used in the TACE. There was no significant difference in the laboratory parameters and the liver function between the two groups in 1.5 months after the TACE. The occurrence of the extrahepatic metastasis in patients with tumor thrombus was significantly earlier than that in patients without it ($p = 0.015$, $HR=2.535$), though there was no significant difference between the two groups. Meanwhile, the

experimental group showed apparent advantage in the dose of the lipiodol used in the TACE, the volume of the intrapatic lipiodol and early occurrence of partial remission by the mRECIST ($p = 0.016, 0.035, 0.029$).

Conclusions: The applications of the balloon catheter could reduce the regurgitation of chemotherapeutic agents and lipiodol and did not show adverse effect to patients' liver function and extrahepatic metastasis. It was preliminarily proved that balloon catheter could be safely adopted in TACE for patients with hypovascular liver cancer, which also showed preferable effectiveness.

PPH25-013

SYNCHRONOUS ADENOCARCINOMA AND MUCOSAL-ASSOCIATED LYMPHOID TISSUE (MALT) LYMPHOMA OF THE STOMACH

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Introduction: Gastric adenocarcinoma is one of the most common malignancies, whereas primary gastric lymphoma is relatively uncommon. The synchronous occurrence of both gastric adenocarcinoma and malignant gastric lymphoma in the same patient is extremely rare. It is still controversial about their etiology. Recent studies have suggested that not only gastric cancer but also primary gastric lymphomas, especially those of MALT type, are associated with *Helicobacter pylori* infection.

Method: We report on a 48-year old male who was referred to our hospital for complaining his epigastric pain of 3 months duration. Endoscopic examination revealed an elevated lesion located at pylorus, and the biopsy demonstrated a moderate differentiated adenocarcinoma with superficial lamina muscularis invasion.

Results: The patient underwent total gastrectomy, and the resected specimen revealed the presence of both adenocarcinoma and MALT lymphoma. Immunohistochemical staining showed positivity for LCA and CD20 in the infiltrated lymphoid cells. However, the lesion with lymphoma was focal and smaller than that of adenocarcinoma in size, which was different from that most of the adenocarcinoma were smaller and penetrated less than coexisting MALT lymphoma reported in literature.

Conclusions: It seemed to suggest that two lesions were primarily separate, but they integrated into a lesion for a long time. Acknowledgements: This work was supported by a grant from Program for changjiang Scholars and Innovative Research Team in University (PCSIRT: 1171).

PPH25-014

THE SIGNIFICANCE OF SERUM AMYLASE IN THE DIAGNOSIS OF POST ERCP PANCREATITIS IN THE ABSENCE OF ABDOMINAL PAIN

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Introduction: ERCP is an invasive pancreatobiliary investigation. Pancreatitis is a known complication following ERCP. In many units, Amylase and lipase levels are routinely done to diagnose post ERCP pancreatitis. Objective of this study is to assess the correlation between serum amylase and abdominal pain following ERCP and to describe the value of serum amylase in diagnosing post ERCP pancreatitis.

Method: Consecutive 94 patients who underwent ERCP at the NHSL and NCTH over a period of 6 months were included. Pre and serial post procedural pain scores and amylase levels at 4 hrs and 24 hrs were assessed. Abdominal pain was assessed using a pain scale from 0 to 10. Data were analyzed by Minitab software.

Results: A significant worsening of abdominal pain was taken as an increase in the pain score of 3 units post procedure compared to the pre procedure value. 22(27.5%) patients experienced a significant worsening of pain at 4 hours and 7 (9.21%) experienced a significant worsening of pain at 24 hours post procedure. Out of 94 patients 44 patients (46.8%) had elevated amylase at 4 hours post procedure. When significant abdominal pain was cross tabulated against elevated amylase, at 4 hours post procedure, the Chi square test failed to show a significant association ($p = 0.311$).

Conclusions: Patients who undergo ERCP may develop abdominal pain which regresses spontaneously in the majority. Although many patients have elevated amylase post procedure it does not have an association with abdominal pain. Therefore a routine measurement of amylase levels post procedure is of limited value.

PPH25-015

COST EFFECTIVE UTILIZATION OF ENDOSCOPIC ACCESSORIES: IS THERE ANY PLACE FOR "SCIENTIFIC COMMON SENSE" IN TODAY'S SCIENTIFIC WORLD?

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Introduction: In most of the developing countries it is ultimately the patient who has to bear the higher cost of endoscopic accessories (EAs), and consequently the endoscopic procedures. The physicians always remain in limbo whether to follow the scientific standards, mostly set by the developed countries and consequently depriving many patients of their treatment rights, or to

adapt measures which apparently make sense to the scientific minds but still awaiting scientific evidence, what we may call it the “Scientific Common Sense” (SCS).

Method: Here are we presenting some of the examples of SCS for the use of EAs to generate a debate whether this concept has any place in today’s scientific world.

Results: Some of the disposable EAs can be used safely again, on the same patient after proper cleaning and/or re-sterilization. The esophageal multiband ligator is a prime example which can be used multiple times after reloading the bands thus reducing the cost to even less than a quarter. Injectors are another example in this category. Naso-biliary drains are prime example of additional or innovative use as it may be cut into pieces to make more than 25 biliary stents from the single unit. Then there are EAs which can be re-sterilized to the extent that they may be considered safe to use in multiple patients, and this include various cannulae, guide wires, biliary balloons, some type of retrieval baskets and papillotomes etc. Then there are many accessories which, by their very nature, may be considered for use in their early expiry periods after reassuring their mechanical and microbiological integrity.

Conclusions: These cost saving measures are in use for decades in developing countries. Thus there is need to re-evaluate whether SCS has any legitimate place in today’s scientific world

PPH25-016

ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY VERSUS INTRAOPERATIVE CHOLANGIOGRAPHY FOR DIAGNOSIS OF COMMON BILE DUCT STONES

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Introduction: Endoscopic retrograde cholangiopancreatography (ERCP) and intraoperative cholangiography (IOC) are tests used in the diagnosis of common bile duct (CBD) stones in patients suspected to have CBD stones. There has been no systematic review of the accuracy of ERCP and IOC.

Method: A literature search of MEDLINE, Embase, Science Citation Index Expanded, BIOSIS, and Clinicaltrials.gov until September 2012 was performed to identify studies assessing the diagnostic accuracy of ERCP and IOC irrespective of language or publication status, or whether data were collected prospectively or retrospectively. At least two authors screened abstracts, selected studies for inclusion, and collected data on true positive, false positive, false negative, and true negative from each study independently. Bivariate model was used for combining the data.

Results: Five studies including 318 participants reported the diagnostic test accuracy of ERCP. The overall summary sensitivity and specificity of ERCP was 0.8264 (95% CI 0.7276 to 0.8945) and 0.9794 (95% CI 0.9284 to 0.9943) respectively. Five studies

including 654 participants reported the diagnostic test accuracy of IOC. The overall summary sensitivity and specificity of IOC was 0.9882 (95% CI 0.7206 to 0.9996) and 0.9856 (95% CI 0.9590 to 0.9950) respectively.

Conclusions: Some patients may have CBD stones in spite of having a negative ERCP or IOC. Such people may have to be retested if the clinical suspicion of CBD stones is very high because of their symptoms. Both these tests are fairly accurate in guiding further invasive treatment as most people diagnosed to have CBD stones by these tests have common bile duct stones. Neither ERCP nor IOC should be used as reference standards in the assessment of accuracy of other tests to diagnose CBD stones.

PPH25-017

UTILITY OF DIFFUSION-WEIGHTED MAGNETIC RESONANCE IMAGING FOR THE DETECTION OF NEUROENDOCRINE TUMOR LIVER METASTASES

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Introduction: Accurate localization of neuroendocrine tumors (NET) in the liver is essential for therapeutic interventions. Since magnetic resonance imaging (MRI) and diffusion weighted imaging (DWI) has improved the detection of hepatic disease, our objective was to evaluate the accuracy of DWI for assessing NET liver metastases compared to standard contrast-enhanced MR images.

Method: Patients with NET liver metastases were identified from 2010 to 2013 via institutional database query. MR images of the liver acquired using 3 Tesla magnets were reviewed. Conspicuity of the largest lesion on DWI and T2-weighted imaging was categorized (yes/no) and compared to conspicuity on contrast-enhanced images, which served as the control. The sensitivity of DWI and T2 were calculated and analyzed by McNemar’s test for paired data. Specificity of DWI and T2 compared to contrast-enhanced images in a separate negative control group without liver metastases was determined.

Results: We identified 7 patients with NET liver metastases with an average age of 59 years who underwent 14 MRI examinations that included DWI, T2, and contrast-enhanced imaging. When MRI images were reviewed, lesion identification was better with DWI compared to T2 imaging (n = 14 of 14, 100% vs. n = 7 of 14, 50%, respectively). A greater number of lesions were identified by DWI than T2 sequences (p = 0.023), and conspicuity by DWI was comparable to contrast-enhanced imaging by McNemar’s test (p = NS). The specificity of both DWI and T2 in the negative control group of 22 exams from 13 patients was 100%.

Conclusions: MRI with DWI has increased sensitivity over T2-weighted images for the detection of NET liver metastases and is comparable to contrast-enhanced images. DWI avoids the need for intravenous contrast use and can be used for patients with contrast allergy

or renal failure and is also superior to non-contrast computed tomographic imaging. MRI with DWI should be considered for routine evaluation of metastatic NETs.

PPH25-018

THE APPLICATION OF ARFI IN LIVER TUMORS

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Introduction: Liver cancers were usually screened by liver sonography and diagnosed by dynamic imaging. But sometimes it is still difficult to differentiate the tumor characters. Acoustic radiation force impulse (ARFI) was used to detect the degree of liver fibrosis, a non-invasive method. Here we try to apply this diagnostic tool to depict the tumor characters.

Method: Patients with 50 HCC and 10 metastatic cancers were enrolled in this study, with median age of 53. All were studied with ARFI before surgery or biopsy. The tumor and nontumor parts stiffness measurements were measured.

Results: The shear velocity measurement (SVM) of ARFI was correlated with the liver fibrosis. Moreover, the result showed significant difference between metastatic tumor and hepatocellular carcinoma. Liver mets showed significant higher SVM and less variation, compared with HCC.

Conclusions: Our data showed ARFI, a non-invasive and easy method, could offer important information for liver tumors, primary or metastatic lesion, HCC or adenocarcinoma. HCC cohort

PPH26-001

LAPAROSCOPIC INTRAOPERATIVE ULTRASONOSCOPY IN PATIENTS WITH CHOLEDOCHOLITHIASIS

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Introduction: Laparoscopic ultrasonoscopy is a novel promising alternative to preoperative examination of the bile ducts in the case of suspected choledocholithiasis. The aim of study was to evaluate the diagnostic efficiency of laparoscopic intraoperative ultrasonoscopy (LUS) in patients with suspected choledocholithiasis.

Method: Totally 124 patients urgently admitted with suspected choledocholithiasis were candidates for intraoperative ultrasonoscopy and prospectively were included during the period from August 2012 till June 2013. Inclusion criteria were preoperative dilatation of the bile ducts on transabdominal ultrasound, biliary pancreatitis/cholangitis, elevated liver enzymes and/or bilirubin. All patients underwent laparoscopic cholecystectomy and LUS. Visualization of macro-/ microlithiasis was considered as a positive finding. Pre-operative variables significant for cholestasis were compared in patients with positive or negative LUS findings.

Results: Preoperatively choledocholithiasis was suspected in 86 patients. Diagnose was based on transab-

dominal ultrasound findings and elevated liver enzymes and/or bilirubin level. Only in 45 cases (52.3%) LUS confirmed preoperative diagnose. In 38 patients preoperative diagnose was proved by magnetic resonance imaging (11 cases), contrast enhanced computer tomography (3 cases) or transabdominal ultrasound in 24 cases. LUS confirmed preoperative diagnose of 32 patients, 84.2%. Preoperative variables were compared in patients with positive or negative LUS finding (77 patients) and (47 patients). Median level of total and direct bilirubin were significantly higher in patients with positive LUS finding, 52 (IQR 93 – 23) versus 22 (44 – 11) $\mu\text{mol/L}$ and 41 (74 – 12) versus 11 (30 – 4) $\mu\text{mol/L}$ compared to patients with negative LUS finding, $p < 0.001$, respectively. Significantly larger common bile duct in LUS positive patients was another finding 10 (12 – 7.3) versus 7 (9.2 – 6) mm, $p < 0.001$, respectively.

Conclusions: LUS is efficient, fast and accurate procedure for detecting stones or sludge in patients with proven or suspected choledocholithiasis. Large common bile duct and elevated bilirubin increases risk of choledocholithiasis.

PPH26-002

DEVELOPMENT OF SCIENTIFIC INITIATION IN MEDICAL EDUCATION: PRELIMINARY RESULTS OF THE STUDENTS' PERSPECTIVE

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Introduction: In Medical Schools of higher intellectual potential, Scientific Initiation (SI) is considered essential to improving students' skills, creativity and responsibilities that magnify the academic life, contributing positively to medical practice. Although many steps for the establishment of SI programs were overcome, many students still fail participate research programs. We aimed to evaluate experiences and perceptions of medical students related to their participation in SI projects.

Method: This is a descriptive exploratory study performed at Faculdade de Medicina da Universidade de Sao Paulo and Faculdade de Ciencias Medicas da Santa Casa de Sao Paulo. We evaluated students attending the first to the third year of medical school in 2013 through application of a questionnaire of multiple choices. There were included students over 18 who sign the acceptance form to participate in the study. We assessed the interest, the barriers, and expectations of the students in respect to SI.

Results: We evaluated 348 students, 38% reported participation in activities associated with scientific research. In most cases, students joined SI programs by indication of friends and teachers. Twenty-seven students (20%) had research SI grants, 15 from FAPESP,

8 from CNPQ and 4 from USP. Of the 62% of students who reported never having participated in SI projects, 90% are interested in participating and believe the institution should invest more in such programs. The main reasons for not being involved in a research program were lack of knowledge in 74% and deficiency of appropriate orientation in 50%.

Conclusions: These preliminary results showed that students have great interest in participate SI programs and understand the importance of SI in medical education. The main reasons for not to be enrolled in SI programs appear to be related with lack of knowledge and orientation about how to initiate the SI program.

PPH26-003

CHANGING PARADIGMS IN BILE CULTURE MICROFLORA AND EMERGENCE OF MULTIDRUG RESISTANT ORGANISMS WITH THEIR CLINICAL IMPLICATIONS

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Introduction: There has been an emergence of resistant micro-organisms across the board with their clinical implications. Understanding the epidemiology of organisms with sensitivity patterns encountered in bile of malignant Hepato-pancreatico-biliary (HPB) patients is important for optimal infection management and control in postoperative period.

Method: We did retrospective analysis of prospectively maintained electronic database of patients who underwent Hepato-biliary surgery with concomitant bile duct excision. An intraoperative bile culture / biliary stent were sent in all such cases with antibiogram. Parameters like age, sex, BMI, duration between stenting and surgery, albumin were studied.

Results: All patients (n = 33) who underwent HPB surgery with bile duct excision from October 2011 to July 2013 were included in the study. Intraoperative bile was collected and sent for culture sensitivity. Biliary stents were also sent in those patients with prior biliary decompression. Pancreaticoduodenectomy (82%) formed the majority of cases. Mean age was 58.5 years (38–73 years) with a male to female ratio of 20:13. 22 (66.7%) patients had preoperative biliary decompression with plastic stent being commonest. Bile in 9 (27.3%) patients was sterile. Out of these 9 patients, one had plastic biliary stent and one had external PTB drainage. 3 patients who did not have any preoperative biliary decompression grew organisms, none having MDRO. Most common organisms isolated were E coli (25%), Klebsiella (22.9), Enterococcus faecium (14.6) and Enterococcus faecalis (9%). Multi drug resistant rate was 45.5% (20/44) with ESBL E coli being commonest (50%).

Conclusions: High incidence of MDRO suggests an alteration of ambient microbiological flora. This calls for developing indigenous prescription policies for antimicrobial prophylaxis. Amikacin was sensitive against most of the drug resistant organisms.

PPH26-004

ERCP, SPHINCTEROTOMY AND LARGE BALLOON SPHINCTEROPLASTY FOR THE MANAGEMENT OF CHOLEDOCHOLITHIASIS, A SINGLE CENTRE EXPERIENCE

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Introduction: Balloon dilatation of the ampulla of Vater (sphincteroplasty) at Endoscopic Retrograde Cholangio-Pancreatography (ERCP) is an invaluable procedure in the management of large bile duct stones. For extraction of large bile duct stones at our institution, patients have traditionally had an ERCP with sphincterotomy initially and a balloon sphincteroplasty at a subsequent procedure due to concerns of perforation.

Method: A retrospective review of all patients undergoing ERCP and large balloon dilatation for cholelithiasis between 2010–2013 was performed. Outcomes measured included successful stone extraction, complications, degree of dilatation performed and stone size. A subset of patients who had concurrent sphincterotomy and balloon sphincteroplasty was also identified.

Results: In total 129 ERCPs were performed with balloon sphincteroplasty. 102 had a previous sphincterotomy and thus underwent dilatation alone. Success in clearing the bile duct was 76.47% with the most common dilatation size being 10 mm (65.38%), range (8–18 mm). The most frequent stone size extracted was 10–20 mm (41.03%). There were 6 (5.88%) complications (5 bleeding and 1 oesophageal perforation). There were 27 patients who underwent sphincterotomy and immediate dilatation. The success rate in clearing the bile duct was 88.9% cleared with 1 complication (3.7%) (bleeding). The most frequent stone size extracted was 5–10 mm (41.67%) with the most common dilatation performed being 10 mm (45.83%), range (8–18 mm).

Conclusions: Performing both a sphincterotomy and immediate balloon dilatation had a high success rate in extracting bile duct stones, although the average stone size extracted was smaller than in the delayed dilatation alone group. The complication rates for both groups were similarly low suggesting that sphincterotomy and immediate balloon dilatation is safe and effective for retrieval of CBD stones. This approach may avoid the need for repeat ERCP and we are planning to investigate this at our institution with a randomized controlled trial.

PPH26-005

CLINICAL IMPLICATION OF ZEB-1 AND E-CADHERIN EXPRESSION IN HEPATOCELLULAR CARCINOMA (HCC)

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Introduction: While recent research has shown that expression of ZEB-1 in a variety of tumors has a crucial impact on patient survival, there is little information regarding ZEB-1 expression in hepatocellular carcinoma (HCC). This study investigated the co-expression of ZEB-1 and E-cadherin in HCC by immunohistochemistry and evaluated its association with clinical factors, including patient prognosis.

Method: A total of 108 patients with primary HCC treated by curative hepatectomy were enrolled. ZEB-1 expression was immunohistochemically categorized as positive if at least 1% cancer cells exhibited nuclear staining. E-cadherin expression was divided into preserved and reduced expression groups and correlations between ZEB-1 and E-cadherin expression and clinical factors were then evaluated.

Results: With respect to ZEB-1 expression, 23 patients were classified into the positive group and 85 into the negative group. Reduced E-cadherin expression was seen in 44 patients and preserved expression in the remaining 64 patients. ZEB-1 positivity was significantly associated with reduced expression of E-cadherin ($p = 0.027$). Moreover, significant associations were found between ZEB-1 expression and venous invasion and TNM stage. ZEB-1 positivity was associated with poorer prognosis ($p = 0.025$). Reduced E-cadherin expression was significantly associated with intrahepatic metastasis and poorer prognosis ($p = 0.047$). In particular, patients with both ZEB-1 positivity and reduced E-cadherin expression had a poorer prognosis ($p = 0.005$). Regardless of E-cadherin status, ZEB-1 was not a significant prognostic factor by multivariate analysis. There was no statistical difference in overall survival when E-cadherin expression was reduced in the ZEB-1 positive group ($p = 0.24$).

Conclusions: Positive ZEB-1 expression and loss of E-cadherin expression are correlated with poor prognosis in HCC patients and malignancy of ZEB-1 positive tumors involves EMT.

PPH26-006

EDUCATION FOR RESIDENTS TO SAFELY PERFORM PANCREATODUODENECTOMY

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Introduction: The world is now facing a shortage of surgeons. Young surgeons are encouraged to become independent as early as possible. Independent surgeons have to safely perform difficult procedures like pancre-

atoduodenectomy (PD). We will focus on whether we educate residents to safely perform PD.

Method: We have standardized our PD procedure and the way of placing drains originated by two experienced surgeons. Since 2006, we have educated residents at postgraduate year 3–7 to perform PD supervised by the two surgeons. This study retrospectively analyzed 56 supervised PD cases between 2001 and 2013. The operators of PD were classified into two groups: resident (postgraduate year 3–7) or non-resident (postgraduate year ≥ 8). We chiefly investigated short-term morbidity, the rate of reoperation, and hospital mortality.

Results: There were 7 operators (16 cases) in the resident group and 6 operators (40 cases) in the non-resident group. Mean (\pm standard deviation) duration since graduation for operators was 5.38 (± 0.88) years and 17.5 (± 4.93) years in the resident group and in the non-resident group, respectively. Overall morbidity was a little lower in the resident group (56.3% vs. 72.5%; $p = 0.24$). No significant differences were observed between the resident group and the non-resident group, in the rate of pancreatic fistula classified as Grade B or C by the International Study Group on Pancreatic Fistula (37.5% vs. 35%; $p = 0.86$) and in the rate of severe complications classified as Grade IIIa or over by the Clavien-Dindo classification (0% vs. 2.5%; $p = 0.52$). The same reoperation rates (both 0%) and hospital mortalities (both 0%) were seen in both groups.

Conclusions: Outcomes in the resident group proved acceptable compared with those in the non-residents group. Standardization of both PD procedure and postoperative drainage system enables us to educate residents to safely perform PD.

PPH26-007

HYPOXIA INDUCIBLE FACTOR-1 ALPHA (HIF-1 α) EXPRESSION UNDER HYPOXIA PLAYS A KEY ROLE IN INVASION AND METASTASIS VIA EPITHELIAL-MESENCHYMAL TRANSITION (EMT) IN CD133-EXPRESSION PANCREATIC CANCER

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Introduction: Pancreatic cancer (PC) is a highly lethal disease which is the fifth leading cause of cancer related death in Japan. CD133 is well known as one of cancer stem cell (CSC) markers of PC. We previously reported that CD133 expression in PC is correlated with poor prognosis and lymph node metastasis (Br J Cancer, 2008). However, the role of CD133 in CSCs is still obscure. On the other hand, PC is surrounded with desmoplastic morphology which is under the low oxygen condition because of its insufficient blood supply. In this study, we hypothesized that HIF-1 α expression under hypoxia plays a key role in invasion and metastasis for CD133⁺ PC.

Method: 1) To investigate the relationship between HIF-1 α and CD133 expression in PC, primary tumor tissues were used for immunohistochemical study. 2) To clarify the mechanism, we established a highly migratory CD133⁺ Capan1M9 cells (Human Cell, 2012). Consequently, we established Capan1M9-GFP-shCD133 (CD133^{knockdown}) cells by lentiviral transduction method. Using these cell lines, wound healing assay, immunofluorescence staining, western blot, and real-time RT-PCR were performed.

Results: *Immunohistochemical studies:* 1) CD133 expression significantly correlated with poorer prognosis in clinical PC. 2) HIF-1 α expression significantly correlated with hepatic metastasis in clinical PC. *In vitro studies:* 1) Hypoxia increased the ratio of CD133⁺ cells by FACS analysis. 2) CD133⁺ cells showed higher expression of HIF-1 α than CD133^{knockdown} cells. 3) Under hypoxia, migration ability of CD133⁺ cells was higher than that of CD133^{knockdown} cells by wound healing assay. 4) EMT-related molecules such as Slug, N-cadherin and fibronectin in CD133⁺ cells were higher than those in CD133^{knockdown} cells.

Conclusions: Our results indicated that HIF-1 α expression under hypoxia stimulates invasion and metastasis in CD133⁺ PC cells through EMT. The elucidation of role of HIF-1 α in CD133⁺ PC may provide a new insight for PC metastasis.

PPH26-008

DEVELOPMENT OF A NEWLY DESIGNED BILIARY INTERNAL FISTULA TUBE FOR ENDOSCOPIC TRANSLUMINAL BILIARY DRAINAGE

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Introduction: We developed a biliary internal fistula tube (BIFT) which has been constructed with a conventional biliary stent tube and a bioabsorbable polymer seat (BAPS) for a transluminal biliary drainage. In this study we attempted to investigate the difference between the BIFT and conventional tube (CT) in biliary-enteric fistula formation.

Method: The BIFT is a conventional biliary tube wrapped with the BAPS, which is 0.5 mm thickness. The BAPS is an ideal scaffold for tissue regeneration with porous property to allow easy penetration of cells. BIFT group (n = 3): The pigs were laparotomized to expose the extrahepatic bile duct (EHBD). The 5 cm BIFT was placed between gallbladder (GB) and duodenum (DU). CT group (n = 3): The 5 cm CT was placed between GB and DU in a similar manner of the BIFT group. In both group these pigs were sacrificed and re-laparotomized at 4 weeks after the placement.

Results: BIFT group: At 4 weeks after the placement, the distance between GB and DU was shortened. A biliary-enteric fistula, which had 1.5 cm bore diameter and 2 cm length, was constructed between GB and DU. CT group: At 4 weeks after the placement, the CT became surrounded by connective tissue, and the dis-

tance between GB and DU came closer to each other. However, the connective tissue between GB and DU was fragile and easy to be divided. The lumen of the CT has biliary sludge and almost became obstructed.

Conclusions: The placement of the BIFT between GB and DU induced rapid and good fistulization, and has the potential for application as a novel device for transluminal biliary drainage avoiding the need for exchange of tubes.

PPH26-009

PANCREAS PRESERVING SURGERY FOR PRIMARY ADENOCARCINOMA OF THE DISTAL DUODENUM; REPORT OF A CASE AND LITERATURE REVIEW

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Introduction: Primary adenocarcinoma of the distal duodenum (PADD) is a rare entity. We report a case of PADD which extended to jejunum without involving pancreas and major mesenteric vessels.

Method: 77 year-old-man experienced shortness of breath and fatigue for few months. He visited nearby hospital for examination and was diagnosed as having anemia. CT scan revealed a mass measuring 7 cm in length at the distal duodenum. Hypotonic duodenography showed "apple core sign" at forth portion of the duodenum. Endoscopy was carried out to find almost complete obstruction of the lumen and the biopsy specimen was conclusive for moderately differentiated adenocarcinoma. As magnetic resonance imaging showed expansive growth with less chance of pancreatic head involvement, we carried on to perform resection of the third and forth portions of the duodenum (distal duodenectomy).

Results: Functional end to end anastomosis was possible between the remnant duodenum and jejunal limb. No evidence of lymph node metastases or local invasion was detected pathologically.

Conclusions: Pancreatic preserving resection can be applied to PADD if invasion to the pancreas is ruled out. If not, pancreaticoduodenectomy is preferred for better prognosis.

PPH26-010

PROGRAM DIRECTORS' PERSPECTIVES ON COMPLIANCE AND COMPETENCY WITH ACGME HEPATOPANCREATICOBILIARY REQUIREMENTS FOR GENERAL SURGERY RESIDENCY

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Introduction: Hepatopancreaticobiliary (HPB) experience in general surgery residency is changing. This study aimed to compare the methods by which the Accreditation Council for Graduate Medical Educa-

tion's (ACGME) HPB requirements are met in general surgery residency. Secondary objectives included determining who performs HPB surgery and which aspects of diagnostic techniques are employed to enhance HPB education.

Method: A thirty-question survey was sent out to 241 general surgery program directors (PDs) via email. Analysis of the responses was completed.

Results: Academic and mixed programs made up a majority of the responders. Fifty percent of these programs did not have any HPB-fellowship-trained surgeons, resulting in HPB cases being performed by general surgeons (30%) or surgical oncologists (35%). Regarding residency training, 83% of HPB cases were performed by teaching faculty at the institution; only 5% of programs sent residents to tertiary centers to achieve their required ACGME numbers. Most chief residents were completing 50–75% of each HPB case, but only 50% of PDs felt that graduating residents were competent to perform HPB surgery after graduation. Most PDs (59%) stated that none of their chief residents were entering into an HPB fellowship. More PDs believed that single most important diagnostic ability for HPB practice is intraoperative ultrasound interpretation (60%) rather than upper endoscopy (40%). Training for these diagnostic skills was performed by general surgeons (79% of programs), with endoscopy simulation available in 74%. Clinical research was more common (58%), with only 30% of programs having basic science labs.

Conclusions: General surgery residency is changing, with more specialization and less autonomy for residents. More investments into simulation and training should be initiated in order to improve skill sets and expand diagnostic abilities. Enhancing residents' abilities in HPB is key to meeting the ACGME requirements for training and to graduate competent general surgeons.

PPH26-011

AN APPRAISAL OF LIVER RESECTION AND THROMBECTOMY FOR HEPATOCELLULAR CARCINOMA WITH TUMOR THROMBI EXTENDING TO MAJOR MAIN PORTAL VEIN

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Introduction: The prognosis of hepatocellular carcinoma (HCC) with gross tumor thrombi (TT) including portal vein is usually poor. When TT extended to major portal vein (portal bifurcation or main portal vein), the prognosis is extremely poor. Transarterial chemoembolization (TACE) or liver transplantation is always unrecommended due to risk of liver failure or early cancer recurrence. The aim of the study is to evaluate the benefit of liver resection and TT removal.

Method: A retrospective review of 85 liver resections for newly diagnosed HCC with tumor thrombi extending to major portal vein between 1991 and 2012 was conducted. In the similar time, 2094 major hepatectomy, liver resection for HCC were performed. The

patients' age was 64.8 ± 12.9 (range 21 – 86 yrs) (right or extended right hepatectomy, left or extended left hepatectomy) were performed on 48 patients. Partial hepatectomies with TT removal were performed on the other 37 patients due to less favorable liver function.

Results: Postoperative complication occurred in 22 patients (25.8%) without 90-day postoperative mortality. Five-year disease-free and overall survival rates are 21.6% and 26.4%, respectively. No difference of survival rates would be seen in major hepatectomy and partial hepatectomy. After univariate and multivariate analysis only tumor size ≥ 10 cm had a poorer prognosis < 10 cm ($p < 0.0001$). The longest disease-free and overall survival time in this series is 19 years.

Conclusions: Liver resection with partial portal vein thrombi removal may provide possible cure for HCC with tumor thrombi extending to major portal vein. However, adjuvant therapies should be considered when tumor size is > 10 cm.

PPH26-012

COST-EFFECTIVENESS ANALYSIS IN MANAGEMENT OF REFRACTORY ASCITES: PRELIMINARY STUDY

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Introduction: Ascites is one of the most common complications of cirrhosis and it indicates that the disease is at an advanced stage. In cirrhotic patients with refractory ascites, treatment is based on repeat paracentesis. The objective of the study is to evaluate the cost of outpatient treatment of refractory ascites in cirrhotic patients.

Method: A prospective study was done, including all patients with cirrhosis who underwent paracentesis from March 2012 to March 2013 at the Hospital of São Paulo University in the Outpatient Service of Liver Transplantation Unit. A micro cost analysis was performed with tab individual data regarding the consumption of albumin, drugs, materials, human resources, and laboratory analysis; and also the clinical data of the patients.

Results: We conducted a total of 881 paracentesis in 166 patients, 60.6% men and 39.5% women. Patients underwent an average of 5.3 paracentesis / year (1–32). The total cost was \$156.9; and the main cost component was albumin (\$83.9). The total volume of ascites drained was 7396 liters. The average cost per procedure was $\$155.2 \pm 57$. The most frequent causes of cirrhosis were hepatitis C (32%) and alcohol (20%). The majority of patients were enrolled in the waiting list for liver transplantation (54.2%). The factors statistically related to an increased cost during this period were drained fluid volume ($p < 0.001$), MELD score higher than 24 ($p < 0.001$) and patients in transplant waiting list ($p < 0.001$).

Conclusions: Patients with refractory ascites treated with paracentesis represent a high cost group in health services. The main factors related to the cost are the volume of fluid drained, due to the need for albumin

replacement and severity of liver disease according to MELD. These data are being used to study the cost-effectiveness of liver transplantation for patients with refractory ascites and low MELD score.

PPH26-013

POSTOPERATIVE ADJUVANT TACE CAN PREVENT THE EARLY OCCURRENCE OF LUNG METASTASIS IN HIGH-RISK PATIENTS

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Introduction: To investigate the risk factors for the early occurrence of lung metastasis after surgery and whether patients could benefit from the postoperative adjuvant TACE.

Method: A total of 284 patients that were diagnosed with hepatocellular carcinoma in the postoperative pathology and detected lung metastasis during the follow-up were analyzed respectively. Calculate the cumulative incidence of lung metastasis for different risk factors by the Kaplan-Meier method. All 21 possible risk factors, including preoperative laboratory tests, imaging findings, and postoperative pathology, were entered into the COX regression model for univariate analysis and followed by multivariate analysis. Then compare the difference of the time to lung metastasis between patients with or without adjuvant TACE by the Log-rank test.

Results: Maximum diameter of tumor ≥ 10 cm, multifocal lesions and merging tumor thrombosis in preoperative imaging findings, and incomplete or absent tumor capsular, larger necrosis and merging satellite lesions in postoperative pathology were significant high risk factors for lung metastasis in patients with HCC after surgery by COX univariate and multivariate analysis. 193 patients adopted adjuvant TACE treatment after surgery. The median time to lung metastasis in patients with adjuvant TACE in high-risk patients was 7 (5.72, 8.28) months while those without adjuvant TACE was 4 (2.70, 5.30) months ($p = 0.010$). However, there was no significant difference in non-high-risk patients with [12 (9.39, 14.61) months] or without [13 (6.30, 19.71) months] adjuvant TACE ($p = 0.676$).

Conclusions: Postoperative adjuvant TACE can prevent the early occurrence of lung metastasis in high-risk patients that indicated by preoperative imaging and postoperative pathology.

PPH26-014

APPLICATION OF ADAPTIVE STATISTICAL ITERATIVE RECONSTRUCTION CAN IMPROVE THE DIAGNOSIS CONFIDENCE OF SMALL HEPATOCELLULAR CARCINOMA IN MONO-ENERGY IMAGES BY SPECTRAL CT

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Introduction: To investigate whether Adaptive Statistical Iterative Reconstruction (ASIR) can improve the quality of mono-energy images by spectral CT.

Method: The mono-energy images by spectral CT (Discovery 750, GE) of 23 patients with small hepatocellular carcinoma (SHCC) that confirmed by postoperative pathology were studied retrospectively. 13 cases (group 1) were reconstructed with ASIR while 10 cases (group 2) without ASIR. Measure the difference of CT value (CTD) between the lesions and normal liver parenchyma and the standard deviation of normal liver parenchyma (SD) in the mono-energy images on 40~140 keV during the arterial, portal vein and delayed phase (AP, PVP and DP). Then calculate the contrast noise ratio (CNR, the ratio of CTD and SD). Compare CTD, SD, and CNR on 40~140 keV between patients in group 1 and group 2 by t Test. The diagnosis confidence (1~5) of SHCC in the two groups was evaluated by two high-seniority doctors.

Results: There was no significant difference in CTD on 40~140 keV during the triple phases. The SD in group 1 was significantly lower than that in group 2 on 40~90 keV during AP and PVP, and on 40~100 keV during DP. The mean optimal CNR was 68.72 keV during AP, 69.88 keV during PVP and 71.06 keV during DP. The CNR in group 1 was significantly higher than that in group 2 on 50~90 keV during AP, on 60~100 keV during PVP and on 40~90 keV and 110 keV during DP. The diagnosis confidence in group 1 was significantly higher than that in group 2 on 50~80 keV during AP, on 60~80 keV during PVP and on 50~90 keV during DP.

Conclusions: The application of ASIR can improve the quality of mono-energy images by lowering the SD and increasing the CNR, especially on 60~90 keV, which may raise the diagnosis confidence of SHCC.

PPH26-015

FULLY COVERED SELF-EXPANDABLE METAL STENTS FOR TREATMENT OF BENIGN BILIARY STRICTURES: A META-ANALYSIS

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Introduction: Endoscopic stenting has been suggested as the main method of treating benign biliary strictures (BBSs), usually managed with multiple plastic stents

placement. Recently, fully covered self-expandable metal stents (FCSEMSs) have been increasingly proposed as a newly alternative for treating BBSs. We aimed to assess the efficacy and safety of FCSEMS in treating BBS by pooling data of existing trials.

Method: Databases including PubMed, EMBASE, and the Science Citation Index were searched and evaluated by two reviewers (J.W and B.H) independently. Studies pertinent to FCSEMSs for treatment of benign biliary strictures were included without restriction of language. Reviews, comments, case reports (less than 10 patients) were excluded. Main Outcome Measurements included stricture resolution rate, stricture recurrence rate and overall complications. All statistical analyses were done using STATA (Statacorp Version, 12.0, USA). Pooling data was conducted in a fixed effect model or a random effects model.

Results: Eleven studies involving 313 patients (Male, 72%; post-LT anastomotic strictures, 40.8%) were analyzed. The stricture resolution rate was 90% of all patients (95% CI, 0.84–0.95) (Fig. 1) after an average stenting duration of 5.2 months. The stricture recurrence rate was 6% of all patients (95% CI, 0.03–0.09) (Fig. 2) after a median follow up of 12.5 months. The overall complications were 27% (95% CI, 0.12–0.41) (Fig. 3).

Conclusions: Endoscopic placement of FCSEMS is an effective, promising modality for management of patients with benign biliary strictures, while it was associated with high complications. Prospective controlled trials need doing to determine whether it is superior to traditional multiple plastic stents treatment.

PPH26-016

PRIMARY TUBERCULOSIS OF THE APPENDIX: A RARE CAUSE OF A COMMON DISEASE

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Introduction: Tuberculosis (TB) is a major public health problem in developing countries like India. India accounts for one-fifth of the global TB incident cases. Gastrointestinal TB accounts for 3% of extra pulmonary TB, the commonest site of involvement being the ileocaecal region. However involvement of the appendix, lying so close to the ileocaecal region is rare. Primary tuberculosis of the appendix presenting as appendicular abscess is even rarer with incidence of 0.1 to 0.6%. The pathogenesis of this isolated lesion is not clear and presentations are varied. Because of its rarity and absence of any specific clinical and radiological finding, diagnosis is made only after histopathological examination of the appendectomy specimen.

Method: Tuberculosis (TB) is a major public health problem in developing countries like India. India accounts for one-fifth of the global TB incident cases. Gastrointestinal TB accounts for 3% of extra pulmonary TB, the commonest site of involvement being the ileocaecal region. However involvement of the appendix, lying so close to the ileocaecal region is rare. Primary tuberculosis of the appendix presenting as appendicular abscess is even rarer with incidence of 0.1

to 0.6%. The pathogenesis of this isolated lesion is not clear and presentations are varied. Because of its rarity and absence of any specific clinical and radiological finding, diagnosis is made only after histopathological examination of the appendectomy specimen.

Results: Because of its rarity and absence of any specific clinical and radiological finding, diagnosis is made only after histopathological examination of the appendectomy specimen. Hence all appendectomy specimens need to be examined in order to prevent serious complications.

Conclusions: Because of its rarity and absence of any specific clinical and radiological finding, diagnosis is made only after histopathological examination of the appendectomy specimen. Hence all appendectomy specimens need to be examined in order to prevent serious complications.

In our review of 229 cases, for 4 years, we report our experience with tuberculous appendicitis in a tertiary centre in a nation where tuberculosis is still endemic.

PPH26-017

SPONTANEOUS DIAPHRAGMATIC RUPTURE: A RARE CAUSE FOR GASTRIC OUTLET OBSTRUCTION

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Introduction: Acute gastric obstruction associated with a non-congenital diaphragmatic hernia is rare. Obstructed diaphragmatic hernia causes severe respiratory distress and cardiovascular compromise and need to operate urgently. Because of the infrequency of complete obstruction of a diaphragmatic hernia and the difficulties in diagnosis, we report this case.

Method: A 35 year old male presented with left sided chest pain and dyspnea. Patient later developed spasmodic type of abdominal pain with non-bilious, projectile vomiting. There was no history of trauma. There was tracheal shift to the right and absent breath sounds in left lung field. Chest X-ray showed shift of trachea to the right, air fluid level in the left thorax. Ultrasonography of the thorax showed bowel loops in left thorax. CT-scan suggested herniation of stomach into left hemidiaphragm with left hydrothorax. Patient was subjected to emergency surgery, the defect was widened, contents were reduced, and stomach was healthy. The defect was closed. Post-operative period was uneventful.

Results: Radiography plays a key role in diagnosis including CT scanning. A patient's prognosis depends on the size of the diaphragmatic defect and whether there is damage to associated organs. Early diagnosis and urgent management are critical for reducing the likelihood of gastric necrosis.

Conclusions: Radiography plays a key role in diagnosis including CT scanning. A patient's prognosis depends on the size of the diaphragmatic defect and whether there is damage to associated organs. Early diagnosis and urgent management are critical for reducing the likelihood of gastric necrosis.

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ISOLATED SPLENIC HYDATIDOSIS

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Introduction: Hydatid disease is still a health problem in endemic areas. Extrahepatic hydatid cyst is rare, and primary (isolated) splenic cyst is a rare clinical entity, constituting 1.5 to 3.5% of all hydatid cysts.

Method: Objective: to determine the incidence and treatment options of isolated splenic hydatidosis.

Patients & Methods: We reported series of isolated splenic hydatid cysts admitted at Hepatobiliary tertiary center, National Liver Institute, Menophya University, in a period from March 2005 to January 2012 managed surgically with open splenectomy (total and partial).

Results: Out of 439 patients of abdominal hydatidosis 18 (4%) had isolated splenic hydatidosis, Aged range

26–67 years, Twelve (66.5%) were male and six (33.5%) were female. Nine patients (50%) were presented by splenomegaly, four patients (22.2%) were presented by left hypochondrium mass, two patients (11%) had acute abdomen and other 3 patients (16.5%) diagnosed incidentally. Fourteen patients (78%) underwent elective splenectomy, two patients (11%) had urgent abdominal exploration and open splenectomy and two patients (11%) had elective partial splenectomy. No mortality, but complications occurred in 4 patients (22.2%). Hospital stay was 4–11 days. No recurrence was noted during follow up period 12–60 months proved clinically and radiologically.

Conclusions: A high degree of suspicion of hydatid should be there whenever a splenic cyst is encountered in clinical practice and treatment options should be tailored for each case.