RLM the presence of a resection margin <1 mm was the only independent predictor of survival (OR 2.86; $p<0.001$).

Conclusion Overall 5-year survival following resection of both CLM and RLM is similar. Those factors which predict long-term survival following liver resection however differ and this may have implications for selecting those for intensive follow-up or who may be candidates for adjuvant therapy.

Competing interests None declared.

PWE-144 ENDOSCOPIC ULTRASOUND IN THE EVALUATION OF LIVER HILAR PATHOLOGY

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Introduction Liver hilar pathology has traditionally been challenging to investigate as histological diagnosis is often difficult to obtain. The diagnostic yield of existing techniques including ERCP is suboptimal. Patients have consequently been managed in the absence of histological diagnosis, with the attendant hazards, including potential metal stent placement or unwarranted surgery in the absence of malignant disease. Up to 15% of patients with suspected biliary malignancy who undergo surgery are found to have benign disease. The utility of endoscopic ultrasound has not been established and our study aims to evaluate the role of EUS in this setting.

Methods This is a retrospective review of all patients with a hepatic hilar stricture and/or mass, who were reviewed at the hepatobiliary multidisciplinary meeting between July 2006 and September 2011 and went on to have an EUS examination. Patients with presumed benign disease were followed until they underwent definitive surgery, or for 1-year with serial cross sectional imaging.

Results 95 patients with hilar lesions underwent 114 EUS examinations. 67 (70%) patients were diagnosed to have malignant disease. 58 patients had biliary tract cancer. EUS-FNA yielded a positive cytological diagnosis in 52 (78%) patients. In 15 patients EUS cytology was false negative. 28 patients were diagnosed with benign disease. Factors that predicted malignant disease at EUS examination included the presence of a bile duct associated mass lesion (p value 0.0001) and an EUS morphological diagnosis of cancer (p value 0.03). The presence of "pathological" lymph nodes was not statistically significant (p value 0.79). Sensitivity in obtaining a cytological diagnosis, accuracy in defining benign and malignant disease, specificity and negative predictive value of EUS were 78%, 85%, 100%, and 66% respectively. Metal stent insertion was contemplated in at least two patients following cross sectional imaging but was abandoned after EUS confirmed the benign nature of their condition.

Conclusion In the largest series to date we report high sensitivity (80%) for EUS cytology in the diagnosis of malignant disease and accuracy (85%) in distinguishing malignant from benign disease. EUS had a significant impact on the clinical management of our patients, including prevention of potential metal stent placement in at least two patients who were eventually diagnosed with benign disease.

Competing interests None declared.

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PWE-145 PROGNOSTIC FACTORS INFLUENCING SURVIVAL AFTER LIVER RESECTION FOR COLORECTAL METASTASIS

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Introduction A variety of factors have been identified in the literature which influence survival following resection of colorectal liver metastases (CRLM). The aim of this study was to identify those factors which influence survival in patients undergoing resection of CRLM in a UK centre.

Methods All patients having liver resection for CRLM during an 11-year period up to 2011 were identified from a prospectively maintained database and relevant clinical data retrieved from case records. Prognostic factors analysed included tumour size (>5 cm or <5 cm), lymph node status of primary tumour, margin positivity R1 (<1 mm) or R0, neo-adjuvant chemotherapy (for liver), tumour differentiation, number of liver metastases (4 or more), preoperative CEA (>200 or <200) and whether metastases were synchronous (ie, diagnosed <12 months) or metachronous to the primary tumour. Overall survival (OS) was compared with Kaplan–Meier plots, log rank test. Multi-variate analysis was performed using Cox regression model (SPSS V.19). $p<0.05$ considered significant.

Results 432 patients underwent resection of CRLM during this period (67% male; mean age 64.5 years). The overall 5-year survival in this series was 43%. A pre-op CEA >200 was present in 10% of patients and was associated with a poorer 5-year OS (24% vs 45%; $p<0.001$). A resection margin <1 mm was present in 16% of patients and this had a negative impact on 5 yr OS (15% vs 47%; $p<0.001$). Tumour differentiation, number, size, presence of biliary or vascular invasion, relationship to primary disease, nodal status of primary, or the use of neoadjuvant chemotherapy had no impact on OS. Multi-variate analysis identified only the presence of a positive resection margin (OR 1.75; $p<0.05$) and a pre-op CEA >200 (OR 1.88; $p<0.01$) as independent predictors of poorer OS.

Conclusion Despite the wide variety of prognostic factors reported in the literature we were only able to identify a pre-op CEA >200 and the presence of tumour within 1 mm of the resection margin as being of value in predicting survival. These variables are likely to identify patients who may benefit from intensive follow-up to enable early adjuvant chemotherapy postoperatively.

Competing interests None declared.

PWE-146 BILIARY INVASION IN COLORECTAL LIVER METASTASIS—DOES IT MATTER?

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Introduction Vascular invasion of colorectal liver metastasis following liver resection has a detrimental effect on patient outcome. However there are few studies specifically looking at the significance of biliary invasion in colorectal liver metastasis (CRLM). The aim of this study was therefore to evaluate the presence of biliary invasion and patient outcomes in those having liver resection for CRLM.

Methods All patients having liver resection for colorectal liver metastasis during an 11-year period up to 2011 were identified from a prospectively maintained database. The unit follows standardised pathological reporting for CRLM where biliary and vascular invasion are assessed and documented. Missing information was

specifically crosschecked with a separate histopathology database. Univariate and subsequent multivariate analysis were carried out for biliary and vascular invasion individually and in combination with other prognostic variables to assess their clinical significance. Survival was assessed using Kaplan–Meier plots and log rank tests for significance ($p < 0.05$) using SPSS V.19.

Results 432 patients (67% male, mean age 64.5 years, range 29–86) underwent liver resection for CRLM during this time period. Primary tumours were either colonic (54%) or rectal (46%). Seventy patients (16.3%) had positive biliary invasion on tumour histopathology whereas 137 (32%) had vascular invasion. Overall 155 (36%) patients had both biliary and vascular invasion (BVI). Overall 5-year survival was 43% in this series. On univariate analysis 5-year survival in those patients with biliary invasion was 39.9% compared to 42.5% in those without biliary invasion ($p = 0.866$). Results were similar in those patients with or without vascular invasion respectively (40.4% vs 43.2%, $p = 0.65$). Also combined BVI failed to influence OS (39.2% vs 42.2%, $p = 0.856$).

Conclusion In our series, biliary invasion of CRLM does not affect overall survival rates in patients having liver resection.

Competing interests None declared.

PWE-147 COLORECTAL LIVER METASTASIS (CRLM): INCREASING ROLE OF LAPAROSCOPIC LIVER RESECTION—A SINGLE UNIT COMPARATIVE ANALYSIS

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Introduction Laparoscopic liver resection (LLR) is becoming increasingly used to reduce the morbidity of open liver resection. The aim of this study was to compare outcomes after LLR with that of open liver resection.

Methods From April 2007 onwards all patients who underwent either left lateral sectionectomy, left hemi-hepatectomy, segmentectomy and non-segmental resection for CRLM were identified from a prospectively maintained HPB database (open and LLR). Those having right hepatectomy were excluded from analysis as there were too few laparoscopic procedures for meaningful analysis. Comparisons between groups were made in terms of complications (graded using the Clavien-Dindo classification), duration of hospital stay and overall survival (OS). Statistical analysis was performed using Fisher Exact test for categorical variables, Mann–Whitney U test for non-parametric continuous variables and overall survival (OS) plotted with Kaplan–Meier curves (SPSS V.19).

Results 78 patients had LLR for various indications (colorectal $n = 43$, non-colorectal $n = 17$, benign $n = 18$). During the same period 94 patients had open equivalent procedures for CRLM (including 4 conversions from a lap procedure). Female patients were more likely to have a LLR compared to open (47% females, 24% males $p = 0.01$). Grade 3 and 4 complications were more seen in the open group (8.5% vs 4.7%), however grade 1 and 2 complications were slightly higher in the laparoscopic group (18.6% vs 17.1%). Median stay was 4 days in LLR group (range 1–23), 7 days (range 3–95) in open group, $p < 0.001$. R1 resections were less during second era of the study in LLR and comparable to the open group. At 3 years 91% of LLR and 72% of open group were alive. OS was similar ($p = 0.4$).

Conclusion Laparoscopic liver resection has shown benefits in terms of lower morbidity in our series when comparing it to equivalent open procedures. Long term follow-up will be needed to see if there is real advantage in OS and outcome.

Competing interests None declared.

PWE-148 BOUVERET'S SYNDROME: LEAVING NO STONE UNTURNED

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Introduction Bouveret's syndrome is a clinically distinct form of gallstone ileus caused by the formation of a fistula between the biliary tract and duodenum. Early recognition and treatment can significantly improve morbidity and mortality. We present two cases that have been successfully treated at our hospital.

Methods Patient A is 71-year-old lady who was referred for gastroscopy after a CT abdomen that was performed to investigate her weight loss showed deformity of the duodenal cap. The gastroscopy showed a large gallstone obstructing the pyloric opening (Abstract PWE-148 figure 1A). Endoscopic removal was unsuccessful. She then developed vomiting and abdominal pain. Blood tests showed raised inflammatory markers and liver function tests. Repeat gastroscopy showed that the gallstone had passed down the pylorus, revealing a fistula opening in the duodenum (Abstract PWE-148 figure 1B). Diagnosis was confirmed on repeat CT abdomen which showed pneumobilia and two large gallstones that had migrated to the ileum (Abstract PWE-148 figure 1C). Patient B is 87-year-old lady who presented with a 1-week history of vomiting and haematemesis. Her blood tests on admission showed raised inflammatory markers with normal liver function tests. Gastroscopy showed oesophagitis, a duodenal ulcer and obstructing gallstone. Gastrograffin studies then showed that the gallstone had migrated to the proximal jejunum (Abstract PWE-148 figure 1D) and this was confirmed on CT abdomen.

Abstract PWE-148 Figure 1

Results Patient A was treated with a Ryle's tube insertion for stomach decompression, intravenous fluids, antibiotics and peripheral parenteral nutrition. She underwent a laparotomy, which showed distended fluid filled small bowel, with a large 5×3 cm gallstone lodged in the ileum. An ileal enterotomy was performed and the gall stone excised. Patient B was treated with a Ryle's tube insertion, intravenous fluids and peripheral parenteral nutrition. She underwent a laparotomy, in which a gallstone was found lodged in