American Gastrointestinal and Endoscopic Surgeons recommendations being the only written guidance in the literature.

Methods Welsh trainees and ALS members were invited to complete a online survey to select the descriptive terms that best fit their method of cystic duct identification including Calot's triangle Identified", "Calot's triangle Demonstrated", "Infundibular technique utilized" and "Critical View of safety demonstrated".

Results 133 surveys were completed by six clinical fellows (4.5%), 28 ST/SpRs (21.2%) and 98 consultants (74.2%). The most common descriptive terms used was "Calot's triangle demonstrated" (38.3%), followed by "Calot's triangle identified" (32.5%), "critical view of safety demonstrated" (24.2%) and lastly "infundibular technique utilized" (5%). The majority of surgeons in this survey do not seem to select the terms that are perceived to reflect "best practice" for the method of cystic duct identification during LC. It is possible that these surgeons are utilising "best practice" but did not recognise the provided terms or selected the incorrect term or used other terms that were not provided in this survey.

Conclusion The survey highlights the need for standardisation of image-guided surgical procedures to mitigate the effect of human error and take the outcome of such surgery a new height that was never reached in the open era. Standardisation will also permit systematic training and streamline competency testing paving the way for the transition from apprenticeship-based training to a systematic time-efficient training. In the aviation industry the initial study into human factors was controversial but is now a mandatory and cornerstone process for achieving best air transport safety. We feel there is potential for adopting a similar approach in the rapid and technologically advancing era of surgery based on "visual disciplines" to help reduce human error and thus leading to improved patient safety.

Competing interests None declared.

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PTU-073 HEPATIC SINUSOIDAL INJURY IS ASSOCIATED WITH SHORTENED LONG-TERM SURVIVAL IN PATIENTS UNDERGOING RIGHT TRISECTIONECTOMY FOR COLORECTAL LIVER METASTASES

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Introduction Recent data have suggested that oxaliplatin-associated sinusoidal injury (SI) in the non-tumour bearing liver (NTBL) may be associated with adverse long-term outcome following hepatectomy for colorectal liver metastases (CRLM), though this observation may be an epiphenomenon of associations with unfavourable tumour biology. This study aimed to assess the impact of NTBL histology upon long-term outcome in a series of consecutive patients undergoing right hepatic trisectionectomy for CRLM.

Methods Clinicopathological data for patients undergoing right trisectionectomy at a UK tertiary referral hepatobiliary centre between January 2002 and December 2008 were obtained from a prospectively maintained database. Blinded NTBL pathological review was conducted by two pathologists using established criteria for SI, steatosis, non-alcoholic steatohepatitis, fibrosis and cholestasis. Univariate and multivariable Cox regression analyses were performed to correlate perioperative and pathological variables with long-term overall and disease-free survival. Postoperative deaths (90-day) were excluded from long-term survival analyses.

Results A total of 66 consecutive patients underwent right trisectionectomy for CRLM over the study period. Preoperative oxaliplatin-based chemotherapy was used in 24 cases (36.4%, median 6 cycles, range 2–8 cycles). SI was noted in 21 cases (31.8%) and was independently associated with oxaliplatin use. 5-Year overall survival rate was 28.8%. On multivariable analysis, number of metastases resected and SI were independently associated with shortened overall survival following trisectionectomy. Number of metastases resected, perioperative blood transfusion and SI were independently associated with shortened disease-free survival following trisectionectomy. Steatosis, non-alcoholic steatohepatitis, fibrosis and cholestasis showed no association with long-term survival.

Conclusion Short-course oxaliplatin-associated SI is associated with adverse prognosis following right trisectionectomy for CRLM. The inclusion of traditional clinicopathological variables as covariates suggests that this finding is unlikely to simply be an epiphenomenon of associations with unfavourable tumour biology. Further studies are necessary to confirm these findings and to explore the underlying mechanism(s).

Competing interests None declared.

PTU-074 ANATOMIC VS NON-ANATOMIC RESECTION OF COLORECTAL LIVER METASTASES: A COMPARISON OF SURGICAL AND ONCOLOGICAL OUTCOMES

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Introduction Non-anatomic resections (NAR) for colorectal liver metastases (CRLM) have become increasingly common in an attempt to increase resection rates and to enable parenchyma-preserving resections, though some investigators have reported NAR to be associated with higher rates of resection margin positivity and poorer long-term survival than anatomic resections (AR). The aim of this study was to compare surgical outcomes, recurrence and survival in patients treated with NAR and AR.

Methods Patients undergoing hepatic resection for CRLM between January 2002 and December 2008 were identified from a prospectively maintained database. Patients were divided into two groups: those who underwent AR and those who underwent NAR. Patients who underwent simultaneous AR and NAR were excluded from analysis. Clinicopathological variables and perioperative outcomes, as well as long-term disease-free and overall survival were compared between the AR and NAR groups, using the χ^2 test, Mann–Whitney U test, logistic regression analysis, log-rank analysis and multivariable Cox regression analysis employing a backwards stepwise model.

Results Over the study period 91 patients underwent AR and 77 patients underwent NAR. Perioperative (90-day) morbidity, major morbidity and mortality occurred in 25.0%, 8.3% and 1.8% of cases respectively. There was no significant difference in rates of perioperative morbidity, major morbidity or mortality according to resection type (all $p>0.30$). There was also no difference in the incidence of positive resection margins between resection types ($p=0.413$). Overall survival was 48.5% and 36.6% at 3 and 5 years respectively, with disease-free survival of 31.4% and 25.3% at 3 and 5 years respectively. Type of resection was not associated with any significant difference in overall ($p=0.430$) or disease-free survival ($p=0.625$) following metastasectomy.

Conclusion AR is not superior to NAR in terms of perioperative risk, tumour clearance, time to recurrence or long-term survival following metastasectomy. NAR should remain an integral component of the surgical treatment of CRLM and may enable increasing rates of

operability. Furthermore, the preservation of hepatic parenchyma by NAR may enable a larger proportion of patients subsequently developing recurrent metastatic disease to undergo repeat metastasectomy.

Competing interests None declared.

PTU-075 LIVER DYSFUNCTION AFTER MAJOR HEPATIC RESECTION

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Introduction Liver failure is a potentially fatal complication following major hepatic resection. This study evaluates the incidence and factors associated with posthepatectomy liver failure (PHLF), as well as the outcomes and survival of these patients.
Methods All patients who underwent elective major hepatic resection (>4 liver segments) between January 2001 and March 2011 were identified from a prospective database. Patients with bilirubin levels >100 mmol/l or INR >2 on three consecutive days within the first post-operative week were diagnosed with PHLF (n=54). These patients were compared with 654 control patients.
Results Patients with PHLF had a higher incidence of diabetes mellitus compared to the control group (9.5% vs 3.1%, p=0.05). There was no significant difference in age, pre-operative chemotherapy, weight of resected specimen, use of Pringle manoeuvre, degree of steatosis/fibrosis of background liver, or amount of perioperative blood transfusion. Post-operatively, patients with PHLF were more likely to require n-acetylcysteine (51.4% vs 13.4%, p<0.001) and dialysis (13.2% vs 1.8%, p<0.001), and had longer ITU stay (mean 2.57 days vs 0.84 days, p<0.001). The PHLF group had higher 30-day (22.6% vs 3.1%, p<0.001) and 90-day mortality (41.5% vs 4.7%, p<0.001). Median survival was 9.86 months in the PHLF group and 49.77 months in the control group (p<0.001).
Conclusion This study over a 10-year period has shown a small risk of PHLF (7.6%) in patients undergoing major hepatic resection. PHLF is associated with significantly increased post-operative morbidity and mortality.

Competing interests None declared.

PTU-076 FACTORS AT FIRST ERCP WHICH INFLUENCE THE DECISION TO PROCEED TO SUBSEQUENT SURGERY OR REPEAT ERCP FOR COMPLEX BILIARY PROBLEMS

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Introduction ERCP is a safe and highly effective solution to many pancreaticobiliary problems. However, surgical options also exist. After a challenging first ERCP, it can be unclear whether surgery or repeat ERCP is preferred. The aim of this study was to identify predictive factors at first ERCP which inform this decision.
Methods All ERCPs performed at one hospital (April 2008–March 2011) were analysed. Patients having more than one ERCP were evaluated in detail. Demographics, disease-specific and procedure-specific variables relating to ERCPs and any subsequent surgery were extracted. The primary outcome measure was a requirement for surgery after two or more ERCPs. Descriptive statistics and logistic regression were performed.
Results 1729 ERCPs were done in 1270 patients, of which 317 patients had more than one ERCP. Of these, 140 patients were randomly sampled and analysed in detail. These form the denominator for this analysis. The primary diagnosis was gallstones in 62.8%, malignancy in 16.9% and stricture in 10.2%. Combinations of these or other diagnoses occurred in 17.6%. 74.5% of first ERCPs were urgent or emergent. Cannulation was attempted in 96.3% and successful in 81.5% of patients. The operator deemed the first ERCP to be successful in 40.6%. Multiple stones requiring a stent and planned revisit occurred in 15.2% and a large stone requiring lithotripsy in 9.8%. Repeat ERCP was deemed successful by the operator in 65.2% of cases. 40.2% went on to subsequent ERCP attempts. 31.1% of patients having a second or subsequent ERCP ended up having surgery (open biliary exploration, biliary bypass and other operations). On logistic regression, a primary diagnosis of gallstones was associated with likelihood of endoscopic success (OR (95% CI): 3.8 (1.2 to 12.3, p=0.027). In those patients with a primary diagnosis of gallstones, younger patients (OR 1.07 (1.01 to 1.12, p=0.012)) and those with sepsis at presentation (OR 5.3 (1.1 to 25.2, p=0.038)) were significantly more likely to require surgery. No other pattern was predictive of subsequent ERCP success after a first attempt.
Conclusion From this analysis, there are no unequivocal clinical or technical factors which make either ERCP or surgery preferable following an incomplete first ERCP. Repeat ERCP should be considered in gallstone disease. In gallstone disease, younger or septic patients should be considered for early surgery if a first ERCP is not successful. This decision is not straightforward; multidisciplinary teamwork and communication between surgeon and endoscopist are essential.

Competing interests None declared.

PTU-077 UNPLANNED HOSPITAL READMISSION WITHIN 30 DAYS AFTER LIVER AND PANCREATIC RESECTION

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Introduction Due to limited resources within the NHS, clinicians in the UK are under constant pressure to discharge patients rapidly, even after major surgery. There is a concern that premature discharge may lead to high readmission rates and worsen clinical outcomes. The aim of this study was to evaluate the incidence and outcome of unplanned hospital readmission after liver and pancreatic resection.
Methods Patients who underwent liver or pancreatic resection between January and December 2010 were identified from a prospective database. Potential risk factors for unplanned readmission within 30 days of discharge from hospital were evaluated. Complications (Clavien grade) and 90-day mortality were also assessed.
Results The median lengths of hospital stay after liver and pancreatic resections were 6 (range 4–66) and 9 days (range 5–225), respectively. 14/174 (8%) patients were readmitted after hepatic resection. Type of liver resection was significantly associated with readmission (major 12.5% vs minor 3%; p=0.03). Of the readmitted patients, 7 (50%) had grade 3 complications, including four patients who had an uncomplicated index admission, and two patients died due to sepsis. 10/100 (10%) patients were readmitted after pancreatic resection. Readmission was more likely in patients with a pancreatic fistula (30% vs 8%, p=0.06) and a white cell count $>16\times10^9$/L at the time of discharge (50% vs 6%, p<0.001). Of the readmitted patients, 4 (40%) had grade 3 complications, including