(18.5–24.99 kg/m²), overweight (25–29.99 kg/m²) and obese (≥ 30 kg/m²). Demographics, presence of Barrett's oesophagus or reflux disease, operative time, R0 resections, complications, LN resection and positivity were analysed. Long-term and disease free survival were calculated using the Kaplan–Meier method.

Results 413 patients were identified. 23 had no BMI recorded and were excluded leaving 390 patients: eight underweight; 117 normal BMI; 172 overweight; 93 obese. BMI significantly increased over time (mean BMI 26.0 in 2000–2001, 27.8 in 2010, $p=0.041$). Obese patients were younger compared to normal BMI patients (mean age 60.1 and 64.4 respectively, $p=0.003$). The incidence of Barrett's oesophagus and reflux disease were not significantly different between groups. Operating time was significantly longer for obese patients ($p=0.018$). R0 resections were similar between groups (normal patients 96.4% and obese 95.5%). The mean number of LNs resected (33 for both normal BMI and obese groups) and the LN ratio did not differ significantly between groups. Obese patients had significantly lower disease stages (32.3% stage 1 obese patients vs 16.2% stage 1 normal BMI patients, $p=0.006$). Overall survival was longer for obese patients compared with those of normal BMI (81 months vs 55 months, $p=0.004$). When matched for stage, this difference did not reach significance ($p=0.236$). Disease free survival did not differ between groups. The overall complication rate was similar between groups (70.1% for normal BMI, 66.3% for obese).

Conclusion This is the first study to evaluate BMI in a homogenous group of patients with adenocarcinoma undergoing subtotal oesophagectomy with a standardised radical lymphadenectomy. BMI and obesity among these patients increased with time. The radicality of surgery, in terms of LN yields and R0 resections, did not reduce in the obesity group and this is further supported by equivalent stage-matched long-term survival.

Competing interests None declared.

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OC-129

METASTATIC PANCREATIC NEUROENDOCRINE TUMOURS: DOES AGGRESSIVE SURGICAL INTERVENTION IMPROVE OUTCOME?

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Introduction Pancreatic neuroendocrine tumours (PNETs) often present late. At diagnosis 65% of patients have metastases, with median survival of 24 months.^{1,2} The conventional approach is conservative management. Recent evidence has suggested that aggressive treatment leads to better outcomes.³ We aim to show that in a cohort of patients with advanced PNETs aggressive resection prolongs survival.

Methods All patients with intra-abdominal neuro-endocrine tumours (NETs) were assessed by the Hepato-pancreatobiliary and NET MDTs from April 2005 to January 2012 were prospectively registered on a database. All patients with PNETs were identified. Demographic, treatment, peri-operative and survival data were analysed using SPSS. Peri-operative morbidity was graded using the Clavien system. Predicted survival was calculated using the Kaplan–Meier method.

Results 239 patients were assessed. 61 patients had PNETs (36 female: 25 males) Median age of 65. 55 patients underwent 71 resections. 52 had primary tumours resected and three patients had the primary tumour left in situ. Procedures included: 29 conventional pancreatic resections; 17 extended (including vascular or multi-visceral resections); nine had pancreatic and liver (four synchronous, five sequential) resections; 16 were liver resections alone. 27 patients had 48 additional medical and radiological inter-

ventions. Peri-operative mortality was 0%. Overall morbidity 42%. Median blood loss was 700 ml. Three operated patients died from progressive disease. Five non-surgical patients died. Overall survival for PNETs was 92% at median follow-up of 3 years. Predicted 5 year survival rate was 72% in operated patients.

Conclusion An aggressive multi-modal approach with resection of advanced PNETs leads to excellent long term survival with acceptable morbidity in patients.

Competing interests None declared.

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OC-130

EMERGENCY CHOLECYSTECTOMY: AN ECONOMIC EVALUATION OF PRACTICE AT A REGIONAL HEPATOBIILIARY CENTRE

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Introduction The debate as to how to best manage patients presenting acutely with complications of gallstones continues—whether to consider early emergency surgery or not. Perceptions of increased risk and greatly increased cost still persist about the early approach. We report on our experience from a regional hepatobiliary centre.

Methods A retrospective clinical study was conducted of all patients admitted with acute biliary symptoms, and who underwent cholecystectomy between January 2008 and August 2011. Costing data were calculated for each patient on an individual basis, including all theatre consumables, drugs and calculated cost for length of stay. A decision tree analysis economic model was created, using input data derived from the clinical study as well as the individual patient level costs, and uncertainty in this model tested with probabilistic sensitivity analyses. Categorical data were analysed using the χ^2 test.

Results Of the 1888 patients who had a cholecystectomy during this period, 89 had an emergency or early laparoscopic cholecystectomy (eLC) and 310 patients presented acutely with biliary disease and then went on to have a delayed cholecystectomy (dLC). Overall median length of stay (LoS) for the eLC group was 6 days, and for the delayed group was 7 days ($p=NS$), including the primary admission for medical treatment. The emergency readmission rate for all patients on the waiting list was 13% with a median stay of 4.5 days. Post-operative readmission rates were equivalent for both eLC (8%) and dLC (9%)— $p=NS$. Mean operating time was longer in the eLC group than the dLC group—120 min vs 60 min ($p<0.05$). Post operative ERCP rates were 3% for the eLC group and 0% for the dLC group ($p=NS$), post operative fluid collections requiring intervention were 6% for the eLC group as opposed to 0% for the dLC group ($p=NS$). The baseline cost difference between the eLC and dLC groups was around £150 more expensive for the eLC group. After complications and readmission costs were calculated and inputted into the decision tree analysis, this difference decreased to a cost of £52—more expensive for the eLC pathway.

Conclusion Early cholecystectomy on the index admission appears to be safe, with overall hospital stay slightly shorter. The difference in costs between the early and delayed pathway was essentially cost equivalent. But with NHS tariff (around £3650 for eLC and £2900

for dLC), the difference in net monetary benefit was around £700 per patient in favour eLC pathway. In a hospital conducting around 200 cholecystectomies per year on patients for acute biliary disease in the NHS, this could translate to a cost saving of over £140 000 per year.

Competing interests None declared.

OC-131 **PATTERN OF RECURRENCE FOLLOWING NON-ANATOMICAL RESECTION FOR COLORECTAL LIVER METASTASIS**

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Introduction Non-anatomical resection (NAR) for colorectal liver metastasis (CRLM) has become more common in an attempt to preserve liver parenchyma. Pattern of recurrence (POR) following NAR has been reported previously, but there has been no detail on the hepatic recurrences with respect to previous NAR. We aim to investigate pattern of hepatic recurrence in patients who underwent NAR for CRLM, especially looking at the recurrences in the context of previous resected segment.

Methods 1580 CRLM resection were performed in our centre between 1993 and 2010. 591 (37.4%) were NAR and 989 (62.6%) were AR. Patients who underwent simultaneous Anatomical Resection (AR) were excluded (95 out of 591). All NAR were grouped as either unilobar or bilobar metastatectomy and POR studied in relation to previous resected segment.

Results 495 NAR were included. There were 291 recurrences (58.7%). 188 were hepatic (37.9%) and 103 extra-hepatic (20.8%). In 11 patients with hepatic recurrence, data were not available for recurrence segment and therefore excluded from POR analysis. The POR following unilobar metastatectomy (n=127): same segment (n=32, 25.2%), same sector (n=9, 7.1%), ipsilateral hemi-liver (n=48, 37.8%), contralateral hemi-liver (n=15, 11.8%) and bilobar (n=23, 18.1%). The POR following bilobar metastatectomy (n=50): same segment (n=1, 2%), hemi-liver with equal number of segments resected previously (n=15, 30%), hemi-liver with lesser involved segments previously (n=7, 14%), hemi-liver with more segment involved previously (n=10, 20.0%) and bilobar (n=17, 34.0%).

Conclusion This retrospective study shows that following unilobar CRLM resections, 70.0% recur in the ipsilateral hemi-liver. In bilobar resections, 22.0% recur in the same segment or hemi-liver with previous multiple resections. Our data supports a more aggressive approach for unilobar disease. Further studies need to be done on pattern of recurrences in patients undergoing parenchyma preserving surgery to develop best surgical strategies.

Competing interests None declared.

OC-132 **CARDIOPULMONARY EXERCISE TESTING INCREASES HEPATECTOMY RATE IN THE ELDERLY**

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Introduction Hepatectomy offers the only possibility of cure to patients with colorectal liver metastases (CRLM) and although 50%

of CRLM patients are >70, only 25% of those undergoing hepatectomy are >70.¹ This is likely to be due to the higher perioperative mortality. Cardiopulmonary exercise testing (CPET) can identify patients at higher operative risk.² We introduced CPET on 1 October 2009. This study assesses its effect on patient selection and outcome.

Methods After 1 October 2009 all patients undergoing resection of CRLM meeting one of the following criteria underwent CPET. Criteria

1. Planned extended right/or extended left resection
2. Over 65
3. Significant comorbidities

Data were collected prospectively. Group (A) 1 October 2009–21 February 2011 was compared to a published historical series 1 August 1990 to 1 April 2007 (Group B). We also compared our results to a recently published series from LiverMetSurvey (LMS).¹

Results Group A 155 patients, Group B 654 patients. In Group A 64 (41%) patients were 70+, Group B 181 (28%) patients (p<0.0001). Within the over 70's groups there was no difference in male:female ratio or postoperative complications, but there was an increased use of neoadjuvant chemotherapy in Group A 26 patients (40%) vs 34 patients (19%) Group B (p=0.001). In hospital mortality was 1.6% (1 patient) Group A vs 4.9% (9 patients) group B (p=0.46). Comparing Group A to LMS data¹ from 1/1986 to 6/2007 (7764 resections). Group A 41% aged 70+ vs 21% LMS (p<0.01). No significant difference in neoadjuvant chemotherapy use (Group A 41% vs LMS 34%) (p=0.22), or 60 day mortality (Group A—1 patient (1.6%) vs 62 (3.8%) LMS) (p=0.51).

Conclusion CPET enabled accurate preoperative fitness assessment and led to a significant increase in the number of patients over the age of 70 proceeding to surgery. There is a trend towards lower mortality possibly due to better preoperative assessment. We believe that the number of hepatectomies undertaken for CRLM in patients aged over 70 would rise if CPET were introduced as a standard preoperative assessment tool.

Competing interests None declared.

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OC-133 **ARTERY FIRST PPPD—CLINICAL OUTCOME AND STAGING USING A STANDARDISED PATHOLOGY PROTOCOL**

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Introduction With increased numbers of borderline locally advanced patients undergoing resection due to the acceptance of portal vein (PV) resection, early dissection of the superior mesenteric artery (SMA) allows definitive assessment of the tumour/SMA relationship and improved control when PV resection is required.

Methods The lymph node yield, resection margins, morbidity and mortality data were compared between patients undergoing Artery first technique of pancreaticoduodenectomy (January 2009–December 2010) and previous resections (January 2000–December 2008).

Results 42 resections were carried out using the artery first technique were age, sex and pathology matched with 182 previous