O36 HILAR CHOLANGIOCARCINOMA: MANAGEMENT IN A NORTHERN TERTIARY REFERRAL CENTRE
AK Malik, SM Robinson, JJ French, G Sen, C Wilson, J Hammond, PJ Atherton, J Scott, SA White, DM Manas
HPB and Transplant Unit, Freeman Hospital

Introduction: Hilar cholangiocarcinoma (HCCA) arises from the bifurcation of the common hepatic duct and has a poor prognosis. Most present with unresectable disease. If resectable, extended hemihepatectomy plus caudate lobe resection is usually required to provide oncological clearance. Developments in pre-operative assessment, biliary drainage and liver optimisation via ipsilateral portal vein embolisation (PVE) have improved outcomes. We reviewed outcomes for patients with HCCA managed at our centre.

Method: Electronic records of patients referred to our centre for HCCA were retrospectively reviewed over ten-years (2007-17). The Kaplan-Meier method was used to estimate survival with the log rank test used for significance (p<0.05).

Result: 156 patients with HCCA were identified, confirmed on radiological imaging correlated with CA 19-9. 44 underwent resection (extended left n=14, extended right n=28, extra-hepatic bile duct resection n=1, trial dissection n=1). 112 were determined to have unresectable disease. Overall survival (OS) was longer in resected patients compared with non-resected (39.3 ±21 versus 9.8 ±3.8, p<0.001). Margin status (R0 n=11), vascular resection (n=11), PVE (n=11), lymph node positivity (n=19), and lymphovascular invasion (n=10) did not impact OS (p>0.05). Perineural invasion (n=33) was associated with shorter OS (24.4 versus 55.7 months, p=0.032). The 30-day mortality rate after resection for HCCA was 11.4% (n=5).

Conclusion: The majority of patients had unresectable disease at presentation. Surgery provided superior outcome compared to non-surgical treatment of HCCA, with vascular resection and resection margin having no impact on survival. In patients with resectable disease we continue to advocate an aggressive approach for surgically treating HCCA.

Take-home message: Surgery provides a superior outcome compared to non-surgical management for patients with HCCA. An aggressive approach is warranted in patients with potentially resectable disease.

O37 NEUTROPHIL TO LYMPHOCYTE RATIO (NLR) IN LUMINAL A BREAST CANCERS: RELATIONSHIP WITH ONCOTYPE DX SCORE
N Ni Mhaonaigh, P McAnena, M Kerin, J Brown
Department of Surgery, The Lambe Institute for Translational Research, NUI Galway, Galway, Ireland

Introduction: Breast cancer is a heterogenous disease that exhibits varying prognoses and responses to treatment. Neutrophil-to-lymphocyte ratio (NLR) has been extensively investigated in recent years as a marker of host immune function. High pre-operative NLR has been shown to negatively impact prognosis in a variety of cancers, including breast cancer. Our aim was to investigate the relationship between NLR and Oncotype DX score, and examine if NLR could potentially contribute to estimating risk of breast cancer recurrence.

Method: Pre-treatment blood tests from 309 Luminal A breast cancer patients (2006-current) with Oncotype scores treated at a tertiary referral centre (Galway University Hospital) were analysed. NLR score for each patient was calculated and correlated with age at diagnosis, and Oncotype score.

Result: 1.2% (4/309) patients died, 3.8% (12/309) had recurrence and the remaining 293 patients were alive with no record of disease progression. We found no correlation between any NLR score and: age at diagnosis (p=0.856), disease-free survival (~0.62), or Oncotype Dx score (p=0.94). However, patients in the low-risk Oncotype score (<18) group (n=159) had a significantly lower mean pre-operative NLR, compared to the intermediate-risk group (18-30, n=123) (2.73 vs. 3.26. p=0.036).

Conclusion: No NLR score evaluated correlated to Oncotype score. However, the higher mean NLR score in patients in the intermediate Oncotype suggests that these patients may have a poorer prognosis and are more likely to have a recurrence of breast cancer. Long term follow up of our cohort is required to investigate the prognostic impact of NLR and Oncotype.

Take-home message: We found there was a significantly higher (p=0.036) Neutrophil to Lymphocyte Ratio (NLR) in Patients with an intermediate Oncotype Score than those with a Low oncotype score.

O38 EVALUATING THE BENEFITS OF USING OBJECTIVE BENCHMARKS IN A VIRTUAL REALITY TRAINING CURRICULUM, FOR ROBOTIC AND LAPAROSCOPIC SURGERY
W Watkinson, P Harrison, N Raison, K Ahmed
MRC Centre for Transplantation, King’s College London, London

Introduction: Using virtual reality (VR) simulators has shown benefits within robotic/laparoscopic training, however the most effective form is yet to be established. Objective benchmarks are predetermined scores participants must achieve on an exercise to progress. Objective To perform a systematic review, evaluating the benefits of objective benchmarks in VR simulation for Robotic/Laparoscopic surgical training.

Method: A systematic search of the OVID database Embase, Ovid MEDLINE and Psych Info was performed; data extraction was done according to specific inclusion and exclusion criteria.
Result: 20 studies were included for analysis, 9 RCT, 11 non-randomised trials. The analysis demonstrates after using a VR curriculum with objective benchmarks, participants tested on an outcome assessment significantly outperform participants who used VR curriculum without objective benchmarks/ did not use VR. Once completing a VR curriculum using objective benchmarks, participants can successfully transfer their skills to the theatre, performing surgical operations, as demonstrated in 6 studies the intervention outperformed the control for surgical assessment. The analysis establishes expert benchmarks as beneficial, yet disparity in terms of attainability of proficiency targets within the curriculum was highlighted, emphasising lack of consensus in terms of defining expert benchmarks and optimal targets for proficiency.

Conclusion: Using a VR curriculum with objective benchmarks provides a more effective training curriculum than a VR curriculum without benchmarks, providing surgical competency that can be transferred safely to a clinical setting. Clarity is required for defining the most suitable objective benchmarks within a VR curriculum, with or without restrictions such as time and maximum attempts.

Take-home message: Objective benchmarks are a successful VR training method for improvement and transfer of robotic/laparoscopic surgical skills.

O39 MODELLING THE EFFECTS OF MICRORNA-24 AND -145 INHIBITION IN ENDOTHELIAL CELL CULTURE

SJ Tingle, A Sewpaul, LL Bates, R Figueiredo, E Thompson, S Ali, NS Sheerin, CH Wilson

Newcastle University

Introduction: Ischaemia reperfusion injury (IRI) causes significant damage to organs from deceased donors. MicroRNAs are short non-coding RNAs which each cause repression of many target genes. miR-24-3p and miR-145-5p are two microRNAs with potential detrimental roles in IRI. Our group has used antisense oligonucleotides (ASO) to block miR-24-3p during normothermic machine perfusion (NMP) of human kidney grafts. This project aimed to model changes in miR-24-3p and miR-145-5p with hypoxia and assess whether ASO therapy can alter the expression of the genes which they regulate.

Method: IRI was modelled by placing Human Umbilical Vein Endothelial Cells (HUVECs) into a hypoxic incubator for 24hrs, followed by reoxygenation for 6hrs. microRNA and mRNA expression was quantified with reverse-transcription qPCR. One-way ANOVA was used for statistical analysis.

Result: Hypoxia caused significant upregulation of miR-24-3p (1.51;p≤0.001) and miR-145-5p (1.95;p≤0.001), and significant downregulation of miR-24-3p target HMOX1 (0.165;p≤0.001) and shared target SOD2 (0.502;p≤0.001) in HUVECs. The successful miR-24 inhibition during EVNP did not require transfection reagents; this could not be reproduced in vitro and transfection had to be augmented with lipofectamine. Using ASO transfection to inhibit miR-24-3p and miR-145-5p in combination caused synergistic upregulation of HMOX1 (2.62;p<0.05) and SOD2 (1.61;p<0.05) following hypoxia and reoxygenation.

Conclusion: ASO delivery to HUVECs is not as effective as during EVNP. Dual blockade of miR-24-3p and miR-145-5p significantly increased expression antioxidant genes HMOX1 and SOD2, which both have established protective roles in renal IRI. Dual blockade of miR-24-3p and miR-145-5p during NMP represents a novel therapeutic option worthy of further research.

Take-home message: Targeting microRNAs can allow researchers to alter the expression of many genes. This in vitro project suggests that dual blockade of miR-24-3p and miR-145-5p could have therapeutic potential in the setting of ischaemia reperfusion injury.

O40 SUITABILITY OF TNM STAGING FOR RECTAL CANCER TREATED WITH NEOADJUVANT RADIOTHERAPY AND MAJOR RESECTION: A SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS (SEER) ANALYSIS

SK Kamarajah (1), RP Kiran (2), P Tekkis (3,4), A Bhangu (1,5)

(1)University of Birmingham, UK, (2) Division of Colorectal Surgery, New York Presbyterian Hospital, Columbia University Medical Center, New York, USA, (3) Department of Colorectal Surgery, Royal Marsden Hospital, Fulham Road, London, UK, (4) Division of Surgery, Imperial College, Chelsea and Westminster Campus, London, UK, (5) Department of Colorectal Surgery, Queen Elizabeth Hospital Birmingham, UK

Introduction: This study aimed to determine whether the use of neoadjuvant therapy modifies the ability of TNM staging to discriminate prognosis by stage for rectal cancer patients undergoing resection.

Method: Patients with histologically confirmed rectal adenocarcinoma undergoing major resection were identified from the SEER database from 1998 to 2013. Kaplan-Meier curves were used to determine 5-year cancer specific survival (CSS) and multivariable Cox regression used to produce adjusted hazard ratios (HR).

Result: From 44,638 patients, 14,718 (33%) received neoadjuvant radiotherapy. For stage 1 disease, neoadjuvant radiotherapy was associated with reduced CSS compared to without neoadjuvant therapy (88% versus 93%, HR 1.75, 1.51-2.03). However, for stage 2 and stage 3 disease, neoadjuvant radiotherapy was associated with improved CSS (stage 2: 82% versus 81%, HR 0.59, 0.55-0.64; stage 3: 74% versus 67%, HR 0.76, 0.71-0.82). In patients achieving negative circumferential resection margin (CRM), those downstaged to stage 1 were associated with improved survival compared to those with stage 2 (HR 1.61, 1.39-1.86) or stage 3 disease (2.79, HR 2.42-3.23).
Conclusion: There are stage-by-stage survival differences for patients treated with and without neoadjuvant radiotherapy. A revised staging system that stratifies patient according to neoadjuvant therapy may be more accurate.

Take-home message: There are stage-by-stage survival differences for patients treated with and without neoadjuvant radiotherapy. A revised staging system that stratifies patient according to neoadjuvant therapy may be more accurate.

O41 EPH-EPHRIN SIGNALING REGULATES VENOUS VALVE DEVELOPMENT
C Seet (1), O Lyons (1), A Arnold (2), S Padayachee (2), S Mansour (3), P Ostergaard (3), P Mortimer (3), T Makinen (4), A Smith (1)
(1) Academic Department of Vascular Surgery, Cardiovascular Research Division, KCL, St Thomas’ Hospital, UK; (2) Ultrasonic Angiology, Guy’s & St Thomas’ NHS Foundation Trust, UK (3) SW Thames Regional Genetics Service, St George’s Hospital, UK; (4) Rudbeck Laboratory, Department of Immunology, Genetics and Pathology, Uppsala University, Sweden

Abstract not available for download

O42 NARCA; A NOVEL PROGNOSTIC SCORING SYSTEM IN PALLIATIVE PANCREATIC CANCER
SJ Tingle, GR Severs, M Goodfellow, JA Moir, SA White
Freeman Hospital

Introduction: Several serum based markers and ratios have been investigated for their prognostic value in pancreatic ductal adenocarcinoma (PDAC). This study aimed to investigate whether these markers are independent predictors of survival in unresectable PDAC, and develop a novel prognostic scoring system using a combination of markers.

Method: A retrospective cohort study was performed on 115 patients with unresectable histologically confirmed PDAC. Based on existing literature the following markers were investigated: Neutrophil Lymphocyte Ratio (NLR), Neutrophil Albumin Ratio (NAR), Platelet Lymphocyte Ratio (PLR), fibrinogen, and Ca19-9. These values were dichotomised about their medians for Kaplan-Meier and Cox regression analysis.

Result: On univariate Cox regression the following markers were found to have statistically significant prognostic value: NLR, NAR, PLR, fibrinogen, and Ca19-9. When combining these in a Cox regression model, adjusting for other prognostic indicators (AJCC stage, ECOG performance status, chemotherapy, and age), only NAR (HR=3.174, P=0.022) and Ca19-9 (HR=2.697, P=0.031) were independent predictors of OS. Combining NAR and Ca19-9 allowed us to split the cohort into three NARCA groups:

- NARCA 0 = NAR≤0.13 and Ca19-9≤770, NARCA 1 = either NAR>0.13 or Ca19-9>770, NARCA 2 = NAR>0.13 and Ca19-9>770. Median survival was significantly different between NARCA 0, 1 and 2 (P<0.0005, Log-Rank test); 20.5 months, 9.7 months and 4.1 months respectively.

Conclusion: The combination of the NAR and Ca19-9 into a prognostic score allows stratification of unresectable PDAC patients into groups with significantly different median survival estates. This improved prognostic accuracy has the potential to aid in clinical decision making.

Take-home message: Prognostic scoring systems currently aid clinical decision making in many different conditions. Here, we describe a novel scoring system capable of stratifying patients with unresectable pancreatic cancer into groups with significantly different overall survival.

O43 RISK OF GORD-RELATED DISORDERS IN OBESE PATIENTS ON PPI THERAPY: A POPULATION ANALYSIS
S Erridge, O Moussa, P Ziprin, S Purkayastha
Department of Surgery and Cancer, Imperial College London, UK

Introduction: Abdominal obesity and high BMI have been shown to increase the prevalence of gastroesophageal reflux disease (GORD)-related diseases. Proton pump inhibitor (PPI) therapy has been shown to reduce the incidence of such diseases. The aim of this study was to analyse the Clinical Practice Research Datalink (CPRD) to determine factors that increase the propensity of obese patients on PPIs to develop Barrett’s oesophagus (BE) and oesophageal carcinoma.

Method: A population study and case-controlled analysis was carried out of patients from the CPRD. Clinicopathological factors were extracted for each patient alongside clinical endpoints of GORD, BE and oesophageal carcinoma. Multivariate analysis was utilised to identify factors that increase the propensity to develop BE and oesophageal carcinoma. Statistical significance was set at p<0.050.

Result: 165,929 patients were identified with obesity on PPI treatment up until July 2017. Median follow-up time was 119.0 months (range:11.3-1397.9 months). In patients with GERD the following were associated with increased BE risk: age≥60yrs (OR=1.197;P=0.039), male(OR=2.209;p<0.001), H2 antagonists (OR=1.377;p<0.001), D2 antagonists (OR=1.241;p=0.008) and hiatus hernias (OR=65.821;p<0.001). Class II obesity was associated with reduced risk (OR=0.76; p=0.009). The following were associated with increased risk of oesophageal carcinoma: age (OR=2.831;p=0.031) male sex (OR=3.954;p=0.003) and hiatus hernias(OR=12.170;p<0.001). Only D2 antagonists (OR=2.588;p=0.002) were associated with increased risk of developing oesophageal carcinoma in BE patients.
Conclusion: Increasing obesity levels were not associated with increased risk of BE or oesophageal carcinoma. Males, older patients and those with hiatus hernias are also at increased risk of developing BE and carcinoma. Failure of PPI monotherapy is predictive of future metaplasia and dysplasia.

Take-home message: Appropriate pharmacological therapy and hiatus hernia repair are the most important aspects of care for obese patients with reflux symptoms.

O44 BODY MASS INDEX AND COMPLICATIONS FOLLOWING MAJOR GASTROINTESTINAL SURGERY - A PROSPECTIVE, INTERNATIONAL COHORT STUDY

EuroSurg Collaborative
EuroSurg Collaborative

Introduction: Previous studies have reported conflicting findings regarding the effects of obesity on postoperative outcomes. DISCOVER is a recent prospective, multicentre study that reported obesity is associated with an increased risk of major complications in patients undergoing gastrointestinal surgery for cancer, but nor for benign indications. The aim of this study was to validate these findings in an international cohort of patients.

Method: This prospective multicentre study included adults undergoing both elective and emergency gastrointestinal resection, reversal of stoma, or formation of stoma. The primary endpoint was 30-day major complications (Clavien-Dindo grades III-V).

Result: This study included 2519 patients across 127 centres in the Czech Republic, Republic of Ireland, Italy, the Netherlands, Spain, Turkey, and the United Kingdom. Of 2519, 560 (22.2%) patients were obese. Although unadjusted major complication rates were lower in obese versus normal weight patients (13.0% versus 16.2%, respectively), there were no significant differences in either patients undergoing surgery for malignant or benign conditions in multivariate analysis.

Conclusion: This international multicentre study has failed to identify obesity as a risk factor for major complications following gastrointestinal surgery.

Take-home message: This is the first-ever student-driven multi-centre study to have been conducted across Europe, with over 500 students across 127 centres in 7 countries participating. This study has failed to identify obesity as a risk factor for major complications following gastrointestinal surgery.

O45 PREGNANE X RECEPTOR ACTIVATION IN LIVER PERFUSION

S Moulding, RS Figueiredo, A Sewpaul AC Leitch, L Bates, MC Wright, CH Wilson
Institute of Cellular Medicine, Newcastle University

Introduction: Liver normothermic machine perfusion (NMP) is being adopted as a method of optimising and assessing livers prior to transplantation. However, there is further potential to utilise the NMP model as a platform for drug delivery. Pregnane X Receptor (PXR) activation upregulates CYP3A expression and this has been shown to be protective against ischaemia-reperfusion in rodents. We aimed to introduce a PXR activator during NMP and assess activation of its downstream targets.

Method: Organs were perfused on an NMP circuit using an oxygenated red cell-based perfusate. A series of livers were allocated to PXR treatment and a 1.5mg of a PXR activator (Avasimibe, Pfizer) was added to the perfusate. Biopsies were taken at the start and end of the perfusion process and stored in RNAlater.

Result: qPCR was performed and quantified using the delta delta CT method on control (n=4) and livers (n=6) which received Avasimibe. CYP3A43 and CYP3A4, comparing control and treatment organs, were upregulated 3.797 fold (p>0.181) and 2.229 fold (p>0.536) Avasimibe therapy. No deleterious effects were observed in terms of perfusion dynamics or perfusate analysis.

Conclusion: We have demonstrated that NMP can be successfully used as a platform for drug delivery with reliable activation of downstream targets. Whilst it remains to be seen whether PXR therapy is beneficial in humans, the model suggests that perfusion could be used clinically in the future to further optimise grafts by acting as a drug delivery system.

Take-home message: We have demonstrated that normothermic machine perfusion can be used effectively as a drug delivery system to the liver, allowing one to optimise grafts prior to transplantation.

O46 VARIATIONS IN PATIENT REPORTED QUALITY OF RECOVERY WITH SURGICAL APPROACH FOLLOWING COLORECTAL RESECTIONS

R Thavayogan (1), S Iftekhar Tani (2), A Acheson (1,2), K Mohiuddin (2), B Bharathan (2)
(1) School of Medicine, University of Nottingham, Nottingham, UK (2) Nottingham Colorectal Service, Nottingham University Hospitals, Nottingham, UK

Introduction: Current assessments of recovery places emphasis of surgical endpoints and ignores a patients self-reported quality of recovery (QoR). This is the first prospective cohort study to assess the variations in QoR for patients undergoing laparoscopic surgery (LS) and open surgery (OS).

Method: We prospectively measured QoR in patients undergoing elective colorectal resections using the psychometrically tested and validated QoR-15 questionnaire; preoperatively and on postoperative days 1, 3 & 5. Demographic data, length of stay, use of stomas, surgical approach and use of ERAS were recorded. The Wilcoxon signed rank non-parametric test was utilised to analyse the five domains, which encompass a patients QoR.

Result: Fifty four patients were considered for the analysis, mean age was 61.8 years and 57% were females. Mean length of stay was lower for the LS group (5 vs. 11 days; p<0.05). There was no
statistically significant difference in the scores for demographics, ERAS use and LOS. The physical comfort and pain scores were poorer in the LS group on day 1, but the emotional scores were better and they improved dramatically by day 3 & 5. Improvements in 4 of the 5 domains were consistent with a shorter LOS.

**Conclusion:** QoR is poor for LS group on day one especially in the pain domain. Poor QoR scores showed a strong correlation to longer length of stay. Pain protocols for the LS group over the early post-operative should be re-evaluated. Abbreviations: QoR- Quality of Recovery LOS- Length of Stay LS- Laparoscopic Surgery OS- Open Surgery

**Take-home message:** This study is the first to investigate patient reported quality of recovery following surgery, which has shown that patients undergoing laparoscopic colorectal resection, reported of greater pain and a poorer quality of recovery in the early post-operative period than the open surgery patients. Suggesting that the pain protocols for patients undergoing laparoscopic colorectal resections should be re-evaluated.

**O47 COMPARISON OF K-BOX AND ADVANCED SCOPE TRAINER BENCH MODELS FOR FLEXIBLE URETERORENOSCOPY TRAINING: A RANDOMISED CONTROLLED TRIAL**

F Nawab, A Aydin, B Smith, MS Khan, P Dasgupta, K Ahmed
MRC Centre for Transplantation, Guy’s Hospital, King’s College London, King’s Health Partners, London, UK

**Introduction:** Flexible ureterorenoscopy is a highly utilised, technically difficult procedure in urolithiasis treatment, with training is often limited by high cost and exposure. The study aims to investigate the difference in acquiring technical skills in two bench models; Kidney box (K-box) and Advanced Scope Trainer (AST), for use in flexible ureterorenoscopy training.

**Method:** This randomised controlled trial recruited 30 novices, each randomised into 2 cohorts using a blocked randomisation process. Each cohort received a didactic 30-minute lecture, followed by a baseline assessment on the Endoscopic Urinary Tract Model (SimPortal, USA) with four subsequent training sessions on either the K-Box or AST, in which 2 standardised tasks were undertaken, concluding with a final assessment on the Endoscopic Urinary Tract model.

**Result:** There was an overall reduction of 55.8% in average total time taken from session 1 – 4 for the AST participants (p < 0.0001) compared to 52% in the K-Box arm (p < 0.0001). For the K-box total (task 1 and task 2 combined) average task specific checklist scores increased from the baseline (BA) to final assessments (FA) by 53.7% (p < 0.0001), while for the AST, this also increased by 53.7% (p < 0.0001). Additionally, both the K-Box (52% (p<0.0001)) and the AST (52% (p=0.0002)), led to a reduction in the time taken to complete the task from BA to FA.

**Conclusion:** The bench models evaluated, K-Box and Advanced Scope Trainer, were both effective in terms of acquisition of technical skills relating to flexible ureterorenoscopy, with no significant difference found between each model.

**Take-home message:** Flexible ureterorenoscopy is a highly utilised, technically difficult procedure with training limited. The K-Box and Advanced Scope Trainer are two bench models which were both effective in terms of acquisition of technical skills and thus are potential training tools which could be utilised.