

**Background:** Although they are the second most frequent primary tumor of the liver, intrahepatic cholangiocarcinomas (IHC) are rare. Complete surgical resection (R0) remains the only therapeutic option that may offer a possibility of cure.

**Methods:** Retrospective analysis of patients with the diagnosis of IHC between 2010 and 2015 through the use of a computerized database and clinical data.

**Results:** A total of 46 patients (17 women and 29 men) with an average age of 67 years were diagnosed during this period. The mean lesion size was 82 mm. At the time of diagnosis 10 patients had suspicious hilar adenopathies, 21 metastases and only 12 were potentially resectable. Of the patients considered unresectable (34), 15 underwent palliative CT and 2 underwent radio-embolization. Of the 12 patients operated, 6 underwent major liver surgery. Resection with free margins (R0) was achieved in 7 patients. There was no mortality, 6 patients had complications (50%). The median survival time was 6 months for the all series: 4 months for unresectable disease and 25 months for those undergoing surgery ( $p < 0.001$ ).

**Conclusion:** The IHC is a disease with poor prognosis and diagnosed in advanced stages. Resection surgery is the only therapy that offers a long-term survival hypothesis.

FP22.02

### VASCULAR RECONSTRUCTION IN PATIENTS WITH PERIHILAR AND INTRAHEPATIC CHOLANGIARCINOMA.

R. Alikhanov, M. G. Efanov, I. V. Kazakov, P. P. Kim and A. N. Vankovich

*Moscow Clinical Scientific Center, Hepatopancreatobiliary Surgery, Moscow, Russian Federation*

**Background:** The aim of this study was to describe safety and possibility of vascular reconstruction in patients with perihilar and intrahepatic cholangiocarcinoma in single hepatopancreatobiliary (HPB) clinic.

**Methods:** 52 individuals with a diagnosis of cholangiocarcinoma (not including distal common duct cancer) during the period from 2013 to 2016 were radically operated in HPB department of Moscow Clinical Scientific Center. 16 of those had vascular resection and reconstruction, including vena cava resection in 3 patients, portal vein resection alone in 9 patients, combined hepatic artery and portal vein resection in 3 and hepatic artery resection alone in 1.

**Results:** No significant difference was found in post-operative complications (type III-IV by Clavien-Dindo) between the vascular resection and non-vascular resection group ( $p > 0.05$ ). R0 resection was achieved in 70% that was significantly higher than in previous years. Mortality was 9,2%.

**Conclusion:** New strategy as implementation of vascular resection and reconstruction for treatment of hilar and intrahepatic cholangiocarcinoma are safe and can improve resection rate.

FP22.03

### VENOUS RECONSTRUCTION WITH THE PARIETAL PERITONEUM. THE LONG RESULTS IN 90 PATIENTS.

S. Dokmak, B. Aussilhou, R. Chérif, L. Barbier, F. Cauchy, J. Belghiti, O. Soubrane and A. Sauvanet

*Beaujon Hospital, HPB Surgery and Liver Transplantation, Clichy, France*

**Background:** We recently described our experience of venous reconstruction during HPB surgery with the parietal peritoneum (PP). Our aim is to evaluate our long term results.

**Methods:** Since 2010, 90 patients underwent pancreatic ( $n = 65$ ) or liver ( $n = 25$ ) resections for malignancy ( $n = 88$ ) with reconstruction of the mesentericoportal vein (80) or the vena cava (10) with the PP. The PP (mean length = 25.2 mm; 10 – 100) was rapidly harvested from the falciform ligament ( $n = 40$ ), hypochondrium ( $n = 20$ ), diaphragm ( $n = 18$ ), or prerenal ( $n = 11$ ) area. Reconstruction was lateral (86), tubular (4) and urgent in 11. Postoperative anticoagulation was standard and venous patency and stenosis was assessed by routine CT scan. The mean radiological follow-up was 16 (1 – 48) months and in 32 patients (36%), the follow up was  $> 24$  months.

**Results:** The mean operative time was 295 (135 – 600), mean blood loss was 574 ml (20 – 3000) and 24 (27%) were transfused. One non related mortality, overall morbidity ( $n = 48$ ; 53%) and the mean hospital stay was 19 (6 – 75). There was no PP-related or haemorrhagic complications and no reintervention for symptomatic venous thrombosis. The patency rate was 84/90 (93%) including 74/84 (88%) with no or mild stenosis ( $< 25\%$  of the venous lumen) and 10/84 (12%) with moderate stenosis (25 – 75% of the vascular lumen).

**Conclusion:** This large experience with long term follow up of venous reconstruction with the PP confirm a high patency rate without any significant related complications and PP should be the first choice for a lateral reconstruction.

P5.03

### A CASE FOR DATA: IMPROVING SURGICAL PERFORMANCE AND PATIENT OUTCOMES THROUGH AN EVIDENCE-BASED APPROACH TO LIST ORDERING

T. Pike<sup>1,2</sup>, F. Mushtaq<sup>2</sup>, R. Mann<sup>2</sup>, R. Wilkie<sup>2</sup>, M. Mon-Williams<sup>2</sup> and J. P. A. Lodge<sup>1,2</sup>

<sup>1</sup>Leeds Teaching Hospitals, and <sup>2</sup>University of Leeds, Leeds, United Kingdom

**Background:** Current approaches to surgical list ordering are driven by a combination of patient characteristics and clinical insight. However, we question if this results in optimal outcomes. Here, we propose and demonstrate the value of an alternative, evidence-based case list.

**Methods:** We interrogated electronic patient records from all 38 Spire Healthcare hospitals in the UK, over a two-year period ( $n = 478,713$ ). The effect of operating list

composition on duration of surgery, length of inpatient hospital stay and need for return to theatre (Clavien-Dindo IIIb or greater complication) was examined using machine learning and Bayesian data analysis approaches. We compared this to known prognosticators of operative outcomes; ASA and age.

**Results:** There was a substantial effect of operating list order for single-procedure lists: each increase in position on the list decreased operation time and length of hospital stay ( $p < 0.0001$ ). There was no difference in return to theatre. Combining similar procedures on operating lists resulted in shorter operative times and length of hospital stay ( $p < 0.0001$ ) with no difference in complication rate. Most importantly, we found the composition of an operating list had a similar effect on outcomes as age and ASA.

**Conclusion:** These data show, for the first time, a relationship between operating list composition on surgical outcomes. They suggest that the structure of a case list could help prepare surgeons to operate more effectively and yield better outcomes for patients.

FP20.08

### A RELIABLE AND ACCURATE ALGORITHM TO QUANTIFY THE TUMOR STROMA (QTS) ACROSS TUMOR ENTITIES

R. C. Miksch<sup>1</sup>, J. Hao<sup>1</sup>, K. Dötzer<sup>1</sup>, F. Schlüter<sup>1</sup>, M. Weniger<sup>1</sup>, S. Ormanns<sup>2</sup>, J. G. D'Haese<sup>1</sup>, B. Mayer<sup>1</sup>, A. V. Bazhin<sup>1</sup>, J. Werner<sup>1</sup> and M. B. Schoenberg<sup>1</sup>  
<sup>1</sup>Hospital of the LMU Munich, Department of General, Visceral and Transplantation Surgery, and <sup>2</sup>Institute of Pathology of the LMU Munich, Munich, Germany

**Background:** There are many studies that investigate tumor-infiltrating lymphocytes (TILs) and influence on survival. However, there is great heterogeneity about how to quantify. Therefore, we present a novel Quantification of the Tumor Stroma (QTS) Algorithm to reliably and accurately quantify cells of the tumor stroma.

**Methods:** Immunohistochemical staining of CD3 and CD8 antigens in metastatic colorectal cancer (mCRC), ovarian cancer (OvCa), hepatocellular carcinoma (HCC), and pancreatic cancer (PCa) was performed (N=80). Reliability of identification of hot spots - region with highest density of TILs - was investigated using two blinded observers. The absolute amounts of cells were compared with the intra-class-correlation coefficient (ICC). CD8+/CD3+ ratio as well as the absolute cell numbers were compared with the ICC. ZEN 2 software counting (ZC), ImageJ software with subjective threshold (ISC) and ImageJ with colour deconvolution (IAC) were compared to a manual counting using a linear regression analysis.

**Results:** Quantification of hot spots was reliable for one observer. The ICC for the ratio of CD8/CD3 in 1 hot spot compared to the average from 3 hot spots was consistent in all groups. The absolute cell count in 1 vs 3 hot spots presented poor accuracy. Comparison of manual counting to the computed methods showed excellent accuracy of IAC in mCRC and OvCa, whereas of ISC in HCC and PCa.

**Conclusion:** With the QTS Algorithm quantification of cells in the tumor stroma is reliable and accurate.

P14.06

### ANGIOGENIC MIRNAS AND RELATED TIE2-EXPRESSING MONOCYTES IMPACT OUTCOME IN HUMAN CHOLANGIOCARCINOMA

G. Atanasov<sup>1</sup>, C. Benzing<sup>1</sup>, F. Krenzien<sup>1</sup>, A. Brandl<sup>1</sup>, L. Feldbrügge<sup>1</sup>, H. Morgül<sup>1</sup>, A. Reutzel-Selke<sup>1</sup>, S. Jonas<sup>2</sup>, M. Bähr<sup>1</sup>, A. Pascher<sup>1</sup>, J. Pratschke<sup>1</sup> and M. Schmelzle<sup>1</sup>  
<sup>1</sup>Charité - Universitätsmedizin Berlin, Department of Surgery, Berlin, and <sup>2</sup>310Klinik Nürnberg, Department of Hepato-Pancreato-Biliary Surgery, Nürnberg, Germany

**Background:** Angiopoietins (Angs) and angiogenic microRNAs are associated with prognosis in tumors. Monocyte subsets express Ang-receptor TIE2 (TEMs) and exert pro-angiogenic properties associated with prognosis. However, little is known regarding their influence on tumor progression in human cholangiocarcinoma (CCA).

**Methods:** We analyzed surgical specimens of intrahepatic CCA (n = 88) immunohistologically for distribution of Angs and TEMs. We tested miR targeting genes encoding Angs to be associated with tumor growth (n = 44). MiRNA expression and abundance of TEMs were correlated with clinicopathologic characteristics, recurrence and patients' survival.

**Results:** Absence of TEMs in tumor correlated with elevated CA19-9 serum levels. High Ang1 expression associated with reduced lymphangiosis carcinomatosa (all  $p < 0.05$ ). Patients characterized by invading TEMs showed a trend to reduced tumor recurrence and increased survival ( $\rho = 0.159$  and  $\rho = 0.185$ ). High miR-126 or low miR-128 expression was associated with improved survival (all  $p < 0.05$ ). In a multivariate analysis TEMs, miR-126 and low miR-128 were confirmed as independent prognosticators for survival (all  $p < 0.05$ ).

**Conclusion:** TEMs define a subgroup of patients with improved tumor characteristics and prognosis. Our study provides first evidence that angiogenic miRNAs associate with survival in CCA. Besides suggested functional links between miRNA expression profiles, angiopoietins and TEMs, our data have possible clinical implications as novel diagnostic tools.

FP6.08

### BIOCELLULOSIS INDUCES REGENERATION OF THE EXTRAHEPATIC BILE DUCT

F. Rauchfuß<sup>1</sup>, F. Kramer<sup>2</sup>, W. Fried<sup>2</sup>, A. Tannapfel<sup>3</sup>, K. Petzold-Welcke<sup>2</sup>, D. Klemm<sup>2</sup> and U. Settmacher<sup>1</sup>  
<sup>1</sup>Jena University Hospital, Department of General, Visceral and Vascular Surgery, <sup>2</sup>Jenpolymer Materials, Jena, and <sup>3</sup>Ruhr-University, Institute for Pathology, Bochum, Germany

**Background:** Defects of the extrahepatic bile duct are a major issue in hepatobiliary surgery. In most cases, a bilioenteric anastomosis is the only treatment option. This procedure goes along with several disadvantages like recurrent cholangitis. Aim of this prospective animal study was the evaluation of biocellulosis as a replacement material for extrahepatic bile duct defects.

**Methods:** In male pigs, three centimeter of the extrahepatic bile duct were resected. In the resulting defect a