while Sirius red (SR) staining primarily identifies tissue collagen. We have investigated how morphometric analysis of stellate cell activation, fibrosis and inflammatory activity can contribute to this assessment.

Methods 78 liver biopsies taken between 6 and 3722 (median 688) days post-transplant were reviewed. Sections from formalin-fixed and paraffin embedded post-tranplant liver biopsy specimens were stained with SR, for SMA and CD3 (T lymphocytes). The SR and SMA stained section were digitalised using the scanning function of a Leica DM6000. We used Image J (Version 1.42q) software and Photoshop CS5 software package for specimen analysis. SR and SMA staining proportionate area were calculated according to Calvaruso *et al.*[1] A cell count of lobular CD3+ve lymphocytes was carried out using a microscope grid. Semi quantitative scoring was also carried out using the Ishak scoring system. Liver collagen was expressed as collagen proportionate area (CPA).

Results SR CPA, SMA CPA and CD3 count ranged from 0.26% to 29.63% (mean=6.28%), 0.00018–35.62% (mean=4.89%) and 1–63 (median=13) respectively. Mean SMA CPA and mean SR CPA for each IS category were as follows: IS 0=2.34% (0.25–5.37%), IS 1=3.29% (0–13.33%), IS 2=4.44% (0–11.56%), IS 3=6.64% (1.49–13.93%), IS 4=6.37% (6.02–6.83%), IS 5=7.92% (3.21–14.16%), IS 6=28.96% (22.30–35.62%) and IS 0=3.68% (0.59–5.83%), IS 1=4.67% (1.35–19.46%), IS 2=4.43% (0.61–10.00%), IS 3=8.65% (1.20–17.85%), IS 4=6.77% (5.10–8.43%), IS 5=9.79% (0.26–29.63%), IS 6=11.91% (1.60–22.22%) respectively. IS correlated with SMA CPA (r=0.62, p<0.0001) but not SR CPA (r=0.226, p=0.104). CD3 count also correlated with serum AST (r=0.437, p=0.004).

Conclusion Digitalisation, image analysis and immunohistochemistry for SMA and CD3+ve lymphocytes contribute to the assessment of inflammatory activity and fibrosis in post-liver transplant recurrent HCV infection.

Competing interests None declared.

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Pancreatic free papers

OC-108 EFFECT OF INTERNAL AND EXTERNAL PANCREATIC DUCT STENTS ON OUTCOME AFTER PANCREATICODUODENECTOMY: META-ANALYSIS OF RANDOMISED AND OBSERVATIONAL STUDIES

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Introduction Pancreatic fistula (PF) remains a significant cause of morbidity and mortality after pancreaticoduodenectomy. The relative merits of external (ES) and internal (IS) pancreatic stents on postoperative outcome have not been clearly defined. The aim of this study was to evaluate the role of pancreatic stents after pancreaticoduodenectomy by meta-analysis.

Methods Randomised and observational studies comparing patients with and without pancreatic duct stents (ES or IS) from January 1990 to May 2011 were included in the analysis. Studies were only included if the incidence of PF was separately reported in each group. Secondary outcome measures included postoperative mortality, overall complications and hospital stay. Subgroup analysis was performed for studies that used external stents or internal stents exclusively. Randomised and observational studies were combined separately using a random effects model, and the overall effect was calculated using a mixed effects model. Outcomes were compared using ORs and weighted mean differences (WMD).

Results Sixteen studies were analysed (four randomised and 12 observational), consisting of 1,846 patients (876 stented, 970 not stented). On analysis of all studies (ES and IS), the incidence of PF (p=0.54), overall complications (p=0.23) and perioperative mortality (p=0.19) were similar in stented and non-stented patients. Hospital stay was shorter in the stented group (WMD (–) 2.5 days, CI (–) 4.4 to (–) 0.6 days, p=0.009). On analysis of ES and IS studies separately, PF and overall complications were significantly reduced by external stents (PF: OR 0.49, CI 0.3 to 0.81, p=0.005; complications: OR 0.62, CI 0.43 to 0.89, p=0.01), but no difference was observed with internal stents (PF: OR 1.59, CI 0.97 to 2.61, p=0.07; complications: OR 0.96, CI 0.64 to 1.46, p=0.86).

Conclusion External pancreatic duct stenting appears to reduce the rate of pancreatic fistula and overall complications following pancreaticoduodenectomy. However, due to the lack of high quality evidence, it remains unclear whether internal stents have a role. A well-conducted, adequately powered randomised trial of internal pancreatic stents in patients at risk of pancreatic fistula should help to clarify this.

Competing interests None declared.

OC-109 UTILITY OF QUANTITATIVE ENDOSCOPIC ULTRASOUND ELASTOGRAPHY (QEUSE) FOR THE DIAGNOSIS OF PANCREATIC MALIGNANCY: A LARGE SINGLE-CENTRE EXPERIENCE

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Introduction Recent data suggest that QEUSE, a novel technique that allows real-time quantification of tissue stiffness, can accurately differentiate benign from malignant solid pancreatic masses (area under the receiver operating curve [AUROC]=0.98).[1] External validation of the diagnostic utility of this technique has not been carried out.

Methods 101 patients with CT and/or EUS-proven solid pancreatic masses underwent 108 QEUSE procedures using the Hitachi EUB-7500 or Preirus ultrasound workstation and Pentax linear echoendoscopes. Multiple elastographic measurements of the mass lesion (A) and soft tissue references areas (B) were undertaken and the corresponding strain ratios (B/A) were calculated. Final diagnosis was based on EUS-fine needle aspiration (EUS-FNA) cytology, biliary brushings and/or resection specimen histology. The diagnostic accuracy of QEUSE for discriminating malignant from benign pancreatic masses was assessed.

Results The median lesion size was 3 cm. The final underlying diagnoses were primary pancreatic carcinoma (71.3%), neuroendocrine tumour (9.9%), metastatic cancer (2%) and pancreatitis (16.8%). Malignant pancreatic masses had a higher strain ratio (p=0.002) and lower mass elasticity (p=0.003) than inflammatory ones. However, the AUROC for the detection of pancreatic malignancy was only 0.74 for the strain ratio and only 0.73 for the mass elasticity. Similarly, the diagnostic accuracy of QEUSE for detecting pancreatic malignancy in our cohort was less favourable than those reported recently (see Abstract OC-109 table 1), with lower strain ratio (4.62 vs 6.04) and higher pancreatic mass elasticity cutoffs (0.27 vs 0.05) providing the highest accuracy.

Conclusion In the largest single-centre study of QEUSE of the pancreas reported to date, we found this technology to be less accurate and specific for differentiating pancreatic masses than recently reported, suggesting that it may only complement rather than substitute the role of pancreatic EUS-FNA in the future.