75% (364/486); surgeons 74% (147/199); medical 70% (368/527); p<0.1. Size assessment correlated poorly with histology with a significant increase in the use of 5 mm and 10 mm measurements in vivo ($\chi^2$=71.3 DF=9 p<0.0001). 290 polyps were estimated smaller in vivo and 302 larger (294 precise) when compared to histology [distribution of error curve: SD=3.22 mm; mean=0.16 mm; median=0]. A discrepancy across the 10 mm size occurred in 96 polyps (11%).

**Conclusion** Currently a poor PPV for neoplastic polyps and imprecise in vivo size estimation would mean a resect and discard approach would be inaccurate, but current practice removes a large amount of benign pathology and has both patient morbidity and significant cost implications.

**Competing interests** None declared.

## PTU-234 ENDOSCOPIC ULTRASOUND GUIDED FINE NEEDLE ASPIRATION FOR THE DIAGNOSIS OF PANCREATIC CYSTIC NEOPLASMS: A META-ANALYSIS

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**Introduction** Pancreatic cystic neoplasms consist of mucinous cystic neoplasms (MCNs) and serous cystic neoplasms (SCNs). MCNs have significantly greater malignant potential, and if resected early the prognosis is excellent, although mortality is 2%–3%. Endoscopic ultrasound is a minimally invasive and well tolerated procedure. EUS with fine-needle aspiration (EUS-FNA) provides samples for cytology and fluid analysis, a major advantage over other techniques. However the diagnostic accuracy of EUS-FNA is highly variable in published studies.

**Aim** To determine the diagnostic accuracy of EUS-FNA to differentiate mucinous vs non-mucinous cystic lesions with morphology, and cyst fluid analysis for cytology and carcinoembryonic antigen (CEA) via a meta-analysis of published studies.

**Methods** Relevant studies were identified using MEDLINE and included if they used a reference standard of definitive surgical pathology or clinical follow-up (≥6 months). Study quality was assessed using the STARD (STAndards for the Reporting of Diagnostic Accuracy) initiative criteria. Data were analysed using MetaDiSc© v.1.4, which generated pooled estimates for sensitivity, specificity and summary ROC curve. Subgroups, determined a priori, were used to assess heterogeneity: prospective vs retrospective, location, number of centres and patients, 19G or 22G needle and STARD score.

**Results** 24 studies published between 2001 and 2011 were included, a total of 1703 patients. The median number of patients in each study was 53 (range 18–197) and the median study length was 54 (12–144) months. The pooled sensitivities (95% CI) and specificities (95% CI) and area under the sROC curve (SE), respectively, were: EUS morphology 55 (49–61)%, 65 (57–72)% and 0.74 (0.095); Cytology 54 (50–59)%, 93 (90–95)% and 0.95 (0.040); and CEA 63 (59–67)%, 88 (83–91)% and 0.79 (0.034). Subgroup analysis indicated that retrospective design, low STARD score and study location outside Europe were significant sources of heterogeneity.

**Conclusion** Fine-needle aspiration has moderate sensitivity but high specificity resulting in good overall diagnostic accuracy for MCNs. Morphology alone is inadequate for distinguishing cystic lesions but may contribute to the assessment of more advanced lesions. The moderate sensitivity of FNA (54%) means a significant proportion of MCNs will not be detected. However, the high specificity (93%) means that a positive result is strongly indicative of a MCN. Thus, EUS-FNA is a useful diagnostic tool for correct identification of MCNs and may be the gold standard for pre-operative assessment.

**Competing interests** None declared.

## PTU-235 SUCCESS OF SINGLE STENT ENDOSCOPIC ULTRASOUND (EUS) GUIDED PANCREATIC CYSTOGASTROSTOMY

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**Introduction** Current accepted practice for EUS-guided stent insertion for drainage of pancreatic pseudocysts (PP) involves placement of two or more double-pigtail stents.[1] There has been little work into whether a single stent would provide an equal outcome without increasing complications. Rates of successful drainage without surgical or percutaneous intervention are 88–64% with complication rates at 32–14%.[2] We present a case series comparing outcomes of single stent insertion against these.

**Methods** Retrospective analysis of cases, identified by searching the electronic endoscopic database, in a DGH providing tertiary HPB and EUS service between August 2005 and December 2011 was performed. All procedures were performed by the same experienced endoscopist. All patients had a radiographically proven PP and received a single 7 cm 7Fr double-pigtail stent with prophylactic antibiotics.

**Results** 24 patients underwent cystogastrostomy. 1 patient died from unrelated causes in the days post-procedure, therefore is not included in the analysis. 20 of 23 patients (86.9%) were successfully drained without any surgical or percutaneous intervention. One patient had a pre-existing infected PP, only recognised on fluid analysis after the procedure, required laparotomy for excision and surgical cystogastrostomy. With hindsight more than one stent may have resulted in a better outcome. There were two procedure related complications (8.6%). One suffered pneumoperitoneum 2 days post-procedure. Emergency surgery revealed the pancreatic lesion to actually be a mucinous cystadenoma, despite radiographically and endoscopically (including pre-stent insertion aspirate) behaving as a PP. This misdiagnosis and complication was unavoidable due to this unusual behaviour. The other patient developed sepsis 26 days post-procedure, and had a CT guided drain. Culture of aspirated cyst fluid revealed candida, possibly a post-insertion complication or an incidental finding; patient responded to fluconozole. Two further patients were re-admitted with pyrexia 3 and 5 days respectively post-procedure. They improved with antibiotics, required no intervention, and imaging revealed PP improvement.

**Conclusion** This data suggests that efficacy and complication rates for single-stented EUS-guided cystogastrostomy in simple PP are comparable with data from studies using two or more stents. This would result in shorter procedure time and reduced risks from insertion thereby improving patient safety, and reduced costs. Single stenting is not recommended for infected or complex PP.

**Competing interests** None declared.

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## PTU-236 ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP) METAL BILIARY STENT INSERTIONS: OUTCOME AND COMPLICATIONS

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**Introduction** Endoscopic retrograde cholangiopancreatography (ERCP) is an established technique for palliative stenting and

symptomatic relief of obstruction of the biliary tree. Although mortality following ERCP is high in patients with advanced age and a malignant diagnosis, a Cochrane review has shown that endoscopic stents have reduced complications and mortality compared with surgical bypass in inoperable pancreatic cancer. Furthermore metal stents have improved patency in biliary obstruction than plastic stents. Our aim was to evaluate patient outcomes following endoscopic metallic stenting at a specialist tertiary referral centre, including the need for re-intervention and mortality rates.

**Methods** We performed a retrospective audit and service evaluation for all endoscopic metallic biliary stent procedures at Queen's Medical Centre, Nottingham University Hospitals Trust over a 1-year period during 2010 with patients receiving at least 1-year follow-up. Demographic data, the need for repeat intervention (either endoscopic or radiological), procedure-related complications and mortality were determined.

**Results** During 2010, 40/776 (5.2%) patients undergoing ERCP had metallic biliary stents inserted; uncovered Zilver® stents (Wilson Cook, USA) n=38 (95%), covered Niti-S® stents (Taewoong Medical, S. Korea) n=2 (5%). Of these 22 (55%) were male and mean (±SD) age was 73.1±12.3 years. Final diagnosis was pancreatic cancer; n=22 (55%), cholangiocarcinomas; n=13 (33%), other malignancy; n=3 (7%) and benign stricture; n=2 (5%). Strictures were located either distally n=25 (63%), mid-duct strictures n=4 (10%) or proximal/hilar strictures n=11 (27%). All patients underwent radiological imaging prior to ERCP. 22 patients (55%) had undergone prior ERCP with the majority, 21/22 (95%) patients, having confirmed cytological diagnosis of malignancy and 20/22 (91%) patients having previous biliary stents in situ. These were predominantly plastic stents which had blocked or required stent exchange. All cause 1-year mortality was 80%, with median (range) survival 120 (6–361) days. 7-day and 30-day mortality was 5% and 13% respectively. There were no immediate reported complications at time of endoscopy. 9/40 (22.5%) patients required further ERCP or percutaneous transhepatic cholangiography stenting procedures. All re-interventions were in patients with uncovered stents; 6 due to tumour in growth or stent occlusion and one due to stent misplacement.

**Conclusion** Although technical success and immediate complications were satisfactory, need for re-intervention was required in 22.5%. Median survival and stent patency in this study is comparable to data from the Cochrane review, however further work is required to compare different metallic stent construction or other manoeuvres to reduce the need for re-intervention.

**Competing interests** None declared.

## PTU-237 COMPLICATIONS AND OUTCOMES FOLLOWING PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) TUBE INSERTION: A SINGLE CENTRE EXPERIENCE

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**Introduction** PEG insertion has a reported 30-day mortality of 19%–24%[1 2] suggesting a significant number of inappropriate insertions that were unnecessary for good care. Despite this there are no consistent Australian guidelines regarding patient selection for this procedure. To try and identify patients who would not benefit from PEG insertion we conducted an audit of all PEG insertions undertaken at our hospital, with particular reference to indications, complications and outcome.

**Methods** PEG insertions from 15 January 2009 to 22 July 2011 were identified from an endoscopy database and then medical notes were reviewed. We assessed indication for PEG insertion, the use of prophylactic antibiotics, complications during the procedure, 30 day complications and longer term complication rates.

**Results** 28 patients were identified (13 male and 15 female). The mean age was 71.8 years. The most common indication for PEG insertion was dysphagia following a cerebrovascular accident (CVA) (65%). Other indications included head and neck tumours (14%), other neurological disorders and poor oral intake due to severe depression (21%). 64% of patients received prophylactic antibiotics during the procedure with cephazolin compared to the recommended 100%. Despite this low rate, no patients were re-admitted with PEG site infections. 30-day mortality was 23%. In patients with CVAs 30-day mortality was 45% vs 0% in patients with other indications (p=0.038; Fishers exact test). Eleven patients had episodes of aspiration within 30 days of PEG insertion—the majority of these were from the CVA group (72%). The median time between CVA and PEG insertion was 25.5 days (range 10–53 days). Overall survival at 1 year was 38%. There were three cases in which the PEG fell out: two of the three were due to the patient removing it.

**Conclusion** Our data shows a significantly higher 30-day mortality in CVA patients as well as a higher frequency of aspiration in this group. This is in keeping with other studies[3] and re-iterates the fact that insertion of a PEG does not prevent the development of aspiration pneumonia, which is a common misconception. It would therefore be reasonable to suggest a minimum period of 30 days of observation plus NG feeding in such patients to allow for any change in clinical condition.

**Competing interests** None declared.

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## PTU-238 PREP, NO PREP OR MORE PREP? A PROSPECTIVE RANDOMISED STUDY COMPARING TWO BOWEL PREPARATION REGIMES WITH NO PREPARATION ON QUALITY OF CAPSULE ENDOSCOPY

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**Introduction** Capsule endoscopy (CE) is a widely used method for evaluation of the small bowel. However it does have limitations; visualisation of the small bowel mucosa is often impaired due to the presence of food residue, air bubbles and bile pigments.[1] The effect of bowel preparation on improving visualisation of the small bowel varies[2] and is inconvenient for patients.[3] We aimed to prospectively evaluate the effects of two different bowel preparations on visualisation of the small bowel and on overall diagnostic yield compared with standard dietary changes.

**Methods** 51 patients (26 male/25 female; mean age 60.7 years) were randomised into three groups using the sealed envelope technique. Indications for CE were iron deficiency anaemia, obscure GI bleeding (occult and overt) and anaemia. Group 1 (n=19): Clear fluid day before procedure. Overnight fast. Group 2 (n=12): Clear fluid day before procedure. 2L PEG in afternoon of day prior to procedure. Overnight fast. Group 3 (n=20): Clear fluid day before procedure. 1L PEG and 1 sachet Picoprep in afternoon of day prior to procedure. Overnight fast. CE were viewed by a single blinded examiner and