

**Conclusions** Colonoscopists who perform less than the nationally stipulated minimum of 100 procedures per year have significantly lower ADRs. National guidance should be followed with all colonoscopists performing > 100 procedures per year.

#### REFERENCE

1. Rees CJ, *et al.* UK key performance indicators and quality assurance standards for colonoscopy. *Gut* 2016;**65**:1923–9

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#### TIMING OF ERCP AND OUTCOMES IN PATIENTS WITH ACUTE GALLSTONE CHOLANGITIS GRADED BY SEVERITY

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**Introduction** The optimal timing of endoscopic retrograde cholangiopancreatography (ERCP) in the management of acute gallstone cholangitis is not known. Severity of cholangitis can be classified with the Tokyo 2018 criteria. The European Society of Gastrointestinal Endoscopy published guidance on the recommended timing of ERCP guided by the severity of cholangitis; stipulating that biliary drainage should occur within the following timeframes: mild – elective, moderate – within two to three days and severe – as soon as possible. We aim to analyse the clinical outcomes of patients with acute cholangitis who have been admitted to a tertiary hepatobiliary centre when categorised by severity.

**Methods** A retrospective analysis of patients admitted to our hospital with acute cholangitis over a 3 year period from June 2016 to June 2019 was carried out. Patients were identified via coding department and endoscopy reporting tool. All patients met 2018 Tokyo criteria for definite cholangitis. Only patients with choledocholithiasis without concurrent biliary pathology were included for analysis. Case notes and electronic database interrogation yielded information for calculation of severity of cholangitis. Statistical analyses were carried out with Kruskal-Wallis test or chi-squared tests where appropriate.

**Results** A total of 218 patients were identified and 199 patients who underwent ERCP during the index admission were included for analysis. There was a female preponderance (55.8%) and the median age was 73 years (range 19–96). The proportion of severity of cholangitis at presentation was as follows: 51.3% (n=102) mild, 32.6% (n=65) moderate and 16.1% (n=32) severe. The median time taken from admission to ERCP for the 199 patients was 4.8 days (mild 4.4 days, moderate 5.4 days, severe 4.8 days; p=0.31). The median length of stay 7.8 days (mild 7.2 days, moderate 7.8 days, severe 9.5 days; p=0.009). 31.3% of patients with severe cholangitis (n=10) were admitted to intensive care (ITU); 6 of whom required urgent ERCP. For patients with severe cholangitis, the median time in those who required urgent ERCP was 1.5 days vs 5.6 days in those who did not. The overall 30-day all-cause mortality amongst the 199 patients was 1% (n=2; both with severe cholangitis who underwent successful ERCP at 23 hours and 42 hours). 30-day all-cause mortality was 6.3% in the severe group and 0% in both mild and moderate groups (p=0.005).

**Conclusions** Our results demonstrate no difference in timing to ERCP in patients with acute gallstone cholangitis when categorised by severity. Deaths were observed only in patients with severe cholangitis although the majority of patients with severe disease did not require urgent ERCP. Provision for urgent ERCP has to be available especially for those admitted to intensive care.

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#### SELF-EXPANDING METAL STENTS IMPAIR ENDOSCOPIC ULTRASOUND (EUS) VASCULAR STAGING OF HEAD OF PANCREAS MASSES

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**Introduction** Endoscopic ultrasound (EUS) is indicated for vascular staging of pancreatic ductal adenocarcinoma (PDAC) when CT is equivocal. The reported sensitivity of EUS for vascular invasion ranges from 42% to 91%. The presence of a biliary stent may impair EUS assessment of the vascular interface of head of pancreas (HOP) masses due to imaging artefacts. This may be worse with self-expanding metal stents (SEMS). Previous studies of stent effect have been small with conflicting results. The aim of the study was to assess the influence of stents on EUS vascular staging in patients with a HOP mass undergoing surgery with curative intent.

**Methods** All patients with a solid HOP mass undergoing EUS staging and surgery with curative intent between January 2010 and December 2017 were included. Exclusion criteria included; neoadjuvant chemotherapy, EUS for biopsy only, finding of metastatic disease at laparotomy and surgery > 60 days after staging. Intraoperative surgical assessment was the primary reference standard. When vascular resection was performed histology was additionally correlated. Analysis was performed on an intention to stage basis. Factors with possible impact on diagnostic performances were analysed using logistic regression.

**Results** 158 patients with prior EUS underwent surgery. 58 cases were excluded and 100 formed the study group. 56 were male, 99 were malignant of which 76 were PDAC. Median age [IQR] 68 years [59–74] median tumour size [IQR] 27.5 mm [20–32]. Median Interval between EUS and surgery [IQR] was 29 days [22–42]; 50 (50%) had an indwelling biliary stent (36 plastic, 14 SEMS). In 7(14%) (6 SEMS, 1 plastic) staging was not possible due to stent artefact. 22 (22%) were found to have some degree of vascular involvement at surgery of which 2 were unresectable, 20 underwent vascular resection of which 10 met histological criteria for vascular invasion. There was a significant difference in accuracy of vascular assessment (p=0.042) among patients without a stent (86%) plastic stent (69.4%) and SEMS (57.1%). On multivariable analysis both plastic OR (0.37 95% CI [0.13–1.07]) and SEMS OR (0.21, 95% CI [0.057–0.81]) reduced accuracy. Sensitivity for vascular involvement (surgical reference) was 13/22 (59%). Using histology as the reference, sensitivity was 7/10 (70%); p=0.7.

**Conclusions** In this the largest series to date, the accuracy of vascular staging by EUS was found to be impaired by biliary SEMs. We recommend that patients who require biliary drainage and EUS staging should have EUS before stent placement.

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#### LAPAROSCOPIC ASSISTED ENDOSCOPIC MUCOSAL RESECTION OF A COMPLEX CAECAL POLYP

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**Introduction** Laparoscopic Assisted Endoscopic Mucosal Resection (Laparoscopic EMR) can offer organ preservation in complex colonic polyps deemed too challenging even with expert therapeutic endoscopy input for colonoscopic resection alone.

**Methods** This 64 year old male was diagnosed through bowel screening with a 25 mm laterally spreading polyp in the caecum around the appendix orifice. The patient was assessed by a surgeon, an advanced endoscopist and discussed at a Complex Polyp Multi Disciplinary Team Meeting. Due to the extent of appendix orifice involvement, endoscopic intervention alone was deemed unlikely to be successful and a Laparoscopic EMR was recommended. The patient was placed in the Lloyd David position. For this caecal polyp 10 mm supraumbilical, 5 mm suprapubic and 5 mm left lower quadrant laparoscopic ports were inserted. Lateral mobilisation of the caecum was performed to facilitate laparoscopic assistance during the colonoscopic procedure. The introduction of a tape around the terminal ileum prevented inflation of the small bowel from the colonoscope. Thorough laparoscopic and endoscopic assessment ensured there was no signs of malignant change in the polyp. Piecemeal EMR was performed with laparoscopic assistance achieving complete clearance of lateral margins as visualised through the colonoscopic view. Laparoscopic invagination of the appendix enabled full resection of the polyp from the orifice. Finally the caecum was assessed to exclude evidence of immediate complications.

**Results** There were no intra or post operative complications. The patient was discharged the day following the procedure and histology confirmed a tubulovillous adenoma with low grade dysplasia. A check colonoscopy will be performed three months after the procedure.

**Conclusions** Laparoscopic EMR enables resection of complex colonic polyps that are not amenable to expert colonoscopic intervention alone whilst avoiding bowel resection and its associated risks.

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#### LAPAROSCOPIC ASSISTED ENDOSCOPIC MUCOSAL RESECTION REDUCES THE NEED FOR BOWEL RESECTION FOR COMPLEX COLONIC POLYPS

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**Introduction** The incidence of benign complex colonic polyps is increasing. Lesion size, position or access difficulties may restrict endoscopic removal even with expert therapeutic colonoscopist input. Laparoscopic Assisted Endoscopic Mucosal

Resection (Laparoscopic EMR) may facilitate polyp removal and avoid colonic resection and its risks. Our aim was to assess outcomes after Laparoscopic EMR for the removal of selected complex colonic polyps.

**Methods** A retrospective review was performed of consecutive Laparoscopic EMR patients between September 2008 and October 2018 in a tertiary referral unit. All included lesions and patients were prospectively assessed and discussed in a Complex Polyp Multi Disciplinary Team Meeting. Decisions confirming the suitability for Laparoscopic EMR were made when complex colonoscopic intervention alone was not feasible due to polyp size or access difficulties or had previously been unsuccessful.

**Results** There were 50 patients treated in the series. Median polyp size was 40 mm (range 8–90 mm) with 50% located in the caecum. Indications for laparoscopic EMR included difficult access (46%), size (28%) or both (24%). Endoscopic assisted laparoscopic appendicectomy was required in 8% of patients. There was a 12% intraoperative conversion rate to bowel resection. Postoperative complications included one bleed requiring re-operation and two urinary retentions. Median length of stay was 1 day. Final histology demonstrated malignancy in 5 polyps (9.6%). Two of these had been converted during their initial procedure as cancer was suspected during the intra operative assessment of the polyp. The remaining three had a subsequent bowel resection after discharge. Incidence of residual disease at first surveillance was 10% and all were successfully treated by colonoscopy. There was no polyp recurrence during colonoscopic surveillance over a median follow up of 77.5 months.

**Conclusions** Laparoscopic EMR avoided bowel resection in 82% of patients selected for this procedure. This technique provides a safe option for complex colonic polyps where advanced colonoscopic intervention alone is either unfeasible or unsuccessful with the benefits of low morbidity and excellent long term outcomes.

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#### ARTIFICIAL INTELLIGENCE INCREASES ADENOMA DETECTION EVEN IN 'HIGH-DETECTOR' COLONOSCOPY: EARLY EVIDENCE FOR HUMAN: MACHINE INTERACTION

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**Introduction** Artificial intelligence (AI)-driven polyp detection (PD) modules to assist colonoscopy in real time are now commercially available. Early controlled studies suggests that polyp detection rates (and by inference adenoma detection rates (ADR)) and mean adenomas per patient (MAP) is improved by using such a module. We wished to examine the real-world effect of AI-PD on ADR and MAP.

**Methods** As service evaluation, the GI Genius™ module (Medtronic, Ltd) was used by three 'high-detector' colonoscopists for index colonoscopy procedures over three months (the 'active' period). Data was collected prospectively. Results were compared to the three months immediately preceding use (the 'baseline'), as well as for two months after the active period, when the device was intentionally not used ('inactive'). Withdrawal time included time taken to resect lesions.

**Results** Data from 163 index procedures were analysed (mean age 65.8±4.8y; 69F). During the active period, ADR increased