Results 215 patients (median age 73 years, 50.7% males) underwent 250 procedures - 153 patients had a final diagnosis of malignancy and underwent 163 procedures, 62 patients had a final diagnosis of benign pathology and underwent 87 procedures. 246 (98.4%) samples were deemed adequate for cytological analysis.

Results of biliary brushings are enclosed in the table 1

	Inadequate	Benign	Atypical	Suspicious	Malignant
Final diagnosis of malignancy n= 163	4	38	33	28	60
Final diagnosis benign n= 87	0	82	1	4	0
Key					
	False negatives				
	True positives				
	True negatives				
	False positives				

Abstract PTH-014 Table 1

Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were 55.1%, 95.4%, 95.6%, and 53.9% respectively [with atypia included as false negative in patients with cancer as final diagnosis]. The overall accuracy of the test was 69.3%.

Conclusion Our study confirms that ERCP guided brush cytology for assessment of biliary stricture can be effective in a non-HPB centre with comparable rates of diagnostic yield to tertiary HPB centres. The low sensitivity (55.1%) indicates that biliary brushing alone is insufficient to rule out malignancy in a significant proportion of patients with a final diagnosis of malignancy. Further adjuncts like EUS and cholangioscopy are required to increase the diagnostic yield in biliary strictures.

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PTH-015 INFLAMMATORY REACTION PATTERNS AND MOLECULAR GENETICS IN HIGH-GRADE COLORECTAL ADENOMAS

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Introduction Inflammatory stromal changes are frequent findings in large colorectal adenomas that can contribute to neoplastic progression, but their role is not fully established in high-grade adenomas of the colon as predictors of coexistent invasive malignancy.

Methods ER of large colorectal adenomas (2011–2016) were analysed. A subset containing high-grade dysplasia, intramucosal cancer or invasive cancer was identified and subjected to detailed histopathological analysis: ulceration, distribution of high-grade dysplasia, dysplastic nuclear grade, presence/distribution of necrosis, and distribution of tumour-infiltrating

lymphocytes (TIL). Microdissection, DNA extraction and next-generation sequencing using a human clinically relevant tumour panel of 24 genes were performed separately for two areas with the highest morphological grade from each lesion.

Results ER was performed for 418 large (≥ 20 mm) adenomas. Histopathological genetic evaluation was available in 70 high grade cases. The extension of TIL positively correlated with the presence of coexistent adenocarcinoma, along with multifocal intraluminal necrosis and high nuclear grade. The presence of multifocal high-grade dysplasia was driven by different cooperative sets of genetic abnormalities regarding the TIL pattern: high-impact (TP53), and moderate impact (FLT4, ERBB2, RET/RAS/RAF/ERK) for an interface pattern, and high-impact (TP53, PDGFR, FGFR3), and moderate impact (TP53, ERBB2, KRAS, RET/FGFR3) for an interstitial pattern.

Conclusions A more extensive lymphocytic response contributes to the progression of adenomas and is associated with morphological changes of increased risk of adenocarcinoma (multifocal necrosis and high nuclear grade and abnormal TP53). An interface pattern expresses proliferative (receptor kinase) and vascular (FLT4) profile and the interstitial pattern outlines predominantly stromal (PDGFR, FGFR3) features.

PTH-016 RECURRENCE AFTER ADVANCED COLORECTAL ENDOSCOPIC RESECTION RESULTS IN A SUBSTANTIAL COST BURDEN

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Introduction Little is known about the cost of treating recurrence after colorectal endoscopic resection (ER). Endoscopic mucosal resection (EMR) has proven efficacy and safety and is the procedure of choice for the majority of western endoscopists. However, recurrence is not infrequent but no studies examine the cost associated with ER taking into account treatment for recurrence. We evaluated the *total* cost of ER at a tertiary centre.

Methods ER (EMR, ESD and Hybrid ESD) of large (≥ 20 mm) colorectal tumours with at least the first surveillance colonoscopy were included. Surveillance was performed at 3–6 months and 12 months. Procedure costs were based on NHS national tariffs. Total costs included the cost of all endoscopic or surgical treatments and surveillance to 12 months. Cost of treatment for patients with recurrent adenomas and those without were compared.

Results Of 626 ER of large colorectal tumours, 473 (98% of eligible patients) had undergone at least the first surveillance colonoscopy. Overall, recurrence occurred in 69 (14.7%). Patients with recurrence required a median of 2 ERs (range 2–6). 8 patients required surgery for recurrence. Mean cost of treating those with recurrence was £3976 *versus* £1539 for those without ($p < 0.001$). 51% of lesions had been subjected to prior failed attempts at resection or extensive (≥ 6) biopsy sampling and these were significantly more likely to recur (OR 3.8, 95% CI 2.1–6.9, $p < 0.001$). The cost of treating these patients was significantly more than those with minimal or no manipulation ($p = 0.001$). Recurrence was less likely after ESD (OR 0.25, 95% CI 0.08–0.82, $p = 0.01$).

Conclusion There is a substantial cost associated with the treatment of recurrence after ER which has not been considered in studies evaluating the efficacy of EMR. Injudicious prior manipulation contributes to the heavy cost burden. ESD should be evaluated more closely as it results in fewer subsequent treatments for recurrence and the possibility of longer surveillance intervals.

PTH-017 REGISTRAR-LEVEL TRAINING IN COLORECTAL ESD IN WESTERN PRACTICE: OUTCOMES OF INDEPENDENT TRAINEE PERFORMED ESD

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Introduction There are no published reports on registrar training in colorectal Endoscopic Submucosal Dissection (ESD) in western practice. It is unclear if any such training takes place in western centres where uptake of colorectal ESD has been slow and training, where it exists, is confined to experienced endoscopists who have already completed specialist training. We report our experience of registrar training in ESD and report outcomes from the first 10 cases completed by a trainee unassisted by a trainer.

Methods A registrar's ESD training over a 12 month period was evaluated after sequential training in colonoscopy, magnification endoscopy and endoscopic mucosal resection. The trainee had no prior first-operator experience in ESD. Cases were assigned by the trainer as either 'trainee to perform part' or 'trainee to complete'. Procedures were designated 'trainee completed, unassisted' if completed without the trainer handling the endoscope. A standardised ESD technique was employed. Outcomes for trainee completed cases included ESD proficiency (resection speed in cm²/hour), R0 resection and complications.

Results The trainee performed part or complete colorectal ESD for 22 cases over the study period of which 10 were completed en bloc unassisted by trainer (mean size 48 mm, range 22 mm-110 mm). 8 of 9 cases assigned 'trainee to complete' were successfully completed unassisted, and 2 cases assigned 'trainee to perform part' were completed unassisted. Lesions were located in the rectum (n=8) and sigmoid (n=2). 1 case was performed under general anaesthetic due to extreme size (110 mm) and patient tolerance. Mean proficiency for unassisted trainee completed cases was 12.7 cm²/hour. There were no perforations and 1 case of post procedure bleeding managed with observation alone. R0 resection was achieved in 100%, including a case of submucosal invasive cancer.

Conclusions Registrar level training in ESD in western centres is feasible and safe. With appropriate prior diagnostic and EMR training, progress in ESD training is rapid and good proficiency (speed of resection) is achieved even for initial unassisted cases whilst clinical and oncological safe outcomes are maintained.

PTH-018 SHORT-TERM OUTCOMES OF A PROTOCOL OF ESD/HYBRID-ESD AS THE PRIMARY RESECTION STRATEGY FOR RECTAL ADENOMAS

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Introduction ESD is rarely practiced in western centres. Given its technical difficulty, many western experts believe indications for ESD are limited. However, histopathologic diagnostic and treatment uncertainty resulting in over- or under-treatment can have grave consequences in the rectum. As a result, our unit recently opted for the exclusive use of ESD/Hybrid ESD to resect all large rectal adenomas. We report short term outcomes using this protocol for 12 months.

Methods Endoscopic resection (ER) of large (≥ 20 mm) colorectal adenomas were analysed and outcomes compared after adoption of an exclusive ESD resection strategy for all rectal adenomas ≥ 20 mm for 12 months (Period 2) compared to earlier resections (Period 1) when resection strategy was based on lesion morphology, surface characteristics and ER experience.

Results ER was performed for 185 rectal adenomas (period 1 n=154, Period 2 n=31) with a mean size of 63 mm (range 20-160 mm). ESD/Hybrid ESD was used for 97% of ER in Period 2 *versus* 61% in Period 1 ($p < 0.001$). A trainee performed part or all of 52% of ERs in Period 2 *versus* 7% in Period 1 ($p < 0.001$). There were no differences between time periods in complications (OR 0.4, 95% CI 0.1-3.6, $p = 0.44$) post procedure bleeding (OR 1.0, 95% CI 0.1-8.8, $p = 1$) or risk of stenosis (OR 1.7, 95% CI 0.2-16.7, $p = 0.66$). Rates of submucosal invasive cancer were similar (12.9% *versus* 7.8%, $p = 0.36$). There were no clinically significant perforations in either group.

Conclusions ESD/Hybrid ESD for all large rectal adenomas, even when incorporating ESD training, is feasible and safe with sufficient expertise and experience. Data for long term outcomes are desirable to evaluate potential benefits in oncological results, reduced recurrence and potential fewer additional procedures.

PTH-019 EFFICACY OF FCSEMS FOR REFRACTORY CBD STONES AT A SINGLE CENTRE OVER THREE YEAR PERIOD

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Introduction 10-20% of patients have 'complex' CBD stones whereby extraction by ERCP is unsuccessful despite additional techniques, due to stone impaction and/or stone size. Cholangioscopy with laser/electrohydraulic lithotripsy is efficacious in patients with refractory stones but is normally only available in tertiary centres. Herein, we report the effect of introducing an