

placed jejunostomy (SJ). Direct percutaneous endoscopic jejunostomy (DPEJ) is increasingly used as an alternative to these modalities: Avoiding the intrinsic problems associated with the narrow calibre PEG-J and the tendency of displacement and retrograde migration; and is less invasive than SJ insertion, which also requires an enterotomy and enteropexy. Although progress with deep enteroscopy over the last decade has facilitated DPEJ placement, the presence of post-surgical intra-abdominal adhesive disease may still reduce success rates and procedure safety. In this setting, miniport laparoscopic-assisted DBE (lap-DBE) has the potential to provide safe and successful placement while maintaining the relatively minimally invasive approach of the endoscopic pull-through technique.

**Methods** Prospective assessment of outcomes of DPEJ placement by DBE and lap-DBE placed at our tertiary referral institution since June 2012.

**Results** 10 patients (6 [60%] female, median age 40 years [range: 27–43 years]) with chronic gastroparesis underwent DBE or lap-DBE facilitated DPEJ placement. Miniport laparoscopic assistance was only required in patients with a history of abdominal surgery (30% [3/10]) and allowed us to identify and divide any underlying adhesions laparoscopically, facilitating DPEJ placement under direct endoscopic and laparoscopic vision, without the need for an enterotomy or surgical enteropexy. In this series DPEJ placement was successful in all 10 patients: Estimated depth of insertion [mean±SD] 66 ± 12 centimetres post-pylorus and procedure time [mean±SD] 49 ± 114 min. There were no immediate procedure-related complications and no delayed complications, morbidity or mortality at a mean follow-up of 339 days [range: 175–576 days].

**Conclusion** DPEJ placement by DBE is successful and safe. In patients with a history of abdominal surgery and underlying adhesive disease, lap-DBE should be considered, as it may enhance procedure success and safety.

**Disclosure of Interest** None Declared.

**PTU-057 THE “POOR MAN’S CELL-BLOCK” SAMPLE PREPARATION METHOD FOR EUS-FNA OF MEDIASTINAL AND RETROPERITONEAL LESIONS DOES NOT REQUIRE ATTENDING PATHOLOGY STAFF OR CYTOLOGY EXPERTISE**

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**Introduction** We present a novel technique of sample preparation for endoscopic ultrasound (EUS) that is simple, convenient and yields a high diagnostic success rate. EUS-guided fine needle aspirate (FNA) is increasingly used to obtain tissue in the mediastinum and retroperitoneum. Compared with surgical biopsy, EUS is minimally invasive and safe. The procedure, however is not without risk and can occasionally be poorly tolerated. It is therefore imperative that sampled tissue is optimally prepared. Ideally sample preparation should be simple without the need for an attending pathologist, and enable specific diagnosis and prognostics. The novel “poor man’s cell block”<sup>1</sup> (PCMB) technique, recently adopted in our institution for all EUS FNA, fulfils this need.

The PCMB technique allows the entire sample to be processed “as a biopsy”. No slide preparation skills are needed and pathology staff need not be present. Special equipment or centrifugation is unnecessary, and samples can be reported without

specific expertise or training in cytopathology. PCMB enables additional studies such as immunohistochemistry to enable subclassification and risk stratification of some neoplasms.

**Methods** All mediastinal and retroperitoneal histology/cytology reports since starting we started using the PCMB technique (2012–2013) were retrieved from the pathology database.

**Results** 23 mediastinal and 33 retroperitoneal reports were retrieved, of which 18 mediastinal and 27 retroperitoneal samples respectively were prepared with the PCMB technique.

All of the mediastinal PCMB samples (100%) were diagnostic. Neoplasms were accurately subclassified, and several benign samples were corroborated by the presence of non-necrotising granulomas.

63% of retroperitoneal PCMB samples were diagnostic. More specific diagnoses were afforded by the PCMB technique vs cytology (stromal and perineural invasion was seen in many pancreatic PCMB samples, enabling a “definitive” invasive diagnosis). In addition, a spindle cell GIST, and well differentiated endocrine carcinoma were diagnosed and both approximately graded/risk stratified.

**Conclusion** The PCMB technique is a simple, reliable and cost-effective EUS-FNA sample preparation technique that in our hands appears superior to conventional cytology preparations (83% diagnostic rate PCMB vs 57% cytology). We suggest PCMB can be reported by pathologists without cytology training/expertise. PCMB allows more accurate diagnosis with the additional benefit of immunohistochemistry allowing more accurate diagnosis and risk stratification for some neoplasms.

**REFERENCE**

Mayall, F, Darlington, A. The poor man’s cell block. *J Clin Pathol* 63:837–838.

**Disclosure of Interest** None Declared.

**PTU-058 MACHINE LEARNING CREATES A SIMPLE ENDOSCOPIC CLASSIFICATION SYSTEM FOR DETECTING DYSPLASIA IN BARRETT’S OESOPHAGUS WITH I-SCAN IMAGING AND OPENS THE WAY TO STANDARDISED TRAINING AND ASSESSMENT OF COMPETENCE**

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**Introduction** Barrett’s oesophagus (BE) is the pre-cursor for oesophageal adenocarcinoma. Endoscopic surveillance is performed to detect dysplasia in BE as it is likely to be amenable to curative treatment. Current surveillance relies on white-light endoscopy to obtain 4-quadrant biopsies through every 2cm of the BE segment. This samples less than 5% of the BE epithelium and is likely to miss dysplasia.

A novel endoscopic image enhancement technology, *i-Scan* (PENTAX HOYA, Japan), has been developed to improve lesion recognition in the gastrointestinal tract (GIT). *i-Scan* uses post-processing light filtering to provide real-time analysis and enhancement of the mucosa and microvasculature.

We evaluated the accuracy of *i-Scan* using a mucosal (M) and vascular (V) classification system for BE amongst 3 expert (consultant) endoscopists. Machine learning (ML) generates simple rules, known as a decision tree, to improve dysplasia detection and validate our classification system. To our knowledge, ML has never been applied for dysplasia detection in the GIT.

**Methods** High definition video recordings were collected from patients with non-dysplastic (ND-BE) and dysplastic (D-BE) BE undergoing endoscopy at UCLH. A protocol was used to record areas of interest after which a matched biopsy was taken to confirm the histological diagnosis. In a blinded manner, videos were shown to 3 expert endoscopists who interpreted them based on their M and V patterns, presence of nodularity, ulceration and suspected diagnosis. Acetic acid (ACA) was used in some cases. Data was inputted into the WEKA package to construct a decision tree for dysplasia prediction.

**Results** Videos from 47 patients (13 before and after ACA) were collected (24 ND-BE, 23 D-BE). Cases in which ACA was used, 7 had ND-BE and 6 D-BE. Experts' average accuracy for dysplasia prediction was 72.2% (66.7–76.7%). ACA did not improve dysplasia detection. In 5 cases all 3 experts failed to detect D-BE.

Using ML, the most important attribute was the lesions' V pattern. If this was reported abnormal (irregular, dilated vessels) by more than one doctor, the lesion was D-BE (accuracy 79%). If D-BE was predicted despite the V pattern being reported abnormal by one or fewer experts, the lesion was still D-BE and vice versa.

**Conclusion** Experts can diagnose D-BE in up to three-quarters of cases using i-Scan. ML can define rules learnt from expert opinion that predict dysplasia with a similar level of accuracy and are easier to learn than conventional classification systems. They could be used to train non-expert endoscopists in dysplasia detection and then used for blinded assessment of accuracy.

**Disclosure of Interest** None Declared.

#### PTU-059 COMPARISON OF BIPOLAR RADIOFREQUENCY CUTTING AND MONO POLAR CUTTING FOR ENDOSCOPIC SUBMUCOSAL DISSECTION (ESD) IN A PORCINE MODEL

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**Introduction** Current endoscopic knives utilise mono-polar energy to incise the mucosa, dissect the submucosa and coagulate bleeding vessels. Monopolar devices have proven efficacy but remain technically challenging to use with the risk of major complications.

**Methods** A new bipolar endoscopic device "Speedboat-RS2, (S-RS2) Creo Medical Ltd, UK" was compared to a standard mono-polar endoscopic device (Flush-knife-BT/F-BT/Fujifilm, Japan) for endoscopic submucosal dissection (ESD) in the porcine colon. The S-RS2 blade delivers bipolar radio frequency (RF-400 KHz) cutting and microwave coagulation (5.8 GHz) for hemostasis, and contains a retractable needle for submucosal

injection/tissue irrigation. It also has an insulated hull to prevent thermal injury to the underlying muscle layer. ESD was performed in a random order and video recorded on 5 consecutive 60kg pigs. The following parameters were measured: time taken to complete resection, complications encountered and histological assessment. Two animals were recovered for one week and four animals for four weeks.

**Results** Ten consecutive resections were performed in the colorectum (2 per animal), 5 with S-RS2 and 5 with F-BT. Median time for S-RS2 to complete a resection was 44 min using RF cutting 30W, and for F-BT was 52min using monopolar cutting for mucosal incision (80W) and for submucosal dissection, monopolar forced coagulation 30W. Median flap size for S-RS2 was 36.8mm and for F-BT was 43mm. Microwave coagulation was applied for either minor bleeding or visible vessels on 25 occasions with S-RS2. Monopolar coagulation was applied 14 times with F-BT, mean energy 30W. The Hemostatic Coagrasper was used 7 times to control arteriolar bleeding during S-RS2 dissection when microwave was not sufficient and only once during Flushknife-RS2 dissection. Endoclips were placed to treat deep muscle injury in the resection base on 10 occasions in the F-BT resections (15clips placed) and on 3 occasions (3 clips) for the S-RS2 resections. There was only one study perforation – F-BT group, where urgent peritoneal decompression was required and the resection was abandoned. Histology (S-RS2 resections) showed an intact muscle layer in four resection bases and in one there was slight muscle alteration but muscle cell viability was retained. The muscle layer was absent in two F-BT resection bases and moderately altered in one.

**Conclusion** Compared to Flush knife-BT ESD colonic resections (monopolar) the Speedboat-RS2 was associated with less muscle injury and need for endoscopic clipping. However Speedboat-RS2 resections produced more intraprocedural bleeding requiring the haemostatic forceps.

**Disclosure of Interest** Z. Tsiamoulos Consultant for: Creo Medical Ltd, C. Hancock Shareholder of: Creo Medical Ltd, P. Sibbons Paid instructor for: Creo Medical Ltd, B. Saunders Consultant for: Creo Medical Ltd, Paid instructor for: Olympus KeyMed.

## Inflammatory bowel disease I

#### PTU-060 VACCINATING PATIENTS WITH IBD-STILL TO BEGIN, AT THE BEGINNING...

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**Introduction** Evolving definitions of disease control over the last decade have translated into earlier and often combined use of immunomodulatory (IM) therapy with the aim of achieving deep

**Abstract PTU-060 Table 1** Data on Vaccinations administered to patients on immunomodulators

	Aza (IBD patients) n = 7	Aza (non IBD patients) n = 65	Metx (IBD patients) n = 31	Metx (non IBD pts) n = 415	6MP (IBD pts) n = 6	6MP (non IBD pts) n = 7	Total patients on IM n = 594
Influenza vaccine.	37 (52.9%)	49 (75.4%)	23 (74.2%)	317 (76.4%)	2 (33.3%)	2 (28.6%)	430 (72.4%)
Hepatitis B vaccine	5 (7.1%)	18 (27.7%)	2 (6.5%)	21 (5.1%)	0	0	46(7.7%)
HPV vaccine (females)	2 (6.8%)	2 (4.7%)	0	4 (1.3%)	1 (50%)	0	9(2.3%)
MMR vaccine	16 (22.9%)	5 (7.7%)	1 (3.2%)	12 (2.9%)	1 (16.7%)	1 (14.3%)	36 (6.1%)
Pneumococcal vaccine	28 (40.0%)	43 (66.2)	18 (58.1%)	259 (62.4)	2 (16.7%)	3 (42.9%)	353 (59.4%)