abnormal reflux. Interestingly, 4 patients with normal motility (CC) did have ineffective swallows (<40% swallows), and the removal of these patients, resulted in the redefined cohort having no abnormal proximal reflux. Across all patients reflux bolus exposure time correlated with gastroesophageal pressure gradient (GEPG) (r=0.479;p=0.009), which became stronger when only patients with normal motility were examined (CC: r=0.664;p=0.018; redefined: r=0.881;p=0.004). There was no association in hypo-contractility, likely due to the presence of ineffective motility, which correlated with reflux bolus exposure time (r=0.422;p=0.133). Patients with hypo-contractility had a lower Forced Vital Capacity percent predicted (49%(40–68)%) than patients with normal motility (67%(61–72)%;p=0.04).

Conclusions Ineffective oesophageal motility was associated with increased reflux exposure, with many events reaching the proximal oesophagus, irrespective of whether patients had hypo- or normal motility; likely driven in part by increased GEPG. Furthermore, such motility abnormalities appear to associate with pulmonary dysfunction.

P332 INTRA-SPHINCTERIC BOTULINUM TOXIN INJECTION IN THE MANAGEMENT OF FUNCTIONAL BILIARY PAIN: IS IT EFFECTIVE?

Shyam Menon*, Andrew Holt, Adam Farmer. *The Royal Wolverhampton Nhs Trust, Wolverhampton, UK*

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Introduction The management of Type III sphincter of oddi dysfunction (SOD), or functional biliary pain syndrome, remains challenging. Evidence from the EPISOD study suggests that there is no role for biliary or pancreatic endoscopic sphincterotomy in treating functional biliary or pancreatic pain.[1]Intra-sphincteric ampullary botulinum toxin injection has been reported to be effective in managing pancreaticobiliary pain by a combination of its anti-spasmodic effect on the sphincter of oddi and its general anti-nociceptive properties. We have been using ampullary botulinum toxin injection in conjunction with neuromodulatory drug therapy in managing functional bilio-pancreatic pain and review our experience of this management strategy.

Methods A retrospective review of case notes over a 5-year period (2014–2019) was performed. The diagnosis of Type III SOD or functional biliary pain was made in post cholecystectomy patients following extensive laboratory, radiological and endoscopic investigations. Patients with typical pre-cholecystectomy pain, normal duct size and normal liver function tests were identified as Type III SOD or functional biliary pain, in line with the modified Milwaukee criteria. Intra-sphincteric botulinum toxin A injection was performed in a quadrantic fashion across the ampullary face. The efficacy of ampullary botulinum toxin injection on pain was recorded at post-procedure outpatient review using a nominal pain scale. Opioid analgesia and frequency of hospital admissions were noted, in addition to neuromodulatory medication initiated at the time of endoscopy or at subsequent outpatient review.

Results 119 patients (109 females, 10 males, mean age 45 (17–77) years)) with severe bilio-pancreatic pain underwent 411 intra-sphincteric botulinum toxin injection procedures (mean 2 (1–15) procedures). The median dose of botulinum toxin used was 200 (100–600) units. 43% and 55% of patients respectively were on regular or intermittent opioids for managing pain.

103 patients (87%) reported a significant improvement in pain with 77% of patients managing to discontinue opioids. 76% did not have any acute hospital admissions or emergency department attendances for pain management. 59% of the cohort were initiated on Amitriptyline (TCA), 18% onto Duloxetine (SNRI), 13% onto Pregabalin and 3% on mirtazapine (NaSSA) to treat their pain syndrome. Loss of response with the initial dose of botulinum toxin occurred in 56% of patients. Pain control was re-established in 80% of patients in this cohort following botulinum toxin injection at a higher dose to the previous o the previous effective dose. There were no procedural related complications.

Conclusions Intra-sphincteric botulinum toxin injection is an effective and useful management strategy in conjunction with neuromodulatory agents in functional biliary pain/Type III SOD.

P333 BASELINE MUCOSAL IMPEDANCE PREDICTING THE OUTCOME OF BRAVO PH STUDY

[1,2]Ismail Miah*, [1]Jafar Jafari, [2]Jeremy Sanderson, [2]Peter Irving, [1,2]Terry Wong. *[1]Oesophageal Laboratory, Guy's and St Thomas' NHS Foundation Trust, London, UK; [2]Faculty of Life Sciences and Medicine, King's College London, London, UK*

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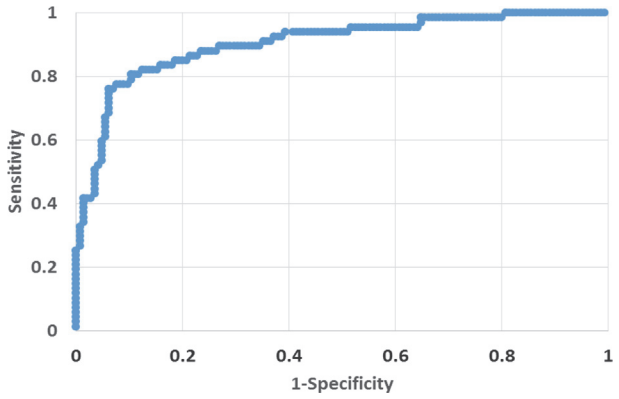
Introduction We have previously shown wireless Bravo pH monitoring (WBM) to increase the diagnostic yield of GORD in patients with normal multichannel impedance-pH monitoring (ZPM).[1] The decision factor to further investigate these patients on WBM after normal ZPM is unknown. This study examines the baseline mucosal impedance (BMI) to predict the outcome of WBM.

Method This is a retrospective study of patients with normal ZPM study (off PPI therapy) who underwent WBM (off PPI therapy) between 2010 and 2019. ZPM was performed using Sandhill Scientific catheters (ZAI-BG-44) and distal BMI was measured up to 7 cm from the manometric gastro-oesophageal junction. The BMI recording period was between 1 am to 6 am when no activity was observed. WBM was performed for 2 days using Given Imaging Bravo capsule that was placed endoscopically 6 cm above the Z-line. The diagnosis for pathological reflux was based on combined 48 hours.[2]

Statistical *t*-test was used to compare BMI between normal and pathological states on WBM study. Receiver operating curve (ROC) was plot to assess for critical BMI threshold to predict pathological reflux on WBM. Fisher exact test along with odds ratio (OR) were calculated to assess the critical BMI threshold. Positive predictive value (PPV) for GORD and negative predictive value (NPV) for absence of GORD were also computed with respect to the BMI critical threshold.

Results Total number patients selected were 212 (F: M=150:62, aged 20–81 years old). The mean BMI recording period was 33 minutes (20–130 minutes).

BMI was significantly reduced in the pathological reflux group found on WBM (p<0.0001). The ROC revealed critical BMI threshold of 2135Ω (sensitivity=87.6%, specificity=82.1%, Youden's J index=0.700)(85% of the area covered below the curve) (see figure 1). On investigating the WBM with pathological outcomes when BMI ≤2100Ω produced an OR of 29.3 and a *p*-value <0.0001 was observed. The PPV for presence of GORD on WBM when BMI≤2100Ω is 75%



Abstract P333 Figure 1 ROC for BMI predicting pathological reflux on WBM

and the NPV for absence of GORD on WBM when BMI>2100Ω is 90.7%.

Conclusion Patients with normal ZPM and a BMI ≤2100Ω increases the likelihood of pathological reflux on WBM monitoring. We recommend this category of patients to be considered for WBM.

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P334 MEASURING OESOPHAGEAL TRANSIT WITH MULTICHANNEL INTRALUMINAL IMPEDANCE; AN ALTERNATIVE TO BARIUM SWALLOW

[1,2]Ismail Miah*, [1,2]Terry Wong, [2]Jeremy Sanderson, [2]Peter Irving, [1]Jafar Jafari. [1]*Guy's and St Thomas' NHS Foundation Trust, London, UK*; [2]*Faculty of Life Sciences and Medicine, King's College London, London, UK*

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Introduction Barium swallow is a common investigation to assess oesophageal transit. However, the technique is affiliated with radiation exposure and indigestion of barium sulphite contrast. Unlike barium swallow technique, the multichannel intraluminal impedance transit (MIIT) offers quantitative measure and may be overall cost-effective.

This study assesses the oesophageal transit time using MIIT in normal oesophageal motility and obstructive oesophageal disorders.

Method Patients were selected between January 2018 and December 2019 who underwent two investigations during fasting periods:

i. High-resolution manometry (HRM) study based on Chicago Classification diagnosis.[1]
ii. MIIT assessment with drinking 200 ml of saline and measuring the oesophageal transit time for clearance[2]

Based on,[1] patients with normal HRM without dysphagia were categorised to control group and dysphagia patients were categorised into OGJ outflow obstruction (OGJOO) and achalasia groups.

Abstract P334 Table 1 oesophageal transit time (minutes) in control and patients groups

Group	N	Mean [median]	Standard deviation	5%-95%CI	Range
Control	38	0.37 [0.32]	0.14	0.32 – 0.41	0.15–0.78
OGJOO	40	2.53 [2.6]	0.88	2.26 – 2.81	0.73–3.90
Achalasia	42	37.7 [36]	21.12	34.4 – 47.3	5.6–84

Statistical Prism software was used to plot receiver operating curve (ROC) to ascertain critical oesophageal transit time between control group and patient groups. Appropriate *t*-test and Fisher exact tests were employed to assess statistical significance.

Results Total number of 117 patients were selected (F: M=74:43, age 18–84 years old). There was statistical significant differences in the MIIT comparing the control group against OGJOO group ($p<0.0001$) and against the achalasia group ($p<0.0001$). Statistical differences were also found by comparing OGJOO and achalasia patient groups ($p<0.0001$). The descriptive statistical data are documented in table 1.

According to the ROC analysis, oesophageal transit time of 0.76 mins will differentiate between normal and OGJOO disorder (sensitivity=91.2%-100%, specificity=86.2%-99.9%). Oesophageal transit time of 3.9 mins will differentiate between OGJOO and achalasia (sensitivity=91.6%-100%, specificity=86.8%-99.95).

Conclusion MIIT can differentiate patients with normal oesophageal motility and obstructive disorders. Therefore, there is a provision for using this method which is readily available during reflux monitoring as an alternative to barium swallow.

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P335 MULTICHANNEL INTRALUMINAL IMPEDANCE TRANSIT TESTING IN PATIENTS WITH FUNCTIONAL DYSPHAGIA

[1,2]Ismail Miah*, [1,2]Terry Wong, [2]Jeremy Sanderson, [2]Peter Irving, [1]Jafar Jafari. [1]*Guy's and St Thomas' NHS Foundation Trust, London, UK*; [2]*Faculty of Life Sciences and Medicine, King's College London, London, UK*

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Introduction Dysphagia symptoms cannot always be explained by endoscopy or radiology investigations and clinicians may refer their patients for high-resolution manometry (HRM) when suspecting motility related dysphagia. There are a cohort of patients for whom HRM also could not explain their dysphagia.

In this study, we perform the multichannel intraluminal impedance transit (MIIT) study to assess the oesophageal transit time (OTT) in patients with unexplained dysphagia.

Method Patients were selected between January 2018 and December 2019 who had normal oesophageal motility testing according to Chicago Classification (CC)[1] and underwent MIIT testing by drinking 200 mL of saline to measure the OTT.[2]Patients were then categorised into dysphagia group (patient group) and asymptomatic of dysphagia group (control group). The OTT of the patient group were compared to the