

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-contraction, likely due to the presence of ineffective motility, which correlated with reflux bolus exposure time ( $r=0.422$ ;  $p=0.133$ ). Patients with hypo-contraction 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*

10.1136/gutjnl-2020-bsgcampus.406

**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.<sup>1</sup>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 or 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**

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

10.1136/gutjnl-2020-bsgcampus.407

**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).<sup>1</sup> 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.<sup>2</sup>

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 2135 $\Omega$  (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  $\leq$ 2100 $\Omega$  produced an OR of 29.3 and a *p*-value  $<0.0001$  was observed. The PPV for presence of GORD on WBM when BMI  $\leq$ 2100 $\Omega$  is 75%