and endoscopic investigations performed up to 5 years previously were reviewed. Episodes of negative investigations were considered ‘missed’ opportunities for diagnosis. Clinical outcomes were compared using chi-squared test and Kaplan-Meier survival curves.

**Results**

396 colorectal cancers were identified with 214 (54%) males and median age 72. Of these, 29 (7%) patients had undergone negative investigations including colonoscopy (n = 8), flexible sigmoidoscopy (n = 7), barium enema (n = 7) and CT for abdominal symptoms (n = 20) (‘missed’ group) within the previous 5 years, median 817 days prior to diagnosis. Age, mode of presentation, tumour site, pT and pN stage were comparable between groups. Metastases at presentation were more common in the ‘missed’ group, pT and pN stage were comparable between groups. In-vivo characterisation of small colonic polyps has been reported using several technologies but with few prospective comparisons between them. We aimed to compare the accuracy of Flexible Spectral Imaging Colour Enhancement (FICE) and i-Scan in the assessment of polyps < 10mm. In addition the relationship between accuracy of white light assessment (WL) and resolution of endoscope was assessed.

**Methods**

Patients undergoing screening colonoscopy through the UK BCSP were prospectively recruited. All procedures were performed by a single endoscopist with extensive experience in in-vivo diagnosis. For the FICE group Fujinon 410,000 pixel CCD and 650,000 pixel CCD colonoscopes were used with an EPX 4400 processor. For the i-Scan group Pentax 1.2 Megapixel colonoscopes were used with an EPKi processor. All polyps < 10mm were assessed sequentially using white light endoscopy (WL) and either FICE or i-Scan before resection. Predicted histology was recorded with both modalities and compared to the final histopathological diagnosis. In-vivo characterisation accuracy was analysed based on the resolution of the endoscopes used; standard definition - SD (410K pixel), high definition – HD (650K pixel) and HD+ (1.2M pixel).

**Results**

In the FICE group 293 polyps of mean size 4.7mm were assessed in 170 patients. In the i-Scan group 209 polyps of mean size 4.3mm were assessed in 84 patients. There was no significant difference in WL accuracy between SD and HD endoscopes (70% vs 72.7%, p = 0.606), however accuracy was significantly higher with the HD+ 1.2megapixel CCD endoscopes (93.3%) compared to both the SD (70.0%, p = 0.0001) and HD (72.7%, p = 0.0001) endoscopes. Sensitivity was significantly greater with FICE using an HD endoscope compared to an SD endoscope (92.6% vs 83.3%, p = 0.048). Overall accuracy was significantly greater with HD+ i-Scan (94.7%) than SD FICE (82.7%, p = 0.0005) and HD FICE (88.3%, p = 0.0459). The use of FICE improved accuracy from 70.0% with WL to 82.7% (p = 0.014) and from 72.7% with WL to 88.8% (p = 0.001) for SD and HD endoscopes respectively. Only a minor gain over WL was seen with addition of iScan (93.3% to 94.7%, p = 0.68).

**Conclusion**

In-vivo characterisation of small colonic polyps has been reported using several technologies but with few prospective comparisons between them. We aimed to compare the accuracy of Flexible Spectral Imaging Colour Enhancement (FICE) and i-Scan in the assessment of polyps < 10mm. In addition the relationship between accuracy of white light assessment (WL) and resolution of endoscope was assessed.

**Disclosure of Interest** None Declared.

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**Abstract PTH-015 Table 1**

<table>
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<th>Sensitivity</th>
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<td>HD WL</td>
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<tr>
<td>HD+ i-Scan</td>
<td>97.0</td>
<td>90.7</td>
<td>94.7</td>
</tr>
</tbody>
</table>

**Conclusion**

1. Only a small, non-significant gain in WL accuracy is seen between a 410K pixel SD endoscope and a 650K pixel HD endoscope. However diagnostic accuracy with WL improves significantly with a 1.2 megapixel endoscope.
2. FICE significantly improves accuracy when used with an SD or HD endoscope but the very high WL accuracy of a 1.2 megapixel endoscope allows no significant additional improvement with i-Scan.

**Disclosure of Interest** None Declared.

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**Disclosure of Interest** None Declared.
BSG abstracts

Introduction Defecating scintigraphic proctograms (DSPs) have an established position in the investigation of evacuatory problems and ano-rectal symptoms. Functional radionuclide imaging allows for both the assessment of rectoceles and correlation with evacuatory function.

Methods 151 consecutive DSPs carried out over a 3-year period were reviewed. Clinical details of presenting symptoms were reviewed with the study results. All studies were reviewed for evidence of anatomical abnormalities and function via % excretion. The % excretion was analysed in those with and without a rectocele and compared with symptoms (constipation, incontinence, rectal pain and evacuatory difficulty). The mean % excretion for each symptom (present/absent) was calculated and compared with a t test.

Results Of the 151 patients, 25 were unable to defecate and no results were available. There were 8 males, 143 females. Mean age range 55 +/- 14. 76% had a rectocele demonstrated. In all patients % excretion was significantly different in those with symptomatic evacuatory difficulty (% excretion; Constipation present/absent 65% v 62.8% p = 0.9, Incontinence present/absent 60% v 64.5% p = 0.46, Pain present/absent 67% v 62.1%, p = 0.24, Evacuatory difficulty present/absent 60.2% v 66.3% p = 0.05). Of those with a rectocele there was a non-significant trend to abnormality on excretory function (% excretion; Constipation present/absent 62.8% v 61.8% p = 0.8, Incontinence present/absent 60.9% v 62.6% p = 0.6, Pain present/absent 66.6% v 61.5%, p = 0.33, Evacuatory difficulty present/absent 59.7% v 65.9% p = 0.06). On those without a rectocele, there was no difference in excretory function in any symptom groups.

Conclusion In this large series DSPs identified rectoceles in 76% of studies. In those with a rectocele functional impairment was often present, with a trend to reduced % excretion seen. In those without a rectocele % excretion on DSPs did not differ in any symptom group. Larger reviews are needed to identify small sub-groups who may benefit from this study. The significant number with abnormalities found on DSPs suggests that this investigation may be underutilised in those with ano-rectal symptoms.

Disclosure of Interest None Declared.

P0218 TOWARDS NOVEL NON INVASIVE METHODS TO DIAGNOSE COLORECTAL CANCER USING AN ELECTRONIC NOSE (E-NOSE) AND FIELD ASYMMETRIC ION MOBILITY SPECTROMETRY (FAIMS)

Introduction Using an electronic nose (E-nose) we have previously demonstrated its ability to detect inflammatory bowel disease (IBD) by shifts in the patterns of volatile organic compounds (VOCs) in the gases and vapours that emanate from urine samples. A similar distinction could be made using FAIMS, which involves a different principle, but still with gas phase samples. Here, we have extended our work to detect colon cancer from odours from urine alone.

Methods Technology Principles: The E-nose uses an array of gas phase chemical sensors which are broadly tuned to different chemical groups (e.g. alcohols, gases). When a sample is presented to the sensor array, as each sensor is different, it will produce a unique response to that sample. By taking all of the sensor responses together, we can create a ‘bio-odorant fingerprint’ of that sample; thus mimicking the human olfactory system. FAIMS operates on similar principles, but produces its fingerprint by measuring the differences in mobility of ionised chemicals in high electric fields. 47 subjects were recruited; 20 with colonic adenocarcinoma (CRC) and 27 controls. The latter comprised 20 with ulcerative colitis (UC) in remission (defined as SCAI score < 4) and 7 healthy subjects. 10 ml urine aliquots were collected and stored frozen. For assay, the containers were first heated to 60 ± 0.1°C. The headspace (the air above the sample) was analysed by an AlphaMOS FOX 4000 E-nose and by an Owlstone Lonestar FAIMS instrument. Discriminant Function Analysis and Fisher Discriminant Analysis were used for statistical evaluation, respectively.

Results The E-nose (Figure 1) and FAIMS plots (not shown) shows those with CRC are tightly grouped and distinct from healthy controls and those with UC (p < 0.001).

REFERENCE

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Results The E-nose (Figure 1) and FAIMS plots (not shown) shows those with CRC are tightly grouped and distinct from healthy controls and those with UC (p < 0.001).
Symptoms of Findings and Correlation with Patient Symptoms

R I Rusu, N Beharry, A Irwin, S Heenan and A Poullis

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