

**P098 has been withdrawn**

## P099

### Evaluation of endoscopic mayo score with an artificial intelligence algorithm

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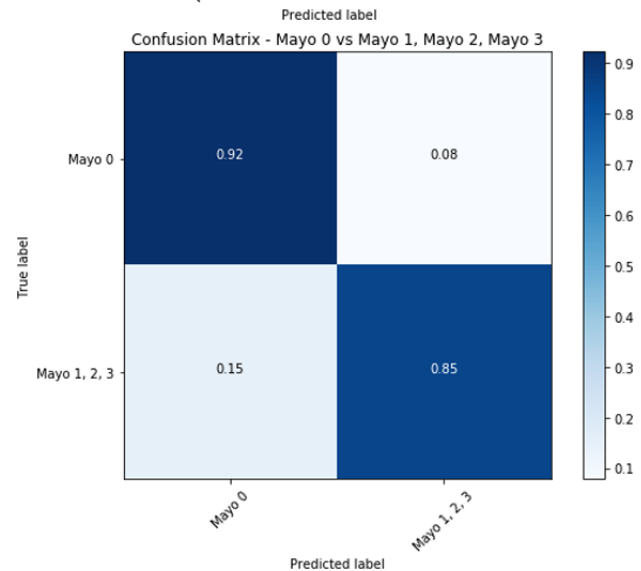
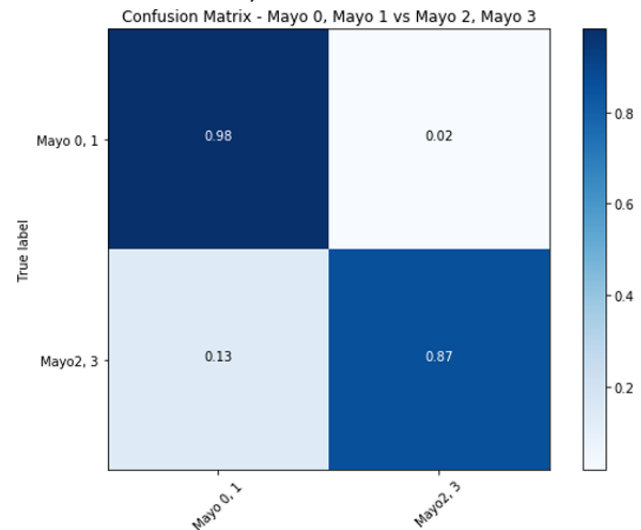
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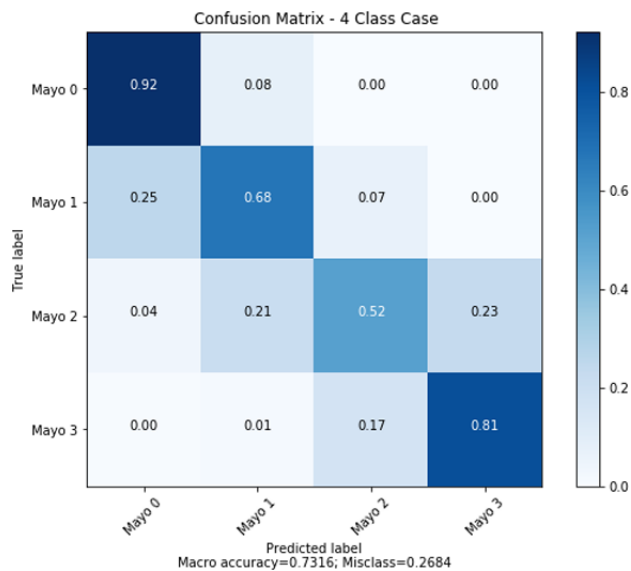
**Background:** Multi-layered convolutional neural networks are artificial intelligence (AI) algorithms that allow to process specific datasets. Endoscopic mayo score (EMS) is an endoscopic scoring tool for ulcerative colitis (UC) that is widely using for evaluating the disease activity to make a further treatment plan. EMS is an endoscopist-dependent subjective tool that varies according to the physician's experience. In this study, our aim was to create a high accuracy EMS diagnostic algorithm to minimize endoscopist-dependent inconsistency and standardize the patient care.

**Methods:** We collected the endoscopic images of UC patients between December 2011 and July 2019 from electronic database of our gastroenterology institute. Images with insufficient bowel cleaning, artifact, retroreflection images, terminal ileum images and pouch patients were excluded. Two blinded gastroenterologists evaluated and tagged the images according to the EMS. Images with a disagreement were excluded for a further evaluation. AI algorithm was performed with Python by using PyTorch library. The dataset was divided into two (85% was used for training and %15 was used for test). ResNet18 model was also used for training.

**Results:** A total of 19690 images of 572 patients from 1053 colonoscopies were identified for the study. The mean procedure number was 1.8 per patient and the mean image number was 18.7 for per colonoscopy. Four thousand and six hundred images without any disagreement between two gastroenterologists were included to the analysis. Two thousand eight hundred and thirteen (61.65%) images were tagged as EMS 0, 956 (20.66%) were tagged as EMS 1, 406 (8.77%) were tagged as EMS 2 and 413 (8.92%) were tagged as

EMS 3. Accuracy was found 73.16% with a sensitivity of 77.2% and specificity of 92.9% in assessment of all EMS groups (Image 1). Also, the accuracy of severe mucosal disease diagnosis (EMS 0 and 1 vs EMS 2 and 3) was 96.3% with a sensitivity of 98.2% and specificity of 86.5% (Image 2) with a perfect reproductivity ( $\kappa$ : 1.00). The performance of the remission diagnosis (EMS 0 vs EMS 1,2 and 3) was done with a 92% accuracy.





**Conclusion:** This is an ongoing study and the preliminary results of our EMS diagnosis algorithm was promising with a high accuracy. The accuracy and sensitivity would be improved by including more images and improving the algorithm. The use of AI in daily IBD practice can eliminate the subjectivity according to the endoscopist in diagnosis and assessing the disease severity for treatment decision.

## P100

### Higher yield of serrated and adenomatous dysplasia detected with chromoendoscopy when compared with high-definition in patients with Primary Sclerosing Cholangitis and Inflammatory colitis.

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**Background:** There is an increased risk of colorectal dysplasia/cancer in patients with primary sclerosing cholangitis and inflammatory bowel disease (PSC-IBD); cumulative risk of 14% at 5 years and 17% at 10 years. SCENIC (2015) consensus guidelines recommend surveillance with chromoendoscopy (CE) and use of a high definition (HD) scope with white light colonoscopy. We aimed to assess the value of CE and HD scope in detection of dysplasia in PSC-IBD. **Methods:** We analysed all colonoscopic surveillance performed for PSC-IBD between 2010–2020 at Oxford University Hospitals (n=422 procedures). Continuous variables were assessed by Kruskal-Wallis (three groups) and categorical variables by Chi-square test. Repeat measurements were accounted for by multilevel regression models with individual colonoscopies nested within patients. Multilevel ordinal logistic regression was used for assessment of bowel prep. Outcomes were adjusted for confounding variables (adj).

**Results:** 359 colonoscopies were analysed in 91 patients with PSC-IBD (69/422 were excluded as prior dysplasia detected). CE and HD scope use increased in frequency over the 10-year period (p=0.02). HD were rarely used in those with bowel preparation deemed

inadequate (p<0.001), but there was no association between CE and bowel prep quality. Dysplasia detection (adenomatous and serrated lesions) was higher with CE compared with white light examination; 14% vs 3% (p<0.001), and after adjusting for confounders (p<0.009) and use of HD scope (p<0.01), OR 5.02 (CI 1.43–17.7). Dysplasia detection was higher with HD compared with standard definition (SD); 14% vs 6% (p<0.04), but was non-significant after adjusting for confounders, OR 1.93 (CI 0.69–5.4). Dysplasia was more likely to be found on targeted than random colonic biopsies (p<0.001).

CE increased detection of serrated lesions (9% vs 2% (p=0.06) OR 3.5 adj) and more so adenomatous dysplasia (6% vs 1% (p=0.03) OR 12 adj) compared to white light. HD increased detection of serrated lesions (9% vs 3.5% (p=0.04) OR 2 adj) but not adenomatous dysplasia (6% vs 2.5% (p=0.19) compared to SD. (Table 1)

**Conclusion:** CE is superior to HD and SD white light examination for dysplasia detection in PSC-IBD after accounting for confounders and performed better for adenomatous than serrated lesions.

## P101

### Fecal calprotectin is increased among patients with pouchitis and increases with increasing endoscopic subscores: Real-world data from a prospectively collected database

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**Background:** An accurate and non-invasive surrogate marker of inflammation is needed for managing patients after Ileal pouch-anal anastomosis (IPAA). In this study, we evaluate the performance of fecal calprotectin (FC) in patients with ulcerative colitis (UC) who underwent IPAA and were assessed with clinical, endoscopic, and histologic examination of the pouch.

**Methods:** Medical records of patients who underwent IPAA with J-pouch formation registered in a prospectively collected database at the Tel Aviv Sourasky Medical Center, Israel, were evaluated. Clinical, endoscopic, histologic, and laboratory data were extracted. Each pouch evaluation was regarded separately. Pouchitis was defined as a Pouchitis Disease Activity Score (PDAI) of  $\geq 7$  (maximum score: 18).

**Results:** One hundred and fifty-six patients underwent 296 unique pouch evaluations. Fifty-two percent of patients were male, the median age at the time of evaluation was 43 years (IQR 35–58), and the median pouch age from the closure of the ileostomy was 10 years (IQR 2.5–15). The median [IQR] FC values were significantly lower in patients without pouchitis than in patients with pouchitis (208 [96–478] vs. 550 [250–1051] ug/g, p<0.0001). Mean FC values were lower in patients with lower endoscopic and histologic scores when compared to higher scores, with a significant linear trend for higher FC levels with increasing endoscopic and histologic disease activity. FC performed better than CRP as a predictor of pouchitis. A FC of over 400 ug/g had over 80% specificity for predicting significant endoscopic disease.