INTRODUCTION: Adenoma detection rate (ADR) is a quality indicator of screening colonoscopy. Artificial intelligence (AI) using Convolutional neural network (CNN), is a type of machine learning algorithm that uses convolutions of the input image to extract relevant information and classify it into different entities. In this analysis, we aim to quantitatively appraise the reported data on ADR during colonoscopy in the presence of CNN based computer-aided detection (CADe) from prospectively conducted parallel RCTs in real-life scenarios compared to standard colonoscopy (SC).

METHODS: Multiple databases were searched (from inception to May 2020), and parallel RCTs that compared deep CNN based CADe assisted colonoscopy to SC were included for this analysis. Using a random-effects model, pooled risk ratios (RR) and mean difference (MD) were calculated. Heterogeneity was assessed by I² % values.

RESULTS: 6 prospective studies we analyzed using a CNN based machine learning algorithm with the capability of detecting lesions in real-time. The total number of patients analyzed was 4962, with 2480 in CADe arms and 2482 in the SC group. Baseline age range (50-52 vs 51), male gender (50% vs 51%) and screening/surveillance indication (13% vs 14%) were comparable between the CADe and SC arms. The pooled ADR with the use of CADe endoscopy was significantly greater when compared to SC (RR = 1.5, 95% CI 1.3–1.7, P = 0.0001, I² = 56%). The pooled proportion of ADR with CADe was 32.8% (95% CI 29.2–36.4) and the pooled proportion of ADR with SC was 23.1% (95% CI 14.5–29.7%). Additionally, the pooled RR of poly detection rate was significantly greater with CADe when compared to SC (1.42, 95% CI 1.33–1.51, P = 0.0001, I² = 9%) and the MD of scope withdrawal was statistically lesser with CADe (0.38 minutes, 95% CI 0.25–0.52, P = 0.02, I² = 72%). The pooled RR of advanced ADR 1.1, 95% CI 0.74–1.46, P = 0.98) and sessile serrated ADR (1.29, 95% CI 0.89–1.89, P = 0.18) were comparable between CADe and SC, however the mean detection rate of adenoma per colonoscopy was significantly better with CADe colonoscopy (MD = 0.19, 95% CI 0.16–0.21, P < 0.0001). The pooled proportion of false positives on CADe colonoscopy was 10.3% (95% CI 6.1–15.6) with comparable cecal intubation time (MD = 0.04, 95% CI 0.29–0.38, P = 0.8) between CADe and SC.

CONCLUSION: CNN based CADe system significantly increases ADR during real-time colonoscopy, with faster withdrawal time and no increase in cecal insertion time. Future studies are warranted to study the impact of AI exclusively in screening colonoscopy.

S0275

Multimedia-Based Education on Bowel Preparation Improves Adenoma Detection Rate - A Systematic Review & Meta-Analysis of Randomized Controlled Trials

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INTRODUCTION: Colorectal cancer (CRC) is the third most common cause of cancer worldwide and the third leading cause of cancer deaths in western countries. Studies have shown a direct association between screening colonoscopy and a reduced risk of death from colorectal cancers. The incidence of poor bowel preparation has been reported in up to 25% cases. We conducted a systematic review and comprehensive meta-analysis to evaluate the effect of patient education using multimedia education on adenoma detection rate and adequacy of bowel preparation.

METHODS: Multiple databases were searched through May 2020 for studies that reported the effect of multimedia education on adenoma detection rate and adequacy of bowel preparation.

RESULTS: We included 13 randomized controlled trials with a total of 3754 patients. Overall ADR was higher in patients receiving multimedia based education (26%) as compared to CT (20.1%) (OR 1.4 CI 95% 1.01–1.85, P = 0.07; I² = 0.04) (Figure 1). In particular, for patients over 50 years of age, ADR was better in MM cohort as compared to controls (OR 1.8 CI 1.1–2.9, I² = 0; P = 0.03) (Figure 2). Finally, a higher proportion of patients receiving multimedia based education achieved optimal bowel preparation.

CONCLUSION: Pre-colonoscopy patient education using multimedia based platforms seems to improve ADR by improving the adequacy of bowel preparation for colonoscopy.

S0276

Can iFOBT (Immunoochemical Fecal Occult Blood Test) for Bwound Cancer Screening Be Safely Deferred After Five Years After a Colonoscopy?

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INTRODUCTION: Australian and international guidelines suggest that immunoochemical faecal occult blood test (iFOBT) for colorectal cancer (CRC) screening may be deferred for 5–10 years after a negative colonoscopy. The aim of this retrospective multicentre observational study was to evaluate the outcomes of patients who had a repeat colonoscopy for iFOBT positivity within five years of a previous colonoscopy showing low risk or normal findings, to assess the risk of interval CRC and advanced colorectal neoplasia (ACRN).

We sought to determine if having a prior colonoscopy with normal or low risk findings within the last five years would predict for negative findings on a repeat colonoscopy in asymptomatic patients who were iFOBT positive.

METHODS: We retrospectively identified patients who underwent a repeat colonoscopy for iFOBT positivity within five years of a previous colonoscopy showing normal or low risk findings from November 2004 to November 2018. Patients identified from Provation, Auscare and the Viewer databases were included from four sites, including The Prince Charles Hospital in Brisbane, Cairns Base Hospital, Innisfail Hospital and Atherton District Hospital in Northern Queensland. We excluded patients with a past history of CRC, patients with a familial malignancy syndrome, patients with poor bowel preparation and patients who were symptomatic.

RESULTS: Among 3,795 patients who underwent colonoscopy for a positive iFOBT in the study period, 239 had a previous colonoscopy in the five-year window that met inclusion criteria. Of these, 4 (1.7%) patients had locally advanced CRC at two regional sites, and 19 (7.9%) patients had ACRN. 42 (17.4%) patients had high risk adenomas, 21 (9.8%) patients had sessile serrated adenomas and 87 (36.4%) patients had adenomas of various sizes. Inadequate bowel preparation in the previous colonoscopy was associated with the findings of subsequent high-risk adenomas and CRC.

CONCLUSION: Our study observed that a substantial portion of patients have interval ACRN associated with a positive iFOBT performed outside of guidelines. These findings were not uniform between the study sites and may reflect local differences, highlighting the importance of interpretation of guidelines, the ability of the clinician to override guidelines if clinically indicated, the need for colonoscopy care standards and teamwork that may facilitate excellence in practice.

S0277

Risk and Predictors of Colonic Polyps and Colorectal Cancer Among Barrett’s Esophagus Patients

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INTRODUCTION: Barrett’s esophagus (BE) and colorectal cancer (CRC) share similar risk factors. Previous studies have shown variable prevalence of colonic polyps and CRC in patients with BE. Using a large multi-center database, we sought to describe the risk and predictors of colonic polyps and CRC among BE patients.

METHODS: We queried a multi-institutional database (Explorys Inc, Cleveland, OH, USA); an aggregate of electronic health record data from 26 US healthcare systems. A cohort of patients with a Systematized Nomenclature of Medicine-Clinical Terms of “Barrett’s Esophagus” 2016–2020, who underwent an upper endoscopy and colonoscopy was identified. Subsequently, another cohort of those who developed colonic polyps and Colorectal Cancer was identified. Patients <18 years old, history of inflammatory bowel disease, familial colorectal cancer syndromes, and familial polyposis syndromes were excluded. Cases were controlled with patients who underwent upper endoscopy and colonoscopy with no history of BE. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS version 25, IBM Corp). For all analyses, a 2-sided P value of <0.05 was considered statistically significant.