

ARTIFICIAL INTELLIGENCE FOR POLYP SIZE IN COLONOSCOPY: FELLOWS VERSUS FACULTY

SCHOOL OF MEDICINE: UNIVERSITY OF MISSOURI HEALTH

INTRODUCTION

- Adenoma Detection Rate (ADR) is an established quality indicator for colonoscopy. Higher rates are associated with decreased interval colorectal cancer incidence
- Artificial intelligence (AI) appears to be beneficial throughout the field of medicine. In gastroenterology, AI significantly improved polyp identification and adenoma detection rates.
- As polyp sizing, which may be variable by level of training by level is training or experience, significantly impacts surveillance timing, AI may be to accurately estimate the size of polyps.
- Therefore, we performed a survey study on the use of AI for estimating polyp size between faculty and fellows.

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METHODS

- A survey was performed in November and December 2021 using a colon endoscopy phantom model.
- Artificial colon polyps were created (rubber-based or Play-Doh), measured with a caliper, and placed in a colon phantom.
- Using a high-definition sigmoidoscope, 11 videos were made in the colon phantom.
- In a single academic center, gastroenterology faculty and fellows were surveyed on the estimation of the size of the polyp in each of the videos.
- A new AI system (Argus - EndoSoft - New York) was used as well and compared to the physicians for accuracy and impact on the timing of surveillance.



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RESULTS

- Faculty volunteered and performed the survey (n=4) with mean years of age 53 ± 11.2 and mean years of experience 19.3 ± 9.2 .
- Fellows volunteered and performed the survey (n=7) with mean years of age 34.7 ± 2.3 .
- Accuracy rates for all participants were 74% median (range 48-88%) as compared to 96% for Argus.
- Fellows appeared to have a higher accuracy rate than faculty (75% vs 71%). All the participants were within the ± 1 mm range on the size estimation 48 times (40%) versus 9 times (82%) with Argus.
- Fellows appeared to be within the ± 1 mm range on the size estimation more than faculty (44% vs 36%).
- Based on current guidelines, all participants' surveillance recommendations based on polyp size were significantly more incorrect as compared to Argus (34 vs 0) with 24 recommending too short (320%) and 10 recommending too long (6%) interval for the next colonoscopy.
- Faculty appeared to recommend too short of an interval more than the fellows (10/44, 23% vs 14/77, 18%).



DISCUSSION

- AI-based polyp detection systems during colonoscopy increase the detection of small nonadvanced adenomas and polyps.
- AI is more accurate at estimating polyp sizing than experienced gastroenterologists and fellows in training.
- Fellows appear to be more accurate at estimating polyp size than the faculty.
- Given the variation in sizing between the entire group and size the size ≥ 1 cm impacts surveillance interval with both faculty and fellows being too short 20% of the time, AI may help all adhere to appropriate surveillance intervals.

