

Incidence Rates of Adenomatous Polyps, Clinically Significant Serrated Polyps, and Advanced Neoplasia in Adults Age 18-45 in a Community Hospital in the Upper Midwest Over a 15 Year Period

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Introduction

Early onset colorectal cancer (EOCRCa) is defined as colorectal cancer prior to the age of 50. Increasing incidence over time and increasing intergenerational rates has been well described.

Temporal trends regarding precursor lesions in young adults are less clearly defined. The aim of this study was to investigate trends in the rates of adenomatous colon polyps, clinically significant serrated polyps and advanced neoplasia in young adults over a 15 year period.

Methods and Materials

Retrospective review of all colonoscopy examinations performed in two community hospitals and an affiliated ambulatory surgery center in Duluth and Two Harbors, MN between January 1, 2006 and December 31, 2020 in adults 18-45 years old.

- **Cohort:** 2655 cases reviewed.
 - Exams were excluded if incomplete or bowel preparation was inadequate.
- **Measurements:**
 - Annual incidence of:
 - Adenomas
 - Clinically significant serrated polyps (sessile serrated polyps, traditional serrated adenomas, proximal hyperplastic polyps >4mm and hyperplastic polyps >9mm)
 - Advanced neoplasia (adenoma >9mm, villous histology, high grade dysplasia, colon cancer)
- BMI, alcohol use and smoking status for each patient were abstracted from the medical record.
- Using Spearman Rank Order Correlation to investigate the relationship between time (as measured by year) and incidence of adenomatous polyps, clinically significant serrated polyps, advanced neoplasia and non-malignant advanced neoplasia.

Table 1. Demographic description

	Number of Patients
Sex	
Female	1600 (60.2%)
Male	1055 (39.7%)
Body Mass Index	
<18.5	36 (1.4%)
18.5-24.9	489 (18.4%)
25.0-29.9	531 (20.0%)
30.0-34.9	573 (21.6%)
≥35.0	468 (17.6%)
NA	558 (21.0%)

Results

- There were a total of 291 cases with at least one adenoma detected (11.0% incidence rate), 63 cases with at least one clinically significant serrated polyp (2.4% incidence rate), 60 cases with advanced neoplasia (2.3% incidence) and 8 cases of colorectal cancer (0.3% incidence rate) among 18-45 year olds who had colonoscopies during the study period.
- The incidence rate of adenomatous polyps increased over the course of the study period ($\rho = .88, n = 15, p < .001$) (Figure 1).
- The incidence of advanced neoplasia and clinically significant serrated polyps both increased over the course of the study period but were not statistically significant ($\rho = .50, n = 15, p = .056$ and $\rho = .40, n = 15, p = .138$, respectively).

Figure 1: Annual incidence of adenoma in adults age 18-45

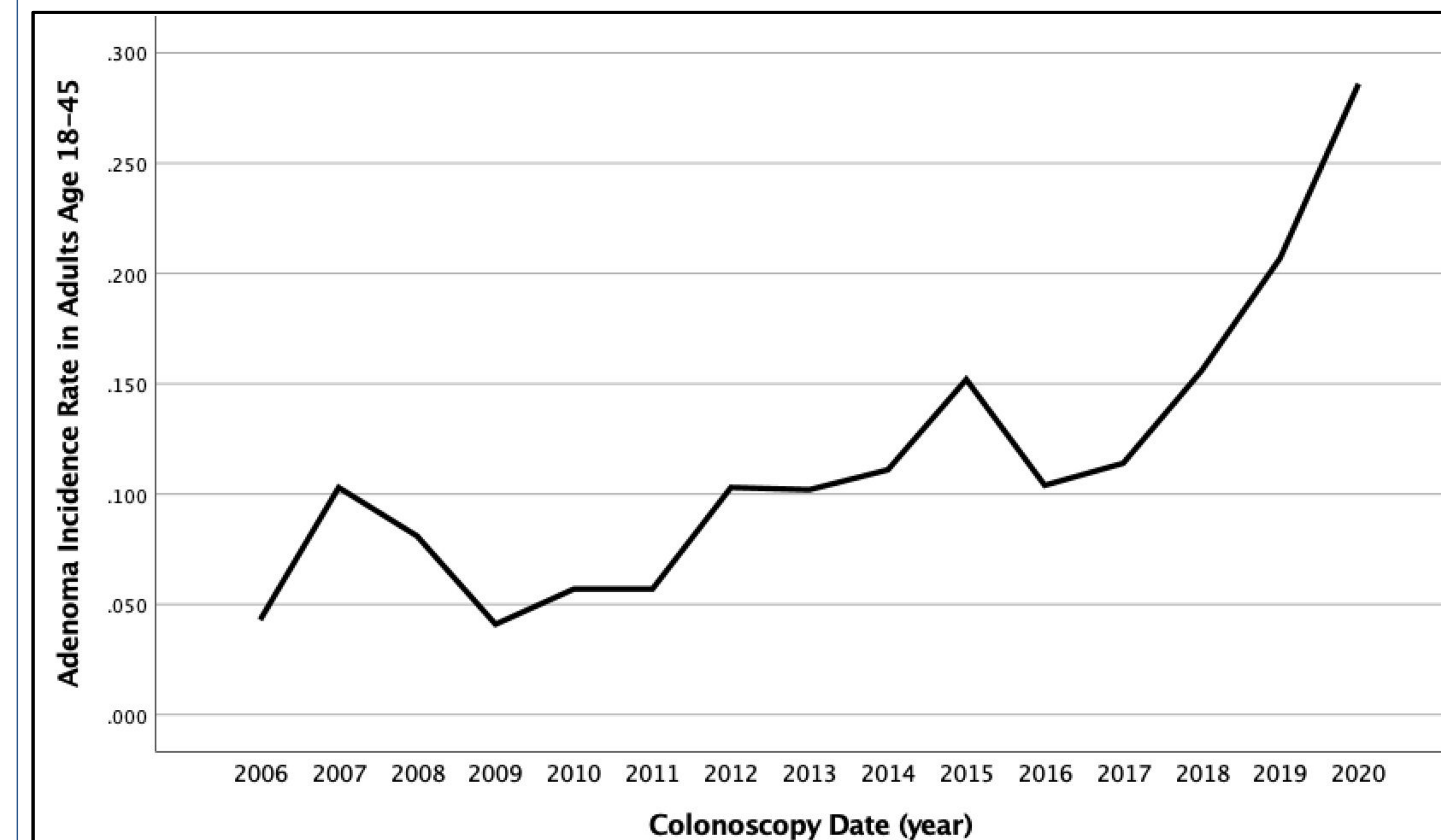


Figure 2: Annual incidence of advanced neoplasia in adults age 18-45

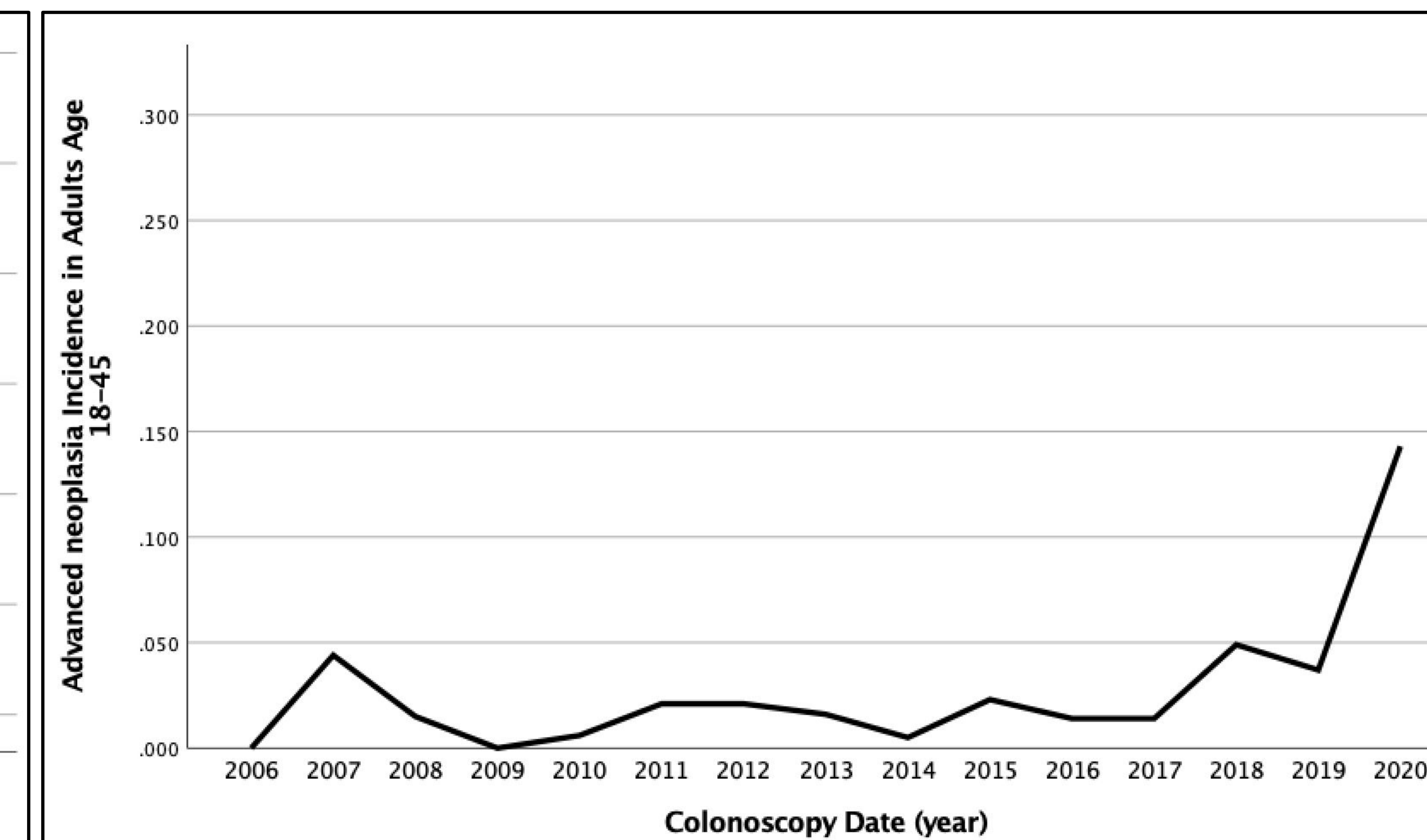


Table 2. Colonoscopy indications

Colonoscopy Indication	Number of Patients
Overt Bleeding	798 (30.1%)
Abdominal/Rectal Pain	464 (17.5%)
Diarrhea	301 (11.3%)
Family History of Colorectal Cancer	295 (11.1%)
IBD Surveillance for Dysplasia	127 (4.8%)
Changes in Bowel Habits	194 (7.3%)
Anemia	89 (3.4%)
Surveillance for Colon Polyps/Neoplasia	89 (3.4%)
Other (IBD, Constipation, Weight Loss, Occult Bleeding, Abnormal Imaging)	298 (11.2%)

Discussion

Current colorectal cancer screening for average risk individuals starts at age 45. The increase in incidence of dysplastic colon polyps over time that we describe here, among symptomatic and higher risk individuals, and the literature demonstrating increased incidence of EOCCa in individuals age 18-45 requires further prospective research to better understand environmental factors that may be contributing to these trends. A better understanding of risk factors for EOCCa and identifying individuals with elevated risk for precancerous polyps may allow for a selective and cost-effective screening program that may help prevent morbidity and mortality due to EOCCa.

A more complete understanding of temporal trends in different precursor colon lesions in young adults may help inform endoscopists caring for young adults with lower GI symptoms.

Changes in the way medical records were recorded over the course of the study period, from a paper based record to a fully electronic record, make retrospective review of earlier records less reliable especially for variables that change over time such as smoking status and alcohol use.

Conclusion

- Incidence of adenomatous colon polyps in adults age 18-45 significantly increased over the study period.
- Incidence of clinically significant serrated polyps and advanced neoplasia in adults 18-45 increased over the study period, but were not statistically significant in this study.

Future Directions

Ideally, next steps will include prospective studies recruiting asymptomatic, average risk adults between the ages of 18-45 for both stool based screening tests and lower endoscopy to accurately measure the incidence of dysplastic colon lesions in this population and validate the accuracy of stool based testing in this population. Collection of patient-specific data including BMI, dietary habits, alcohol use, tobacco use, medication exposure, FHx of colon polyps, and measuring sedentary vs active lifestyle could help to develop risk stratification tools. Equipped with this information, larger prospective studies could test whether screening select young adults could reduce the incidence and mortality due to EOCCa.

Selected References:

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