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Patients With Advanced Adenomas on Index Exam are at Increased Risk for Metachronous Advanced Neoplasia at Second Surveillance

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This summary reviews Javidi DJ, Obaida D, Mackenzie TA, et al. Association between index adenomas and advanced findings at third colonoscopy: Data from the New Hampshire colonoscopy registry. Clin Gastroenterol Hepatol. 2026; Online ahead of print.

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STRUCTURED ABSTRACT

Question: There is a paucity of data informing risk of metachronous advanced neoplasia at second surveillance colonoscopy. The objective of this study was to examine the risk for an advanced finding (large SP, advanced adenomas [AA], or colorectal cancer [CRC]) on second surveillance colonoscopy in individuals with advanced adenomas on index exam and a first surveillance colonoscopy without polyp findings, accounting for potential confounders including adenoma detection rate, smoking, body mass index (BMI), and family history of CRC.

Design: Retrospective analysis of data from the New Hampshire Colonoscopy Registry (NHCR) which is a prospective statewide colonoscopy registry.

Setting: Endoscopy centers across New Hampshire, USA.

Patients: To be included in the analysis, patients were required to have no previous neoplasia and 2 surveillance colonoscopies at least 12 months apart with a first surveillance colonoscopy without polyp findings. Patients who had any CRC,

advanced adenomas, tubular adenomas, large serrated polyps (≥ 1 cm), dysplastic sessile serrated polyps, traditional serrated adenomas, or any sessile serrated polyps on first surveillance exam were excluded.

Exposure: Individuals were stratified into 4 groups based on index exam findings: no adenomas, 1-2 non-advanced adenomas, 3-4 non-advanced adenomas, and advanced adenomas or 5+ non-advanced adenomas.

Outcomes: The primary outcome was detection of advanced neoplasia (advanced adenomas or CRC) on the second surveillance exam.

Data Analysis: The authors ran a Poisson model regression using robust standard errors which predicted advanced findings on second surveillance exam, adjusting for age, sex, family history of CRC, smoking, serrated polyps on index exam, BMI, and adenoma detection rates of index and first surveillance endoscopists with months to second follow-up exam as an offset variable.

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Results: In the study, 3,171 patients were included and risk-stratified into 4 different groups based on index colonoscopy findings; no adenomas (n=1948), 1-2 non-advanced adenomas (n=846), 3-4 non-advanced adenomas (n=69) and, advanced adenomas or 5+ non-advanced adenomas (n=308).

Only those with advanced adenomas or 5+ non-advanced adenomas had a higher risk for metachronous advanced adenomas or CRC (RR=3.47 95% CI: 1.46-8.24).

COMMENTARY

Why Is This Important?

The investigators found that the risk for advanced outcomes in patients with AA or 5+ non advanced adenomas was increased at the second surveillance colonoscopy despite an interim first surveillance exam without polyps. This risk was modified by several factors, including the endoscopist's adenoma detection rate at the first surveillance, patient smoking status, and high-risk serrated polyps on the index exam. Specifically, smoking status evaluated at the initial surveillance was associated with a nearly threefold increase in risk for advanced findings on the second surveillance. While smoking is an

established risk factor for advanced neoplasia, this is the first study to demonstrate its impact at the second surveillance interval.[1,2]

However, after adjusting for these covariates, this association was observed to be independent of adverse drug reaction and important risk factors such as smoking and BMI. These data support the US Multi-Society Task Force on Colorectal Cancer (USMSTF) recommendation of 5-year follow-up for these patients.[3] These data address the knowledge gap regarding the risk at second surveillance colonoscopies which were not addressed by previous studies.

Studies from the Netherlands and the VA have observed that high-risk conventional adenomas on an index colonoscopy increases the risk of significant lesions on a second surveillance, despite a clear first surveillance.[4,5] However, a recent meta-analysis highlighted critical limitations in these published data.[6] These limitations include failing to account for endoscopist performance (adenoma detection rate and bowel preparation quality) and patient risk factors such as smoking, BMI, genetic predispositions, and whether the baseline exam was conducted for surveillance.

The investigators addressed prior limitations by adjusting for quality measures and known CRC risk factors in patients who underwent 2 subsequent surveillance exams. The study cohort was restricted to patients with no polyps detected during their first surveillance. This is important since individuals with findings (e.g., advanced adenomas) are assigned rigorous surveillance intervals

Advanced adenoma or CRC on second surveillance colonoscopy		
No adenomas (N = 1,948)	N=39 (2.0%;1.5-2.7)	Rate ratio=1.0 (Reference)
1-2 non-advanced adenomas (N = 846)	N=36 (4.26%:3.1-5.8)	**1.84 (0.94 – 3.59)**
3-4 non-advanced adenomas (N = 69)	N=3 (4.4%:1.5-12.0)	**2.26 (0.48 - 10.67)**
AA/5+ non-advanced adenomas (N = 308)	N=17 (5.5%:3.5-8.6)	**3.47 (1.46 – 8.24)**

Table 1. Advanced neoplasia on second surveillance colonoscopy

* Results from a Poisson model regression which predicted advanced neoplasia on second surveillance exam, adjusting for age, sex, family history of CRC, smoking, serrated polyps on index exam, BMI, adenoma detection rates of index and first surveillance endoscopists with months to second follow-up exam as the offset variable.

regardless of their index exam. Thus, this is the first study to assess the risk of advanced outcomes on a second surveillance colonoscopy among patients lacking previous neoplasia and who also had a negative first surveillance exam.

Key Study Findings

Patients with advanced adenomas or 5 or more non advanced adenomas on their index colonoscopy had an increased risk for metachronous advanced neoplasia at the second surveillance colonoscopy. The risk was not mitigated when adjusting for endoscopists' detection rates or known risk factors such as smoking or BMI. These data support the USMSTF recommendation of a 5-year follow-up for these patients.

Caution

The low racial diversity in New Hampshire may decrease the generalizability of the findings. Thus, more data are needed in other more racially diverse populations.

My Practice

I follow the USMSTF for CRC recommendations for post polypectomy which currently suggest a 5-year follow up for these patients. These data support that recommendation by demonstrating that the risk for these patients is elevated at second surveillance colonoscopy and is independent of known risk factors as well as the adenoma detection rates of the endoscopists performing the colonoscopies.

For Future Research

These data should be validated in other populations. In addition, the risk for the third surveillance colonoscopy should be evaluated.

Conflict of Interest

Dr. Anderson had no financial conflict of interest.

REFERENCES

1. Anderson JC, Attam R, Alpern Z, et al. Prevalence of colorectal neoplasia in smokers. Am J Gastroenterol 2003; 98: 2777–83.
2. Anderson JC, Calderwood AH, Christensen BC, et al. Smoking and other risk factors in individuals with synchronous conventional high-risk adenomas and clinically significant serrated polyps. Am J Gastroenterol 2018; 113: 1828–1835
3. Gupta S, Lieberman D, Anderson JC, et al. Recommendations for follow-up after colonoscopy and oolypectomy: A consensus update by the US Multi-Society Task Force on Colorectal Cancer. Am J Gastroenterol 2020; 115: 415–434.
4. Sullivan BA, Redding TSt, Hauser ER, et al. High-risk adenomas at screening colonoscopy remain predictive of future high-risk adenomas despite an intervening negative colonoscopy. Am J Gastroenterol 2020; 115: 1275–1282.
5. Van Heijningen EM, Lansdorp-Vogelaar I, Kuipers EJ, et al. Features of adenoma and colonoscopy associated with recurrent colorectal neoplasia based on a large

community-based study. Gastroenterology 2013; 144: 1410–8.
6. Pandita P, Le Y, Trivedi M, et al. Yield of advanced neoplasia at second post-polypectomy surveillance colonoscopy: A systematic review and meta-analysis. Clin Gastroenterol Hepatol. 2025; 23(13): 2448-2458.