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ADR Isn't the Only Game in Town: Proximal Serrated Lesion Detection Rates Predicts Interval Cancer Risk

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This summary reviews: van Toledo DEFWM, IJspeert JEG, Bossuyt PMM, et al. Serrated polyp detection and risk of interval post-colonoscopy colorectal cancer: a population-based study. Lancet Gastroenterol Hepato 2022; 7 (8):747-54. https://pubmed.ncbi.nlm.nih.gov/35550250/

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STRUCTURED ABSTRACT

Question: Is a higher proximal serrated polyp detection rate (PSPDR) inversely associated with post-colonoscopy colorectal cancer (PC-CRC) risk?

Study Design: Population-based prospective cohort study.

Setting: Dutch fecal immunochemical test (FIT)-based colorectal cancer screening program linked with the Netherlands Cancer Registry.

Participants: Asymptomatic individuals aged 55-74 years who had a colonoscopy for positive FIT from January 2014 to December 2020 were included. Overall, 277,555 colonoscopies performed by 441 endoscopists were included (median 542 colonoscopies per endoscopist). Median age of patients was 68 and 58% were male.

Definitions: Positive FIT testing was defined with a cutoff of >15 μg Hb/g feces from January 2014 to mid-2014, then defined as > 47 μg Hb/g feces for the remainder of the study period. PSPDR was defined as the proportion of colonoscopies in which at least one serrated polyp proximal

to the descending colon was detected. Serrated polyp was defined as histologically proven hyperplastic polyp, traditional serrated adenoma, or sessile serrated lesion. PC-CRC was defined as a CRC case detected before the advised post-colonoscopy surveillance interval in the endoscopy report. If the recommended surveillance interval was not documented, Dutch national polyp surveillance guidelines were applied to determine the surveillance interval. PC-CRCs included adenocarcinoma, mucinous carcinoma, undifferentiated carcinoma or signet ring cell carcinomas located in the colon or rectum. Neuroendocrine tumors, lymphomas, small cell carcinomas and carcinoids were excluded.

Outcomes: The primary outcome was the association between endoscopists' individual PSPDR and their patients' risk for PC-CRC. Adenoma detection rate (ADR) and association with PC-CRC as well as correlation to PSPDR was also assessed.

Results: The overall PSPDR was 11.9% (IQR 8.3%-15.8%) and the ADR was 66.3% (IQR 61.4%-69.9%) in the asymptomatic, FIT+ patients. The median time from index colonoscopy to CRC or end of follow up was 36 months overall, and 33 months for those diagnosed with PC-CRC. Of the 277,555 patients included, 305 were diagnosed with PC-CRC. Fifty-seven percent of the PC-CRC cases were in men, 49% were located proximal to the descending colon and 58% were diagnosed at advanced stages. For each percentage point increase in PSPDR, the adjusted interval post-colonoscopy CRC hazard was 7% lower (hazard ratio [HR]= 0.93; 95% confidence interval [CI]: 0.90-0.95). Risk of PC-CRC was significantly lower in the fourth (HR 0.42, 95% CI 0.28-0.64) and fifth (0.35, 95% CI 0.21-0.55) highest performing quintiles, compared to the lowest performing quintile. The association between PSPDR and CRC remained significant for both advanced and non-advanced stages, proximal and distal tumors, and male and female patients. ADR was inversely related to interval cancer (HR 0.94, 95% CI 0.93 -0.96). The correlation between PSPDR and ADR was moderate (r=0.59). Endoscopists were defined as "high" or "low" performers based on having ADR above or below the median. Endoscopists with high PSPDR and high ADR had the lowest risk of PC-CRC. Compared with this high-performing group, there was a significant increase in PC-CRC for endoscopists with high ADR but low PSPDR (HR = 1.79; 95% CI: 1.22-2.63) as well as for endoscopists with low ADR but high PSPDR (HR = 1.97; 95% CI: 1.19-3.24).

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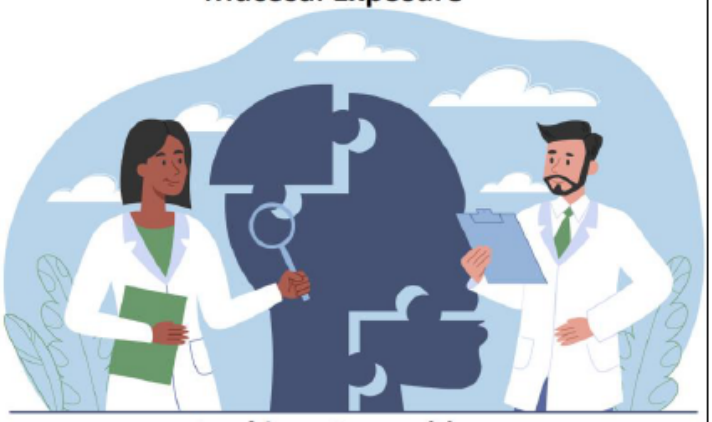
<table>
<tr><td colspan="2">Mucosal Exposure
 
Looking at a problem</td><td colspan="2">Lesion Recognition
 
Seeing a problem</td></tr>
<tr><td colspan="2">Bowel Preparation
❋ Split dose
❋ Simethicone
❋ Washing/cleansing</td><td colspan="2">High-definition Equipment</td></tr>
<tr><td colspan="2">Inspection technique</td><td colspan="2">Training in lesion recognition</td></tr>
<tr><td colspan="2">❋ Fold examination
❋ Lumen distention
❋ Two looks in right colon</td><td>Adenoma characteristics
❋ Red
❋ Irregular vascular network
❋ Absence of innominate groves
❋ Friability
❋ Wall deformity</td><td>Serrated lesion characteristics
❋ Mucous cap
❋ Irregular shape, indistinctive border
❋ Cloud-like surface
❋ Dilated, branching vessels
❋ Type II open pit pattern
❋ Small dark dots
❋ Similar color to surrounding mucosa</td></tr>
<tr><td colspan="2">Adjunct Devices
❋ Attachment devices
❋ Wide-angle colonoscopies</td><td colspan="2">Computer-aided detection systems</td></tr>
</table>

Figure 1. Techniques to improve lesion detection rate during colonoscopy.

COMMENTARY

Why Is This Important?

CRCs progressing through the serrated pathway account for a disproportionate number of PC-CRCs,[1] likely because serrated lesions are flatter, have similar color to surrounding mucosa, may have a mucus cap, and are more likely to be located in the ascending colon where the bowel preparation is more likely to be sub-optimal. Thus, they are more difficult to detect[2] and more likely to be incompletely resected[3] compared to conventional tubular adenomas. There is highly variable serrated lesion detection rates among endoscopists and only moderate correlation between serrated lesion detection rates and ADR,[4] thus leaving the question of whether ADR

alone is an adequate quality metric to assess risk of PC-CRC.

Key Study Findings

This is the first prospective cohort study to demonstrate an inverse association between proximal serrated lesion detection rates and the clinical outcome of interest in CRC screening—post-colonoscopy CRC. This finding was consistent regardless of CRC stage, anatomic location, or patient sex.

For each percentage point increase in PSPDR, the adjusted interval post-colonoscopy CRC hazard was 7% lower (HR = 0.93; 95% CI: 0.90-0.95).

This study reinforced that ADR is also inversely associated with PC-CRC risk, but only moderately correlated to serrated lesion detection rate. In other words, both are important to optimize since endoscopists with high ADR and low PSPDR demonstrated an increased hazard for PC-CRC (HR = 1.79; 95% CI: 1.22-2.63) versus high performers for both ADR and PSPDR.

Caution

It is important to note that the patients included in the study were referred for colonoscopy due to a positive FIT. Thus, the lesions detection rates are not generalizable to a screening population, thus cannot inform minimum detection rate benchmarks. In most healthcare systems, collection of PSPDR is a resource-intensive process that requires manual entry of colonoscopy data and pathology data. Although there are emerging ways to streamline this process into routine clinical care[5] or use natural language processing to automate data extraction,[6] these methods are not widely available, thus implementing PSPDR as an additional quality metric may not be feasible.

My Practice

This study confirms that serrated lesion detection rate is an important quality metric and although most techniques to improve ADR and serrated lesion detection are similar, serrated lesion detection requires special attention. To optimize lesion detection during colonoscopy, I take specific measures to maximize mucosal exposure and lesion recognition (**Figure**). Optimal mucosal exposure requires a high-quality bowel preparation, intentional inspection technique (fold examination, lumen distention), multiple passes in the right colon, and if available, adjunctive devices such as distal attachment caps, EndoCuff, or wide angle colonoscopes. Optimal lesion recognition requires high-definition equipment and special training in the endoscopic characteristics of adenomatous and serrated lesions. Serrated lesions tend to be

located in the right colon, have overlying mucous caps, an open pit pattern, and have a similar color as surrounding mucosa. Familiarity with classification systems such as the Workgroup SerrAted PolypS and Polyposis (WASP) criteria (indistinctive borders, irregular shape, cloud-like surface, dark spots) can be helpful. Finally, emerging technologies, such as computer-aided detection, can also help with lesion recognition.

For Future Research

Similar studies need to be conducted in average-risk screening populations to establish minimum benchmarks for serrated lesion detection rates. More work needs to be done in collaboration with informatics specialists to facilitate streamlined and automated collection and reporting of lesion detection rates.

Conflicts of Interest

Dr. Patel has no conflicts of interest.

Note

The authors of the article published in the journal *Lancet Gastroenterology and Hepatology* are active on social media. Tag them to discuss their work and this EBGI summary!
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