Detection rates of premalignant polyps during screening colonoscopy: Time to revise quality standards?

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Background: Standards for the detection of adenomas during screening colonoscopy are widely used to measure examination quality. No such standards exist for sessile serrated adenomas (SSAs).

Objective: To measure both the adenoma detection rate (ADR) and SSA detection rate (SSADR) during screening colonoscopy before and after quality improvement/financial incentive measures.

Design: Retrospective determination of baseline ADR/SSADR by the endoscopist, followed by prospective collection of data after informing physicians of baseline detection rates.

Setting: Tertiary cancer center with a large cancer screening program.

Patients: A total of 2833 average-risk colorectal cancer screening patients 50 to 75 years of age undergoing initial colonoscopy.

Data Collection: Electronic medical records for indication and demographics, endoscopy report, and pathology report.

Main Outcome Measurements: Detection rates of adenomas and SSAs by sex.

Results: The overall ADR in male and female patients was 50.6% and 36.6%, respectively. The overall detection rate of advanced adenomas in male and female patients was 12.4% and 6.5%, respectively. The overall SSADR in male and female patients was 10.1% and 7.1%, respectively. In 108 patients (3.8% of entire group), SSAs were the only premalignant lesions found. Detection rates of both types of premalignant polyps improved over time but did not reach statistical significance.

Limitations: Single-center experience with limited sample size and small group of endoscopists.

Conclusion: ADRs far in excess of current standards are achievable. Cecal withdrawal time is associated with the ADR. Prevalence of SSA rivals that of advanced adenomas and is greater than current medical literature suggests. The combination of monitoring and financial incentives did not result in statistically significant improvement in ADRs. (Gastrointest Endosc 2015;81:567-74.)

Current standards for adenoma detection rates (ADRs) of 25% in men and 15% in women during screening colonoscopy were established based on studies published in an era before the availability of high-definition colonoscopes, electronic chromoendoscopy (eg, narrow-band imaging), and widespread use of split-dose bowel

Abbreviations: ADR, adenoma detection rate; BMI, body mass index; CI, confidence interval; IRB, institutional review board; IQR, interquartile range; MAP, mean adenomas per procedure; OR, odds ratio; SSA, sessile serrated adenoma; SSADR, sessile serrated adenoma detection rate.

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prepartions.[1-7] Recent reports from multiple practice settings demonstrate ADRs significantly above the standards, suggesting that the bar has been set too low.[8,9] However, such reports are not universal as other studies report ADRs barely exceeding the current standards.[10-12] The limited ability of colonoscopy as frequently performed to detect many adenomas was brought out by the tandem colonoscopy studies.[13] Missed adenomas would provide an explanation for the incomplete protection from colon cancer provided by colonoscopy and the failure to approach the cancer reduction rates projected in the National Polyp Study.[14,15]

The shortfall in colonoscopy's ability to reduce colon cancer rates is particularly striking in the right side of the colon.[16,17] This has been attributed in part to flat lesions such as sessile serrated adenomas (SSAs), whose cancer risks have only recently received widespread attention.[18-20] Although SSAs are well described in the pathology literature, their natural history is poorly defined. Their prevalence is unclear but is estimated to be less than 2%.[21] Despite the growing significance of SSAs, no standards exist to inform the endoscopist of whether their detection rate is adequate. The implicit assumption is that an endoscopist with an adequate ADR will have a suitable SSA detection rate (SSADR).

Our aim was to assess the detection rates for both adenomas and SSAs in screening average-risk patients to determine whether their detection rates were correlated. Because these data were collected as part of a quality improvement effort, an additional objective was to determine the impact of informing endoscopists about their individual detection rates on future performance.

METHODS

Patients

Data were collected from all first-time screening colonoscopies in average-risk individuals 45 to 75 years of age from July 2010 through May 2013. The Endoscopy Center at MD Anderson Cancer Center is open access with patients referred for screening colonoscopy from their primary oncologic service or through a Cancer Prevention Center. The latter patients were frequently evaluated by gastroenterology mid-level providers before their procedures. Screening examinations were identified by manual review of all colonoscopy reports performed during the study period by 3 of the authors (S.T., M.S., and W.R.). If a colonoscopy report was identified as a potential screening examination, clinic notes preceding the procedure date were reviewed to verify that the colonoscopy was the first for the patient and that no symptoms or conditions were prompting the examination. Patients were excluded if they (1) were suspected of having a colon cancer syndrome based on a family or personal history of cancer, (2) had multiple first-degree relatives with a colon cancer history or 1 first-degree relative younger than 45 years of age at time of diagnosis of colon cancer, (3) had a personal history of Crohn's disease or ulcerative colitis, (4) had a previous colonoscopy, or (5) had a previous colon resection. Demographic, clinical, and endoscopic data were entered into a secure database. Initially, the data collection was part of a Quality Assurance/Quality Improvement project, and institutional review board (IRB) approval was not required. However, as data collection was proving labor intensive, a broader initiative was undertaken to develop a means to automate the data collection as much as possible. IRB approval was obtained from the University of Texas MD Anderson Cancer Center with the current study forming the baseline dataset to serve as a standard for a subsequent electronic neoplastic polyp detection rate monitoring system based on Natural Language processing. A waiver of consent was obtained from the IRB.

Procedure

Patients underwent colonoscopy after following a standard split-dose preparation regimen established in 2009.[22] Quality measures being actively monitored at time of study were cecal withdrawal time and cecal intubation rates. For the purposes of this study, cecal withdrawal time was calculated only on examinations with no polyps. All procedures were performed with Olympus Series 180 colonoscopes (Olympus America, Center Valley, Pa), which have narrow-band imaging capability. Use of narrow-band imaging and distal cap attachment was left to the individual endoscopist's discretion. Procedural reports were generated by using a standard template with Endoworks software (Olympus America). Incomplete examinations because of inadequate bowel preparation or technical difficulty were included. A total of 13 gastroenterologists performed 90 or more screening colonoscopies during the study period and are included in the analysis.

Pathology

Specimens were reviewed by a group of 9 academic GI pathologists who were assigned to read specimens on a schedule that varied month to month. For the purposes of this study, pathology results were taken from original pathological reports; no review of earlier results was done. Polyp submission method, either as individual polyps in each container or batched, was left to the individual endoscopists. If multiple polyps were submitted in 1 container but a number was not specified, it was assumed to have 2 polyps. Endoscopists were performing procedures on a set weekly schedule. Polyp size was determined from the pathology report. Select cases are routinely reviewed at a weekly pathology conference. Polyps not retrieved after removal were considered to be non-neoplastic.

Incentive and quality improvement program

In February 2012, all physicians were given their individual ADRs and SSADRs. In addition, they were given data