The "golden retriever" study: improving polyp retrieval rates by providing education and competitive feedback

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Background and Aims: Although optical diagnosis of small colorectal polyps can be achieved at expert centers, accurate prediction of histopathological outcomes has not been achieved in all practice settings. It is therefore important that resected polyps are retrieved for histology. The aims of this study were to evaluate the effect of education and competitive feedback on the overall polyp retrieval rate and to determine which polyp-related and procedure-related factors are associated with retrieval.

Methods: We prospectively included consecutive colonoscopies performed at a single center between April 1, 2013 and April 1, 2014. Patients with inflammatory bowel disease or familial polyposis syndromes were excluded from analysis. Six months after the start of the study, all endoscopists were educated on the importance of polyp retrieval, and a competition was started by publicly providing feedback on the retrieval rate of all endoscopists and the monthly best 3 performers (or "golden retrievers") in particular. We compared overall retrieval rates in the 6 months before and after the start of the competition.

Results: The overall polyp retrieval rate improved from 88% (525/594) to 93% (978/1047), comparing consecutive colonoscopies performed in the 6 months before and during the polyp retrieval competition ($P < .01$). The histopathological outcomes of retrieved polyps were not different before and during the competition. The retrieval rate of right-sided polyps increased from 85% to 95% during the competition (odds ratio [OR], 3.3; 95% confidence interval [CI], 2.0-5.4), whereas the left-sided retrieval rate remained 92%. On multivariable analysis, polyp size greater than 5 mm (OR, 4.1; 95% CI, 1.8-9.6) and in competition resection (OR, 1.8; 95% CI, 1.3-2.6) were significantly associated with polyp retrieval, respectively.

Conclusion: Providing education and competitive feedback to endoscopists will improve polyp retrieval rates, especially for clinically relevant, right-sided polyps. (Gastrointest Endosc 2016;83:596-601.)

Surveillance after removal of 1 or more colorectal polyps is predominantly determined by the result of histopathological evaluation of the resected material.[1,2] Adequate recommendations require assessment of the number of polyps harboring adenoma and their grade of dysplasia. Although optical diagnosis of small colorectal polyps can be achieved at expert centers, accurate prediction of histopathological outcomes has not been achieved in all practice settings.[3-6] Therefore, it is still important that resected colorectal polyps are retrieved.

International guidelines recommend a minimum standard for polyp retrieval rate of ≥90% and a target of ≥95% for experienced endoscopists.[7-9] Although previously reported to be achieved by experts,[10] the minimum standard is not routinely met by all endoscopists.[9,11] Substantial variations in retrieval rates can be explained by differences in dedication, removal and retrieval techniques, and polyp characteristics. Small sessile polyps that are removed by cold snaring are not always easily retrieved, and adequate retrieval technique is important, particularly for these lesions.[10,12]

Abbreviations: BBPS, Boston Bowel Preparation Scale; CI, confidence interval; OR, odds ratio.

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As retrieval of polyps is still clinically relevant, the primary aim of this study was to evaluate the effect of education and competitive feedback on the overall polyp retrieval rate. The secondary aim was to determine which polyp characteristics and procedure-related factors are associated with retrieval.

METHODS

We prospectively recorded data on consecutive colonoscopies performed at the Department of Gastroenterology and Hepatology of the University Medical Center Utrecht between April 1, 2013 and April 1, 2014. Patients with inflammatory bowel disease or familial polyposis syndromes were excluded. Directly after performing colonoscopy, the endoscopists recorded all colonoscopic findings in specifically designed electronic colonoscopy forms, integrated in the patients' medical records. The items of interest included the Boston Bowel Preparation Scale (BBPS) score (a BBPS of $\geq$6 was considered to be adequate), the number of polyps and their respective location (proximal location was defined as a location between the cecum and the splenic flexure), size, and resection technique. Resection techniques were classified as cold snaring, hot snaring, or EMR, subdivided into en bloc and piecemeal EMR. Polyps removed by biopsy were not taken into consideration. The outcomes of the histopathological evaluation as reported by an expert pathologist were added to the electronic colonoscopy forms. Polyps were classified as nonneoplastic, conventional adenoma, sessile serrated adenoma or polyp, or carcinoma. Dysplasia was categorized into nondysplastic, low-grade dysplasia, high-grade dysplasia, and invasive carcinoma.

The endoscopists were not aware of this study until 6 months after the start (end of September 2013), when all gastroenterologists and trainees were educated on the importance of polyp retrieval and techniques to improve retrieval rate.[10,13] After the educational session, a polyp retrieval competition was started from October 1 by providing feedback on the retrieval rate of all endoscopists. In addition, we publicly announced the monthly best performers (or "golden retrievers"). We compared overall retrieval rates in the 6 months before and during the competition. Procedural factors and characteristics of retrieved and nonretrieved polyps were compared by using the χ^2 test for categorical variables and the *t* test for normally distributed continuous variables. We performed multivariable logistic regression analysis to identify factors associated with successful polyp retrieval. We calculated odds ratios (ORs) with 95% confidence intervals (95% CIs). A *P* value of <.05 was considered statistically significant. Analyses were performed by using SPSS statistical software version 22.0 (IBM, Chicago, Ill).

This study was exempted from patient informed consent as determined by the Institutional Review Board of the University Medical Center Utrecht in accordance with the Medical Research Involving Humans Subjects Act, as patient data were anonymously collected for the purposes of the study. All participating endoscopists agreed with the use of data on the colonoscopies that they performed before and during the competition.

TABLE 1. Characteristics of study populations before and during competition

	Precompetition	Competition	*P* value
Colonoscopies, no.	548	746	
Indications, no. (%)			.054
GI symptoms	338 (62)	371 (50)	
Surveillance	78 (14)	126 (17)	
Screening	28 (5)	33 (4)	
Polypectomy	33 (6)	53 (7)	
Findings on PET/CT scan*	34 (6)	29 (4)	
Unknown	37 (7)	134 (18)	
Polyp detection rate	296 (54)	442 (59)	.060
Resected polyps	594	1047	
Polyp size, mm			.650
0-5	438 (74)	762 (73)	
6-9	82 (14)	138 (13)	
≥10	74 (13)	147 (14)	
Polyp location			.679
Proximal colon	307 (52)	530 (51)	
Distal colon/rectum	287 (48)	517 (49)	
Resection technique			.227
Cold snare	426 (72)	726 (69)	
Hot snare	80 (14)	169 (16)	
EMR, en bloc	66 (11)	100 (10)	
EMR, piecemeal	22 (4)	52 (5)	
BBPS score, mean ± SD	7.4 ± 1.5	7.5 ± 1.6	.331
Type of endoscopist			<.001
Fellow	374 (63)	509 (49)	
Gastroenterologist	220 (37)	538 (51)	

PET, positron emission tomography; *BBPS*, Boston Bowel Preparation Scale.
*Hot spot or suspected polyp in the colon.

RESULTS

A total of 1294 colonoscopies were performed in 1249 patients between April 1, 2013 and April 1, 2014. Indications for colonoscopy were abdominal symptoms suggestive of colorectal pathology in 55% and polyp surveillance in 16% of cases, whereas other indications comprised less than 10% each (Table 1). Polyps were detected in 296 of 548 colonoscopies (54%) before the competition and in 442 of 746 colonoscopies (59%) during the competition ($P = .06$). For colonoscopies in which at