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Improving Endoscopic Adherence to Quality Metrics in Colonoscopy

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Background: Appropriate documentation of quality metrics in the endoscopy reports provides evidence that a thorough and complete examination was performed. The aim of our study was to assess compliance with 3 current quality metrics for colonoscopy defined by the American Society for Gastrointestinal Endoscopy.

Methods: We retrospectively examined colonoscopy reports from 6 gastroenterologists at Ochsner Medical Center for appropriate documentation of the quality of the bowel preparation and photodocumentation of the appendiceal orifice and the ileocecal valve. A performance review and educational session then took place with each physician. Subsequent colonoscopy reports were evaluated to monitor for improvement.

Results: Bowel preparation documentation was high before and after the educational sessions (97.5% and 97.2%). Preeducation, the mean photodocumentation rate of the appendiceal orifice was 55% (range, 23%-84%). For the ileocecal valve, the documentation rate was 32.5% (range, 3%-73%). Posteducation, the mean appendiceal orifice labeling increased to an average of 91%, with a median change of 28.5% (P=0.0313). Documentation of the ileocecal valve improved to an average of 73%, a median change of 37.5% (P=0.0625).

Conclusion: Although reassessment of subsequent reports will be necessary to evaluate the permanence of this intervention, our evidence suggests that educational sessions can improve the quality and accuracy of documentation of quality metrics during colonoscopies.

Keywords: *Colonoscopy, documentation, quality improvement*

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INTRODUCTION

Multiple quality metrics for endoscopic procedures have been proposed to ensure high-quality exams are being performed. In 2006, the American Society for Gastrointestinal Endoscopy (ASGE) published guidelines for colonoscopies that include documentation of the quality of bowel preparation, cecal intubation rates, appropriate surveillance intervals, and adenoma detection rates.[1] Studies from other institutions have evaluated individual practice performance in accordance with the ASGE guidelines and have suggested that an educational intervention can result in physician awareness and improved performance.[2,3] The aim of our study was to assess compliance with 3 current colonoscopy quality metrics as defined by the ASGE. We performed a performance review and developed an educational session with a plan to reassess the data at a later date and achieve 100% compliance among our physicians for these 3 colonoscopy quality metrics.

METHODS

Institutional review board clearance was obtained for this study. Selecting a random starting date in 2012, we used the electronic endoscopic documentation software ProVation MD (Wolters Kluwer) to retrospectively examine 100 sequential colonoscopy reports for each of our 6 gastroenterologists at Ochsner Medical Center in New Orleans. From these colonoscopy reports, we assessed the baseline documentation for 3 of the 15 ASGE quality metrics in colonoscopy: description of the quality of bowel preparation, photodocumentation of the appendiceal orifice (Figure 1), and photodocumentation of the ileocecal valve (Figure 2).[4] We chose these 3 quality metrics to focus on the intraprocedural markers of quality that affect the adenoma detection rate.[5-7] Diagnostic, screening, and surveillance colonoscopies were included; however, poor or inadequately prepped colonoscopies were excluded. Patients with a history of colonic surgeries, with abnormal anatomy, or with resected segments of colon were also excluded from this study.

We shared the results with our 6 gastroenterologists and implemented a face-to-face, individualized education session, emphasizing the need for documentation of the quality of bowel preparation and proper photodocumentation of the appendiceal orifice and the ileocecal valve for colonoscopy

Figure 1. Photograph of the appendiceal orifice.

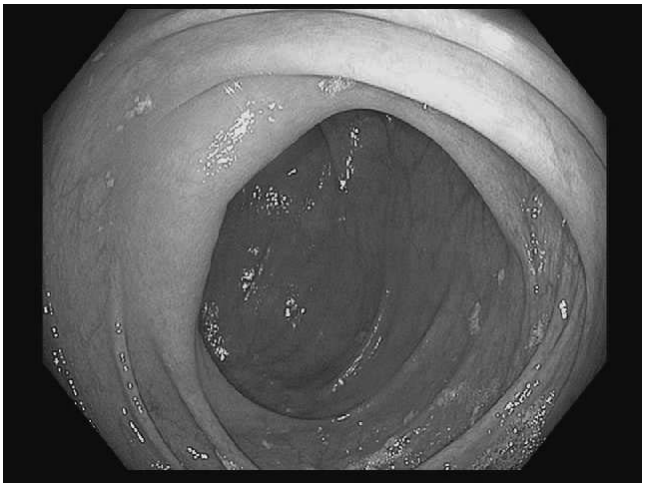

Figure 2. Photograph of the ileocecal valve.

reports. We reviewed each physician's deficiencies according to the ASGE guidelines and instructed each gastroenterologist on methods for improvement.

After 5 months, without notice, we collected the same 3 colonoscopy quality metrics from 100 more colonoscopy reports for each of the 6 gastroenterologists. Following our second collection, we discussed the final results with the 6 gastroenterologists in our departmental meeting.

Collecting 100 observations before the intervention and 100 subsequent observations after the intervention per endoscopist provided >80% power to detect a difference of at least 15%. Our statistical analysis involved calculating the median values for the changes in data points and conducting nonparametric signed-rank tests to obtain *P* values. A *P* value <0.05 was used to determine statistical significance.

RESULTS

At baseline, the endoscopists recorded the quality of bowel preparation 97.5% of the time. The mean photodocumentation rate of the appendiceal orifice with correct labeling among the endoscopists was 55%, ranging from 23%-84%. The mean ileocecal valve photodocumentation rate with correct labeling was 32.5% among the endoscopists, ranging from 3%-73%. After the one-on-one educational sessions, documentation of the quality of bowel preparation remained high at 97.2% (Figure 3). Improvement in documentation of the appendiceal orifice with correct labeling increased to a mean of 91% (Figure 4), with a median change of 28.5% (*P*=0.0313). Documentation of the ileocecal valve with correct labeling improved to a mean of 73% (Figure 5), with a median change of 37.5% (*P*=0.0625). The overall increase in documentation for appendiceal orifices and ileocecal valves was 36% and 41%, respectively, after the one-on-one educational sessions (Table).

DISCUSSION

Education sessions can increase adherence to the ASGE guidelines. Coe et al utilized a didactic model at Mayo Clinic and reported significant improvement ranging from 54%-83% in 4 quality metrics.[3] As the US healthcare system moves toward a more value-based payment model, defining and assessing quality metrics will continue to be paramount. Proving value with a thorough and complete examination will be vital to patients and payers alike. Multiple studies have examined the adenoma detection rates of initial colonoscopies with inadequate bowel preparation and found that 28%-33% of adenomas were missed.[6,7] Thus, documentation of the quality of bowel preparation is important for quality control and determining intervals for future screening and surveillance examinations.

Physician documentation of the quality of bowel preparation at our institution occurred 97.5% and 97.2% of the time before and after the education sessions, respectively. This near-perfect documentation of the quality of bowel preparation was not surprising because of the established departmental policy requiring documentation of the quality of bowel preparation in all colonoscopy reports. In addition, documentation of bowel preparation is also a default window in the ProVation workstation we use to prepare our colonoscopy reports.

Proof of cecal intubation with accurate photodocumentation of the ileocecal valve and the appendiceal orifice are important to ensure that the procedure was complete and the entire colon was examined. Soetikno et al found that flat lesions or nonpolypoid lesions occurred at a prevalence of 5.84% with an odds ratio of 2.01 involving carcinoma.[8] Flat lesions may occur even in the right colon; therefore, a thorough evaluation of the whole colon is important.

Our physicians reported almost 100% cecal intubation rates, but they lacked the appropriate photodocumentation. Some endoscopists correctly photographed landmarks but incorrectly labeled them, while others did a poor job of photographing landmarks and did not take convincing photographs of labeled landmarks. This discrepancy between proper labeling and photodocumentation is problematic because 2-dimensional views may not show convincing evidence of the anatomical landmark if the photographs are not taken at the correct distance, so accurate labels are necessary.[9,10] We suspected that the relatively poor documentation rates at baseline and follow-

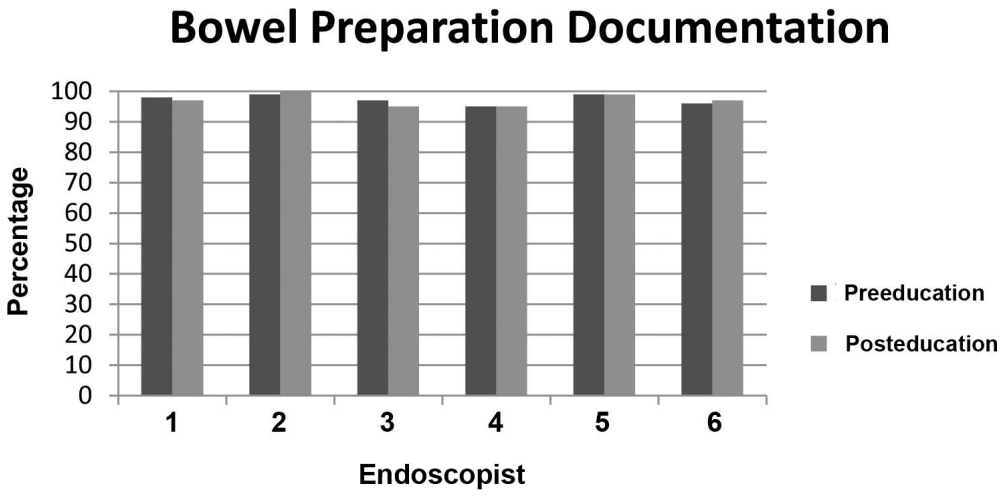

Figure 3. Preeducation and posteducation comparison of bowel preparation documentation rates.

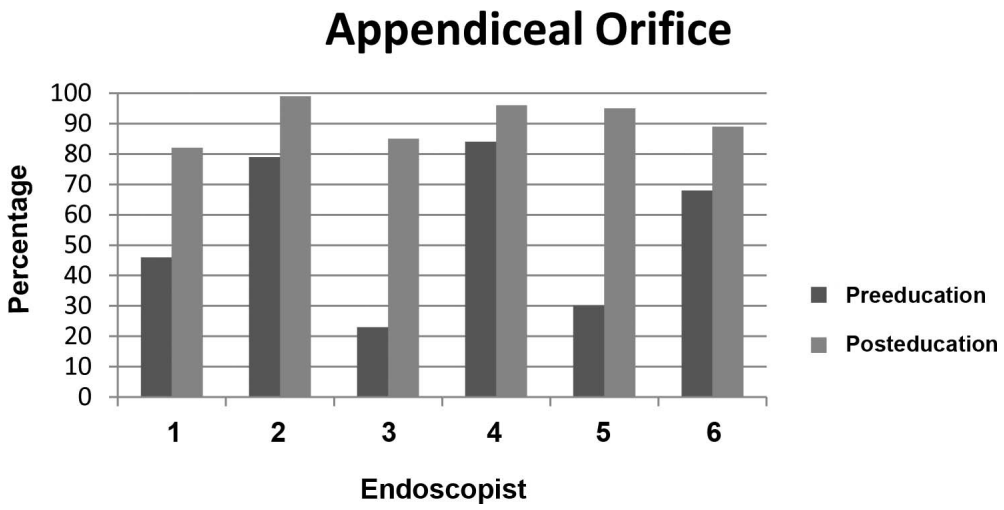

Figure 4. Preeducation and posteducation comparison of the appendiceal orifice documentation rates.

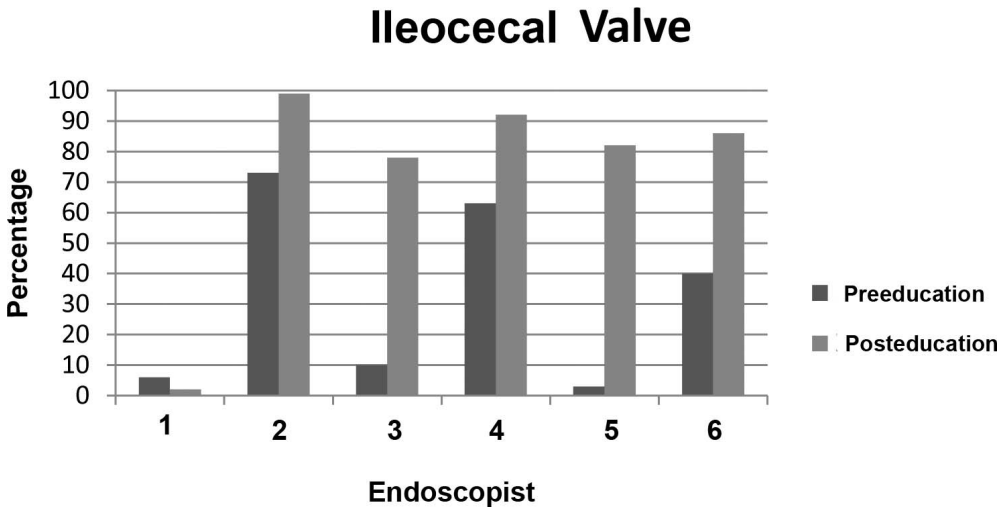

Figure 5. Preeducation and posteducation comparison of the ileocecal valve documentation rates.

Table. Preeducation and Posteducation Documentation Rates for the Appendiceal Orifice and Ileocecal Valve

Endoscopist	Proper Documentation of Appendiceal Orifice		Proper Documentation of Ileocecal Valve	
	Preeducation	Posteducation	Preeducation	Posteducation
1	46%	82%	6%	2%
2	79%	99%	73%	99%
3	23%	85%	10%	78%
4	84%	96%	63%	92%
5	30%	95%	3%	82%
6	68%	89%	40%	86%
	Median change of 28.5% (P=0.0313)		Median change of 37.5% (P=0.0625)	

ing intervention were partly attributable to the nuances of inaccurate cursor placement in the image during labeling of photographs in the ProVation workstation. We found that if the cursor was not placed accurately when we were labeling pictures of the appendiceal orifice and ileocecal valve, the default label was "cecum." Endoscopists were not given credit for pictures that were incorrectly labeled even if the pictures were taken correctly. Part of the education process was to remind the endoscopists to carefully and correctly photodocument and label key aspects of their procedure in accordance with ASGE guidelines. Although correct photodocumentation rates of the appendiceal orifice and ileocecal valve improved, the improvement was statistically significant only for the photodocumentation of the appendiceal orifice.

Our inability to prove statistical significance in the improvement of correct photodocumentation of the ileocecal valve was influenced by 1 endoscopist who did not change his/her photodocumentation practice. This endoscopist can be considered an outlier, but our study was limited by the total number of gastroenterologists from whom we could collect data rather than the total number of colonoscopies reviewed per gastroenterologist.

The quality of a colonoscopy is not only beneficial for patient care but is often explored in malpractice lawsuits, specifically in regard to interval cancers and deviations from the standard of care.[11] Appropriate documentation of quality metrics in the endoscopy report provides evidence that a thorough and complete examination was performed.

Future studies can reexamine the durability of this improvement and assess other quality metrics proposed by the ASGE, such as surveillance intervals, withdrawal times, adenoma detection rates, and total adenomas per patient examination.[12]

CONCLUSION

Although we will need to reassess subsequent colonoscopy reports to evaluate the permanence of this intervention, our evidence suggests that educational sessions can improve the quality and accuracy of documentation of quality metrics during colonoscopies. Our goal of 100% compliance with the 3 quality metrics was not met. However, we feel the results of our intervention are promising and provide an avenue to accurately measure and improve performance of other quality metrics in gastroenterology and endoscopy. Our intervention also introduced fellows and residents to the importance of quality metrics and improvement projects during their training.

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