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SURGICAL ENDOSCOPY
and Other Interventional Techniques

# Colonoscopy

## Why are general surgeons being excluded?

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**Abstract**
*Background:* The role of surgeons as endoscopists has been extensively debated in the literature, with conflicting studies published regarding the safety and efficacy of surgeons performing colonoscopies. A multitude of medical federations and societies have set various standards for granting endoscopy privileges, many with a bias against general surgeons [1, 3]. We reviewed the colonoscopy experience at our institution to evaluate differences between gastroenterologists (GI) and general (GS) and colorectal surgeons (CRS) in procedure times and complication and cecal intubation rates.
*Methods*: Between January 2000 and July 2002, 5237 colonoscopies were performed at our institution. The data for procedure times, completion, and complication rates were collected in a prospective database. Complications were defined as perforation, bleeding, and postpolypectomy syndrome. Incomplete colonoscopies due to colitis, poor bowel preparation, or tumor obstruction were excluded. Chi-squared test was used to compare complication and cecal intubation rates between the three groups. Median procedure times were compared using the Kruskall-Wallis and Dunn's pairwise tests. A significant $p$-value was defined as $< 0.05$.
*Results*: No differences in the complication rate was noted between the three groups: GI (0.12%), CRS (0.15%), and GS (0.11%) ($p = 0.99$). There was a trend toward a lower incomplete colonoscopy rate in the GS group compared to CRS and GI: 0.32% vs 0.84% and 0.36%, respectively ($p = 0.07$). The median colonoscopy times for GS (29 min), however, were shorter than for GI (34 min, $p < 0.001$) or CRS (31 min, $p < 0.001$).
*Conclusion:* General surgeons perform colonoscopies expeditiously, with as low a morbidity rate and as high a completion rate as their gastroenterology or colorectal surgery colleagues. As the results of this study confirm, general surgeons should not be excluded from endoscopy suites.

**Key words:** Colonoscopy — Endoscopy — General Surgeons

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Although surgeons initially introduced colonoscopy, their role as endoscopists has subsequently been extensively debated in the literature. Conflicting reports by endoscopy "specialists" and "nonspecialists" have been published regarding the outcomes of colonoscopies performed by surgeons. A multitude of medical federations and societies have set various standards for granting hospital endoscopy privileges, many of which are biased against general surgeons. A recent large prospective study by Wexner et al. [6] favorably addressed this issue. Their study, however, did not differentiate between general and colorectal surgeons. We therefore reviewed the colonoscopy experience at our institution over the past 2 years to detect differences among gastroenterologists and general and colorectal surgeons in procedure times, complications, and cecal intubation rates.

## Methods

In the period between January 2000 and July 2002, 5499 colonoscopies were performed at the Cleveland Clinic Hospital Florida, Naples. Attending physicians of the Gastroenterology (GI), Colorectal (CRS), and General Surgery (GS) services performed or supervised all procedures. Our institution's IRB committee approval was obtained and a prospective database was created using Pentax Endopro software (Pentax Corporation, Orangeburg, NY). Specific colonoscopic procedures not performed by the GS service (stenting, injections, etc.) were excluded, leaving 5237 procedures for review. The collected data were analyzed for procedure times and completion and complication rates.

**Table 1.** Comparison of complication and completion rates

| Speciality | Total no. | Incomplete (%) | Complications (%) | Mortality |
|---|---|---|---|---|
| GI | 1,661 | 6 (0.36) | 2 (0.12) | 0 |
| CRS | 2,628 | 22 (0.84) | 4 (0.15) | 0 |
| GS | 948 | 3 (0.32) | 1 (0.11) | 0 |

**Table 2.** Breakdown of complications

| Speciality | Perforation | Bleeding | Postpolypectomy syndrome |
|---|---|---|---|
| GI | 0 | 1 | 1 |
| CRS | 0 | 3 | 1 |
| GS | 0 | 1 | 0 |

Complications were defined as perforation, postpolypectomy syndrome, and bleeding only. Incomplete colonoscopies due to colitis, poor bowel preparation, or tumor obstruction were excluded, The chi-squared test was used to compare complication and cecal intubation rates between the three groups. Median procedure times were compared using the Kruskall-Wallis test—as the data were not normally distributed—followed by a Dunn's pairwise comparison. A significant $p$-value was defined as $<0.05$.

## Results

The results have been summarized in Tables 1–4. There were no deaths or overt perforations. The overall complication rate was low in each speciality group: GI = 2 (0.12%), CRS = 4 (0.15%), and GS = 1 (0.11%). The differences between the groups' complication rates were also statistically insignificant ($p = 0.99$). There was a trend toward a lower incomplete colonoscopy rate in the GS group compared to CRS and GI. The cecum was not reached in six GI (0.36%), three GS (0.32%), and 22 CRS (0.84%) cases, with a trend toward statistical significance ($p = 0.07$) between GS and CRS. Although not clinically significant, the median colonoscopy time for GS (29 min) was shorter than for GI (34 min, $p < 0.001$) or CRS (31 min, $p < 0.001$).

**Table 3.** Procedure time

| Specialty | No. exams | Median time (min) | Minimum | Interquartile range | Maximum |
|---|---|---|---|---|---|
| GI | 1,661 | 34 | 5 | 25, 46 | 90 |
| CRS | 2,628 | 31 | 5 | 23, 41 | 90 |
| GS | 948 | 29 | 8 | 22, 38 | 88 |

**Table 4.** Comparison of procedure times

| | $p$ value |
|---|---|
| GI vs CRS | $<0.001$ |
| GI vs GS | $<0.001$ |
| CRS vs GS | $<0.001$ |

## Discussion

The role of surgeons as endoscopists has been extensively debated in the literature and has recently been reviewed by Wexner et al. [5, 6]. In a prospective analysis of 13,580 colonoscopies performed by 207 surgeons, they reported completion and complication rates of 92% and 0.074%, respectively. Increased experience was associated with higher colonoscopy completion rates but did not correlate with the number of complications. That study, however, included all surgical endoscopists. In their study published in 1992, Reed et al. specifically analyzed data from 1000 consecutive colonoscopies performed by general surgeons with no formal endoscopic training [2]. They reported a 0.1% complication rate and no mortality. However, they did not mention colonoscopy times or completion rates: factors the medical literature usually emphasizes in touting the advantages of GI specialists over surgeons in performing colonoscopies. And finally, citing the increasing role of rural surgeons as endoscopists, Sariego reported no complications in 276 endoscopic procedures [4].

In this study, compared to CRS and GI, there was a trend toward a lower incomplete colonoscopy rate in the GS group, with similar complication rates and median colonoscopy times. These differences, however, are not clinically significant. Variations in procedure types were not a contributing factor, as we had already excluded those not done by GS, such as injections and colonic stenting. Referral bias, however, may account for some of these differences. Most patients were either self-referred or sent by our multispeciality group's internists. A central scheduling office would subsequently assign an endoscopist based on patient and endoscopy suite schedules. Whereas most postcolectomy patients were examined by their primary colorectal surgeons, a higher percentage of screening endoscopies may have been done by the general surgery service. On the same line, the more difficult patients, as conceived by the referring physicians, may have been preferentially referred to GI.

Our study is also limited by its retrospective design. Four endoscopists had performed the vast majority of the cases. The data, therefore, may heavily reflect these individuals' significant experience with endoscopy. The GS colonoscopies were done by one general surgeon with a significant volume of endoscopic experience both during and after residency. This experience may not mimic that of the average general surgeon in practice. However, it may very well be that general surgeons, by nature of the selection process and eye–hand coordination developed while learning laparoscopic procedures, require fewer endoscopic cases to become proficient. A prospective randomized study would be needed to properly control and monitor these variations.

The total number of complications, too, may have been under reported if the patients were admitted for postcolonoscopy problems to outside institutions without our knowledge. Postprocedural contact with these 5200 patients would have been well beyond the scope of our study. Finally, procedural time and complication rates may have been influenced by the presence and experience of endoscopy trainees assisting with procedures, as well as the frequency with which polypectomies were performed. The differences in polypectomy rates and total number of polypectomies could not be

distinguished among the three speciality groups in this retrospective analysis. A prospective study would be needed to address all of these potential sources for variation as well as to standardize definitions of completion using objective measures of cecal intubation.

Our study does suggest that experienced general surgeons can match or surpass objective colonoscopy competency measures when compared with gastroenterologists and colorectal surgeons. Therefore, they should not be excluded from endoscopy suites solely on the basis of their speciality. Prospective studies evaluating the validity of the current gastroenterology society colonoscopy credentialing guidelines [1] as applied to general surgeons should be performed to more definitively address these issues.

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