

GI endoscopy in rural communities: Experience of a rural family physician in British Columbia

A study in central BC found that a well-trained general practitioner was able to perform more than 600 safe and technically competent endoscopic examinations over 2.5 years.

ABSTRACT

Background: Endoscopic examination plays an important role in evaluating upper and lower gastrointestinal problems and in screening for colon cancer. Because patients in rural settings are primarily served by family physicians and have limited access to specialists such as gastroenterologists, a study was initiated to assess the outcomes and complications of upper and lower endoscopy performed by a rural family physician, and to compare these results with those in the literature. **Methods:** A literature review and a retrospective observational study were undertaken. The population studied included patients in a rural area of central BC who underwent colonoscopy and/or esophagogastroduodenoscopy performed by a family physician from September 2002 to December 2004 (2.5 years). The charts for 100 of the patients who underwent the procedures were

reviewed and analyzed. The procedures included 49 upper and 58 lower scopes (some patients had both). **Results:** The reach-the-cecum rate in the group studied was 94.8%. The reach-the-duodenum rate was 95.9%. The overall incompleteness rate was 4%. The complications rate was 0%. The false-negative rate was 6% and the false-positive rate was 11%. In 30% of cases no pathology was available for comparison. **Conclusions:** A well-trained rural family physician can provide safe and technically competent upper and lower GI endoscopy in rural settings. The results from this case review compare favorably with the currently reported results from other endoscopy studies. Further research is needed to determine the kind of training required by rural family physicians who perform endoscopic examinations.

Background

Digestive disorders are extremely common in the general population, especially in the elderly. Endoscopic examination is important in evaluating and managing upper and lower gastrointestinal problems. About 1% of the general population has an endoscopy each year, although this proportion varies widely across health districts and regions.^{1,2} An endoscopic diagnosis is generally agreed to be required before long-term treatment is initiated. Evidence is accumulating that early endoscopy is more cost-effective than empirical treatment followed by endoscopy when indicated.³

As well as playing a role in evaluating problems, endoscopy plays a role in screening for colon cancer. There is a national movement to screen patients at risk for colon cancer, and a growing need for surveillance of patients with a history of polyps and colorectal cancer. Many physicians and patients prefer colonoscopy as the reference standard screening study for colon polyps and cancer as well as for surveillance.⁴ The lack of qualified endoscopists in rural areas

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means that family physicians with training in upper and lower gastrointestinal endoscopy are often required to perform these procedures. The issue of how we define a “well-trained” family physician endoscopist is a matter of controversy. There is no consensus and no national or provincial certification process that is required for endoscopic privileges in many Canadian hospitals. However, most leaders in training endoscopists emphasize that clinical knowledge and judgment are at least as important as technical skill in manipulating a scope, and recommend strongly that all programs for certifying endoscopists incorporate such clinical training. In order to determine the quality of endoscopic examinations performed by a rural family physician, a study was initiated to collect some baseline data.

Methods

A literature review was conducted using the following keywords and subject headings: endoscopy, digestive system, gastrointestinal, rural health, rural hospitals, general practitioner, family physicians, and Canada. Only two articles specifically about GI endoscopy in rural communities were found.^{5,6} One study looked at the safety and effectiveness of colonoscopy done by family physicians in rural Ontario.⁵ The other study looked at patterns of upper and lower GI endoscopy in Alberta.⁶ While there are very few studies addressing the provision of GI endoscopic services in small rural hospitals by nonspecialist physicians, there are numerous studies about the quality and safety of the procedure in general. These studies report that a competent colonoscopist can reach the cecum more than 90% of the time.⁷⁻¹³ (There is a lack of data on reaching the duodenum, even though this might prove to be an indicator of the colonoscopist’s compe-

tence. Studies also show that endoscopy can be completed with a complications rate of 0% to 5%,^{8,10-15} and with a satisfactory rate of detection of pathologic lesions.^{8,12-16} The complications reported by various researchers include arrhythmia, bradycardia, hypotension, hypoxia, bleeding, and perforation.

The retrospective observational study that followed the literature review used data collected on 100 patients undergoing endoscopic examinations performed by the same rural family physician at St. John’s Hospital in Vanderhoof, BC. This 24-bed health care facility in central British Columbia serves a population of

Table. Results of endoscopic examinations performed on 100 patients at St. John’s Hospital, Vanderhoof, BC, 2002–2004.

Colonoscopy (N=58) findings	Rate in sample	95% CI
Diverticular diagnosis	27.6% (16/58)	(16.1%, 39.1%)
Colitis	8.6% (5/58)	(1.4%, 15.8%)
Lower GI polyps	36.2% (21/58)	(23.8%, 48.6%)
Melanosis coli	1.7% (1/58)	(0.0%, 5.1%)
Hemorrhoids	19.0% (11/58)	(8.9%, 29.1%)
Rectal ulcer	1.7% (1/58)	(0.0%, 5.1%)
Inflammatory bowel disease	1.7% (1/58)	(0.0%, 5.1%)
Anal fissures	1.7% (1/58)	(0.0%, 5.1%)
Colon cancer	1.7% (1/58)	(0.0%, 5.1%)
Normal	25.9% (15/58)	(14.6%, 37.1%)
Gastroscopy (N=49) findings	Rate in sample	95% CI
Esophagitis	22.4% (11/49)	(10.8%, 34.1%)
Upper GI polyps	10.2% (5/49)	(1.7%, 18.7%)
Barrett esophagus	10.2% (5/49)	(1.7%, 18.7%)
Esophageal cancer	2.0% (1/49)	(0.0%, 6.0%)
Gastritis	75.5% (37/49)	(63.5%, 87.6%)
Hiatal hernia	30.6% (15/49)	(17.7%, 43.5%)
Gastric ulcer	4.1% (2/49)	(0.0%, 9.6%)
Duodenitis	12.2% (6/49)	(3.1%, 21.4%)
Foreign body	2.0% (1/49)	(0.0%, 6.0%)
Normal	4.1% (2/49)	(0.0%, 9.6%)
Quality indicators	Rate in sample	95% CI
Upper GI incompleteness rate	4.1% (2/49)	(0.0%, 9.6%)
Lower GI incompleteness rate	3.4% (2/58)	(0.0%, 8.1%)
Total	4.0% (4/100)	(0.1%, 7.8%)
Reach-the-cecum rate	94.8% (56/58)	(89.1%, 100.0%)
Reach-the-duodenum rate	95.9% (47/49)	(90.2%, 100.0%)
Complications rate	0.0% (0/100)	Upper bound only: 4.0%
False-negative rate	6.0% (6/100)	(1.3%, 10.7%)
False-positive rate	11.0% (11/100)	(4.9%, 17.1%)

12 000 people. From September 2002 to December 2004 (2.5 years), 677 scopes were undertaken at the facility. One hundred charts describing 49 upper and 58 lower scopes (some patients had both) were randomly selected and every third chart was analyzed in detail. The data collected included patient demographic characteristics, indications for endoscopy, endoscopic and pathologic findings, and complications. Analysis of these data provided some quality indicators: the reach-the-cecum-rate (RCR), the reach-the-duodenum rate (RDR), the complications rate, and the false-negative and false-positive rates.

Results

Of the 100 patients whose charts were reviewed, 49 were female and 51 were

male. The mean age was 53.1 years. The most common indication for an upper scope was chronic abdominal pain (38.8%), and for a lower scope was PR bleeding (36.2%). Only one colon cancer and one esophageal cancer were found (Table). The physician completed the procedure in all but 4 cases, and reached the cecum (56/58) or duodenum (47/49) as required in almost all cases. There were no complications, 6 false-negative results, and 11 false-positive results. Overall these results compare favorably with those expected of a competent endoscopist.

According to the American Society for Gastrointestinal Endoscopy (ASGE) and the Canadian Association of Gastroenterology (CAG), the following are some of the appropriate quality indicators when reviewing GI

endoscopy for both clinical and research purposes: sedation, complications, patient satisfaction, duration of procedure, and success of procedure (technical success, subjective outcome, and diagnostic findings). Many studies rely on the modified GHAA-9 patient satisfaction survey, a useful tool that has been validated in numerous patient populations and has been used for more than 20 years (Figure). Technical success is commonly defined as reaching the cecum in lower endoscopy and reaching the duodenum in upper endoscopy. Other indicators of procedural success are subjective outcome (whether the findings were clinically useful), and diagnostic findings (visual and/or pathologic). Time taken for colonoscopy is not itself a measure of quality, but is of interest when considering efficiency and scheduling. The average time for colonoscopy in different studies varies.¹⁵ However, it is now recognized that for polyp screening, the operator should take a minimum of 6 minutes to withdraw the scope from the cecum, and that using less time may result in a higher miss rate for small neoplasms. In larger centres, taking longer than 15 minutes on average for insertion and withdrawal results in lack of efficiency and further prolongs waiting lists. It would be difficult to measure whether this need for efficiency exists to the same degree in rural communities, or in fact what the relative per capita cost is for endoscopy in different communities. There is a lack of reported time studies for upper GI endoscopy.

Limitations of the study discussed here include a relatively small sample size and the fact that only one rural family physician performed all the procedures. Data on certain suggested criteria were not collected (e.g., patient satisfaction and duration of procedures). In addition, no pathologic

Questionnaire

A number of questions are listed below regarding the visit you just made. In terms of your satisfaction, how would you rate each of the following:

- How long you waited to get an appointment.
 Excellent Very Good Good Fair Poor
- Length of time spent waiting at the office/hospital for the procedure.
 Excellent Very Good Good Fair Poor
- The personal manner (courtesy, respect, sensitivity, friendliness) of the physician who performed your procedure.
 Excellent Very Good Good Fair Poor
- The technical skills (thoroughness, carefulness, competence) of the physician who performed your procedure.
 Excellent Very Good Good Fair Poor
- The personal manner (courtesy, respect, sensitivity, friendliness) of the nurses and other supportive staff.
 Excellent Very Good Good Fair Poor
- Adequacy of explanation of what was done for you and all your questions answered.
 Excellent Very Good Good Fair Poor
- Overall rating of the visit.
 Excellent Very Good Good Fair Poor
- Would you have the procedure done again by this physician?
 Yes No
- Would you consider having this procedure again at this facility?
 Yes No

Figure. Modified GHAA-9 questions used to assess patient satisfaction with endoscopic examination.¹⁷

ic report was available for comparison in 30% of cases, and 4% of procedures were incomplete. Future studies are needed to specifically address these limitations and other issues. While the measures studied assessed the endoscopist's accuracy in recognizing mucosal pathology, the real value of endoscopic diagnosis is in confirming or refuting a clinical diagnosis, not in verifying gross mucosal appearance by means of a biopsy. The endoscopic diagnosis cannot be the main determinant of real outcome unless described in the context of detailed history and physical exam. For the same reasons, the clinical management of the presenting problem during the procedure was not described in this study. For example, were polyps removed at colonoscopy once identified? Were bleeding lesions treated by appropriate endoscopic means? These would be useful data in assessing the overall effectiveness, efficiency, cost-effectiveness, and productivity of the procedure, as well as designing specific training programs and courses for potential candidates.

One strength of this study is the centrality of information: with only one hospital and medical clinic in town, the chance that any complication would be missed is unlikely. Another potential strength is the use of RDR data, which might be utilized for further comparative studies in the future.

Conclusions

In a central BC hospital, a well-trained rural family physician was able to provide safe and technically competent diagnostic and therapeutic GI endoscopy for patients. The quality of the physician's results compared favorably with published results for the procedures performed. However, we still need more information on what type of procedural instruction and what amount of experience is necessary for

family physicians performing endoscopy in rural areas. Furthermore, outcome studies are needed to relate endoscopic findings to clinical diagnosis and patient management, and to determine how these relationships are affected by the practitioner's training. Further prospective research using recommended quality indicators will assist in establishing objectives and standards for training programs for rural practitioners and will allow patients in small communities to benefit from the presence of physicians who are well trained in this area of practice.

Competing interests

None declared.

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