

Feasibility of 105-cm Flexible Sigmoidoscopy in Family Practice

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The 105-cm flexible sigmoidoscope was studied for the feasibility of its use in a family practice setting in screening for colorectal cancers and polyps. A total of 49 examinations were performed. The average length of colon examined was 71 cm. Insertion to 105 cm was accomplished in 14 patients (29 percent) and exceeded 65 cm in 28 patients (57 percent). No complications of the procedure were encountered. The study indicated that some patients, with no special preparation or medications and no additional discomfort, might benefit by the more thorough screening afforded by 105-cm flexible sigmoidoscopy. What is not yet known is the efficacy of large-scale screening for cancers and polyps utilizing the 105-cm flexible sigmoidoscope in the family practice setting.

Carcinoma of the colon is a major health concern. The American Cancer Society estimates that there will have been 138,000 new cases of cancer of the colon and rectum identified in the United States in 1985.¹ The American Cancer Society currently recommends a strong program of early detection as the major approach in controlling this disease. Early detection of colon cancer centers on two screening modalities: stool occult blood testing and sigmoidoscopic examination.

The flexible sigmoidoscope has been demonstrated to be superior to the rigid proctoscope for the early detection of colon cancers and polyps.² Johnson et al³ have demonstrated the feasibility of screening for colon cancer and polyps utilizing the 65-cm flexible sigmoidoscope in the family practice setting.

Recent studies indicate the distribution of polyps and cancer in the colon is changing. Shinya et al⁴ reported on the distribution of 6,942 polyps within the colon: 6 percent of adenomas were located in the rectum, 46 percent in the sigmoid colon, 23 percent in the descending colon, 12 percent in the transverse colon, and, 13 percent in the right colon. Such data lead to controversy regarding the ideal length of the flexible sigmoidoscope for colon screening.

There is evidence that the 65-cm flexible sigmoidoscopy examination may be insufficient for colon-screening purposes. Tedesco et al⁵ reported on a series of 642 patients in whom 39 cancers and 199 polyps were discovered. A total of 36 percent of cancers and 34 percent of polyps were located greater than 60 cm from the anus. Although the flexible sigmoidoscopy detects more lesions than the rigid proctoscope, 50 percent of colon cancers located beyond detection by the proctoscope would not have been detected with a 65-cm sigmoidoscope. A longer flexible sigmoidoscope may be required so as not to miss cancers and polyps in colon-screening examinations.

Just how much of the colon is being examined with the various instruments? Conventional wisdom holds that the 35-cm flexible sigmoidoscopy visualizes up to the junction of the sigmoid and descending colon and that the 65-cm flexible sigmoidoscopy can be passed to the splenic flexure. Rosenberg⁶ reported on the use of a 105-cm flexible sigmoidoscopy by experienced proctologists for the identification of colon polyps and cancers in the office setting. Utilizing anatomical landmarks, he identified the extent of colon visualized with the 105-cm flexible sigmoidoscopy in 250 patients: mid- and proximal sigmoid colon, 16 percent of patients; descending colon, 15 percent; splenic flexure, 16 percent; distal transverse colon, 45 percent; hepatic flexure, 6 percent; and, ascending colon, 3 percent.

The anatomical level reached by the flexible sigmoidoscopy determines the potential of the sigmoidoscopy to detect colon disease. Lehman et al⁷ challenged the ability of endoscopists to predict accu-

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rately, by anatomical criteria, the level of colon examined. In his study a metal clip was applied to the colon wall when examination with a 60-cm flexible sigmoidoscope was completed. The location of the clip was demonstrated subsequently by barium enema examination. Lehman et al concluded that the endoscopist's report of extent of insertion, assessed by visual appearance, is unreliable. He further demonstrated that, when the flexible sigmoidoscope is inserted to 60 cm, the examination can terminate in an area from the proximal sigmoid colon to the distal transverse colon.

In the course of examining over 400 patients utilizing the 65-cm flexible sigmoidoscope in a family practice setting, it has been noted that further advancement could have been accomplished frequently and easily given a longer instrument. An opportunity exists for family physicians to screen patients more thoroughly for colon polyps and cancers using the 105-cm flexible sigmoidoscope. Reported here is a preliminary study investigating the feasibility of the 105-cm flexible sigmoidoscope in a family practice setting.

METHODS

Between June 1984 and April 1985, 49 flexible sigmoidoscopy examinations were performed utilizing the ACMI TX91R 105-cm instrument. The flexible sigmoidoscopy examinations were done by a member of the family practice faculty who had previous experience in over 500, 65-cm flexible sigmoidoscopy examinations. Patients were informed of the potential benefits and hazards of the 105-cm examination. As with the 65-cm flexible sigmoidoscopy examination, patients were instructed that the procedure would be terminated upon request. Indications for 105-cm flexible sigmoidoscopy included colon screening, rectal bleeding, positive stool guaiac, abdominal pain, and change in bowel habits.

Patients underwent bowel preparation that included a clear liquid diet for 24 hours before the examination and a Fleet's enema the evening before and the morning of the procedure. No sedatives or other medications were utilized. The flexible sigmoidoscopy examinations were performed with the patient lying on the left side. A digital rectal examination and rigid proctoscopy to 10 cm were performed prior to flexible sigmoidoscopy.

A database was completed for each patient, which included name, reason for examination, findings, reason for ending examination, patient comfort, time taken, and centimeters of flexible sigmoidoscopy insertion.

Patient comfort was determined by presence or absence of pain and cramping, relief by suctioning or withdrawal, and request for cessation of the procedure. Comfort was ranked as excellent, with minimal

TABLE 1. NUMBER AND PERCENTAGE OF PATIENTS EXAMINED WITH 105-CM FLEXIBLE SIGMOIDOSCOPE BY INSERTION DISTANCE

Patients Examined (n = 49)	
Sigmoidoscope Insertion Distance (cm)	No. (%)
105	14 (29)
95	2 (4)
90	1 (2)
85	1 (2)
80	2 (4)
75	7 (14)
70	1 (2)
65	2 (4)
60	3 (6)
50	1 (2)
45	1 (2)
40	7 (14)
35	3 (6)
30	2 (4)
20	2 (4)

cramping, no spontaneous reports of discomfort, and no request for cessation of the procedure; good, with self-reported cramping relieved with suctioning of air, no need to withdraw the instrument to relieve pain, and no request for cessation of the procedure; fair, with self-reported pain not relieved by suctioning but relieved by withdrawing the instrument, and no request for cessation of the procedure; and poor, with self-reported pain not relieved by suctioning or withdrawal, or request for cessation of the procedure.

Time of the examination comprised total physician time, defined as preprocedural discussion with the patient, the examination itself, biopsies as necessary, and postprocedural instruction and discussion with the patient.

RESULTS

The average length of colon examined with the 105-cm flexible sigmoidoscope was 71 cm. Insertion to 105 cm was accomplished in 14 cases (29 percent). Insertion exceeded 65 cm in 28 cases (57 percent) and 35 cm in 42 cases (86 percent). Results of 105-cm sigmoidoscopy examinations by centimeters of insertion are shown in Table 1.

Colon cancer was identified in one case and polyps in five cases. No lesions were noted above 30 cm. No complications of the procedure were encountered. Total physician time required for the examination rarely exceeded 30 minutes.

Reasons for terminating the flexible sigmoidoscopy examination prior to 105 cm differed according to

anatomical level reached. Inadequate bowel preparation was the reason for termination twice as often for examinations exceeding 60 cm compared with reasons for termination of examinations of 60 cm or less. Pain was the least common reason for termination above 60 cm (25 percent) and was the most common reason at 60 cm or less (42 percent). Patient discomfort sufficient to cause termination of the procedure, once 65-cm insertion had been achieved, was encountered in four patients. Patient comfort once 65-cm insertion was achieved was rated as excellent (43 percent), good (37 percent), fair (10 percent), and poor (10 percent).

DISCUSSION

Results demonstrate that the 105-cm flexible sigmoidoscope can be utilized in a family practice setting to extend the search for colon cancers and polyps. It is not clear, however, what the final role of the 105-cm sigmoidoscope will be, particularly when compared with the 65-cm instrument. A number of issues need to be resolved.

The literature suggests that, with the changing distribution of colon lesions, longer instruments will detect more cancers and polyps at an earlier stage. The yield from colon screening with the 105-cm flexible sigmoidoscope in asymptomatic patients is not yet known. In the small series reported here, no lesions above 30 cm were found. Potential benefits gained from examining increased colon surface must be weighed against possible additional discomfort to the patient.

The additional training family physicians will require to utilize the 105-cm flexible sigmoidoscope needs to be determined. Many experienced family practice endoscopists have encountered the splenic flexure and negotiated its lumen in the course of 65-cm flexible sigmoidoscope examination. In addition, family physicians, experienced in utilizing the 65-cm instrument, frequently encounter times when, having reached 65 cm, they could have easily passed the sigmoidoscope tip farther given a longer instrument. Present experience indicates that minimal additional training will be needed, as the 105-cm flexible sigmoidoscope examination is a logical extension of 65-cm sigmoidoscope examination skills. An unanticipated benefit discovered was that the 105-cm flexible sigmoidoscope proved to be a more maneuverable instrument and thus easier to use.

On the surface it might appear that examination with the 65-cm flexible sigmoidoscope is safer, simpler for the physician, less uncomfortable for the patient, and more cost effective than examination with the 105-cm instrument. These assumptions need to be carefully examined. From the present experience and that of other endoscopists, screening sigmoidoscopy with either the 65-cm or the 105-cm flexible instrument is an

extremely safe procedure.

Several observations about 105-cm flexible sigmoidoscopy can be made. Once the 105-cm sigmoidoscope is inserted to 65 cm, the endoscopist is able to advance the sigmoidoscope farther almost all of the time. In the present study, average insertion, once 65 cm had been achieved, was 91 cm. Two consistent levels of difficulty were encountered at 40 cm and 75 cm of insertion. Of the examinations terminated before 105 cm, two out of five terminated at 40 cm or less. This termination related to difficulty negotiating tortuosity in the proctosigmoid and sigmoid-descending colon. Of the examinations exceeding 40 cm, one out of five was terminated at the 75 cm level. As transverse colon landmarks were not identified in these examinations, it is postulated that those sigmoidoscope examinations terminated at 75 cm represented inability to negotiate the splenic flexure.

The cost effectiveness of 105-cm flexible sigmoidoscopy depends on many variables. When performed for screening purposes, examination with the 105-cm sigmoidoscope has the potential to be more cost effective than examination with the 65-cm sigmoidoscope. It is estimated that examination with the 105-cm flexible sigmoidoscope should identify approximately three more positive cases per every 100 examinations when compared with 65-cm sigmoidoscope examinations. Potential increased yield from utilization of the 105-cm sigmoidoscope could contribute to decreased mortality and morbidity from colon disease. When performed by family physicians, 105-cm flexible sigmoidoscope could facilitate further advances in colon screening at the primary care level.

The evaluation of the symptomatic patient or a patient with a positive stool guaiac requires a full colon workup with barium enema examination or colonoscopy. Examination with the 105-cm flexible sigmoidoscope would offer observation of more colon than examination with the 65-cm sigmoidoscope and better complement the barium enema examination. Screening for colon cancer, using barium enema examination, is not currently recommended.

The additional physician procedure time required for 105-cm flexible sigmoidoscopy needs further study. The examination usually goes relatively rapidly after a 40-cm insertion is attained. In this study it was learned that an additional 10 minutes' time will be spent in examination with the 105-cm sigmoidoscope compared with 65-cm sigmoidoscope (for patients whose examinations exceed 65 cm). There are no physician time increases for 105-cm sigmoidoscope examinations that are terminated before 65 cm.

Differences in costs will affect decision making about flexible sigmoidoscope equipment purchase. Currently, the 105-cm flexible sigmoidoscope costs approximately \$6,000, about twice as much as the 65-cm sigmoidoscope. Few of the longer sigmoidoscopes, however, are now sold. Should colon screening with the 105-cm sigmoidoscope prove to be

superior to screening with the 65-cm sigmoidoscope, the unit cost of the longer instrument should drop dramatically. Cost effectiveness of 105-cm flexible sigmoidoscopy, as measured by cost per cancer and polyps identified, is not yet known.

CONCLUSIONS

Whether colon screening with the 105-cm flexible sigmoidoscope should be recommended for family physicians is still undetermined. This small study suggests that some patients, requiring no special preparation or medications and encountering no additional discomfort, might benefit from the more thorough screening afforded by 105-cm sigmoidoscopy. What is less clear is the feasibility of large-scale screening for cancers or polyps utilizing the 105-cm sigmoidoscope in the family practice setting. Flexible sigmoidoscopy is currently the best screening technique for colon cancer, and it is very important to assess carefully the efficacy of 105-cm sigmoidoscopy in the family practice setting. A large-scale study of family physicians utilizing the 105-cm flexible sigmoidoscope in asymptomatic patients is in order.

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