

Flexible Fiberoptic Sigmoidoscopy: Its Use In Family Medicine

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Abstract: Flexible fiberoptic sigmoidoscopy (FFS) can be both learned and taught by family physicians. The patient benefits because unnecessary referral is reduced. The physician benefits by offering more comprehensive services to the patient and by demonstrating expertise in the procedure. In a collaborative study involving family physicians performing more

than 1,500 FFS examinations, both the 35-cm scope and the 65-cm scope were effective instruments, but most physicians who had experience with both scopes preferred the longer one. In addition, the results of this study support a significant advantage in pathology detection for the 65-cm scope compared with the 35-cm scope. (*J Am Bd Fam Pract* 1988; 1:189-93.)

Flexible fiberoptic sigmoidoscopy (FFS) is now recommended as an important standard procedure in family practice. Numerous studies establish the effectiveness and safety of flexible sigmoidoscopy, especially when compared with the older rigid-scope examination.¹⁻⁹ Consequently, it is increasingly important for family physicians to perform the flexible procedure expertly.

The American Academy of Family Physicians (AAFP) and the American Society for Gastrointestinal Endoscopy (ASGE) have developed a program for training AAFP members to perform flexible sigmoidoscopy.¹⁰ Their jointly published syllabus was the impetus for our study of the following objectives:

1. To demonstrate the effectiveness/ineffectiveness of family physicians as teachers of FFS.
2. To compare the use of the 65-cm and the 35-cm instruments.

Methods

The Department of Family Practice Residency Program at the Medical Center of Delaware conducted a 4-year study of FFS performed and taught by family physicians at eight sites in the eastern United States.*

Family physicians performed and recorded 1,505 uses of flexible sigmoidoscopy; 783 with the 65-cm scope and 722 with the 35-cm scope. Each group of family physicians noted the results

of FFS examinations on a standard reporting form. Each procedure was recorded regardless of outcome. Data were tabulated for each group and each physician.

Patients selected for the FFS examination met either the American Cancer Society screening criteria for colon cancer detection or had symptoms related to their gastrointestinal (GI) tract. To prepare for FFS, patients were told to ingest only clear liquids after the evening meal prior to the next day's examination. Liquids were not to contain caffeine or other stimulants. Starting 1 to 3 hours before the procedure (depending on travel time to the office) patients were instructed to administer enemas until the returns were completely clear. "Clear returns" were stressed so that the patient understood the importance of removing all stool from the distal colon. Enemas were not recommended for patients with diarrhea, the elderly, or the medically ill. No significant mucosal irritations or "inflammations" due to the enemas were noted by any of the examiners.

The patient position for the examination was generally the Sims or left lateral decubitus position. Most family physicians in this study did not have electric examining tables in their offices and the left lateral position was comfortable for the patients and convenient for the physician.

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Figure 1. Olympus OSF-2 65-cm flexible fiberoptic sigmoidoscope used in this study.

The brand of scope used varied among examiners, and several examiners used multiple brands. Examples of the scopes used in the study are shown in Figures 1-3.

Results

Patients

The average patient age for the 35-cm procedures was 52.6 years; 59 percent were female, and 41 percent were male. The average patient age for the 65-cm procedures was 53.1 years; 50.7 percent were female, and 49.3 percent were male.

Procedure Time

As Table 1 shows, the average time per procedure in the eight centers was under 13 minutes. At the Medical Center of Delaware, beginners (residents) required more time to perform the examinations than their preceptors.

Insertion Depth

The average depth of insertion for the 35-cm scope was 28.9 cm and for the 65-cm scope, 46.2



Figure 2. Olympus CLK-3 light source for primary care endoscopy, which includes spare bulb, air, and adjustable brightness.

cm (Table 2). Preceptors at the Medical Center of Delaware were more effective than the residents in achieving complete insertion of the scope. A learning curve was most apparent when physicians used the 65-cm scope. By eliminating the first 30 procedures per physician, the average depth of insertion was more than 50 cm. Interestingly, average 65-cm scope insertion depth in men (50.7 cm) was greater than that in women (47.3 cm).

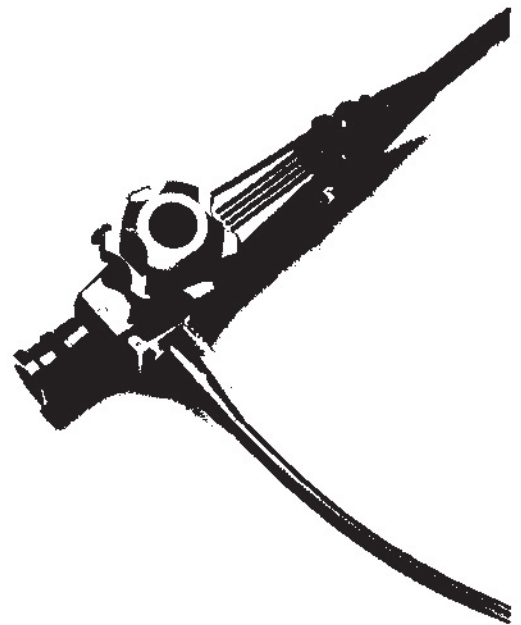


Figure 3. Schott Fiber Optics 65-cm flexible fiberoptic sigmoidoscope used in this study.

Adequacy of Preparation

Approximately 90 percent of patients were considered adequately prepared (Table 3). Inadequate preparation was the reason for termination in less than 3 percent of patients. This compares favorably with the published experience of others.^{1,6,7,11}

Pathology

Table 4 reveals that polyps and diverticuli were frequent findings, which is consistent with earlier reports.^{1,7-9} A significant difference between the 35-cm scope and the 65-cm scope was noted in detecting diverticuli and cancer.

Table 1. Procedure Time (Minutes): Medical Center of Delaware (MCD) Study.

Site/Physician	35-cm Scope		65-cm Scope	
	No. of Examinations	Av Min	No. of Examinations	Av Min
MCD study				
All residents	110	11.4	203	17.6
All preceptors	160	7.9	431	10.9
Total	270	9.4	634	12.6
Eight centers				
Total	722	12.8	783	12.2

Patient Preference

Patients who experienced both flexible and rigid sigmoidoscopy gave overwhelming preference for the flexible scope (Table 5). In particular, induced colon spasm was noted less frequently with the flexible scope. On several occasions, however, patients complained of marked spasm when residents persisted for more than 20 minutes in attempts to insert the scope.

Complications

Discomfort was the most frequently reported complication. There were no major complications such as perforations, deaths, sepsis, or dysrhythmias.

Discussion

35-cm or 65-cm Scope

Significantly more diverticuli and cancer were detected when the 65-cm scope was used (Table 4). The results, however, are confounded by the degree of experience of the examiners. The 65-cm procedures were performed by more experienced examiners who had first learned on the 35-cm scope.

Current primary care literature does not clearly establish an advantage for the 65-cm over the 35-cm scope. If our eight groups are representative, many family physicians will progress from the 35-cm to the 65-cm scope or will prefer to start with the 65-cm scope. The purchase price of some 65-cm scopes is competitive with the shorter

Table 2. Depth of Intubation (cm): Medical Center of Delaware (MCD) Study.

Site/Physician	35-cm Scope		65-cm Scope	
	No. of Examinations	Av Depth (cm)	No. of Examinations	Av Depth (cm)
Connecticut	27	22.6	0	
East Carolina	34	24.7	0	
Florida	50	25.8	73	47.9
Maryland	7	20.3	33	39.2
Med. U. of South Carolina	213	31.8	0	
New Jersey	0		16	49.4
U.S.A.F.				
Residents	74	27.3	0	
Preceptors	42	27.7	0	
MCD				
Residents	110	27.6	203	43.0
Preceptors	165	30.2	458	47.8
Total eight centers	722	28.9	783	46.2

Table 3. Colon Preparation: Comparison of Medical Center of Delaware (MCD) Study and Marks, et al.⁷

Study/Scope	No. Adequate	No. Inadequate	Percent Adequate
MCD—35 cm (n = 722)	648	74	89.8
MCD—65 cm (n = 783)	709	74	90.5
Total MCD (n = 1,505)	1,357	148	90.2
Marks, et al.—Rigid	953	31	94.2
Marks, et al.—65 cm	831	175	82.1

models, and the costs of either should be recoverable in 6 months to 1 year. Cost is not the only factor that should influence the purchase decision. Physicians should consider partners' preferences, patient load, support staff, office and examination room size, and personal motivation for learning FFS. Once the decision to purchase is reached, the model and make should be selected, not only by individual inspection and use of the equipment, but also by the seller's service support system. A company that does not offer high-quality service should not be considered.

Learning FFS

Many physicians, including a number of the preceptors in this study, learned FFS through self study and previous experience with the rigid scope. Use of the rigid and flexible scopes on consenting patients proved to be quite effective for one of our members. The practicing physician can refer to numerous articles^{2,3,12-15} and textbooks¹⁶ for technical advice.

The American Academy of Family Physicians and the American Society for Gastrointestinal Endoscopy have set up a network of preceptors and provided them with guidelines to teach FFS.¹⁰ In addition, numerous seminars are presented around the country to help physicians get a good preparation for starting FFS in their offices.

Privileges and Certification

While the procedure appears to be extremely safe, family physicians may someday need certification in order to bill insurance companies for FFS or to obtain privileges to perform FFS in the hospital or possibly even in the office. The beginner should record all efforts at learning, including patient's name, age, date, scope used, patient preparation, insertion time and depth, pathology detected and location, as well as any complications.

Already, many hospitals require documentation of previous experience and certification of competence by another approved physician before granting hospital privileges for FFS. The results of this study and the actions of the AAFP and the ASGE clearly indicate that primary care physicians may serve as preceptors and certifiers for this procedure.

Family Physician's Role

The skills developed and the patient care given by the family physician using FFS are extremely valuable to both patients and physicians. Health maintenance organizations, third-party payers, individual patients, and society in general are putting pressures on family physicians to be more selective in the consultations they request and the studies and procedures they order. Increasing economic pressures encourage the family physician

Table 4. Pathology Detection: Overview of All Eight Centers.

Pathology	35-cm Scope (n = 722) Percent	65-cm Scope (n = 783) Percent	Significance
Polyps	8.3	10.9	NS*
Diverticuli	8.2	23.1	P<0.001
Cancer	0.6	2.4	P<0.05

*NS = not significant.

Table 5. Preferences of Patients Who Had Both Rigid and Flexible Sigmoidoscopy: Medical Center of Delaware (MCD) Study.

Scope	No. Flexible Preferred	No. Rigid Preferred	No. Unsure	Percent Flexible Preferred
35 cm	202	7	4	94.8
65 cm	192	4	17	90.1

to be more involved with evaluating the patient before asking the specialist for help. In order to provide excellent patient care and to be financially responsible, the front-line physician must be perceptive and versatile in procedures like endoscopy to gain as much knowledge as possible before deciding with the patient the need for a consultation or referral.

That most of the 1,505 procedures reported here were performed by beginners enhances the argument for the effectiveness of FFS by family physicians. One could theorize that more experienced examiners will be more adept at scope insertion (on the average) and will more accurately interpret and notice significant findings. Therefore, if our excellent results as beginners show a significant advantage for colon pathology detection by family physicians, FFS should be even more important and effective once the office-based family physician becomes more proficient and experienced.

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References

1. Bohlman TW, Katon RM, Lipshutz GR, McCool MF, Smith FW, Melnyk CS. Fiberoptic pansigmoidoscopy. An evaluation and comparison with rigid sigmoidoscopy. *Gastroenterology* 1977; 72:644-9.
2. Hocutt JE Jr, Jaffe R, Owens GM, Walters DT. Flexible fiberoptic sigmoidoscopy. *Am Fam Physician* 1982; 26:133-41.
3. *Idem*. Flexible fiberoptic sigmoidoscopy in family medicine. *Am Fam Physician* 1984; 29:131-8.
4. Johnson RA, Quan M, Rodney WM. Flexible sigmoidoscopy. *J Fam Pract* 1982; 14:757-70.
5. Johnson RA, Rodney WM, Quan M. Outcomes of flexible sigmoidoscopy in a family practice residency. *J Fam Pract* 1982; 15:785-9.
6. Manier JW. Flexible sigmoidoscopy: its use in clinical practice. *Current Concepts in Gastroenterology* 1983; 8:18-21.
7. Marks G, Boggs HW, Castro AF, Gathright JB, Ray JE, Salvati E. Sigmoidoscopic examinations with rigid and flexible fiberoptic sigmoidoscopes in the surgeon's office. *Dis Colon Rectum* 1979; 22:162-8.
8. O'Connor JJ. Flexible fiberoptic sigmoidoscopy. A study of 746 cases. *Am J Proctol, Gastroenterol, Colon Rectal Surg* 1981; 32:8, 28.
9. Traul DG, Davis CB, Pollock JC, Scudamore HH. Flexible fiberoptic sigmoidoscopy—the Monroe Clinic experience. A prospective study of 5,000 examinations. *Dis Colon Rectum* 1983; 26:161-6.
10. Rodney WM, ed. AAFP/ASGE flexible sigmoidoscopy home study syllabus. Kansas City, MO: American Academy of Family Physicians, 1985.
11. Winnan G, Berci G, Panish J, Talbott TM, Overholt BF, McCallum RW. Superiority of the flexible to the rigid sigmoidoscope in routine proctosigmoidoscopy. *N Engl J Med* 1980; 302:1011-2.
12. Hocutt JE Jr. A step-by-step pictorial guide to flexible sigmoidoscopy. *Primary Care Cancer* 1985; 5:9-22.
13. Collier JA. Technique of flexible fiberoptic sigmoidoscopy. *Surg Clin North Am* 1980; 60:465-79.
14. Hocutt JE Jr, Eisenstat TE. Why you should use these flexible fiberoptic instruments. *Consultant* 1984; 24:39-50.
15. Rodney WM, Felmar E. Flexible sigmoidoscopy: a "how to" guide. *Your Patient and Cancer* 1984; 4:57-64.
16. Katon RM, Keeffe EB, Melnyk CS. Flexible sigmoidoscopy. New York: Grune & Stratton, 1985.