

# Bowel Perforation Complicating Flexible Sigmoidoscopy

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**F**lexible sigmoidoscopy has gained rapid acceptance as a routine screening procedure in family practice, in part because of its excellent reported safety. This report describes the occurrence of bowel perforation as a major complication of flexible sigmoidoscopy.

## CASE REPORT

A 79-year-old woman underwent screening sigmoidoscopy with a 35-cm flexible fiberoptic sigmoidoscope (American Optical FPS-3P). She had no gastrointestinal tract symptoms, and the same procedure had been performed one year previously by the same physician to a depth of 35 cm without difficulty. Informed consent was obtained prior to the procedure, including discussion of the remote possibility of bowel perforation as a complication of the procedure.

The patient was generally well, although she had congenital kyphoscoliosis and hypertension. It is also of note that she had had an abdominal hysterectomy 30 years previously.

The operator reported using routine techniques in performing the examination. "Dither-torque" and "slide-by" maneuvers<sup>1,2</sup> were used to negotiate the sigmoid colon. At no time did the patient complain of significant abdominal discomfort, and no unusual difficulties were encountered during insertion of the instrument. Following a partial withdrawal of the sigmoidoscope from 25 to 20 cm, however, the operator identified the sudden appearance of mesenteric blood vessels, fat, and serosal surface of bowel.

Bowel perforation was diagnosed and the sigmoidoscope withdrawn. Intravenous cefoxitin was begun immediately, and emergency laparotomy was performed. Two bowel perforations were identified intraoperatively at 25 and 40 cm from the anus, respectively. Marked fecal soiling of the peritoneum was evident. A diverting loop colostomy was created using the proximal perforation, and the distal perforation was oversewn. The surgeon reported that the patient's bowel wall was "as thin as paper," but that no specific anatomic abnormalities, such as diverticulae, were identified.

The patient's postoperative course was complicated by peritonitis, sepsis, congestive heart failure, hypoalbuminemia, hypokalemia, heparin-induced thrombocytopenia, urinary tract infection, erythema multiforme resulting from sulfa allergy, and depression. The initial three-week hospitalization was followed by nursing home placement, in part because the patient refused to learn to care for her colostomy. Two months after the initial event she was again hospitalized for closure of the colostomy. She tolerated this procedure well, and was subsequently able to return to her own home. Total hospital and physician charges for her care exceeded \$30,000.

This physician had performed 25 previous uncomplicated flexible sigmoidoscopic examinations, and members of his group practice had performed a total of 188. There had been no complications in any of these prior examinations. All were performed with the same 35-cm instrument. The operator in this case was a board-certified family physician who had been trained in sigmoidoscopic techniques in intensive workshops organized by appropriate professional organizations. The preceptorships recently announced by the American Academy of Family Physicians and the American Society for Gastrointestinal Endoscopy were not yet available when he began performing flexible sigmoidoscopies. He had performed several procedures with colleagues, and was generally regarded as one of

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the most proficient sigmoidoscopists in his group of family physicians.

## DISCUSSION

Flexible sigmoidoscopy has an acceptably low incidence of complications. It has been recommended for routine use by family physicians, including use in elderly patients.<sup>3</sup>

Rodney and colleagues<sup>4,5</sup> reported no complications in a series of 450 examinations performed in a family practice residency and stated that "no complications have been reported to date" in several series, totaling over 1,900 procedures by family physicians. Sanowski et al,<sup>6</sup> reviewing the results of 17,167 procedures by 438 primary care physicians, found only two perforations although the only training received by the majority of the physicians was an intensive one-day workshop using anatomic models. This low rate, however, may be influenced by selection bias in voluntary self-reporting by the clinicians surveyed.

Published reports of major complications by non-family physicians are also rare. No perforations were reported in series that included 5,000 procedures performed by gastroenterologists and a surgeon,<sup>7</sup> 825 procedures performed by a nurse practitioner,<sup>8</sup> and 1,121 procedures performed by a surgeon.<sup>9</sup>

Anecdotal reports, however, suggest that perforations may be more common than the literature suggests. For example, although Katon and colleagues<sup>2</sup> reported finding only one case of perforation among 10,000 sigmoidoscopies described in the literature, they also stated that "we are aware of additional unreported cases over the last two years. Therefore the literature does not represent the true incidence of the complications of flexible sigmoidoscopy."

A more accurate estimate of complication rates may be found by examining the literature on diagnostic colonoscopy, in which the incidence of perforation has been estimated to vary between 1 in 531 (0.19 percent) and 1 in 442 (0.23 percent) cases.<sup>2,10</sup> Bowel perforations with colonoscopy occur most commonly in the sigmoid colon as free perforation into the peritoneal cavity (such as in the present case). Closed and undetected perforations also occur. Risk of perforation is thought to increase with a history of previous pelvic surgery.<sup>2</sup> The patient reported in this case had previous pelvic surgery, but she had tolerated previous sigmoidoscopy without difficulty. It is important to recognize that it is not the tip of the instrument, but rather

the deflecting bend that most commonly causes perforation.<sup>10</sup>

Several implications of this event are evident. First, as increasing numbers of physicians perform the procedure, they should continue to record and report their experience. Reporting may be emotionally difficult for physicians who encounter complications, especially in view of the very low complication rates currently reported in the literature. It is important to report complications, however, to ensure that their true incidence is known. Second, physicians should be aware of the risk factors for complications of flexible sigmoidoscopy (eg, prior pelvic surgery), and take these into account when recommending sigmoidoscopy to patients. Third, training programs should emphasize the risk of perforation being caused by the sigmoidoscope shaft or deflecting bend. Currently available training models inappropriately tend to focus attention on management of the tip of the instrument. Excellent discussions of mechanisms of perforations are available.<sup>2,10</sup> Finally, informed consent should make patients aware that perforation is a complication of sigmoidoscopy that occurs with a low but finite frequency.

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