

## Original Article

# A Retrospective Study of Sigmoidoscopic Examination with Rigid Sigmoidoscope in a Medical School Sigmoidoscopy Center

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### Abstract

Rigid sigmoidoscopy is a common outpatient procedure to diagnose many rectosigmoid pathologies. As better investigative tools replace it, we decided to consider its validity at our outpatient settings. A retrospective study of the data at our sigmoidoscopy center demonstrated its efficacy as an inexpensive and effective method to screen and diagnose numerous pathologies in a setup such as ours.

**Objectives:** 1. To determine the diagnostic yield of rigid sigmoidoscopy as an investigative tool with special emphasis on neoplastic lesions, and 2. To determine yearly trends in various pathologies.

**Design:** Retrospective study of data from the records of a sigmoidoscopy center at SMHS Hospital, Kashmir, India, from April 2002 to April 2006.

**Main outcome measures:**

Number of sigmoidoscopy procedures performed, various pathologies picked up, sex distribution of pathologies, emphasis on rectosigmoid carcinoma cases and hemorrhoids.

**Results:** During the study period, 6125 examinations were done on 5244 patients. A total of 3522 abnormalities were picked up, giving a diagnostic yield of 67.2%. The most common lesion found was hemorrhoids (2418 cases, 46.1%). Other pathologies included neoplasms (660 cases, 12.6%), anal fissures (227 cases, 4.3%), fistula in ano (91 cases, 1.7%), and others (126 cases, 2.4%). Certain temporal trends in various pathologies also were observed.

**Conclusions:** Rigid sigmoidoscopy is a feasible diagnostic tool for diagnosing various rectosigmoid pathologies. The incidence of rectosigmoid carcinoma is increasing.

**Key words:** Rigid sigmoidoscopy, colonoscopy, rectosigmoid cancer, hemorrhoids.

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### Introduction

Rigid sigmoidoscopy is an outpatient procedure that allows for direct examination of the anus, rectum, and sigmoid colon. It is useful for quick and reliable diagnosing of a variety of dis-

orders such as hemorrhoids, neoplastic lesions and inflammatory conditions of the anus, rectum, and sigmoid colon.<sup>1</sup>

Whether sigmoidoscopy is useful as a screening procedure for colorectal carcinoma is still under considerable debate.<sup>2</sup> However in symptomatic patients it is an important diagnostic tool, because the rectum and sigmoid colon are not clearly seen through barium enema examination.<sup>3</sup>

Our center is in a developing country with limited resources and a sizeable patient influx. Not many studies have been conducted to analyze the diagnostic yield of rigid sigmoidoscopy and look into its suitability for our population. The following study demonstrates that rigid sigmoidoscopy is successful in picking up many pathologies, and its wide applicability and affordability at our sigmoidoscopy center make it a valuable investigative tool for evaluation of lower gastrointestinal (GI) symptoms.

### Material and Methods

Rigid sigmoidoscopy is performed at the sigmoidoscopy center in SMHS Hospital, which is a tertiary care, 1000-bed hospital. The sigmoidoscopy center is a three-room facility where both inpatient and referred outpatients are examined by consultants and senior residents (registrars) with a nondisposable 25-cm long metallic instrument, well illuminated with a separate light source. Before the procedure, patients were given two bowel enemas. Brief histories were taken, and then the procedures were performed in the knee-elbow position without sedation. The findings, along with relevant information about the patients, were entered into the record books of the department. Biopsies were taken when appropriate. The patients were followed weekly for 3-6 months in the outpatient department (OPD).

The following information was extracted from the records:

- Total number of procedures with dates
- Age and sex of each patient
- Outcome of procedure

Subsequent complications of the procedure were also noted in the study.

The population attending this clinic comprises both outpatients and inpatients from urban and rural backgrounds. Our study is not equivalent to a screening study for asymptomatic subjects, although

in some a cause of symptoms could not be found on complete sigmoidoscopic examination (labeled as "normal study"). Findings were recorded under the following headings:

1. Hemorrhoids: grades 1-4
2. Neoplastic lesions: both benign and malignant growths
3. Anal fissure
4. Fistula in ano
5. Others (proctitis, skin tags, worms, etc)
6. Normal study
7. Poorly prepared: fecal matter made further examination impossible. All these patients were reexamined during a subsequent visit after proper preparation.
8. Could not tolerate: the examination could not be completed due to poor compliance. All these patients were referred to other centers for flexible sigmoidoscopy.

*R-Software* and *SPSS* software were used for the statistical calculations.

### Results

Data were collected for the study period of 4 years from April 2002 to March 2006. A total of 6125 sigmoidoscopic examinations were carried out on 5244 patients. The age of patients ranged from 16 to 90 years (Table 1). Males comprised 3650 of the 5244 patients (69.6%), and females made up 1594 of the 5244 patients (30.4%). This proportion was maintained with little variation throughout the 4-year study period.

Table 2 illustrates the various symptoms bringing patients to our center. Bleeding per rectum, constipation, and complaints of "something coming out of anus" constituted the most common indications for sigmoidoscopy.

Poor bowel preparation was present in 881 of the 5244 (16.8%) patients. All these patients were reexamined in subsequent visits after proper bowel preparation. Three hundred and fourteen of the 5244 patients (6%) could not tolerate the procedure.

A total of 3522 abnormalities were found to account for symptoms of 5244 patients. Hemorrhoids were the most frequently reported finding (Table 3), and it continued to be so with little variation over the study period (Figure 1). One thousand, three hundred and forty-five of the 2418 cases (55.6%) pre-

sented with grade 2 hemorrhoids. Grade 4 was the fastest growing grade in the hemorrhoids group (Figure 2), and this trend was significant ( $p = 0.039$ ).

Certain year-wise trends were observed in various pathologies (Figure 1). All pathologies maintained almost a uniform distribution throughout the study period except the neoplastic lesions group, which showed a significant upward trend ( $p = 0.046$ ).

Six-hundred and sixty of the 5244 cases (12.6%) were reported as neoplastic lesions, out of which 42.3% were reported as malignant (Figure 3). A significant upward year-wise trend ( $p = 0.033$ ) in this group was also observed (Figure 4) with rectal adenocarcinoma being the most frequently reported malignancy. Benign polyps constituted more than 90% of benign lesions.

Certain miscellaneous findings such as skin tags, worms, and proctitis also were noted in a small group of patients ( $n = 126, 2.4\%$ ).

There were no complications reported in our patients, either during the procedure or on follow-up.

**Discussion**

Rigid sigmoidoscopy is adequate for active lesions in the rectum e.g. fissures, hemorrhoids, polyps, cancer, and proctitis.<sup>4</sup> This procedure is widely performed at our center on patients who present with lower GI symptoms. This fact was demonstrated by the sheer number of patients who were subjected to this procedure (5244 patients over

**Table 1. Age distribution of patients.**

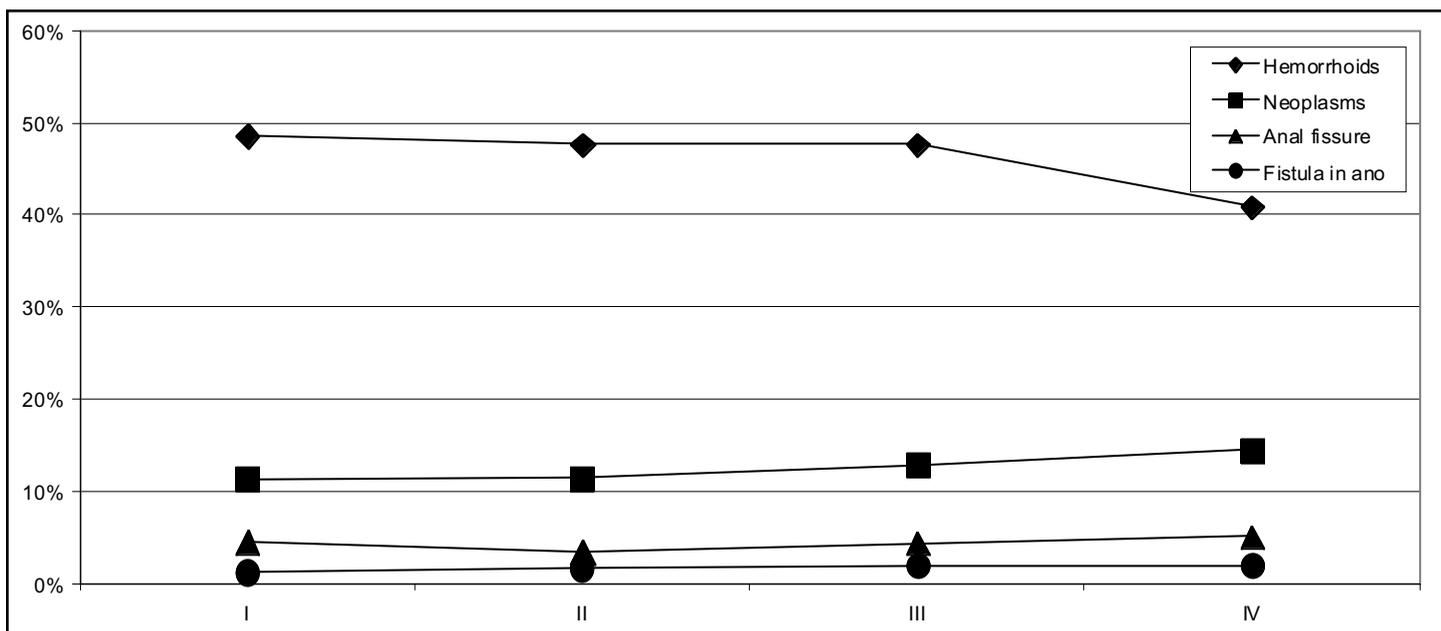
Age Group	Number	Percentage
16-30	576	11%
31-45	1,363	26%
46-60	2,098	40%
61-75	892	17%
76-90	315	6%
<b>Total</b>	<b>5,244</b>	<b>100%</b>

**Table 2. Presenting symptoms.**

Symptoms	Percentage of patients
Bleeding per rectum	65%
Constipation	45%
Something coming out of the anus	27%
Anemia	10%
Weight loss	8%
Pain	5%
Pruritis ani	3%
Melena	2%
Abdominal mass	1%
Tenesmus	<1%

Often, multiple symptoms were present in a patient.

*Editor's note: Details of the statistical equations used are available upon request from the authors.*



**Figure 1. Trends in pathologies over the study period. The increase in neoplasms was significant ( $p = 0.046$ ).**

**Table 3. Diagnostic yield of sigmoidoscopic examination.**

Sigmoidoscopic Findings	Sex		Total	Diagnostic Yield (%)
	M	F		
Hemorrhoids	1,784	634	2,418	46.1%
Neoplasms	435	225	660	12.6%
Anal fissure	142	85	227	4.3%
Others: proctitis, perianal skin tags, worms, etc.	88	38	126	2.4%
Fistula in ano	76	15	91	1.7%
<b>Total</b>	<b>2,525</b>	<b>997</b>	<b>3,522</b>	<b>67.2%</b>

4 years).

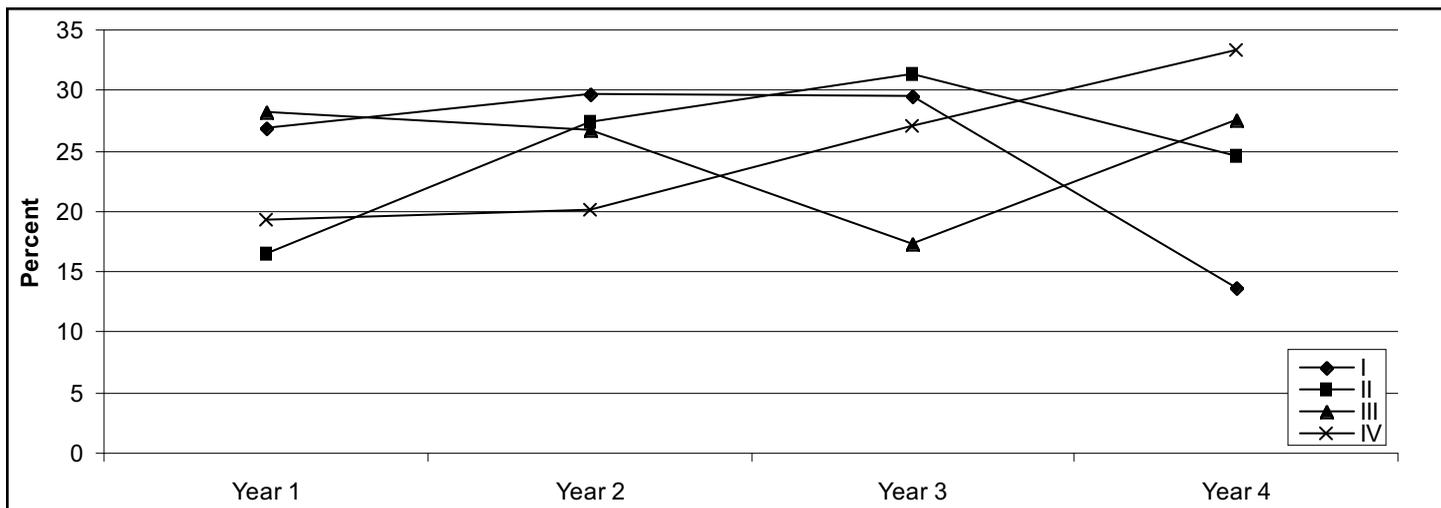
In our study, the mean age of patients was 53 years. The male-to-female ratio was approximately 3:1. This proportion was maintained with little variation in the annual number of patients.

The diagnostic yield in our series was 67.2%. This high diagnostic yield is at variance with that found in the study conducted by Donald et al.<sup>1</sup> Such a yield obtained in our series with the rigid instrument could be explained by the fact that almost all patients who present to our department with lower GI symptoms are evaluated initially by proctosigmoidoscopy.

Hemorrhoids were the most common pathology noted in both sexes. In our series, grade 2 hemorrhoids formed the majority of cases, 1345 out of 1784

(55.6%), while grade 4 was the fastest growing grade.

Even though the male group outnumbered the female group in all pathologies, it was observed that with any given pathology, the relative numbers of males and females were different (Figure 5), i.e., the diseases were distributed nonrandomly between the sexes, and this relation was proven to be statistically significant ( $p < 0.05$ ). The relative percentage of females with anal fissures was higher than in all other pathologies (Figure 5). In females, its incidence was significantly higher than fistula in ano ( $p < 0.05$ ). On the other hand, the relative percentage of fistula in ano was the highest in males and, except for hemorrhoids, it was significantly higher than any other pathology ( $p < 0.05$ , Figure 5). The high incidence of anal fissures in females can be attributed to previous



**Figure 2. Trends in grades of hemorrhoids. The increase in grade IV hemorrhoids was statistically significant,  $p = 0.039$ .**

labor and delivery and to the more frequent habitual constipation. However, the high incidence of fistulas in ano in males in our series could be due to the increased tolerance of pain<sup>5</sup> of a perianal abscess, allowing it to progress into a fistula by the time the patient presents to our center.

Poor bowel preparation occurred in 16.8% of patients. While sigmoidoscopy can be done in poorly prepared patients, it is possible to get an acceptable view in 50% of these patients only,<sup>6</sup> thus making gut preparation preferable. The majority (94%) of our patients tolerated the procedure well, in contrast to

other studies.<sup>1</sup> The patients were followed for the next 3-6 weeks. This was possible in 85% of the patients. Our study found no postprocedure complications.

All pathologies in our study demonstrated a stable incidence except the “neoplastic lesions” group, which showed a significant upward trend. This observation is similar to those in other studies<sup>7</sup> where the clinical observation of an increase in GI malignancies in Kashmir Valley was documented in the recent past. Further, in our study, rectal adenocarcinoma was the most commonly reported malig-

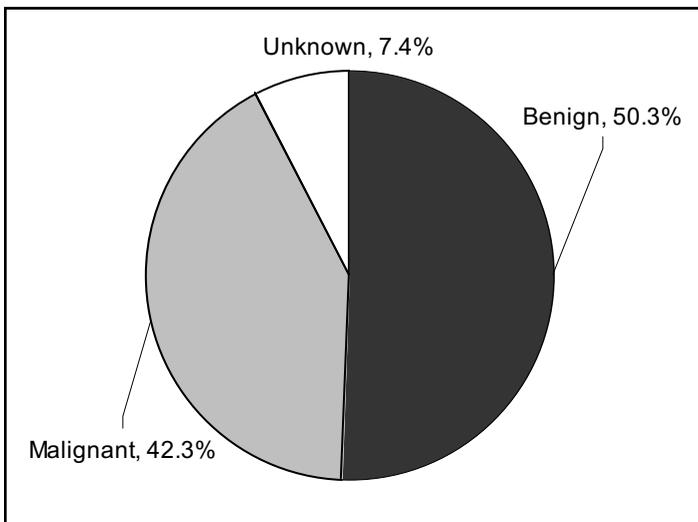


Figure 3. Distribution of various neoplastic lesions. The histopathology of 7.42% of neoplastic lesions could not be retrieved from the records.

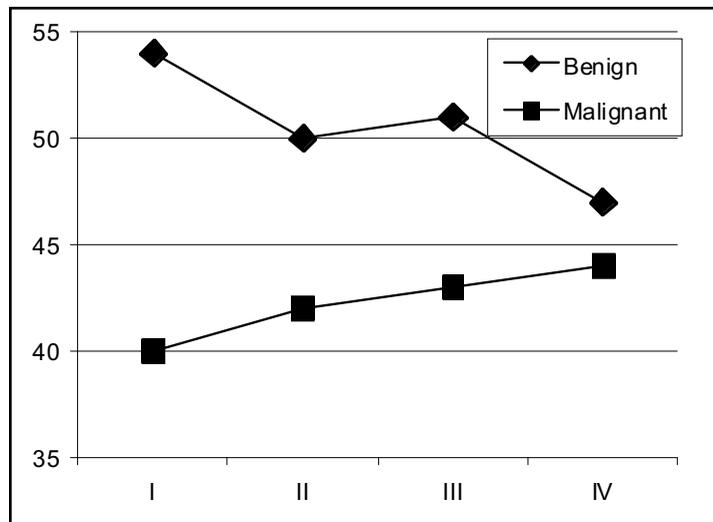


Figure 4. Trend in distribution of benign and malignant lesions over the study period. The increase in malignancy was significant,  $p = 0.033$ .

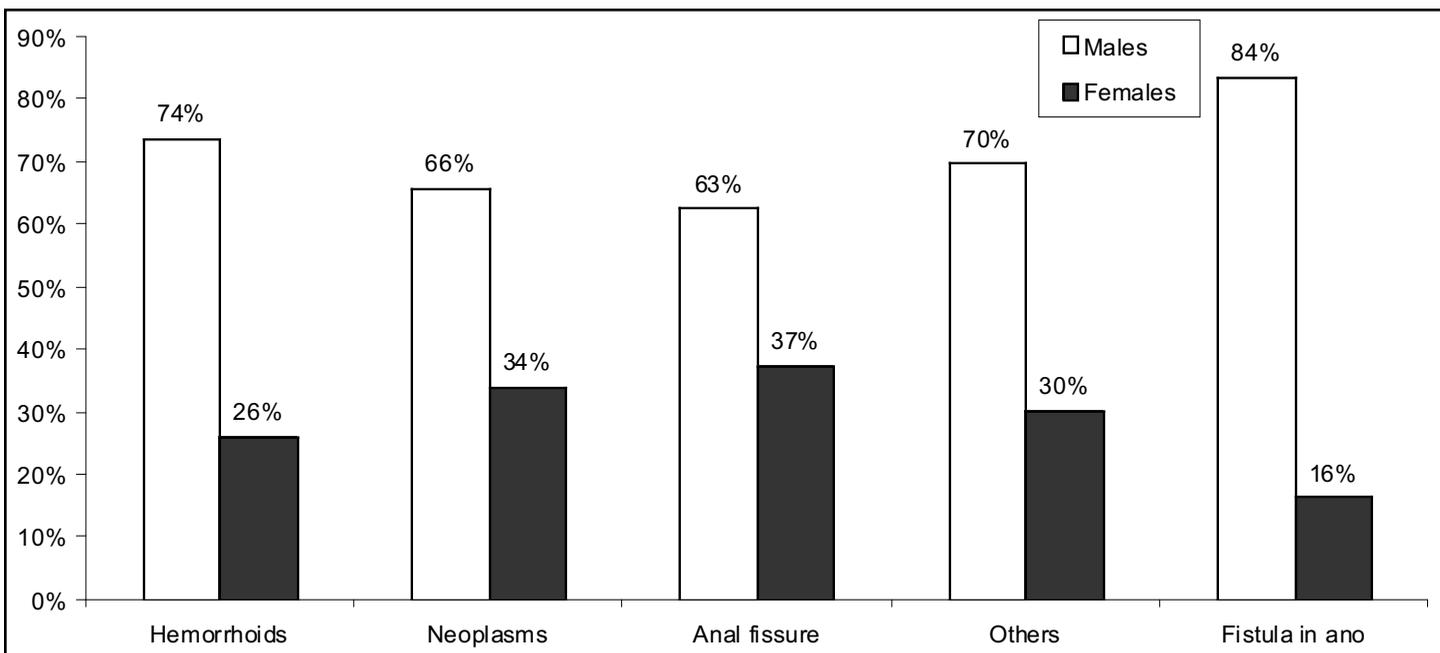


Figure 5. Sex distribution in each pathology.

nancy. Possible explanations for this increasing trend in neoplastic lesions are changes in socioeconomic status and dietary habits and increased health consciousness of our patient population as a result of regular mass media campaigns regarding the warning symptomatology of malignancies. Among benign lesions, benign polyps formed >90% of this group. This is not reassuring in itself as untreated polyps have been shown to grow and subsequently undergo malignant change.<sup>8</sup>

Malignant lesions picked up by rigid sigmoidoscopy are from the distal colon. It has been observed that neoplastic change in the distal colon may be a marker of neoplastic change in proximal colon<sup>9</sup> as well, warranting the need for additional investigations in these patients.

Although the gold standard investigative tool for colon cancer is colonoscopy due to its higher sensitivity and early detection, its applicability at the outset in every patient in our setting is limited. The equipment and its maintenance are costly. There are not enough trained clinicians. Perforation and bleeding sometimes accompany a colonoscopy, mandating additional hospital stays and, at times, even surgery.<sup>10</sup> The large number of patients coming through the outpatient department makes it unfeasible to carry out regular colonoscopic examinations on every symptomatic patient initially.

### Conclusion

Although it is tempting to declare that rigid sigmoidoscopy is an outdated procedure and our patients are grossly under-investigated, this study points to the following facts, which negate these arguments:

1. The diagnostic yield of rigid sigmoidoscopy at our center is quite high (67.2%)
2. This procedure was well tolerated by our patients
3. With almost no post-procedure complications reported in our study, it can be considered a safe procedure (when performed patiently and under proper conditions) for peripheral health centers, and it can be done for screening.
4. It can be performed successfully, as in our study, quickly, and without any sedation in an outpatient setting.
5. The necessary equipment is inexpensive and widely available. Further, this is an easily learned procedure in comparison to other available

investigative tools.

6. Much larger biopsy specimens can be obtained.<sup>1</sup>
7. In cases without any bowel preparation, stools can be directly inspected for bleeding, steatorrhea, worms, mucus, etc.

Thus rigid sigmoidoscopy is a valuable investigative tool for the distal colon and rectum, especially suited for a setup such as ours, and the benefits of continuing with it are significant.

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