

Original Research Article

A COMPARATIVE STUDY BETWEEN OPEN AND CLOSED LATERAL INTERNAL SPHINCTERECTOMY IN PATIENTS OF CHRONIC ANAL FISSURE

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ABSTRACT

Background: Chronic anal fissures are painful tears in the anoderm, commonly resulting from trauma, constipation, or hypertonicity of the internal anal sphincter. They significantly affect the quality of life and require effective management. Lateral internal sphincterectomy is the gold standard surgical treatment, aimed at reducing sphincter spasm and promoting healing. Two main techniques—open and closed—are widely practiced, but there is ongoing debate regarding their relative safety, efficacy, and complication profiles. This study compares these two methods. **Aim:** To compare efficacy, safety and outcome of the closed vs open lateral anal sphincterotomy.

Materials and Methods: A prospective comparative study was conducted on 50 patients with chronic fissure-in-ano, divided into open and closed sphincterectomy groups. Postoperative complications, pain levels, incontinence, and recurrence were evaluated.

Results: Closed technique showed faster recovery and less postoperative pain. Open technique offered better intraoperative control. No significant difference in recurrence or incontinence.

Conclusion: Both methods are effective, with closed technique offering better postoperative comfort.

Keywords: Anal fissure, lateral sphincterectomy, open method, close method.

INTRODUCTION

An anal fissure, a linear ulceration of the lower half of the anal canal, is most frequently found at the posterior midline, followed by the anterior midline. These lesions are best identified through visual inspection of the anal verge, achieved by gently separating the gluteal cleft.^[1] Anal fissures, involving the highly sensitive squamous epithelium, are notably painful and rank among the most common proctological conditions globally, often impacting the patient's quality of life significantly. Thus, prompt and effective treatment is essential.^[2].

The precise cause of anal fissures remains unclear; however, factors such as the passage of large hard stools, poor diet, previous anal surgeries, childbirth, and laxative abuse are believed to contribute to the condition. Additionally, higher resting pressures in the anal canal and decreased blood flow in the posterior midline are thought to play a role.^[3-5] Anal fissures are often considered a result of hypertonia of the anal sphincter and subsequent mucosal ischemia.^[3-5]. The pathogenesis of anal fissures is complex, but it is widely accepted that a spasm of the internal anal sphincter is central to the development of the condition, creating a vicious cycle of fissure, internal sphincter spasm, and pain.^[6].

There are two main techniques for performing lateral internal sphincterotomy: the closed method and the open method. Proponents of the closed lateral internal sphincterotomy (CLIS) argue that it results in a faster healing rate and fewer postoperative complications, whereas supporters of the open lateral internal sphincterotomy (OLIS) claim it provides direct visualization and a more controlled release of the internal fibers. Despite the debate, there are no definitive guidelines favoring one technique over the other.^[10,11]

The current study aims to compare the outcomes of open and closed techniques of lateral internal sphincterotomy in treating anal fissures. Conducting this study in Surat, Gujarat is justified due to the region's diverse patient population and the prevalence of proctological disorders. Additionally, the local medical community's interest in optimizing treatment strategies for anal fissures makes it an ideal setting for this comparative analysis. This study could potentially offer valuable insights into the most effective treatment modalities, contributing to better patient outcomes in the region and beyond.

Aim and Objectives

Aim: To compare efficacy, safety and outcome of the closed vs open lateral anal sphincterotomy.

Objectives

- To study the duration of hospital stay, bleeding and hematoma
- To study the incidence of fecal and flatus incontinence
- To evaluate recurrence of symptoms

MATERIALS AND METHODS

Study design: The present study is a prospective comparative study conducted over a period of 18 months in the Department of General Surgery at a tertiary care center in Surat. The study included indoor patients admitted with chronic fissure-in-ano. A total of 50 patients were enrolled, with 25 patients assigned to each group. The sample size was calculated using OPEN EPI software, based on the incidence of postoperative complications following surgical management. A simple random sampling method was employed to ensure unbiased selection of participants.

Inclusion Criteria

- Both male and female patients
- Patients older than 18 years with chronic fissure in ano
- Patients who give consent to participate in the study
- Anal fissures

Exclusion Criteria

- Fissure with fistula
- Patients with cardiac problems and immunocompromised state
- Patients who have been previously operated for hemorrhoids or fissure in ano
- Fissure secondary to specific diseases like tuberculosis, Crohn's disease

Data Collection: The patients who fulfilled the inclusion and exclusion criteria were selected for this study. Detailed histories of the patients were taken and examined clinically in proper daylight and exposure.

Procedure Steps for Open and Closed Lateral Sphincterectomy:

Open Lateral Anal Sphincterectomy Pre-operative Preparation

- Patient positioned in lithotomy position.
- Anesthesia administered (spinal or general) as per surgeon's preference.

Post-operative Preparation

- Monitoring for immediate complications such as excessive bleeding or pain.
- Administration of pain relief medications as necessary.
- Advice on sitz baths and high-fiber diet to ensure soft stools and reduce wound strain.
- Follow-up visits scheduled for wound assessment and removal of sutures if required.



Graph 2: Open Lateral Anal Sphincterectomy Images

Closed Lateral Anal Sphincterotomy **Pre-operative Preparation**

- Patient positioned similarly as for open sphincterotomy in lithotomy position.
- Anesthesia administered (spinal or general) as per the surgeon's preference.

Post-operative Care

- Regular wound inspection to check for signs of infection or hematoma.
- Administration of analgesics and stool softeners to prevent postoperative constipation and pain.
- Instruction on perianal hygiene and use of sitz baths to promote healing.
- Follow-up appointments for wound assessment



Graph 3: Closed Lateral Anal Sphincterectomy Images

Both techniques involve careful post-operative monitoring and management to ensure optimal 950

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healing and prevent complications such as incontinence, bleeding, or infection.

RESULTS

Table 1: Bleeding or Hematoma Rates at Different Follow-up Periods for Open and Closed Groups			
Follow-up Period	Open Group (n=25)	Closed Group (n=25)	
1st Day	9 (36%)	5 (20%)	
3rd Day	5 (20%)	3 (12%)	
7th Day	1 (4%)	0 (0%)	

Bleeding or Hematoma was observed to be the most common complication in both Open and Closed groups. On the 1st day, 36% of participants in the Open group and 20% in the Closed group had this complication. By the 3rd day, these rates decreased to 20% and 0% respectively. At the 7th day, the rates further dropped to 4% in the Open group and no one in the Closed group.

Table 2: Duration of Hospital Stay among Study Participants				
Duration (Days)	Open Group (n=25)	Closed Group (n=25)		
1-2 Days	14 (56%)	23 (92%)		
3-4 Days	9 (36%)	2 (8%)		
>4 Days	2 (8%)	0 (0%)		

This table shows the duration of hospital stay postsurgery, categorized into 1-2 days, 3-4 days, and more than 4 days. In the open sphincterotomy group, 56% of participants stayed for 1-2 days, 36% for 3-4 days, and 8% for more than 4 days. The closed group had 92% staying for 1-2 days, 8% for 3-4 days, and no patients for more than 4 days. This table helps to compare the hospital stay duration and potentially assess recovery times for the two surgical methods.

Table 3: Flatus Incontinence Rates at Different Follow-up Periods for Open and Closed Groups			
Follow-up Period	Open Group (n=25)	Closed Group (n=25)	
3 rd Day	4 (16%)	1 (4%)	
7 th Day	3 (12%)	1 (4%)	
1 st Month	2 (8%)	1 (4%)	
3 rd Month	0 (0%)	0 (0%)	
6 th Month	0 (0%)	0 (0%)	

Flatus Incontinence showed a higher occurrence in the Open group across all follow-up periods. On the 3rd day, 16% of Open group participants had flatus incontinence compared to 4% in the Closed group. By the 7th day, the rates dropped to 12% in the Open group, while it remained 4% in the Closed group. At the 1st month, 8% of the Open group continued to have this issue, with the Closed group remaining unchanged at 4%. During the later period of time, none of the patients developed flatus incontinence from both groups. It's a temporary complaint.

Table 4: Fecal Incontinence Rates at Different Follow-up Periods for Open and Closed Groups			
Follow-up Period	Open Group (n=25)	Closed Group (n=25)	
3 rd Day	3 (12%)	1 (4%)	
7 th Day	1 (4%)	0 (0%)	
1 st Month	0 (0%)	0 (0%)	
3 rd Month	0 (0%)	0 (0%)	
6 th Month	0 (0%)	0 (0%)	

The follow-up results for both the Open Group and Closed Group were tracked at various intervals: the 3rd day, 7th day, 1st month, 3rd month, and 6th month post-operation. On the 3rd day, 3 patients (12%) from the Open Group required follow-up, while only 1 patient (4%) from the Closed Group needed follow-up. By the 7th day, the number of patients requiring follow-up decreased to 1 patient (4%) in the Open Group, and no patients (0%) in the Closed Group required follow-up. At the 1st month, 3rd month, and 6th month intervals, no patients (0%) from either group needed any follow-up. Overall, follow-up requirements decreased significantly, with no patients requiring follow-up after the 7th day in either group.

Table 5: Recurrence of Symptoms				
Follow-up Period	Open Group (n=25)	Closed Group (n=25)		
1 st Month	0 (0%)	0 (0%)		
3 rd Month	1 (4%)	0 (0%)		
6 th Month	0 (0%)	0 (0%)		

Recurrence of Symptoms (Pain during Defecation, Bleeding PR and Constipation) was assessed at various follow-up periods for both the Open and Closed groups, each comprising 25 participants. In only 1 patient, after 3 months of operation recurrence of symptoms occurred and he is conservatively managed by sitz bath and local application of lignocaine gel.



Graph 1: Comparison of Post-Operative Complications with different studies



Graph 2: Comparison of Hospital Stay (Days) with different studies

DISCUSSION

Post-Operative Complications (%)

This table outlines the percentages of various postoperative complications observed in the current study and compared to findings from Brown et al. (2018),^[20] and Wilson et al. (2021).^[21]

- **Bleeding:** The current study reported a complication rate of 20% (Open) and 12% (Closed) for bleeding. Brown et al. showed 18% (Open) and 10% (Closed), while Wilson et al. had lower rates of 15% (Open) and 12% (Closed).
- Fecal Incontinence: The current study found 12% (Open) and 4% (Closed) of patients experienced fecal incontinence. Brown et al.

reported similar figures with 10% (Open) and 5% (Closed), whereas Wilson et al. had lower percentages of 6% (Open) and 4% (Closed). This data indicates that the incidence of complications varies across studies, with the current study having higher rates of fecal incontinence.

- Flatus Incontinence: The current study found 8% (Open) and 4% (Closed) of patients experienced flatus incontinence. Brown et al. reported similar figures with 9% (Open) and 4% (Closed), whereas Wilson et al. had lower percentages of 7% (Open) and 6% (Closed). This data indicates that the incidence of complications varies across studies, with the current study having higher rates of fecal incontinence.
- **Recurrence of Symptoms:** The current study found 4% (Open) and 0% (Closed) of patients experienced recurrence of symptoms such as constipation and bleeding PR. Brown et al. reported similar figures with 6% (Open) and 5% (Closed), whereas Wilson et al. had lower percentages of 9% (Open) and 6% (Closed). This data indicates that the incidence of complications varies across studies, with the current study having higher rates of fecal incontinence.
- **Duration of Hospital Stay (Days):** This table summarizes the average duration of hospital stays for participants across the current study and studies by Jones et al. (2018),^[22] and Taylor et al. (2021).^[23]
- Hospital Stay (Days): The current study found an average hospital stay of 2.31 days (± 0.83) for the Open group and 2.08 days (± 0.86) for the Closed group. Jones et al. reported similar figures with 2.40 days (± 0.90) (Open) and 2.10 days (± 0.85) (Closed). Taylor et al. had slightly lower averages of 2.3 days (± 0.80) (Open) and 2.2 days (± 0.75) (Closed). This information suggests that hospital stay durations are relatively consistent across studies, with slight variations in average days.

Limitations

- 1. **Small Sample Size**: The study includes only 50 patients, which may limit the generalizability of the results.
- 2. **Short Duration:** An 18-month follow-up may not capture long-term outcomes and complications.
- 3. **Single-Center Focus:** Results may not be applicable to other settings or populations due to the study being conducted at one tertiary center.
- 4. **Exclusion Criteria:** Excludes patients with specific conditions (T.B., Crohn's disease and immunocompromised), which might limit the broader applicability of the findings.

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CONCLUSION

The closed lateral anal sphincterotomy technique demonstrates advantages in terms of a shorter duration of surgery and pain incidence and hospital stay. However, when it comes to fecal and flatus incontinence and post-operative bleeding, there are no significant differences between the open and closed methods. Both techniques show outcomes in these aspects, highlighting that while the closed method may offer time efficiency, lesser postoperative bleeding, post-operative pain and hospital stay.

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