



Original Article


A Comparative Study of 0.3% Nifedipine and Lateral Anal Sphincterotomy in Anal Fissure

Dr Deepak Samson¹, Dr Manish S¹, Dr sanchitha³

¹Junior Resident - General Surgery Department, Rajarajeshwari Medical college

²Assistant Professor, General surgery, Rajarajeshwari medical college

³Senior Resident, Rajarajeshwari medical college

 OPEN ACCESS

Corresponding Author:

Dr Deepak Samson

Junior Resident - General Surgery
Department, Rajarajeshwari
Medical college

Received: 01-03-2026

Accepted: 21-03-2026

Available online: 05-04-2026

Copyright © International Journal of
Medical and Pharmaceutical Research

ABSTRACT

Background: Chronic anal fissure is a common anorectal condition characterized by severe pain, bleeding per rectum, and internal anal sphincter spasm. Lateral internal sphincterotomy remains the gold standard treatment; however, concerns regarding postoperative complications, especially incontinence, have led to increasing interest in non-surgical alternatives such as topical nifedipine.

Aim: To compare the efficacy of 0.3% nifedipine ointment with lateral internal sphincterotomy in the management of chronic anal fissure.

Methods: A prospective comparative study was conducted on 60 patients with chronic fissure in ano, divided equally into two groups. Group X received topical 0.3% nifedipine ointment twice daily for 6 weeks, while Group Y underwent lateral internal sphincterotomy. Patients were followed up for 10 weeks, and outcomes assessed included fissure healing rate, pain relief, bleeding per rectum, recovery time, recurrence, and incontinence.

Results: The healing rate was higher in the surgical group (96.7%) compared to the nifedipine group (83.3%). Pain relief and recovery time were also better with surgery. However, the nifedipine group showed negligible risk of incontinence, whereas temporary and minimal permanent incontinence was noted in the surgical group. Recurrence was higher with nifedipine (10%) compared to none in surgery.

Conclusion: While lateral internal sphincterotomy remains the most effective treatment for chronic anal fissure, topical 0.3% nifedipine offers a safe, non-invasive alternative with good efficacy and minimal complications, making it suitable as a first-line therapy.

Keywords: Chronic anal fissure; 0.3% nifedipine; Lateral internal sphincterotomy; Chemical sphincterotomy; Anal pain; Healing rate; Incontinence; Recurrence; Non-surgical management; Calcium channel blockers.

INTRODUCTION

Chronic anal fissure is a common benign anorectal disorder characterized by a longitudinal tear in the anoderm distal to the dentate line, presenting with severe pain during defecation, bleeding per rectum, and internal anal sphincter spasm. The pathophysiology is primarily attributed to hypertonia of the internal anal sphincter, resulting in reduced anodermal blood flow and impaired healing, thereby perpetuating a cycle of ischemia and pain.^{1,2}

Lateral internal sphincterotomy (LIS) is considered the gold standard treatment for chronic anal fissure, achieving healing rates of more than 95%.³ However, this surgical approach is associated with complications such as postoperative pain, bleeding, and varying degrees of fecal incontinence, which can significantly affect patient quality of life.⁴ These drawbacks have prompted the search for effective non-surgical alternatives.

Topical calcium channel blockers, particularly nifedipine, have emerged as promising agents for chemical sphincterotomy. By relaxing the internal anal sphincter, they reduce resting anal pressure and improve anodermal

perfusion, thereby facilitating fissure healing. Studies have demonstrated healing rates ranging from 60% to 95% with topical nifedipine, along with minimal side effects and a negligible risk of incontinence.^{5,6}

Despite these favorable outcomes, previous studies have limitations such as variability in drug concentration, inconsistencies in dosage and duration, small sample sizes, and lack of adequate follow-up for recurrence assessment.⁶ Moreover, direct comparative studies between topical 0.3% nifedipine and lateral internal sphincterotomy are limited.

Therefore, the present study was undertaken to compare the efficacy of 0.3% nifedipine ointment with lateral internal sphincterotomy in the management of chronic anal fissure, focusing on healing rates, symptom relief, recurrence, and continence outcomes, thereby addressing existing gaps in the literature.

AIMS AND OBJECTIVES

1. To compare the efficacy of 0.3% nifedipine ointment and lateral internal sphincterotomy in the treatment of chronic anal fissure.
2. To evaluate and compare fissure healing rates, pain relief, and recovery of bleeding per rectum between the two treatment modalities.
3. To assess the average recovery time and overall clinical outcomes in both groups.
4. To compare the incidence of complications including anal incontinence, morbidity, recurrence, and need for conversion to surgery.

MATERIALS AND METHODS

A prospective randomized comparative study was conducted in the Department of General Surgery, Rajarajeswari Medical College and Hospital, Bengaluru, from January 2024 to March 2025. A total of 60 patients diagnosed with chronic fissure in ano were included in the study after obtaining informed consent.

Patients aged between 20 and 60 years of both sexes presenting with symptoms of anal fissure for more than 6 weeks were included. Patients with recurrent fissures, fissures secondary to specific conditions (such as Crohn's disease, tuberculosis, or malignancy), associated anorectal conditions (hemorrhoids or fistula), pregnant women, and those unwilling to participate were excluded.

The study population was divided into two groups of 30 patients each. Group X received topical 0.3% nifedipine ointment (chemical sphincterotomy), applied twice daily for 6 weeks. Group Y underwent lateral internal sphincterotomy under spinal or general anesthesia using the standard open technique. All patients in both groups were advised a high-fiber diet, sitz baths, analgesics, and laxatives.

Patients were followed up at regular intervals (2nd, 4th, 6th, 8th, and 10th weeks). Outcomes assessed included fissure healing rate (primary outcome), pain relief (using Visual Analogue Scale), bleeding per rectum, recovery time, recurrence, and complications including anal incontinence (assessed using Wexner score).

Data were analyzed using appropriate statistical methods, including the Chi-square test, with a p-value <0.05 considered statistically significant.

RESULTS

A total of 60 patients with chronic fissure in ano were studied, with 30 patients each in the nifedipine (Group X) and surgical sphincterotomy (Group Y) groups. The majority were aged 20–30 years with a predominance of posterior fissures (88.3%). The healing rate was higher in Group Y (96.7%) compared to Group X (83.3%), though not statistically significant ($p = 0.19$). Pain relief was significantly faster in the surgical group ($p = 0.008$). Recovery of bleeding per rectum was comparable in both groups ($p = 0.93$). The mean recovery time was shorter in Group Y (4.6 weeks) than Group X (5.2 weeks), without statistical significance ($p = 0.19$). No incontinence was observed in the nifedipine group, whereas temporary (30%) and permanent (3.3%) incontinence occurred in the surgical group ($p < 0.001$). Recurrence was noted in 10% of patients in Group X and none in Group Y ($p = 0.049$). The conversion rate to surgery in the nifedipine group was 26.7% ($p < 0.001$).

DISCUSSION

Chronic anal fissure is a common anorectal condition associated with significant morbidity due to pain, bleeding, and sphincter spasm. The principal aim of management is to relieve internal sphincter hypertonia, thereby improving anodermal blood flow and promoting healing.¹² The present study compares chemical sphincterotomy using 0.3% nifedipine with lateral internal sphincterotomy (LIS), the current gold standard.

In this study, the overall healing rate with LIS (96.7%) was higher than that with topical nifedipine (83.3%), although the difference was not statistically significant ($p = 0.19$). These findings are consistent with previous studies reporting

healing rates above 95% with LIS.³ Perrotti et al. reported a healing rate of 94.5% with topical nifedipine, while Katsinelos et al. demonstrated comparable efficacy between medical and surgical modalities.^{5,6} The slightly lower healing rate observed in the present study with nifedipine may be attributed to variations in patient compliance and duration of therapy.

Pain relief was significantly faster in the surgical group ($p = 0.008$), which correlates with the immediate reduction in sphincter tone following sphincterotomy. Similar findings have been reported in earlier studies where surgical intervention provided rapid symptomatic relief compared to pharmacological therapy.⁴ However, nifedipine also showed substantial pain reduction over time, supporting its role as a non-invasive alternative.

The recovery of bleeding per rectum was comparable in both groups ($p = 0.93$), indicating that both modalities are effective in symptomatic relief. The average recovery time was shorter in the surgical group, although not statistically significant ($p = 0.19$), which is in agreement with existing literature.⁵

A key finding of this study is the difference in complication profiles. No cases of incontinence were observed in the nifedipine group, whereas the surgical group showed a 30% incidence of temporary and 3.3% permanent incontinence ($p < 0.001$). This aligns with previous reports highlighting the risk of continence disturbance following LIS.^{4,6} The absence of such complications with nifedipine underscores its safety and suitability as a first-line therapy.

Recurrence was higher in the nifedipine group (10%) compared to none in the surgical group ($p = 0.049$), which is consistent with earlier studies indicating higher recurrence rates with conservative management.⁶ Additionally, the conversion rate of 26.7% in the nifedipine group reflects the need for surgical intervention in non-responders.

Overall, while LIS remains the most effective treatment with rapid symptom relief and low recurrence, topical 0.3% nifedipine offers a safe, non-invasive alternative with good efficacy and minimal risk of incontinence. It can be considered as an initial treatment modality, reserving surgery for refractory or recurrent cases.

CONCLUSION

Lateral internal sphincterotomy remains the most effective treatment for chronic anal fissure, offering faster pain relief and higher healing rates with minimal recurrence. However, topical 0.3% nifedipine provides a safe, non-invasive alternative with good efficacy and negligible risk of incontinence, making it suitable as a first-line treatment, reserving surgery for refractory cases.

REFERENCES

1. Goligher JC. *Surgery of the anus, rectum and colon*. 5th ed. London: Baillière Tindall; 1984.
2. Schouten WR, Briel JW, Auwerda JJ. Relationship between anal pressure and anodermal blood flow. *Dis Colon Rectum*. 1994;37(7):664–9.
3. Nelson RL. Operative procedures for fissure in ano. *Cochrane Database Syst Rev*. 2005;(2):CD002199.
4. Lund JN, Scholefield JH. Aetiology and treatment of anal fissure. *Br J Surg*. 1996;83(10):1335–44.
5. Perrotti P, Bove A, Antropoli C, Molino D, Antropoli M, Balzano A. Topical nifedipine with lidocaine ointment vs active control for treatment of chronic anal fissure. *Dis Colon Rectum*. 2002;45(11):1468–75.
6. Katsinelos P, Papaziogas B, Koutelidakis I, Paroutoglou G, Dimiropoulos S, Atmatzidis S, et al. Topical 0.5% nifedipine vs lateral internal sphincterotomy for chronic anal fissure. *Int J Colorectal Dis*. 2006;21(2):179–83.