

Original article

A Comparison of outcome of Lateral Internal Sphincterotomy and Chemical Sphincterotomy for Treatment of Chronic Anal Fissure

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Abstract

Background: Lateral Internal Sphincterotomy (LIS) is considered the gold standard for surgically managing chronic anal fissures when conservative and medical treatments fail. It is highly effective in curing anal fissures, but it is associated with a high incidence of postoperative incontinence. **Objective:** To compare the effectiveness of B and chemical sphincterotomy (CS) in the treatment of chronic anal fissure. **Methods:** A randomized controlled trial was conducted among the 70 purposively selected patients, aged 15-50 years, diagnosed with chronic anal fissure. The patients were divided equally into two groups, each containing 35 patients: a lateral internal sphincterotomy (LIS) group and a chemical sphincterotomy (CS) group. Data were collected from January 2014 to December 2015 at both government and private hospitals in Faridpur, Bangladesh. **Results:** After 3 months, 34 patients in the LIS group achieved complete healing of the fissure compared to 13 patients in the CS group. By the 6-month mark, 6 patients in the CS group had experienced healing. Additionally, one patient in the LIS group required further surgery for a superficial fistula, while 9 patients in the CS group needed an internal sphincterotomy. Compliance issues were notable in the ointment group due to slower healing and a prolonged duration for symptom relief. Minor incontinence occurred in 5.7% of the LIS group and was absent in the CS group. **Conclusion:** Lateral internal sphincterotomy is the best treatment option for chronic anal fissures due to its early symptom relief, quick fissure healing, and improved patient compliance.

Keywords: Anal fissure; lateral internal sphincterotomy, glyceryltrinitrate; sphincterotomy.

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Introduction

An anal fissure manifests as an elongated ulcer along the longitudinal axis of the lower anal canal, with approximately 90% occurring anteriorly in the midline. While the exact cause of anal fissures, particularly their frequent occurrence in the posterior midline, remains incompletely understood, a probable explanation lies in the anatomy of the posterior rectal wall. During defecation, the pressure exerted by hard fecal matter primarily affects the posterior anal tissue, stretching the overlying anal epithelium significantly.^{1,2} This epithelium, relatively unsupported by muscle, becomes vulnerable to injury when expelled with force.

Conversely, anterior anal fissures, more common in females, especially those who have given birth, are attributed to pelvic floor damage and an attenuated perineal body, resulting in insufficient support to the anal mucous membrane.^{2,3}

A newer perspective suggests that ischemia contributes to the development of anal fissures. Among the known causes are: surgical procedures for hemorrhoids where excessive skin removal leads to anal stenosis and tearing of the scar during difficult bowel movements; inflammatory bowel diseases, especially Crohn's disease; and sexually transmitted infections.⁵⁻⁷

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Anal fissures persist as a significant proctologic issue, characterized by intense, stabbing pain during defecation, frequently lasting for an hour or longer, accompanied by bleeding and discharge.⁸ Chronic anal fissures are linked with sustained hypertonicity of the internal anal sphincter and spasms, resulting in heightened resting anal pressure.⁹ Over the past century, numerous surgical techniques and chemical sphincterotomy procedures have been outlined to alleviate this spasm and reduce the elevated anal pressure, thereby promoting fissure healing.¹⁰ The aim of all approaches was to achieve a high healing rate while minimizing morbidity and mortality. Lateral internal sphincterotomy has emerged as the preferred procedure due to recurrence rates below 10%, although it carries a risk of incontinence. Chemical sphincterotomy, particularly with 2% Glyceryl Trinitrate (GTN) ointment for a period of three months, has demonstrated feasibility and is widely employed.¹¹

However, reported rates of healing range between 45-80%, indicating relatively low healing rates. Additionally, poor compliance, often due to headaches, has prompted some to question the efficacy of chemical sphincterotomy.¹²⁻¹⁴

Materials and methods

This was a randomized controlled trial was conducted to compare the effectiveness of surgical lateral internal sphincterotomy and chemical sphincterotomy (CS) in the treatment of chronic anal fissure among the 70 patients of purposively selected hospital settings (both government and private hospitals) of Faridpur, Bangladesh. Data were collected from January 2014 to December 2015.

Patients were eligible for inclusion in this trial if they met the following criteria: aged between 15 and 50 years, diagnosed with chronic anal fissure based on history and physical examination and treated for a minimum of 6 weeks with conservative medical measures such as a high-residue diet, stool softeners, and analgesics. Chronic anal fissure was defined as the presence of fibrous indurations or exposed internal fibers. Exclusion criteria included age outside the specified range, any degree of stenosis due to anatomical alterations, presence of abscess or fistula and any degree of symptomatic hemorrhoids as they are the absolute contraindication for chemical sphincterotomy. Only chronic anal fissure is the inclusion criteria.

Initially, 78 patients diagnosed with chronic anal fissure were selected, but 8 were subsequently excluded from the study. Reasons for exclusion included refusal of internal sphincterotomy after randomization (6 patients), spontaneous healing of the fissure before surgery (1 patient) and absence of a fissure observed during surgery (1 patient). The age range of the patients was between 15 and 50 years, with 34 women and 36 men included. They were evenly divided into two

groups, each comprising 35 patients: one undergoing lateral internal sphincterotomy and the other undergoing chemical sphincterotomy. Following the procedures (LIS or CS), both groups were followed up for 6 months for various outcome variables such as healing, anal spasm, symptom relief, recurrence, and incontinence. The data were checked and cleaned followed by categorizing data manually. The statistical analysis was done by descriptive statistics and presented with tables.

Participation was voluntary, and confidentiality was ensured, and informed written consent was obtained from all participants. All procedures were carried out in accordance with the ethical norms outlined in the 1964 Declaration of Helsinki. Ethical approval for the study was approved by Faridpur Medical College Hospital, Faridpur, Bangladesh.

Results

Table 1 depicts 19 patients from the chemical sphincterotomy groups and 34 patients of lateral internal sphincterotomy group were symptom free with clinical resolution of their fissure at the time of first follow up ($p=0.02$; 95% CI 0.13 to 0.45). Seven patients stopped taking GTN because of headaches despite of instructions to reduce the amount applied. 9 fissures did not heal despite of the fact that patient completed 12 weeks of GTN application. All 9 patients had lateral internal sphincterotomy thereafter. Only 1 patient in the internal sphincterotomy group required further surgery for a superficial fistula.

Table 1: Characteristics of patients of both groups (N=70)

Characteristics	LIS Group (n=35)	CS Group (n=35)
Female: male ratio	15:20	19:16
Median age range (years)	36 (16-46)	38 (17-50)
Position of fissure		
• Posterior	28 (80.0%)	26 (74.3%)
• Anterior	6 (17.1%)	9 (25.7%)
• Both anterior and posterior	1 (2.9%)	1 (2.9%)
Median duration of symptoms (months)	5 (2-12)	6 (2-18)

Table 2 demonstrates 19 fissures healed after the course of GTN. 4 of these patients still had a fissure after 8 weeks but were free of symptoms. All 4 were treated with a further 4 weeks of GTN after which their fissures had healed. In 3 patients' fissure recurred within 6 months of the index fissure healing with GTN. All were men and all had a sentinel tag. Complete healing with resolution of symptoms occurred in all those treated by sphincterotomy. Only 1 patient became incontinent of flatus post operatively. 1 patient randomized to operation had a late recurrence of his fissure 8 months

postoperatively, which was treated successfully with topical GTN.

Table 2: Outcomes of the patients of both groups (N=70)

Outcomes	LIS Group (n=35)	CS Group (n=35)
After 3 months complete healing	34 (97.1%)	13 (37.1%)
After 6 months complete healing	0 (0.0%)	6 (17.1%)
Fistula	1 (2.9%)	0 (0.0%)
Incontinence	2 (5.7%)	0 (0.0%)
Patient compliance	Good	Poor

Discussion

In a prior prospective study comparing outcomes over 24 months following treatment for chronic anal fissure with 0.2% GTN ointment or lateral internal sphincterotomy, 70 patients were enrolled and randomized into two groups, each with 35 participants. Initially, all surgically treated patients were cured, as in our study, but one fissure recurred after 8 months. Among the 35 fissures treated with GTN, 15 healed.^{5,15} In a multicenter randomized controlled trial assessing the efficacy of topical nitroglycerin compared to internal sphincterotomy for treating chronic anal fissures, eighty-two patients were enrolled. At the six-week mark, 34 patients from the sphincterotomy group achieved complete healing of the fissure, compared to 13 patients from the nitroglycerin group.¹⁵ In another prospective randomized clinical trial comparing surgical and chemical sphincterotomy for chronic anal fissures, after a 3-month follow-up, overall healing rates were 92.5% in the open sphincterotomy group and 45% in the chemical group. The incidence of incontinence was 5% in the open sphincterotomy group and 0% in the chemical group. They suggested surgical sphincterotomy as the primary therapeutic approach for patients exhibiting clinical and manometric indicators of recurrence.¹⁶

In a study chronic anal fissure was treated by fissurectomy with isosorbidedinitrate in patients not responding to conservative treatment. Seventeen consecutive patients with chronic anal fissure not responding to conservative treatment underwent to diathermy fissurectomy. After operation patients used a 1% isosorbidedinitrate cream. Postoperatively follow up continued until wound had healed, at which time anal endosonography was performed. A telephone enquiry into fissure recurrence and continence status was done. 17 patients underwent fissurectomy without post-operative complications. All wound had healed within 10 weeks.¹⁷ In a previous prospective randomized clinical trial, symptomatic relief, healing and changes in maximum anal resting pressure (MARF) were studied in forty consecutive patients with chronic anal fissure

randomized for treatment with either topical GTN or internal sphincterotomy. Before treatment, anal manometry was performed on all patients, and 1 hour after GTN application or sphincterotomy, changes were assessed. Patients were monitored at 2-week intervals for 6 weeks for symptomatic relief and healing. Both the GTN and sphincterotomy groups exhibited a highly significant and comparable reduction in MARF after treatment ($p=0.001$ in both groups). Sphincterotomy provided earlier relief compared to GTN, although after 4 weeks, pain relief was comparable in both groups. Healing occurred earlier with sphincterotomy than with GTN, although after 6 weeks, healing rates were comparable in both groups. Sphincterotomy was associated with a significant incidence of minor, short-term complications and required surgical expertise, theater time and day beds.¹⁵

In a prior randomized study comparing GTN with lateral sphincterotomy as the definitive management of chronic anal fissure, 65 patients participated, with 31 in the lateral sphincterotomy group and 34 in the GTN group. 12 patients in the GTN group experienced minimal improvement in their symptoms and subsequently underwent lateral sphincterotomy. The fissure healed significantly faster after sphincterotomy compared to GTN.¹⁷ In a prospective study, long-term follow-up of chemical sphincterotomy for chronic anal fissures was conducted. Out of the 455 patients who completed the study, 323 patients achieved healing by the end of the follow-up period. Among the healed patients, 170 experienced one or more recurrences, which were successfully treated with further interventions. On the other hand, 132 patients did not achieve healing and were subsequently referred for lateral sphincterotomy.¹⁸

Conclusion

Lateral internal sphincterotomy surpasses topical GTN in treating chronic anal fissures, offering a high healing rate with minimal side effects and a low risk of early incontinence. Therefore, lateral internal sphincterotomy continues to be the preferred treatment for chronic anal fissures.

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