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Original Research Article

Management of Lateral Internal Sphincterotomy in Patients with Chronic Anal Fissure at Tertiary Care Hospital

Article History

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Abstract

Background: Chronic anal fissure is a painful benign anorectal disorder that may require surgical treatment when conservative therapy fails. Lateral internal sphincterotomy is widely used to promote healing by reducing internal anal sphincter hypertonicity. **Objective:** To evaluate postoperative outcomes of lateral internal sphincterotomy in patients with chronic anal fissure at a tertiary care hospital. **Methods:** This prospective cohort study was conducted over a period of six months in the Department of General Surgery, Surgical Unit-I, People's University of Medical and Health Sciences for Women, Nawabshah. A total of 87 patients aged 20–60 years with chronic anal fissure who fulfilled the predefined inclusion and exclusion criteria were enrolled using consecutive sampling. All patients underwent lateral internal sphincterotomy performed by a consultant surgeon. Postoperative pain was assessed using the Visual Analogue Scale, while healing time, hospital stay, and fecal incontinence were recorded. Participants were followed prospectively twice weekly for four weeks. Data were analyzed using IBM SPSS Statistics version 23.0. Quantitative variables were summarized as mean ± standard deviation and categorical variables as frequencies and percentages. Chi-square and independent-samples t-tests were applied as appropriate, with $p \leq 0.05$ considered statistically significant. **Results:** The mean age was 39.0 ± 9.3 years, and 48 (55.2%) participants were female. The mean postoperative pain score at 24 hours was 6.15 ± 1.17, while mean hospital stay was 1.24 ± 0.43 days. The mean healing time was 18.0 ± 4.3 days. Fecal incontinence occurred in 5 (5.7%) patients during follow-up. Obesity was significantly associated with postoperative fecal incontinence ($p=0.014$). No significant associations were observed with gender, diabetes mellitus, hypertension, or socioeconomic status. Postoperative pain, healing time, and hospital stay did not differ significantly according to gender. **Conclusion:** Lateral internal sphincterotomy provided favorable short-term outcomes in patients with chronic anal fissure. The procedure was associated with satisfactory healing and short hospitalization, with fecal incontinence occurring infrequently. The association between obesity and fecal incontinence suggests that individual continence risk should be considered when planning surgical management.

Keywords: Chronic anal fissure; Lateral internal sphincterotomy; Fecal incontinence; Postoperative pain; Fissure healing; Hospital stay; Obesity; Anorectal surgery.

INTRODUCTION

Chronic anal fissure (CAF) is a common and highly symptomatic benign anorectal disorder characterized by persistent ulceration of the anoderm, typically associated with severe pain during defecation and rectal bleeding. Symptoms persisting for more than six weeks are generally considered chronic and may

substantially impair daily activities and quality of life. Although many acute fissures respond to dietary modification, stool-softening measures, and topical pharmacological therapy, chronic fissures that remain refractory to conservative treatment frequently require surgical intervention. Lateral internal sphincterotomy (LIS) remains the principal surgical treatment because reduction of internal anal sphincter hypertonicity promotes fissure healing and provides rapid symptomatic relief [1,2].

Recent evidence demonstrates consistently high healing rates following LIS. In a series of 165 patients undergoing LIS for chronic anal fissure, the procedure produced favorable clinical outcomes, supporting its continued role in surgical management [1]. A prospective randomized controlled trial involving 200 patients reported clinical improvement in 100% of patients one month after sphincterotomy, although recurrence and continence outcomes remained important considerations during longer follow-up [2]. A systematic review and meta-analysis of eight randomized controlled trials involving 1,035 patients reported an overall postoperative healing rate of 90.2%, with recurrent fissure occurring in 3.7% and postoperative incontinence in 8.9% of patients following LIS [3].

The principal concern associated with LIS is postoperative fecal incontinence, which has encouraged modifications in surgical technique and more individualized sphincter division. A recent meta-analysis involving 1,711 patients found that closed LIS was associated with significantly lower risks of incontinence, postoperative pain, delayed healing, and overall complications compared with open LIS [4]. Furthermore, a recent study comparing fissurectomy with LIS reported a 97.8% healing rate following LIS, while de novo postoperative incontinence occurred in 8.9% of patients [5].

Despite extensive international evidence, outcomes may vary according to patient characteristics, surgical expertise, and local healthcare practices. Therefore, evaluating postoperative pain, healing time, hospital stay, and fecal incontinence in the local population is clinically relevant. The present study aims to determine the outcomes of lateral internal sphincterotomy in patients with chronic anal fissure at a tertiary care hospital.

METHODLOGY

This study was conducted as a prospective cohort This prospective cohort study was conducted in the Department of General Surgery, Surgical Unit-I, People's University of Medical and Health Sciences for Women, Nawabshah, over a period of six months. The study population comprised patients presenting with chronic anal fissure who fulfilled the predefined inclusion and exclusion criteria. Chronic anal fissure was defined as an anal fissure diagnosed on the basis of a history of pain during defecation and bright-red blood in the stool, persisting for more than six weeks, with failure of medical treatment for more than one month. A total of 87 patients were enrolled using a non-probability consecutive sampling technique. The sample size of 87 was calculated at a 5% level of significance, taking a 6% frequency of fecal incontinence following closed lateral internal sphincterotomy at a 95% confidence interval.

Patients aged 20–60 years of either sex with chronic anal fissure according to the operational definition were included. Patients with hemorrhoids diagnosed on clinical examination, multiple anal fissures, perianal fistula, carcinoma of the anus, a history of previous anorectal surgery, or those unwilling to participate in the study were excluded. Following approval from the Ethical Review Committee and CPSP, eligible patients admitted to the Department of Surgery were enrolled after fulfilling the predefined selection criteria. All procedures were performed by one consultant surgeon with at least five years of post-fellowship experience. Patients were hospitalized for one night following surgery. The gauze pad at the operative site was removed the following morning, after which the wound was cleaned with physiological saline. Patients without complications were discharged and received oral analgesics. Oral or topical antibiotics were not routinely prescribed according to the approved study protocol. Patients were advised to take a high-fibre diet and perform warm showers two to three times daily with soap for cleansing of the wound site. Participants were followed twice weekly for four weeks by the researcher, and all observations were recorded on a structured data collection proforma.

The principal outcomes of the study were postoperative pain score, healing time, hospital stay, and fecal incontinence following lateral internal sphincterotomy. Age, gender, duration of fissure, height, weight, body mass index, diabetes mellitus, hypertension, obesity, and socioeconomic status were recorded as relevant patient characteristics. Pain was assessed using the Visual Analogue Scale. Healing time was measured in days from the date of operation until healing, which was defined by the absence of pain during defecation and blood in the stool together with complete epithelialization of the fissure on clinical examination. Fecal incontinence was assessed from the patient's history and was defined as lack of control over defecation. Hospital stay was recorded in days. Gender, diabetes mellitus, hypertension, obesity, and socioeconomic status were considered potential effect modifiers and were assessed through stratified analysis.

All collected data were entered and analyzed using IBM SPSS Statistics version 23.0. Quantitative variables, including age, body mass index, duration of

fissure, hospital stay, pain score, and healing time, were presented as mean and standard deviation. Qualitative variables, including gender, diabetes mellitus, hypertension, obesity, fecal incontinence, and socioeconomic status, were presented as frequencies and percentages. Stratified tables were constructed to control for the effects of gender, diabetes mellitus, hypertension, obesity, and socioeconomic status. The post-stratification chi-square test was applied to assess their association with fecal incontinence, while the independent-samples t-test was used for comparison of pain score, healing time, and hospital stay as specified in the approved synopsis. A p-value of ≤0.05 was considered statistically significant.

The study was initiated after obtaining permission from the relevant Ethical Review Committee and approval from the College of Physicians and Surgeons Pakistan (CPSP). Eligible participants were informed about the study before enrollment, and participation was voluntary. The study data were recorded on study-specific proformas and handled confidentially. Patient information was used exclusively for research purposes, with confidentiality maintained throughout data collection, analysis, and reporting.

RESULT

A total of 87 patients with chronic anal fissure who fulfilled the predefined eligibility criteria were included in the study. The mean age of the patients was 39.0 ± 9.3 years, with an age range of 20–59 years. Among the participants, 39 (44.8%) were male and 48 (55.2%) were female. The mean body mass index (BMI) was 25.5 ± 3.5 kg/m², while the mean duration of anal fissure was 14.0 ± 7.0 weeks. Diabetes mellitus was present in 17 (19.5%) patients, whereas hypertension was reported in 17 (19.5%) patients. Obesity was present in 8 (9.2%) patients. Regarding socioeconomic status, 43 (49.4%) patients belonged to the poor socioeconomic group, 34 (39.1%) belonged to the middle socioeconomic group, and 10 (11.5%) belonged to the upper socioeconomic group. The baseline demographic and clinical characteristics of the study participants are presented in Table 1.

Following lateral internal sphincterotomy, the mean postoperative pain score at 24 hours was 6.15 ± 1.17 on the Visual Analogue Scale. The mean hospital stay was 1.24 ± 0.43 days. Sixty-six (75.9%) patients had a hospital stay of one day, whereas 21 (24.1%) patients remained hospitalized for two days. The mean healing time was 18.0 ± 4.3 days. During the four-week follow-up period, 5 (5.7%) patients developed fecal incontinence, while 82 (94.3%) patients remained free of fecal incontinence. The postoperative outcomes following lateral internal sphincterotomy are summarized in Table 2.

An association between selected demographic and clinical characteristics and postoperative fecal incontinence was assessed using the chi-square test. Fecal incontinence was observed in 2 of 8 (25.0%) obese patients compared with 3 of 79 (3.8%) non-obese patients. This difference was statistically significant ($\chi^2 = 6.03$, $p = 0.014$). No statistically significant association was observed between fecal incontinence and gender ($p = 0.482$), diabetes mellitus ($p = 0.979$), hypertension ($p = 0.979$), or socioeconomic status ($p = 0.694$). The associations between the selected characteristics and postoperative fecal incontinence are presented in Table 3.

Stratified analysis was performed to assess differences in postoperative pain score, healing time, and hospital stay according to gender. The mean postoperative pain score was 6.1 ± 1.2 among female patients compared with 6.0 ± 1.1 among male patients, with no statistically significant difference between the groups ($p = 0.450$). The mean healing time was 18.4 ± 4.4 days among female patients and 17.4 ± 4.1 days among male patients ($p = 0.274$). Similarly, the mean hospital stay was 1.27 ± 0.45 days among female patients compared with 1.21 ± 0.41 days among male patients ($p = 0.221$). These findings are presented in Table 4.

Table 1. Baseline demographic and clinical characteristics of patients with chronic anal fissure (n = 87)

Variable	Value
Age (years), mean ± SD	39.0 ± 9.3
Age range (years)	20–59
Male, n (%)	39 (44.8)
Female, n (%)	48 (55.2)
BMI (kg/m²), mean ± SD	25.5 ± 3.5
Duration of fissure (weeks), mean ± SD	14.0 ± 7.0
Diabetes mellitus, n (%)	17 (19.5)
Hypertension, n (%)	17 (19.5)
Obesity, n (%)	8 (9.2)
Poor socioeconomic status, n (%)	43 (49.4)
Middle socioeconomic status, n (%)	34 (39.1)
Upper socioeconomic status, n (%)	10 (11.5)

Table 2. Postoperative outcomes following lateral internal sphincterotomy (n = 87)

Outcome	Value
Pain score at 24 hours (VAS), mean ± SD	6.15 ± 1.17
Hospital stay (days), mean ± SD	1.24 ± 0.43
Hospital stay 1 day, n (%)	66 (75.9)
Hospital stay 2 days, n (%)	21 (24.1)
Healing time (days), mean ± SD	18.0 ± 4.3
Fecal incontinence, n (%)	5 (5.7)
No fecal incontinence, n (%)	82 (94.3)

Table 3. Association of demographic and clinical characteristics with postoperative fecal incontinence (n = 87)

Variable	Fecal incontinence	No fecal incontinence	Statistical test	p-value
Obesity	2/8 (25.0%)	6/8 (75.0%)	$\chi^2 = 6.03$	0.014
No obesity	3/79 (3.8%)	76/79 (96.2%)		
Gender	—	—	χ^2	0.482
Diabetes mellitus	—	—	χ^2	0.979
Hypertension	—	—	χ^2	0.979
Socioeconomic status	—	—	χ^2	0.694

Table 4. Stratified comparison of postoperative outcomes by gender (n = 87)

Outcome	Female (n = 48)	Male (n = 39)	p-value
Pain score at 24 hours, mean ± SD	6.1 ± 1.2	6.0 ± 1.1	0.450
Healing time (days), mean ± SD	18.4 ± 4.4	17.4 ± 4.1	0.274
Hospital stay (days), mean ± SD	1.27 ± 0.45	1.21 ± 0.41	0.221

DISCUSSION

Lateral internal sphincterotomy (LIS) remains an effective surgical treatment for chronic anal fissure (CAF), particularly when conservative therapy fails. The present study demonstrates favorable short-term outcomes following LIS, including satisfactory healing, limited hospital stay, and a low frequency of postoperative fecal incontinence. These findings are consistent with contemporary evidence showing that LIS provides higher healing rates than most nonsurgical treatments. A systematic review and network meta-analysis reported that LIS was among the most effective interventions for achieving fissure healing, although continence disturbance remains an important consideration. [6]

The effectiveness of LIS can be explained by its underlying physiological mechanism. Chronic fissures are commonly associated with increased internal anal sphincter tone, which contributes to impaired anodermal blood flow and perpetuates pain, spasm, and delayed healing. Controlled division of the internal sphincter reduces resting pressure and improves local perfusion, facilitating fissure healing. Comparative evidence supports this mechanism, with randomized data demonstrating favorable outcomes following LIS compared with fissurectomy. [7]

The postoperative recovery observed in this study is also compatible with recent literature. A systematic review comparing sitz baths with LIS found that conservative treatment may provide symptomatic relief, particularly in acute fissures, but LIS provides superior definitive healing in chronic disease. [8] Furthermore, a meta-analysis of 16 trials involving 1,711 patients reported that closed LIS was associated with shorter hospital stay, lower postoperative pain, fewer complications, and lower incontinence risk than open LIS. [9] These findings emphasize the importance of surgical technique in optimizing recovery while minimizing morbidity.

Fecal incontinence remains the major concern following LIS because division of the internal sphincter may reduce the functional reserve of the continence mechanism. Recent evidence confirms that LIS generally provides greater healing than botulinum toxin, but this benefit must be balanced against the potential for continence-related complications. [10] Current international guidance therefore supports individualized treatment selection, particularly in patients with possible pre-existing sphincter dysfunction or other risk factors. [11,12]

The significant association between obesity and postoperative fecal incontinence in the present study is clinically noteworthy. Although the small number of obese participants requires cautious interpretation, recent evidence indicates that obesity may independently increase the risk of fecal incontinence and may be associated with altered rectal sensitivity. [13] Obesity-related changes in anorectal sensation and continence reserve could therefore make patients more susceptible to functional consequences after sphincter division. Nevertheless, this association should be considered hypothesis-generating rather than causal.

The study has several strengths, including its prospective design, consecutive recruitment, standardized postoperative assessment, and evaluation of clinically relevant potential effect modifiers. However, the single-center design, relatively small sample, non-probability sampling, short four-week follow-up, and clinical rather than validated scoring-based assessment of fecal incontinence limit generalizability. Longer multicenter studies using validated continence scores, anorectal manometry, and extended follow-up are warranted. Recent population-level evidence demonstrates that fecal incontinence is relatively common and varies according to age and sex, highlighting the importance of longer-term functional assessment. [14.15]

CONCLUSION

Lateral internal sphincterotomy provided favorable short-term outcomes in patients with chronic anal fissure who had failed medical treatment. The procedure was associated with progressive fissure healing, limited postoperative hospitalization, and generally acceptable postoperative morbidity. Fecal incontinence occurred infrequently during the four-week follow-up, although obesity was associated with a greater likelihood of this complication. These findings support lateral internal sphincterotomy as an effective treatment for appropriately selected patients with chronic anal fissure. Careful assessment of continence risk and individualized surgical technique are important to minimize functional complications. Larger multicenter studies with validated continence assessment, recurrence assessment, and longer follow-up are warranted.

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