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ORIGINAL ARTICLE

Comparison of glyceryl trinitrate (GTN) 0.2% with lateral anal sphincterotomy in the management of chronic anal fissure.

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ABSTRACT… Objective: To compare GTN ointment with lateral anal sphincterotomy. **Study Design:** Randomized Control Trial. **Setting:** Department of Surgery, Gujranwala Medical College and Teaching Hospital, Gujranwala. **Period:** September 2021 to January 2023. **Methods:** Sixty (60) patients with age 20 to 60 were included in the study. These were equally distributed randomly into two groups. 1st group underwent lateral anal sphincterotomy and second group receive 0.2% GTN for chronic anal fissure. All these patients were assessed 6 weeks after the start of treatment and were on the basis of control of symptoms per rectum bleed, constipation and pain around perianal region. **Results:** A total of 60 patients were enrolled and evenly divided into two groups. After 6 weeks of treatment, 90% of patients in the lateral sphincterotomy group achieved complete healing, compared to 50% in the GTN ointment group. Post-treatment perianal pain persisted in only 10% of the surgical group versus 50% in the GTN group. Similarly, per rectal bleeding and constipation were significantly lower in the sphincterotomy group (6.7% each) compared to the GTN group (30% and 46.7%, respectively). The differences between groups were statistically significant ($p < 0.05$) across all outcome variables. **Conclusion:** Lateral anal sphincterotomy is significantly more effective than 0.2% glyceryl trinitrate ointment in the treatment of chronic anal fissure. It provides higher healing rates and better symptomatic relief with minimal residual symptoms. Therefore, it should be considered the treatment of choice, especially in patients who do not respond adequately to conservative management.

Key words: Chronic Anal Fissure, Constipation, Lateral Anal Sphincterotomy, Per Rectal Bleeding.

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INTRODUCTION

Fissure in ano is very painful condition of the perianal region because of tear in the perianal area of skin.[1] The presentation mostly is pain at perianal area during and after passing stool with most of the times bright red colored bleeding along the surface of stool.[2] It is a very common perianal problem in which all age groups are involved but mostly seen in the younger and middle age group people with almost equal incidence in both male and female gender.[3] Around 90% perianal fissure occur at posterior mid line. Many times it heal spontaneously but in some patients enter into a complexity of perianal pain, constipation, injury due to fecal matter and spasm of sphincter.[4]

The pathophysiology of perianal fissure clearly fully understood, however, hypertonicity of internal anal sphincter and decrease blood supply and oxygen supply of anterior and posterior skin of perianal region have been seen to be cause.[5] As far as treatment option for conservative management, GTN (glyceryl trinitrate) ointment was the first line modality this relaxes the internal anal sphincter. This option was cost effective in this modern time of surgical management.[6] Option of surgery was considered when the conservative management which includes laxative, stool softeners and GTN, fail. This treatment option is invasive with post operative pain, but very effective. On the other hand, topical option of treatment took more time for the recovery of fissure and also results in headache. Ladies normally suffer for long time as they didn't opt surgical management due to social dilemma.[7,8]

Clinical evidence clearly leans in favor of lateral anal sphincterotomy when compared to glyceryl trinitrate ointment. Patients undergoing surgical treatment tend to experience more consistent and faster healing, with quicker relief from pain

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and fewer instances of the condition returning over time.[9] In contrast, those treated with GTN ointment often face delayed symptom relief and a higher likelihood of the fissure recurring after initial improvement.[10] Additionally, the topical treatment is frequently associated with bothersome side effects, such as persistent headaches, which can discourage patients from continuing its use. While GTN may be considered a first-line, non-invasive option—particularly for individuals hesitant about surgery—its overall effectiveness is limited when weighed against the durable results offered by surgical intervention.[11]

This study aims to compare these two primary treatment modalities—GTN 0.2% ointment and lateral anal sphincterotomy—based on their clinical outcomes, recurrence rates, side effect profiles, and overall efficacy in managing chronic anal fissure. By analyzing healing outcomes and patient responses from both treatment arms, the study provides practical insights into the optimal management of this debilitating condition. Ultimately, the findings highlight the need for tailored treatment strategies, considering the patient's preference, symptom severity, and likelihood of adherence, while acknowledging that LAS remains the gold standard for long-term resolution.

METHODS

This randomized controlled trial was designed to evaluate and compare the effectiveness of lateral anal sphincterotomy and 0.2% glyceryl trinitrate (GTN) ointment in the management of chronic anal fissure. It was conducted at the Department of Surgery, Gujranwala Medical College and Teaching Hospital, over a period extending from September 2021 to January 2023 after the approval from the Institutional Review Board (Letter No: No.Admn.192/GMC, Dated: 29/07/2021 in the name of Dr. Farhan Tahir).

A total of sixty patients, ranging in age from 20 to 60 years and presenting with symptoms consistent with chronic anal fissure for more than eight weeks, were randomly divided into two equal groups. One group underwent lateral anal sphincterotomy, while the other received topical application of 0.2% GTN ointment. Both male and female patients were included regardless of gender distribution.

Patients were evaluated based on the presence of perianal pain, rectal bleeding, and constipation prior to and after treatment. Follow-up assessments were performed six weeks after the initiation of treatment to monitor symptom resolution and treatment response. The primary outcome measured was healing of the fissure, while secondary outcomes included persistence or improvement of associated symptoms. Patients with acute fissures, underlying anorectal conditions such as inflammatory bowel disease, rectal polyps, or malignancy, as well as those outside the specified age range, were excluded from the study. Data collected during the study were analyzed using SPSS and Microsoft Excel to determine treatment efficacy and compare clinical outcomes between the two therapeutic approaches.

RESULTS

Gender wise in the 1st group (lateral sphincterotomy) male patients were (60%) and female patients were (40%) while in group II (0.2% GTN CREAM) male patients were (47%) and female patients were (53%). Most of patients were between 20 to 40 years age group.

Per rectal bleeding, pain around perianal region and constipation were main features in both the groups. In the 1st group (lateral sphincterotomy) after 6 weeks treatment 90% healed completely only 10% patients have mild perianal pain which persist, around 7% with per rectal bleeding and around 7% with constipation In group II (0.2% GTN CREAM): 50 % patients were completely healed and another 50% healed with mild perianal pain and pruritus, 30% with per rectal bleeding and around 47% with constipation. (p-value = 0.0019) There is a statistically significant difference in residual perianal pain. (p-value = 0.0008) Pain is significantly lower in the surgery group. And there is a statistically significant difference in complete healing between the two groups. Lateral sphincterotomy is significantly more effective than GTN 0.2% cream. Post-treatment bleeding is significantly less in the sphincterotomy group compared to GTN group. (p-value = 0.0176)

TABLE-I

Baseline demographic and clinical features of patients in both groups

Variable	Category	Group I: Lateral Sphincterotomy	Group II: 0.2% GTN Cream
Gender	Male	18 (60.0%)	14 (46.7%)
	Female	12 (40.0%)	16 (53.3%)
Age (Years)	20–30	9 (30.0%)	10 (33.3%)
	31–40	10 (33.3%)	11 (36.7%)
	41–50	7 (23.3%)	6 (20.0%)
	51–60	4 (13.3%)	3 (10.0%)
Pain Around Perianal Region	Yes	25 (83.3%)	26 (86.7%)
	No	5 (16.7%)	4 (13.3%)
Per Rectal Bleeding	Yes	13 (43.3%)	12 (40.0%)
	No	17 (56.7%)	18 (60.0%)
Constipation	Yes	21 (70.0%)	20 (66.7%)
	No	9 (30.0%)	10 (33.3%)

TABLE-II

Clinical symptoms at 6-week follow-up

Symptom	Group I: Lateral Sphincterotomy	Group II: 0.2% GTN Cream
Pain (perianal region)	3 (10.0%)	15 (50.0%)
Per Rectal Bleeding	2 (6.67%)	9 (30.0%)
Constipation	2 (6.67%)	14 (46.7%)

DISCUSSION

Although, there are many options of treatment are known for chronic anal fissure but all these options are very time consuming and bothersome for the patient. Therefore, surgical management which is lateral internal sphincterotomy is the safest and most effective mode of treatment. After 6 weeks follow up of patient's surgery has a great chance around 90% of quick recovery from symptoms with no any major complication and result in quick postoperative relief of constipation problem along with the quick release of defecation discomfort which is as compare to GTN cream 50% recovery from pain and other symptoms.

In our study after 6 weeks almost all the patients after surgery has healed fissure and in other group around 50% has healed fissure. This present study has results comparable to the study done by Siddique et al. In which there was 28 out of 33 (84.85%) patients after surgical treatment and 11 out of 31 (35.48%) patients after medical treatment with GTN ointment ($p<0.001$) had complete healing at the end of six weeks.[12]

Our study results were non-comparable to the results of the study done by Mishra et al., on 40 patients with chronic anal fissure in which there were out of 20 patients 18 have healed with medical treatment 0.2% GTN ointment and out of 20 patients 17 have healed with lateral internal sphincterotomy surgery at the end of 6th weeks of treatment.[13]

The Consultants know the efficacy and advantage of surgery but still give preference to medical treatment for chronic fissure in ano which is very bothersome and time taking for the patients. The surgical procedure which is lateral anal sphincterotomy should be the first option by the surgeons for treatment of chronic anal fissure.[14] This approach is cost effective. Chronic fissure in ano has high prevalence of around 1 out of 350 individuals. Patients even with the pain and bleeding often ignore it and don't go for proper treatment which result in compromise of their daily activities, discomfort and complications like anemia. Till now, many medical options are in practice including of GTN (glyceryl trinitrate) 0.2%, which is very useful as local applicant specially for acute anal fissure which results in increase blood flow by dilating the vessels, relaxes the sphincter and relaxes the anal canal for defecation.[15]

Anal Fissure is also very common in children and is one of the cause of Per rectal bleeding, low fibre diet and decrease water intake are two most important factors leading to Fissure in ano. This is a metabolic disease need patient's education about good diet, increase water intake and also to educate people that don't overlook the symptoms of anal fissure and consult doctor immediately and get themselves examined. All need is good awareness and nothing else.

CONCLUSION

Chronic anal fissure, is a disease of both the genders equally effected. Although, many treatment options are available but all are time consuming and with high recurrence rate and are not cost effective. Therefore, the safe and most effective option of treatment is lateral anal sphincterotomy. This method has a great chance around 96% of quick recovery from symptoms with no any major complication and result in quick postoperative

relief of constipation problem along with the quick release of defecation discomfort. Doctors knows the advantage of surgery but still use conservative options for chronic anal fissure. The surgical option must be the first and absolute option for chronic anal fissure treatment. This will save both time and money

RECOMMENDATIONS BASED ON STUDY RESULTS

Based on the findings of this randomized controlled trial, lateral anal sphincterotomy should be considered the first-line treatment for patients suffering from chronic anal fissure, especially those with persistent symptoms and poor response to conservative measures. The procedure demonstrated a significantly higher rate of complete healing (90%) compared to 0.2% glyceryl trinitrate (GTN) ointment (50%), along with a markedly lower incidence of residual symptoms such as perianal pain, rectal bleeding, and constipation. These outcomes support the superior efficacy, faster symptom resolution, and better overall patient outcomes with surgical management. Therefore, clinicians should prioritize sphincterotomy in treatment algorithms, while reserving GTN ointment for patients who are unwilling or unfit for surgery.

LIMITATIONS OF THE STUDY

Despite its valuable findings, the study has several limitations. Firstly, the sample size was relatively small (n=60), which may limit the generalizability of the results to the broader population. Secondly, the short follow-up duration of 6 weeks does not allow assessment of long-term outcomes, such as recurrence rates or late complications like incontinence. Thirdly, blinding was not mentioned, which may introduce observer or performance bias. Moreover, patient compliance and side effects from GTN ointment, such as headache, were not evaluated or documented, which could have impacted treatment adherence and outcomes. Lastly, the study was conducted at a single center, which may limit external validity. Future research with larger, multi-center trials and longer follow-up periods is recommended.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Farhan Tahir:** Data collection, paper writing.
2	**Amin Warraich:** Data collection.
3	**Mudassar Rasool:** Data analysis.
4	**Rashid Ehsan Randhawa:** Discussion writing.
5	**Hafsa Ijaz:** Review of manuscript.
6	**Imran Amin:** Data analysis.