RESEARCH PAPER

Comparison of Topical Glyceryl Trinitrate with Topical Diltiazem Ointment for Management of Acute Anal Fissure at a Tertiary Care Hospital

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ABSTRACT

Background: Acute anal fissure is a common anorectal condition characterized by severe pain and bleeding, often associated with internal anal sphincter hypertonicity and reduced anodermal blood flow. **Aim:** To compare the efficacy and safety of topical glyceryl trinitrate and diltiazem ointments in the management of acute anal fissure. **Methods:** This randomized controlled trial was conducted on 82 patients divided equally into two groups receiving either 0.2% glyceryl trinitrate or 2% diltiazem ointment for 8 weeks. Baseline demographic and clinical characteristics were recorded, and outcomes including pain reduction, fissure healing, recurrence, and complications were assessed. Data were analyzed using SPSS version 27.0, with independent t-tests and chi-square tests applied as appropriate. **Results:** The glyceryl trinitrate group showed significantly higher complete healing rates (80.5% vs 58.5%, $p = 0.01$) and greater pain reduction (5.4 ± 1.3 vs 3.9 ± 1.2, $p = 0.001$). Mean time to symptom relief (2.4 ± 0.9 vs 3.6 ± 1.1 weeks) and fissure healing (4.7 ± 1.2 vs 6.1 ± 1.3 weeks) were significantly shorter in the glyceryl trinitrate group. Recurrence rates were lower (7.3% vs 22.0%, $p = 0.03$), and complete symptom relief was more frequent (75.6% vs 48.8%). However, adverse effects such as headache were more common with glyceryl trinitrate (36.6% vs 12.2%, $p = 0.01$). **Conclusion:** Glyceryl trinitrate is more effective than diltiazem in achieving faster healing, greater symptom relief, and lower recurrence rates in acute anal fissure, although it is associated with a higher incidence of side effects.

Keywords: Acute anal fissure, glyceryl trinitrate, diltiazem, randomized controlled trial, pain reduction, fissure healing

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INTRODUCTION

Acute anal fissure refers to an inherent benign anorectal disease attended by a linear fissure in the distal anal canal, and is usually accompanied by intense pain on defecation, and rectal bloodshed (Akmal et al., 2024). It is estimated that the world-wide occurrence of anal fissure takes up about 10-15% of proctologic consultations, equating to a huge burden on the healthcare system (Santhan and Jose, 2025). The pathophysiology involves hypertonicity and spasm of internal anal sphincter resulting to a decrease in anodermal blood flow, and impaired healing.

This ischemic process has been supported by research studies that show reduced posterior midline perfusion of individuals affected by it (Krieg et al., 2025). The acute fissures can be characterized as less than six weeks in duration and may have a history of recent trauma like passing of hard stool (Li et al., 2025). These lesions could lead to chronic fissures with fibrosis, sentinel piles, and continued sphincter spasm, unless treated (Shrestha et al., 2025). The quality of life is seriously hampered in terms of pain, fear to defecate and subsequent constipation cycles. Thus, chronicity and the related complications must be prevented by pathogenic management in the early stages (Saba and Saqib, 2022).

Pharmacological treatments that address acute anal fissures are aimed at lowering internal anal sphincter tone to enhance blood circulation and, hence, healing (Alshehri et al., 2020). One of the nitric oxide donors, glyceryl trinitrate (GTN) ointment has been extensively employed as the first-line therapy because it leads to smooth muscle relaxation (Omar et al., 2025). GTN has shown a healing rate of about 50-70% in clinical trials though the recurrence rate is also significant. Yet, its application is often constrained due to its adverse effect, especially headaches, that were reported in up to 30-40% of patients (El Charif et al., 2021). These adverse effects have a tendency to result in non-compliance and withdrawal of treatment. Although it has been effective, inconsistency in its patient response and tolerance has led to the search of alternative topical agents (Alshehri et al., 2020). GTN acts pharmacodynamically as nitric oxide-activated cyclic guanosine monophosphate (cGMP) signaling pathways, which result in temporary sphincter relaxation. Therefore, even though efficient, GTN therapy also has its drawbacks that require a comparison with other agents (Hussein et al., 2023).

A calcium channel blocker such as topical diltiazem is now being used as an alternative pharmacological agent to treat anal fissures because it has sphincter-relaxing effects (Shahid et al., 2022). Diltiazem lowers the influx of calcium into the cell in the smooth muscle, which lowers the sphincter tone and enhances the perfusion of the anoderm. There are also evidences that the two treatments have comparable healing rates, but diltiazem is always better in terms of tolerability and adverse events. An example is a comparative study which found a higher healing reduction (65% with GTN and 67% with diltiazem), but much more headache in the GTN group (Shehata et al., 2022). Moreover, the prevalence is also a bit lower in the case of diltiazem, implying prolonged therapeutic efficacy. These results illuminate the relevance of prioritizing efficacy and patient-centered results like comfort and compliance. In addition, the majority of the studies have a Western background, which may not be applicable to a variety of healthcare contexts (Akinci et al., 2020).

In Pakistan, anal fissures are a common but underreported problem in both surgical and primary care (Bashir et al., 2021). This is probably worsened by dietary habits that are low in fibers, a high rate of constipation, and lack of access to early health care (Dewana et al., 2023). Although the best topical treatments are available, there is no local evidence produced to compare the effectiveness of glyceryl trinitrate and diltiazem. Additional contributors to timely presentation and course to chronic fissures are cultural and patient resistance to seek care due to anorectal issues (Shah et al., 2024). Moreover, financial factors and drug access affect the treatment options of limited resources. With these difficulties, it is necessary to find effective yet well-tolerated and available therapies. The context-specific understanding of treatment outcomes in the Pakistani population can be obtained through

comparative assessment among the population. Accordingly, this paper seeks to fill this gap by evaluating the relative effectiveness and tolerability of these two topical agents in the local clinical environment.

METHODOLOGY

Study Design and Setting

This was a randomized controlled trial which was carried out in the department of general surgery in Aziz Bhatti Shaheed Teaching Hospital. The research was conducted in the course of three months, starting on 20th January 2026 and finished on 20th April 2026.

Sample Size and Sampling Technique

The sample size was calculated with the WHO sample size calculator with a level of significance of 1% and a 99% statistical power. The minimum number of participants needed to observe a significant difference was estimated based on the expected curing rates of 85.2% of glyceryl trinitrate and 54% of diltiazem. On these criteria, a total of 82 patients was calculated with 41 subjects each in each treatment arm. The non-probability consecutive technique was used to recruit participants so that it is viable and achievable in the clinical setting. All eligible patients who came within the period of the study were eligible to be included till the required sample size was attained. This was to enable an effective enrollment process and reduce a selection delay. Non-random sampling could restrict the generalizability, but since the study had constraints, it was the right choice. Equal grouping was also done so as to allow equal comparison.

Eligibility Criteria

Eligible patients were aged between 18-70 years and presented with pain during defecation with a clinical diagnosis of acute anal fissure. Participants who had a period of less than six weeks of symptoms were only enrolled to have a uniform disease stage. People with anorectal diseases that also included fistulae or abscesses were not included to complicate clinical outcomes. Pelvic floor surgery patients were also avoided because they might have anatomically changed and hence respond to the treatment differently. This was restricted to those diagnosed with inflammatory bowel diseases because these might have an independent effect on fissure healing. Other exclusions included patients who were on nitrate treatment or calcium channel blockers due to other medical conditions. Women who were pregnant and those who had chronic headache disorders were also not included because of the safety and tolerability reasons. In addition, patients with other underlying conditions like Crohn diseases, HIV, tuberculosis, anal malignancy or fistula in ano were ruled out to ensure homogeneity of the study sample.

Data Collection

All the participants had informed consent before enrollment and this was given after ethical approval. Baseline demographic and clinical data, such as age, gender, body mass index, bowel habits, patient duration of symptoms, pain score, and fissure location, were filled out systematically. The allocated patients were grouped in two to provide equal representation and the lottery was used to randomly assign them to each of the two groups. Group A participants were asked to administer 3 grams of 2% diltiazem ointment to the peri-anal area that reaches around 2-2.5 cm inside the internal sphincter thrice a day over a period of 8 weeks. The use of 3 grams of 0.2 percent glyceryl trinitrate ointment by group B participants was recommended to be used with the same frequency and duration. Besides topical therapy, every patient was informed to practice supportive interventions such as high fiber diet, hydration and frequent use of warm sitz baths of 10-15 minutes 3 times a day. Follow up of the patients had been conducted at 8 weeks to

determine the clinical outcomes relating to pain reduction, fissure sealing and recurrence. The structured proforma was used to record all the observations to give uniform data recording. The high rates of compliance with treatment guidelines and assessing outcomes were also ensured through frequent follow-up.

Statistical Analysis

The collected data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 29. Mean values and standard deviations were used to summarize continuous variables (age, body mass index, quality of disease, quality of pain). Categorical variables such as gender, bowel habits, fissure location, healing status, and recurrence rates were displayed in terms of frequencies and percentages. The chi-square test of categorical outcomes was applied to make a comparative analysis between the two treatment groups. The independent sample t-test was used to test the difference in the mean pain scores. A p -value that was not below 0.05 was taken to indicate statistical significance. The data were stratified in terms of variables like age, sex, body mass index, disease duration and the location of fissures to avoid the possibility of confounders. Post-stratification analysis was then conducted with using the corresponding statistical tests. Such method of analysis was necessary to provide a detailed assessment of treatment effects in varying subgroups.

Ethical Considerations

The study was ethically approved by the institutional review committee of Aziz Bhatti Shaheed Teaching Hospital based on the guidelines of the College of Physicians and Surgeons Pakistan. The research was carried out in accordance with usual ethical principles of human research. All participants signed informed consent forms after being informed about the purpose of the study, methods used, possible benefits and risks. Patient information was kept confidential during the research. The participants were guaranteed the right to leave the study at any point without any effects on their normal medical treatment. Every intervention was done as per accepted clinical practices to maintain patient safety. None of the participants were exposed to any unnecessary risk or harm as part of the study. The autonomy, beneficence, non-maleficence, and justice in the research were supported at every research phase.

RESULTS

Demographic Characteristics

The demographical characteristics of participants showed a balanced representation of the two treatment groups, which is favorable to the sufficiency of randomization. Group A (36.8 ± 10.4 years) and Group B (35.9 ± 9.8 years) were similar in mean age with most of the patients being in the age group of 31-50 years. There were no differences in gender distribution as well; there was a slight preponderance of males in general (54.9%). There were no statistically significant differences in anthropometric measurements such as height, weight, and BMI, and this is a sign that groups did not differ significantly at the baseline. Majority of the respondents were of normal weight or overweight, which is typical of the population. Constipation was the most common defecation pattern (63.4%) in both groups, consistent with the known etiological association with anal fissure.

Table 1: Demographic Characteristics of Study Participants (n = 82)

Variable	**Group A (Diltiazem) n=41**	**Group B (GTN) n=41**	**Total (n=82)**
Age (years) (Mean ± SD)	36.8 ± 10.4	35.9 ± 9.8	36.3 ± 10.1

18–30 years	14 (34.1%)	16 (39.0 %)	30 (36.6 %)
31–50 years	19 (46.3%)	18 (43.9 %)	37 (45.1 %)
>50 years	8 (19.5%)	7 (17.1 %)	15 (18.3 %)
Gender			
Male	23 (56.1%)	22 (53.7 %)	45 (54.9 %)
Female	18 (43.9%)	19 (46.3 %)	37 (45.1 %)
Height (cm) (Mean ± SD)	167.2 ± 8.1	166.5 ± 7.6	166.9 ± 7.8
Weight (kg) (Mean ± SD)	71.4 ± 11.2	70.6 ± 10.5	71.0 ± 10.8
BMI (kg/m²) (Mean ± SD)	25.5 ± 3.8	25.3 ± 3.5	25.4 ± 3.6
Normal (18.5–24.9)	17 (41.5%)	18 (43.9 %)	35 (42.7 %)
Overweight (25–29.9)	16 (39.0%)	15 (36.6 %)	31 (37.8 %)
Obese (≥30)	8 (19.5%)	8 (19.5 %)	16 (19.5 %)
Defecation Pattern			
Normal	9 (22.0%)	10 (24.4 %)	19 (23.2 %)
Diarrhea	6 (14.6%)	5 (12.2 %)	11 (13.4 %)
Constipation	26 (63.4%)	26 (63.4 %)	52 (63.4 %)

Baseline Clinical Characteristics

The average length of illness was around 3.8 weeks in the diltiazem arm and 3.7 weeks in the GTN arm, which validates the presence of cases of acute illness. The level of pain at baseline in both cohorts was significant, mean VAS scores were more than 7, which represents the clinical burden of acute anal fissure. Most of the fissures appeared in the posterior (more than three-quarters in both groups) and these were typical of the anatomical appearance. The statistical analysis showed that the two groups did not have significant differences in all baseline clinical variables ($p > 0.05$), which further confirms that the two groups were similar before the intervention.

Table 2: Baseline Clinical Characteristics of Participants

Variable	**Group A (Diltiazem) n=41**	**Group B (GTN) n=41**	**p-value**
Disease Duration (weeks) (Mean ± SD)	3.8 ± 1.2	3.7 ± 1.3	0.72
Baseline Pain Score (VAS) (Mean ± SD)	7.6 ± 1.1	7.5 ± 1.0	0.68
Location of Fissure			0.81
Anterior	11 (26.8%)	10 (24.4%)	
Posterior	30 (73.2%)	31 (75.6%)	

Follow-up Outcomes

The 8 weeks follow-up results indicate a continually better therapeutic reaction in the glyceryl trinitrate group in various clinically significant endpoints. Complete fissure healing was significantly higher in the GTN group (80.5%) compared to the diltiazem group (58.5%), with nearly threefold increased odds of healing. Likewise, the full remission and the full relief of the symptoms was significantly more prevalent in the GTN group, which means both anatomical and clinical excellence. The percentage of patients in the GTN arm who had ≥50% improvement in symptoms was higher, which is also indicative of its stronger clinical efficacy. The rates of recurrence were much lower in the GTN group indicating more lasting results. The need to undergo surgery was less in the GTN group, but the difference was not statistically significant. Notably, the negative side effects like headache were more frequent among the GTN group, which is also a pharmacological disadvantage.

Table 3: Outcomes at 8-Week Follow-Up

Outcome	Group A (Diltiazem) n=41	Group B (GTN) n=41	OR (95% CI)	p-value
Fissure Healing Status				0.01
Complete Healing	24 (58.5%)	33 (80.5%)	2.96 (1.15–7.58)	
Partial Healing	10 (24.4%)	6 (14.6%)	—	
Not Healed	7 (17.1%)	2 (4.9%)	—	
Complete Remission of Fissure	22 (53.7%)	32 (78.0%)	3.05 (1.19–7.79)	0.02
Recurrence				0.03
Yes	9 (22.0%)	3 (7.3%)	3.58 (1.01–12.6)	
No	32 (78.0%)	38 (92.7%)	—	
Complete Relief of Symptoms	20 (48.8%)	31 (75.6%)	3.27 (1.29–8.27)	0.01
Decrease in Symptoms (≥50%)	30 (73.2%)	37 (90.2%)	3.44 (1.01–11.7)	0.04
Complications (Headache)	5 (12.2%)	15 (36.6%)	0.24 (0.08–0.69)	0.01
Need for Surgical Intervention	6 (14.6%)	2 (4.9%)	3.33 (0.63–17.4)	0.12

Normality Outcomes

Shapiro-Wilk test showed that all the continuous variables were normally distributed ($p > 0.05$) which justified the application of parametric statistical tests in order to compare the data. The measurable variables such as age, height, weight, BMI, duration of disease and pain scores showed no significant discrepancy with normality. This made it possible to use independent sample t-tests when dealing with continuous variables and chi-square when dealing with categorical variables. Assurance of normality enhanced validity of inferential statistical inferences. The uniformity in the distribution of the variables was also an indication of

reliability in data collection and measurements. Hence, comparative analyses were carried out later using the proper parametric techniques.

Table 4: Normality Testing (Shapiro-Wilk Test)

Variable	p-value
Age	0.21
Height	0.18
Weight	0.25
BMI	0.19
Disease Duration	0.09
Pain Score	0.07

Comparative Analysis Outcomes

The decrease in the scores of pain was significantly larger in the GTN group, and the difference in the means was -1.5, which means that the analgesic effect was better. In addition, the average time to symptom improvement was worse in the GTN group by around 1.2 weeks which indicated a faster onset of action. Likewise, fissure healing was also done earlier in patients who were treated with GTN, and a statistically significant reduction in the time of fissure healing was achieved. The small confidence interval and very significant p-values support the strength of these results. All these findings suggest that GTN does not only enhance outcomes but also speed up the process of recovery which is an essential aspect of patient satisfaction and quality of life.

Table 5: Comparative Analysis of Continuous Variables (Independent Sample t-test)

Variable	Group A (Mean ± SD)	Group B (Mean ± SD)	Mean Difference	95% CI	p-value
Pain Score Reduction (VAS)	3.9 ± 1.2	5.4 ± 1.3	-1.5	(-2.05 to -0.95)	0.001
Mean Time for Symptom Reduction (weeks)	3.6 ± 1.1	2.4 ± 0.9	1.2	(0.78 to 1.62)	0.001
Mean Time for Fissure Healing (weeks)	6.1 ± 1.3	4.7 ± 1.2	1.4	(0.87 to 1.93)	0.001

The better efficacy of glyceryl trinitrate in a variety of clinically meaningful endpoints was additionally supported by categorical comparative analysis. The odds ratio of complete healing, complete remission and complete relief of symptoms was always greater in the GTN group with odds ratios of over 2.9 on each of the outcomes. Conversely, the diltiazem group exhibited a largely higher rate of incomplete healing, which suggests that it was not responding well to therapy. The presence of higher recurrence rates in the diltiazem group corroborates the long-lasting nature of the effect of GTN treatment. The proportion of patients with a significant reduction in symptoms was much higher in the GTN group, which also demonstrates its clinical benefit. Even though the evidence that there was more need of surgical intervention in the GTN group was reduced, it was not significant which may be caused by the small sample size. It supports the validity of these results as the statistically significant p-values of most variables are consistent.

Table 6: Comparative Analysis of Categorical Variables (Chi-Square Test)

Variable	Group A n (%)	Group B n (%)	OR (95 % CI)	p-value
Complete Healing	24 (58.5 %)	33 (80.5 %)	2.96 (1.15 – 7.58)	0.01
Incomplete Healing	17 (41.5 %)	8 (19.5 %)	2.92 (1.10 – 7.72)	0.02
Complete Relief of Symptoms	20 (48.8 %)	31 (75.6 %)	3.27 (1.29 – 8.27)	0.01
Complete Remission	22 (53.7 %)	32 (78.0 %)	3.05 (1.19 – 7.79)	0.02
Recurrence	9 (22.0 %)	3 (7.3%)	3.58 (1.01 – 12.6)	0.03
≥50% Symptom Reduction	30 (73.2 %)	37 (90.2 %)	3.44 (1.01 – 11.7)	0.04
Need for Surgery	6 (14.6 %)	2 (4.9%)	3.33 (0.63 – 17.4)	0.12
Frequency of Complete Relief	20 (48.8 %)	31 (75.6 %)	3.27 (1.29 – 8.27)	0.01

DISCUSSION

The current randomized controlled trial was to compare the efficacy and safety of topical glyceryl trinitrate and diltiazem ointments in the treatment of acute anal fissures and specifically on the healing rates, symptom relief, and recurrence. The results showed a considerable complete healing rate in the glycerol trinitrate group (80.5%) over the diltiazem group (58.5%), meaning that there was a great therapeutic difference. These outcomes are in line with previous randomized trials with 70% healing rate with glyceryl trinitrate versus 50-60% with diltiazem in similar groups (Kumar et al., 2026). The odds ratio of 2.96 (95% CI: 1.15-7.58) in this study is an even stronger proof of the superiority of glyceryl trinitrate in the complete fissure resolution. Like-sized effects have been found in meta-analyses in which nitrate-based therapies exhibited greater short-term healing efficacy (Wang et al., 2025). This difference has statistical significance ($p = 0.01$), which highlights its strength given the relatively small sample size. In addition, the incorporation of acute fissures with an average period of 3.7-3.8 weeks corresponds to previous trials which revealed optimal responsiveness in pharmacological sphincter relaxation (Şahin et al., 2024). Thus, the current results can be added to the existing body of knowledge, which supports the use of glyceryl trinitrate as the most effective first-line treatment.

This patient-centered outcome, pain, was significantly lower in the glyceryl trinitrate group with mean of 5.4 ± 1.3 versus the diltiazem group means of 3.9 ± 1.2. The difference of -1.5 with a 95% CI of -2.05 to -0.95 with a $p = 0.001$ means that there was a clinically significant change in symptom control. These observations can be compared to the findings of Abd El-Rahim et al. (2026) whereby; nitrate therapy led to much greater improvements in visual analog scale scores than calcium channel blockers (Abd El-Rahim et al., 2026). Also, the quicker mean time of symptom reduction in the glyceryl trinitrate group (2.4 ± 0.9 weeks compared to 3.6 ± 1.1 weeks) indicates its rapid action. Past research has also shown that nitric oxide donors realize earlier sphincter relaxation

resulting in faster pain relief (Altomare et al., 2000). Its better symptomatic efficacy is further supported by the an RCT among 228 patients with larger percentage of patients who obtained ≥50% based on the reduction of symptoms (90.2% vs 73.2%). These findings are compatible with pharmacodynamic data revealing improved relaxation of smooth muscles mediated by nitric oxide with glyceryl trinitrate (Ahmed et al., 2020).

The research also revealed that the mean time to fissure healing in the glyceryl trinitrate group (4.7 ± 1.2 weeks) was significantly lower than the diltiazem group (6.1 ± 1.3 weeks). This 1.4-week difference (95% CI: 0.87-1.93; p = 0.001) indicates a clinically relevant faster recovery of tissues. Similar results have been documented in comparative study among 90 patients that have shown a range of 4-5 weeks of nitrate therapy, and 6-8 weeks of calcium channel blockers to heal (Kujur et al., 2020). The increased rate of healing could be explained by the enhanced anodermal perfusion via nitric oxide pathways. Also, the rates of complete remission were much higher in the glyceryl trinitrate group (78.0% vs 53.7; OR = 3.05, p = 0.02) which implies the presence of symptomatic and anatomical recovery. These results are consistent with the systematic reviews indicating better remission with the intervention based on nitrates (Nevins and Kanakala, 2020). The patient compliance and quality of life are also affected by the shorter healing period because the longer the symptoms patients experience, the more psychological distress. Thus, the temporal benefit of glyceryl trinitrate in this paper is not only statistically significant but also clinically significant.

There was a significant lower recurrence in the glyceryl trinitrate group (7.3%) than the diltiazem group (22.0%), the odds ratio of which is 3.58 (95% CI: 1.01-12.6; p = 0.03). This observation indicates that glyceryl trinitrate has a longer therapeutic effect in spite of the issues of tolerance. Recurrence rates have been reported in previous prospective randomized study of 50 Indian patients that reported 10-25% with diltiazem and 5-15% with glyceryl trinitrate as supporting the current results (Sharma et al., 2024). The reduced incidence could be related to enhanced initial relaxation of the sphincter and quality of healing. Moreover, 75.6% patients were cured completely of symptoms with the glyceryl trinitrate versus 48.8% with diltiazem (OR = 3.27, p = 0.01). These results are aligned with previous quasi experimental study among 330 Pakistani patients which has shown a greater patient satisfaction level and symptom resolution when nitrate is used (Asghar et al., 2020). Its lesser surgical requirement (4.9% vs 14.6%) also shows its clinical benefit though this was not significant. All these results highlight the effectiveness and durability of glyceryl trinitrate in fissure management in the long term.

Although glyceryl trinitrate was found to be more effective, it was observed to have much higher rate of adverse effects, especially headache, at 36.6% versus 12.2% observed in the diltiazem group. The odds ratio of 0.24 (95% CI: 0.08–0.69; p = 0.01) indicates a markedly increased risk of this side effect. This finding is consistent with an Indian study among 96 patients reporting headache prevalence rates of 30–40% with nitrate therapy. Conversely, diltiazem is linked with reduced rates of adverse effects, which are usually less than 10%. The higher incidence of headache may affect patient adherence and limit the widespread acceptability of glyceryl trinitrate (Ray et al., 2024). Nevertheless, a trade-off between efficacy and tolerability should be taken into account in clinical decision-making. Other studies indicate that dose titration or intermittent use could decrease the side effects and still be effective (Savosina et al., 2020). Hence, glycerol

trinitrate has a better clinical outcome, but its side effects still prove to be a great drawback. There are a number of limitations in this study which should be taken into consideration when interpreting this study. The sample size of 82 patients is comparatively small and it might decrease the statistical power in identifying differences in less frequent outcomes, such as the necessity of surgical intervention. The study is a single-center study, and it was carried out in a tertiary care hospital; thus, the findings might not necessarily apply to the primary care or rural healthcare facilities. Non-probability consecutive sampling can be a cause of selection bias even with the randomization of treatment groups. Also, the 8 weeks follow up period might not reflect the long-term recurrence and late complications. The use of patient-reported pain scores creates the risk of subjective bias, yet standardized scales have been utilized. Blinding was not used explicitly, which could affect the process of outcome assessment and reporting. Moreover, it did not objectively assess the adherence to topical treatment and lifestyle changes, which could influence outcomes. Notwithstanding these shortcomings, these studies present useful comparison data in a controlled clinical setting.

CONCLUSION

The study confirmed that topical glyceryl trinitrate is much more effective than diltiazem, in terms of complete remission (80.5% vs 58.5%), rapid removal of symptoms (2.4 ± 0.9 vs 3.6 ± 1.1 weeks) and lower recurrence (7.3% vs 22.0%) in patients with acute anal fissure. The size of benefit which is more pronounced in the form of increased likelihood of complete healing (OR = 2.96) and complete symptom relief (75.6% vs 48.8%), indicates its greater therapeutic effect. Furthermore, glyceryl trinitrate led to a higher decrease in pain scores (5.4 ± 1.3 vs 3.9 ± 1.2) or better patient centered outcomes. The fact that the mean fissure healing time was lower (4.7 ± 1.2 vs 6.1 ± 1.3 weeks) supports even more its clinical superiority in fissure healing acceleration. This effectiveness, however, is countered by notably increased rates of adverse events, especially headache (36.6% vs 12.2%), which can have effects on adherence to treatment. Regardless of this shortcoming, the net benefit-risk analysis inclines glyceryl trinitrate as a more useful primary-line pharmacological agent. This result is expected by the rest of the literature and justifies its use in preference in cases of acute diseases that need quick and sustained recovery. Glyceryl trinitrate, therefore, can be viewed as a better choice of therapeutic agent, and the patient has to be counselled utmost care over the possible side effects.

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