

Results of Medical Treatment in Acute Anal Fissure

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ABSTRACT

Background: Acute anal fissure is commonly associated with sphincter hypertonicity, pain, and bleeding, and conservative treatment aims to promote healing while avoiding operative sphincter injury. **Objective:** To compare anal self-massage with passive progressive anal dilatation for the treatment of acute anal fissure. **Methods:** This prospective randomized comparative study included 50 patients with acute posterior anal fissure allocated equally to self-massage (Group A) or progressive anal dilatation (Group B). Clinical healing, pain, bleeding, itching, burning, adverse effects, and recurrence were assessed at treatment completion and at 3 and 6 months. Categorical comparisons were evaluated using Fisher's exact test. **Results:** Complete fissure resolution occurred in 20/25 patients (80.0%) in Group A and 15/25 (60.0%) in Group B (RR 1.33, 95% CI 0.92–2.04; $p=0.217$). At 6 months, persistent anal pain was significantly less frequent in Group A than Group B (20.0% vs 56.0%; $p=0.019$). Six-month recurrence among initially healed patients was 5.0% and 20.0%, respectively ($p=0.292$). Bleeding, itching, and burning were numerically less frequent with self-massage but did not differ significantly between groups. No treatment-related adverse effects were reported. **Conclusion:** Anal self-massage produced favorable clinical trends and significantly less persistent pain at 6 months, but differences in complete healing and recurrence were not statistically significant. **Keywords:** Anal fissure, anal self-massage, anal dilatation, anal pain, conservative treatment, fissure healing.

INTRODUCTION

Anal fissure is a common benign anorectal disorder characterized by a linear tear in the anoderm, typically associated with severe pain during or after defecation and, frequently, rectal bleeding. The persistence of symptoms is closely related to increased internal anal sphincter tone, local mechanical trauma, and impaired anodermal healing. Consequently, management is directed not only toward relieving pain and facilitating bowel movements but also toward reducing sphincter hypertonicity and promoting fissure epithelialization. Initial conservative management commonly includes dietary and hygienic measures, regulation of bowel habits, stool-softening strategies, and pharmacological approaches aimed at reducing anal sphincter pressure. Although conservative management can produce short-term improvement in a substantial proportion of patients, recurrence remains an important clinical concern (1–3).

Topical agents that induce chemical sphincter relaxation, particularly glyceryl trinitrate and calcium-channel antagonists, have been used to promote fissure healing while avoiding surgical division of the internal anal sphincter. However, treatment may be limited by adverse effects, particularly headache with topical nitrates, variable patient tolerance, incomplete healing, and recurrence following cessation of treatment (4–8). These limitations have encouraged investigation of non-operative mechanical approaches capable of reducing sphincter hypertonicity while avoiding the potential continence-related complications associated with operative sphincterotomy.

Controlled anal dilatation represents one such conservative approach. Previous clinical evidence has suggested that gradual passive dilatation may facilitate fissure healing by reducing anal sphincter pressure, although the method may require prolonged treatment and recurrence after conservative dilatation has been reported (9–11). Patient adherence may also be affected by the duration and inconvenience of repeated progressive dilator use. These considerations provide a rationale for evaluating simpler patient-controlled techniques that may produce sphincter relaxation with a shorter treatment schedule.

Anal self-massage using the patient's finger may offer a practical alternative to mechanical dilatation because the patient can regulate the degree of pressure and movement according to discomfort and tolerance. In addition to gentle dilatation, circular digital massage may facilitate relaxation of the anal sphincter while avoiding the prolonged progressive use of different-sized dilators. However, comparative evidence regarding digital self-massage and structured passive anal dilatation for acute anal fissure remains limited. Therefore, the present study aimed to compare anal sphincter self-massage with passive anal dilatation in patients with acute anal fissure, with particular emphasis on fissure healing, pain, bleeding and other anorectal symptoms, treatment-related adverse effects, and recurrence during follow-up.

MATERIALS AND METHODS

This prospective randomized comparative study included 50 patients with acute anal fissure and was conducted at Bolan Medical College/Sandeman Provincial Hospital, Quetta, from 17 October 2024 to 17 April 2025. All participants provided written informed consent before random allocation to treatment. Eligible participants were 18–70 years of age, experienced anal pain during defecation, and had a clinically identified acute posterior anal fissure. An acute fissure was defined as an ulceration of the anoderm developing within one month and occurring without the characteristic features of chronic fissure, including a sentinel skin tag, fibrous induration of the fissure margins, or visible exposure of internal anal sphincter fibres (12). Patients with concomitant anorectal fistula or abscess, previous pelvic-floor surgery, inflammatory bowel disease, or current nitrate therapy were excluded.

The 50 enrolled participants were allocated in equal numbers to anal self-massage (Group A; n=25) or passive anal dilatation (Group B; n=25) using a random-number table. Participants in Group A were instructed to introduce their lubricated index finger gently into the anal canal for 10 minutes twice daily during the first two days of treatment. For the subsequent five days, they performed circular digital massage within the anal canal for 10 minutes twice daily, resulting in a total treatment duration of seven days. Participants allocated to Group B underwent progressive passive anal dilatation using Dilatan® anal dilators. A 20-mm dilator was used twice daily for at least 10 minutes for the first five days, followed by a 23-mm dilator twice daily for at least 10 minutes for another five days. A 27-mm dilator was subsequently used twice daily for at least 10 minutes for a further 20 days, producing a total treatment duration of 30 days. The same lubricant cream was used to facilitate insertion in both treatment groups.

Before treatment, participants underwent clinical examination, including digital rectal examination in the left lateral position. Rectal assessment was performed at rest and during functional contraction and straining. Baseline symptoms were documented, including anal pain, bleeding during defecation, anal itching, anal burning, and bowel habit. Pain intensity was quantified using a visual analogue scale ranging from 0, representing no pain, to 10, representing the maximum tolerable pain. Bowel function was additionally assessed using the Agachan constipation scoring system, an established clinical scoring approach for evaluating constipation-related symptoms (13).

Participants were reassessed at the completion of their assigned treatment and subsequently at 3 and 6 months after treatment. Follow-up evaluation consisted of clinical examination and standardized questioning regarding anal pain, bleeding, itching, burning, bowel-related symptoms, adverse effects, and recurrence. Fissure healing and epithelialization were evaluated clinically at follow-up. Treatment

success was defined as either complete healing of the anal fissure or partial epithelialization accompanied by a reduction of at least 50% in the pain score at the end of treatment. Recurrence was evaluated during subsequent follow-up among patients showing treatment response. The principal outcomes assessed during follow-up were fissure healing, pain, bleeding, other anorectal symptoms, adverse effects, and recurrence.

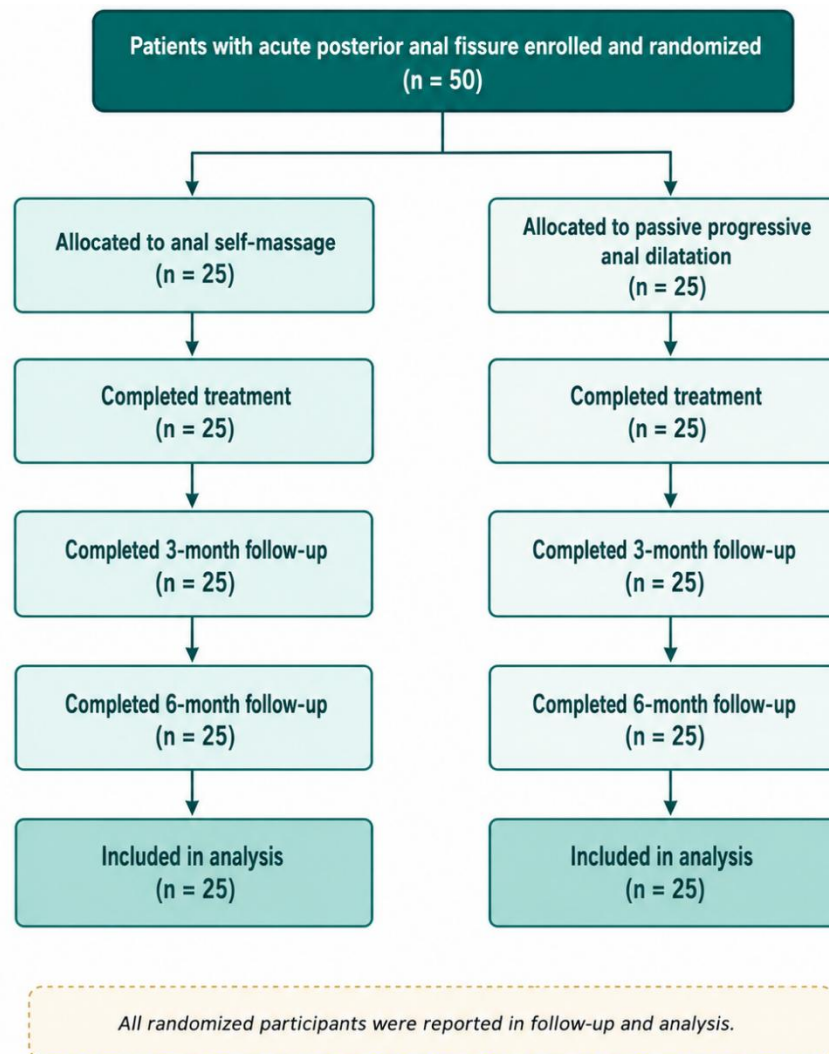


Figure 1 CONSORT Flowchart

Data were entered and analysed using IBM SPSS Statistics version 23.0. Continuous variables were summarized using the mean and standard deviation where applicable, whereas categorical variables were expressed as frequencies and percentages. Categorical comparisons between the two treatment groups were evaluated using Fisher's exact test. Statistical significance was defined as a two-sided p-value ≤ 0.05 .

RESULTS

Among the 50 participants, 27 were women (54.0%) and 23 were men (46.0%), with a mean age of 38.6 ± 12.3 years and an age range of 18–56 years. All participants presented with an acute posterior anal fissure and anal pain at baseline. Bleeding during defecation was present in 42 participants (84.0%), anal itching in 10 (20.0%), and anal burning in 16 (32.0%). Baseline symptom frequencies were comparable between the two treatment groups, with no statistically significant differences in bleeding, itching, or burning (all $p > 0.05$). The overall baseline pain intensity was 8 on the 0–10 visual analogue scale. Thirty-

four participants reported normal bowel movements, 12 reported constipation, and 4 reported diarrhoea. No treatment-related adverse effects were reported in either group.

Table 1. Baseline Characteristics and Clinical Presentation of the Study Participants

Characteristic	Group A (n=25)	Group B (n=25)	Total (N=50)	p-value
Age, years, mean $\pm$ SD (range)			38.6 $\pm$ 12.3 (18–56)	
Female sex, n (%)			27 (54.0)	
Male sex, n (%)			23 (46.0)	
Anal pain, n (%)	25 (100.0)	25 (100.0)	50 (100.0)	1.000
Bleeding during defecation, n (%)	22 (88.0)	20 (80.0)	42 (84.0)	0.702
Anal itching, n (%)	4 (16.0)	6 (24.0)	10 (20.0)	0.725
Anal burning, n (%)	7 (28.0)	9 (36.0)	16 (32.0)	0.762

Values are presented as mean $\pm$ standard deviation or n (%), as appropriate. Between-group categorical comparisons were performed using Fisher's exact test. Group-specific age and sex distributions were not available in the reported data.

Table 2. Clinical Symptoms at the End of Treatment and During Follow-up

Outcome	Time point	Group A, n (%)	Group B, n (%)	Absolute difference, percentage points	p-value
Anal pain	End of treatment	4 (16.0)	11 (44.0)	–28.0	0.062
	3 months	5 (20.0)	12 (48.0)	–28.0	0.072
	6 months	5 (20.0)	14 (56.0)	–36.0	0.019
Bleeding	End of treatment	3 (12.0)	7 (28.0)	–16.0	0.289
	3 months	3 (12.0)	7 (28.0)	–16.0	0.289
	6 months	3 (12.0)	8 (32.0)	–20.0	0.171
Anal itching	End of treatment	1 (4.0)	4 (16.0)	–12.0	0.349
	3 months	2 (8.0)	5 (20.0)	–12.0	0.417
	6 months	2 (8.0)	5 (20.0)	–12.0	0.417
Anal burning	End of treatment	2 (8.0)	6 (24.0)	–16.0	0.247
	3 months	2 (8.0)	6 (24.0)	–16.0	0.247
	6 months	2 (8.0)	8 (32.0)	–24.0	0.074

Percentages were calculated using n=25 per treatment group. Absolute differences were calculated as Group A minus Group B. Exact two-sided p-values were obtained using Fisher's exact test. The previously reported value of 8 (28%) for bleeding in Group B at 6 months has been corrected to 8 (32.0%).

Table 3. Complete Fissure Resolution and Reported Recurrence

Outcome	Group A	Group B	Effect estimate	95% CI	p-value
Complete fissure resolution at end of treatment, n/N (%)	20/25 (80.0)	15/25 (60.0)	RR 1.33	0.92–2.04	0.217
Absolute difference in complete resolution			20.0 % points	–5.3 to 42.2	
Recurrence at 3 months among participants with initial complete resolution, n/N (%)	0/20 (0.0)	2/15 (13.3)			0.176
Recurrence at 6 months among participants with initial complete resolution, n/N (%)	1/20 (5.0)	3/15 (20.0)			0.292

RR, risk ratio for complete fissure resolution in Group A relative to Group B; CI, confidence interval. The between-group p-value for complete resolution and recurrence comparisons was calculated using Fisher's exact test. Recurrence percentages use the participants with initial complete fissure resolution as the denominator.

At the completion of treatment, complete fissure resolution was observed in 20 of 25 participants receiving anal self-massage (80.0%) compared with 15 of 25 participants receiving passive anal dilatation (60.0%). This represented an absolute difference of 20.0 percentage points and a relative risk of complete resolution of 1.33 (95% CI 0.92–2.04) in favour of self-massage; however, the between-group difference did not reach statistical significance ($p=0.217$). Thus, although complete healing was numerically more frequent with self-massage, the available sample did not demonstrate a statistically conclusive difference in complete fissure resolution between the two treatments.

Residual anal pain was consistently less frequent in Group A than in Group B throughout follow-up. At the end of treatment, pain was reported by 4 participants (16.0%) in Group A and 11 (44.0%) in Group B,

corresponding to an absolute difference of -28.0 percentage points ($p=0.062$). At 3 months, pain was present in 5 participants (20.0%) and 12 participants (48.0%), respectively ($p=0.072$). By 6 months, pain remained present in 5 participants (20.0%) in the self-massage group compared with 14 participants (56.0%) in the dilator group, representing an absolute difference of -36.0 percentage points and a statistically significant between-group difference ($p=0.019$).

Bleeding during defecation also remained less frequent in Group A throughout follow-up, although the between-group differences were not statistically significant. At the end of treatment and at 3 months, bleeding was reported by 3 participants (12.0%) in Group A compared with 7 participants (28.0%) in Group B at each assessment ($p=0.289$). At 6 months, bleeding remained present in 3 participants (12.0%) in Group A and 8 participants (32.0%) in Group B ($p=0.171$).

Anal itching and burning showed similar descriptive patterns. At the end of treatment, itching was reported in 1 participant (4.0%) in Group A and 4 participants (16.0%) in Group B ($p=0.349$). At both 3 and 6 months, itching was reported by 2 participants (8.0%) in Group A and 5 participants (20.0%) in Group B ($p=0.417$ at each time point). Anal burning was present at the end of treatment in 2 participants (8.0%) in Group A and 6 participants (24.0%) in Group B ($p=0.247$), with the same frequencies at 3 months. At 6 months, burning was reported by 2 participants (8.0%) in Group A and 8 participants (32.0%) in Group B; this difference did not reach statistical significance ($p=0.074$).

Among participants who achieved complete fissure resolution at the end of treatment, no recurrence was reported in Group A at 3 months, whereas 2 of 15 participants with initial complete resolution in Group B experienced recurrence (13.3%; $p=0.176$). At 6 months, recurrence had been reported in 1 of 20 initially healed participants in Group A (5.0%) compared with 3 of 15 in Group B (20.0%; $p=0.292$). Accordingly, recurrence was numerically less frequent after self-massage, but the between-group differences were not statistically significant.

No adverse effects were reported in either treatment group throughout the reported observation period. Overall, the results demonstrate a higher numerical rate of complete fissure resolution and consistently lower frequencies of residual pain, bleeding, itching, burning, and recurrence in the self-massage group. Of these between-group comparisons, only the difference in anal pain at 6 months reached statistical significance.

DISCUSSION

The present randomized comparative study evaluated anal self-massage and progressive passive anal dilatation in patients with acute posterior anal fissure. Both approaches were associated with substantial clinical improvement, but the pattern of response consistently favored self-massage. Complete fissure resolution at the end of treatment occurred in 80.0% of patients receiving self-massage compared with 60.0% receiving anal dilatation. Although this represented a 20-percentage-point absolute difference and a relative risk of 1.33, the between-group difference was not statistically significant (95% CI 0.92–2.04; $p=0.217$). Persistent anal pain was less frequent in the self-massage group throughout follow-up and reached statistical significance at 6 months, when pain was reported by 20.0% of Group A compared with 56.0% of Group B ($p=0.019$). Bleeding, itching, and burning also remained numerically less frequent after self-massage, although their between-group differences were not statistically significant. Recurrence among patients who initially achieved complete healing occurred in 5.0% of the self-massage group and 20.0% of the dilator group by 6 months, but this difference was also not statistically significant. No treatment-related adverse effects were reported in either group.

Anal fissure has traditionally been linked to increased resting pressure of the internal anal sphincter and consequent impairment of local anodermal perfusion, particularly at the posterior midline where blood supply may be relatively vulnerable (14–17). Mechanical trauma associated with hard stool or difficult defecation may initiate the mucosal injury, whereas persistent sphincter hypertonicity and

reduced local perfusion may contribute to delayed healing and recurrent symptoms (14–17). These physiological considerations support therapeutic strategies that reduce sphincter pressure while facilitating atraumatic bowel movements and fissure epithelialization.

Non-operative management remains clinically important because it avoids permanent division of the internal anal sphincter. Topical glyceryl trinitrate has demonstrated the capacity to facilitate fissure healing through chemical sphincter relaxation, but its clinical usefulness may be limited by headache, tolerability concerns, incomplete response, and recurrence after treatment (4,6–8,18,19). Calcium-channel antagonists such as nifedipine and diltiazem have also been investigated as sphincter-relaxing therapies and may provide an alternative when nitrate-associated adverse effects are problematic (20,21). These treatments reinforce the broader therapeutic principle that reduction of sphincter hypertonicity can improve fissure-related symptoms and facilitate healing without surgical sphincter division.

Botulinum toxin represents another sphincter-relaxing strategy and has been used for chronic anal fissure, although treatment response may depend on injection technique, dose, patient selection, and follow-up duration (22). In contrast, lateral internal sphincterotomy remains a highly effective operative treatment but carries an important potential risk of postoperative continence disturbance, particularly when patient-related risk factors are present (23). Consequently, conservative approaches capable of achieving satisfactory symptom control and healing without permanent sphincter injury remain clinically relevant, particularly for uncomplicated acute disease.

Passive progressive anal dilatation has previously been investigated as a conservative treatment for anal fissure. Earlier studies reported therapeutic benefit from mechanical dilatation, although recurrence and the prolonged nature of treatment have limited its practical appeal (9–11). In the present study, the passive dilator regimen required progressive use of 20-, 23-, and 27-mm devices over 30 days, whereas the self-massage protocol was completed within 7 days. The shorter treatment duration and absence of a dedicated dilator device may make self-massage more convenient for selected patients. However, the present study did not perform a formal adherence or economic analysis; therefore, convenience and potential resource advantages should not be interpreted as demonstrated cost-effectiveness.

The numerically greater complete-healing rate observed with self-massage may be biologically plausible because the patient's finger permits continuous adjustment of pressure according to discomfort and sphincter resistance. In addition to gentle mechanical dilatation, circular massage may promote transient relaxation of the internal sphincter and allow the patient to regulate the manoeuvre more precisely than a fixed-diameter dilator. The original hypothesis that tactile feedback could contribute to neuromuscular relaxation is clinically interesting, but the present study did not directly measure anal sphincter pressure, electromyographic activity, anorectal manometry, or changes in local perfusion. The mechanism should therefore be regarded as a plausible explanation rather than a demonstrated physiological effect.

Pain provided the clearest evidence of a sustained difference between the interventions. Although between-group differences at treatment completion and 3 months did not reach conventional statistical significance, the persistent separation in pain prevalence culminated in a significant difference at 6 months. This pattern suggests that the potential benefit of self-massage may involve longer-lasting symptom control rather than simply faster early improvement. Nevertheless, the absence of detailed longitudinal VAS values and paired participant-level transitions prevents a more precise assessment of the magnitude and trajectory of pain reduction. The significant six-month categorical pain difference should therefore be interpreted alongside the non-significant difference in complete fissure healing.

Bleeding, itching, and burning declined after treatment in both groups but did not demonstrate statistically significant between-group differences at the available follow-up points. Bleeding is a common clinical manifestation of fissure and would be expected to improve as mucosal trauma and fissure activity decrease. In contrast, itching and burning are less specific and may reflect local irritation

or concomitant anorectal symptoms rather than fissure activity alone. The absence of significant differences in these secondary symptoms indicates that the observed advantage of self-massage was most apparent for persistent pain rather than uniformly across all clinical manifestations.

The recurrence analysis also requires distinction from persistent symptoms. Among participants who achieved complete resolution at treatment completion, recurrence by 6 months occurred in 1 of 20 patients in the self-massage group and 3 of 15 in the dilator group, corresponding to 5.0% and 20.0%, respectively. Although this numerical difference favored self-massage, it was not statistically significant. Persistent anal pain at 6 months, particularly the 56.0% prevalence observed in the dilator group, should not be interpreted as equivalent to fissure recurrence because pain may persist or recur for reasons other than objectively confirmed fissure reappearance. Separating symptom persistence from anatomically confirmed recurrence provides a more accurate representation of the study findings.

An important practical consideration is that anal self-massage may not be acceptable or feasible for every patient. Frail older adults, patients with severe obesity, neurological impairment, musculoskeletal limitations, or restricted manual dexterity may experience difficulty performing the technique independently. Cultural and personal attitudes toward digital anal manipulation may also influence acceptance and adherence. Accordingly, self-massage should be regarded as a patient-dependent conservative option rather than a universally applicable replacement for other established therapies.

The study has several strengths, including prospective randomized allocation, equal treatment-group sizes, clearly described intervention schedules, assessment of multiple clinically relevant symptoms, and follow-up extending to 6 months. The study also directly compared two non-operative mechanical approaches rather than evaluating either treatment without a concurrent comparator. However, the modest sample of 50 participants limits statistical precision, particularly for healing and recurrence outcomes. Group-specific baseline age and sex distributions were unavailable, limiting detailed evaluation of baseline comparability. Allocation concealment and assessor masking were not established in the available study information, and treatment adherence was not quantitatively reported. In addition, longitudinal VAS measurements were not available in sufficient detail for complete repeated-measures analysis, and recurrence was based on relatively small numbers of initially healed patients. The study was conducted at a single center and involved patients with acute posterior fissure; consequently, the results should not be extrapolated without caution to chronic fissures, atypically located fissures, or patients with secondary anorectal disease.

Taken together, the findings indicate that both self-massage and progressive anal dilatation can be used as conservative approaches for acute anal fissure. Self-massage produced a higher numerical proportion of complete fissure resolution, lower frequencies of residual anorectal symptoms, and fewer observed recurrences, while requiring a substantially shorter treatment schedule. However, most between-group comparisons were not statistically significant, and the evidence therefore supports a cautious interpretation rather than definitive superiority. The significant reduction in persistent anal pain at 6 months provides the strongest comparative signal in favor of self-massage and supports further evaluation in adequately powered randomized trials incorporating standardized healing assessment, longitudinal pain measurement, adherence evaluation, and clearly predefined primary outcomes.

CONCLUSION

Anal self-massage and passive progressive anal dilatation were both associated with clinical improvement in patients with acute anal fissure. Self-massage resulted in a higher numerical rate of complete fissure resolution and lower frequencies of persistent symptoms and recurrence, while the between-group difference in anal pain was statistically significant at 6 months. However, the difference in complete healing and recurrence did not reach statistical significance. These findings suggest that anal self-massage may represent a practical, shorter-duration conservative treatment option for

appropriately selected patients, although larger randomized studies are required to establish whether it provides a definitive therapeutic advantage over passive anal dilatation.

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