



COMPARATIVE EVALUATION OF HOT WATER SPRAY AND WARM SITZ BATH IN THE CONSERVATIVE MANAGEMENT OF ACUTE ANAL FISSURE: A PROSPECTIVE COMPARATIVE STUDY

General Surgery

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ABSTRACT

Background: Acute anal fissure is a common benign anorectal disorder characterized by severe pain during and after defecation. Warm sitz bath remains a widely recommended conservative treatment; however, compliance may be limited by inconvenience and time requirements. Hot water spray represents a simpler alternative that may provide comparable or superior symptom relief. **Objectives:** To compare the effectiveness of hot water spray and conventional warm sitz bath in reducing pain and improving patient satisfaction among patients with acute anal fissure. **Methods:** A prospective comparative study was conducted in the Department of General Surgery, Index Medical College Hospital and Research Centre, Indore, from November 2023 to March 2024. Fifty patients diagnosed clinically with acute anal fissure were enrolled and allocated into two groups of 25 patients each. Group I received warm sitz bath ($>30^{\circ}\text{C}$) for 10 minutes three times daily, while Group II received hot water spray ($>30^{\circ}\text{C}$) for 2 minutes three times daily. Treatment was continued for seven days. Pain was assessed daily using the Visual Analogue Scale (VAS). Patient satisfaction and improvement in symptomatology were assessed on days 3, 5, and 7. **Results:** Both treatment modalities significantly reduced pain scores over the study period. Mean VAS scores decreased from 7.87 ± 1.27 to 4.21 ± 0.51 in the warm sitz bath group and from 7.27 ± 1.12 to 2.67 ± 0.42 in the hot water spray group. Hot water spray demonstrated significantly greater pain reduction throughout follow-up ($p < 0.05$). Patient satisfaction scores were significantly higher in the hot water spray group (4.12 ± 0.76 vs 2.89 ± 0.52 ; $p < 0.05$). Improvement in symptomatology was also superior in the hot water spray group on days 3, 5, and 7. **Conclusion:** Hot water spray appears to be an effective, convenient, and inexpensive alternative to conventional warm sitz bath for conservative management of acute anal fissure. It provides superior pain relief, greater symptom improvement, and higher patient satisfaction.

KEYWORDS

Anal Fissure; Hot Water Spray; Warm Sitz Bath; Conservative Management; Pain Relief; Visual Analogue Scale

INTRODUCTION

Anal fissure is a longitudinal tear in the anoderm distal to the dentate line and represents one of the most common causes of severe anal pain encountered in surgical practice. The condition typically presents with excruciating pain during defecation, frequently accompanied by bleeding per rectum and constipation. Most acute fissures occur in the posterior midline and are believed to result from trauma to the anoderm caused by passage of hard stool, diarrhea, childbirth, or increased sphincter tone.

The pathophysiology of anal fissure involves internal anal sphincter hypertonia and reduced anodermal blood flow, leading to local ischemia and impaired healing. Consequently, conservative treatment aims to reduce sphincter spasm, improve local perfusion, and promote fissure healing.

Warm sitz bath has traditionally been recommended as an adjunctive treatment because warmth induces relaxation of the internal anal sphincter through the thermosphincteric reflex. Despite widespread clinical use, patient compliance may be affected by inconvenience, limited portability, and time requirements. Hot water spray represents a simpler technique that can deliver local warmth directly to the perianal region while maintaining hygiene and improving convenience.

The present study was undertaken to compare the effectiveness of hot water spray and warm sitz bath in the conservative management of acute anal fissure.

MATERIALS AND METHODS

Study Design and Setting

This prospective comparative study was conducted in the Department of General Surgery, Index Medical College Hospital and Research Centre, Indore, Madhya Pradesh, India, between November 2023 and March 2024.

Study Population

Fifty patients aged 20–65 years with clinically diagnosed acute anal fissure were enrolled.

Inclusion Criteria

Age between 20 and 65 years

Acute anal fissure diagnosed clinically Willingness to participate in the study

Exclusion Criteria

Age less than 20 years
Pregnant women
Chronic anal fissure
Previous anorectal surgery
Associated anorectal pathology requiring surgical intervention

Clinical Assessment

Diagnosis was established primarily by clinical history and gentle perianal inspection. Digital rectal examination and proctoscopy were performed only when tolerated and clinically indicated to avoid exacerbation of pain.

Study Groups

Group I ($n=25$):
Warm sitz bath using water maintained above 30°C for 10 minutes, three times daily for seven days.

Group II ($n=25$):
Hot water spray using water maintained above 30°C for 2 minutes, three times daily for seven days.

Outcome Measures

Primary Outcome:
Pain reduction measured by VAS (0–10)
Secondary Outcomes:
Patient satisfaction score
Improvement in symptomatology

Statistical Analysis

Data were analyzed using SPSS software. Continuous variables were expressed as mean $\pm$ standard deviation. Comparisons between groups were performed using one-way ANOVA followed by Tukey's post hoc test. A p -value < 0.05 was considered statistically significant.

RESULTS

Table 1. Daily Pain Scores (VAS)

Day	Warm Sitz Bath ($n=25$)	Hot Water Spray ($n=25$)	P value
1	7.87 ± 1.27	7.27 ± 1.12	< 0.05

2	7.05 ± 0.93	6.45 ± 0.87	<0.05
3	6.52 ± 0.85	5.84 ± 0.76	<0.05
4	6.02 ± 0.87	5.12 ± 0.71	<0.05
5	5.56 ± 0.74	4.45 ± 0.65	<0.05
6	4.87 ± 0.56	3.54 ± 0.45	<0.05
7	4.21 ± 0.51	2.67 ± 0.42	<0.05

A progressive decline in pain scores was observed in both groups. The reduction was significantly greater among patients treated with hot water spray.

Table 2. Patient Satisfaction Scores

Parameter	Warm Sitz Bath	Hot Water Spray	P value
Satisfaction Score (Day 7)	2.89 ± 0.52	4.12 ± 0.76	<0.05

Patient satisfaction was significantly higher in the hot water spray group.

Table 3. Improvement in Symptomatology

Day	Warm Sitz Bath	Hot Water Spray	P value
3	1.65 ± 0.24	2.12 ± 0.32	<0.05
5	2.05 ± 0.28	3.43 ± 0.25	<0.05
7	2.76 ± 0.36	4.65 ± 0.42	<0.05

Improvement in symptomatology was significantly greater in the hot water spray group throughout follow-up.

DISCUSSION

The present study demonstrated that both warm sitz bath and hot water spray effectively reduced pain associated with acute anal fissure. However, hot water spray provided significantly greater pain relief, superior symptom improvement, and higher patient satisfaction.

Warm water therapy has long been advocated in the management of anorectal disorders because of its ability to induce relaxation of the internal anal sphincter and improve local blood flow. Shafik described the thermosphincteric reflex, whereby warm water reduces sphincter tone and alleviates pain. Similar benefits have been reported in previous studies evaluating sitz bath therapy.

The superior outcomes observed with hot water spray may be attributable to improved convenience, better compliance, direct delivery of warmth to the affected area, and enhanced perianal hygiene. Hsu et al. similarly reported greater patient satisfaction and convenience with warm water spray compared with conventional sitz bath.

The study findings suggest that hot water spray may represent a practical alternative for patients who find conventional sitz baths cumbersome or difficult to perform regularly.

Limitations

The study was conducted at a single center with a relatively small sample size and short follow-up period. Long-term healing rates and recurrence were not evaluated.

CONCLUSION

Hot water spray was associated with significantly greater pain reduction, superior improvement in symptoms, and higher patient satisfaction compared with conventional warm sitz bath. Given its simplicity, convenience, and low cost, hot water spray may be considered an effective conservative treatment modality for acute anal fissure.

REFERENCES

1. Schouten WR, Briel JW, Auwerda JJ. Relationship between anal pressure and anodermal blood flow. The vascular pathogenesis of anal fissures. *Dis Colon Rectum*. 1994;37(7):664-9.
2. Beatty JS, Shashidharan M. Anal fissure. *Clin Colon Rectal Surg*. 2016;29(1):30-7.
3. Nelson RL. Anal fissure. *BMJ*. 2003;327(7427):354-5.
4. Lund JN, Scholefield JH. Aetiology and treatment of anal fissure. *Br J Surg*. 1996;83(10):1335-44.
5. Perry WB, Dykes SL, Buie WD, Rafferty JF. Practice parameters for the management of anal fissures. *Dis Colon Rectum*. 2010;53(8):1110-5.
6. Shafik A. Role of warm-water bath in anorectal conditions: the thermosphincteric reflex. *J Clin Gastroenterol*. 1993;16(4):304-8.
7. Tejirian T, Abbas MA. Sitz bath: where is the evidence? Scientific basis of a common practice. *Dis Colon Rectum*. 2005;48(12):2336-40.
8. Lang DS, Tho PC, Ang EN. Effectiveness of the sitz bath in managing adult patients with anorectal disorders. *Jpn J Nurs Sci*. 2011;8(2):115-28.
9. Gupta PJ. Randomized controlled study comparing sitz bath and no-sitz-bath treatment in patients with acute anal fissures. *ANZ J Surg*. 2006;76(8):718-21.
10. Gupta PJ. Effects of warm water sitz bath on symptoms in post-anal sphincterotomy in

chronic anal fissure: a randomized and controlled study. *World J Surg*. 2007;31(7):1480-4.

11. Jensen SL. Treatment of first episodes of acute anal fissure: prospective randomized study of lignocaine ointment versus hydrocortisone ointment or warm sitz bath plus bran. *Br Med J (Clin Res Ed)*. 1986;292(6529):1167-9.
12. Hsu KF, Chia JS, Jao SW, Wu CC, Yang HY, Mai CM, et al. Comparison of clinical effects between warm water spray and sitz bath in post-hemorrhoidectomy period. *J Gastrointest Surg*. 2009;13(7):1274-8.
13. Kahraman A, Karaca K, Etoz A, Ozcan M. Perianal burn as a complication of hemorrhoid treatment caused by hot-water sitz bath. *Burns*. 2004;30(8):868-70.
14. Gibbons CP, Read NW. Anal hypertonia in fissures: cause or effect? *Br J Surg*. 1986;73(6):443-5.
15. Nelson RL, Thomas K, Morgan J, Jones A. Non-surgical therapy for anal fissure. *Cochrane Database Syst Rev*. 2012;(2):CD003431.
16. Stewart DB Sr, Gaertner W, Glasgow S, Migaly J, Feingold D, Steele SR. Clinical practice guideline for the management of anal fissures. *Dis Colon Rectum*. 2017;60(1):7-14.
17. Wald A. Clinical practice. Constipation, diarrhea, and symptomatic hemorrhoids during pregnancy. *Gastroenterology*. 2007;132(2):580-7.
18. Altomare DF, Binda GA, Canuti S, Landolfi V, Trompetto M, Villani RD. The management of patients with primary chronic anal fissure: a position paper. *Tech Coloproctol*. 2011;15(2):135-41.
19. Cross KL, Massey EJ, Fowler AL, Monson JR. The management of anal fissure: ACPGBI position statement. *Colorectal Dis*. 2008;10(Suppl 3):1-7.
20. Emile SH, Elgendy H, Elfeki H, Youssef M, Sakr A, Christensen P, et al. Systematic review and network meta-analysis of medical treatments for anal fissure. *Br J Surg*. 2020;107(8):e215-e225.