



The Effect of a Warm Menthol Oil Sitz Bath on Pain After Hemorrhoidectomy

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ABSTRACT

Aim: This study will examine the use of warm sitz baths with menthol oil as a non-pharmacological method of pain control after hemorrhoidectomy. To determine the effect of warm sitz baths with menthol oil on pain after hemorrhoidectomy.

Method: This interventional study was conducted with inpatients of a general surgery ward between June 2018 and September 2019. The study sample of 64 patients was divided into two groups: an intervention group (n=32) and a control group (n=32). Patients were given a warm (30-40 °C) sitz bath at three time points: four hours after surgery, after the first defecation, and after 18 hours. Menthol oil was added to the intervention group's bathwater. Data were collected using a patient information form and a numerical rating scale to assess pain level. Pain intensity before and after first defecation was evaluated in both groups prior to and following the sitz bath.

Results: It was found that the pain intensity of both groups decreased significantly after the sitz bath compared with before the bath ($p<0.05$). Although there was no significant difference when the two groups were compared, the pain level of the intervention group was lower than in the control group ($p>0.05$).

Conclusion: The results show that warm sitz baths with or without menthol oil decrease patients' pain levels when used after hemorrhoidectomy.

Keywords: Aromatherapy, hemorrhoidectomy, menthol oil, nursing care, pain, sitting bath

Introduction

Pain is the most common problem following hemorrhoidectomy^{1,2} and can manifest as either resting pain or pain upon defecation. Resting pain affects most patients and can occur spontaneously without strain or attempts to defecate. Thus, pain relief is of great importance in the postoperative period. Pain is generally quite severe in the first 24 h after surgery and gradually decreases in intensity from the second postoperative day onwards. Painful defecation occurs when irritation in the anorectal region from the passage of stool around the surgical wound causes internal anal sphincter spasms during or after defecation.² In pain management, local anesthetics, calcium channel inhibitors, and vasodilators are used both orally and topically as medicinal therapies.²⁻⁵ In addition, non-pharmacologic nursing approaches, such as sitz baths, thermal applications, hirudotherapy, and water spraying, are used to relieve

pain and increase patient comfort in the periods before and after surgery.⁶ Sitz baths are used before surgery and in the postoperative period in the conservative treatment of anorectal disorders (e.g., anal fissures, fistulas, and hemorrhoids) to accelerate wound healing, prevent infection, and significantly relieve pain by relaxing the internal anal sphincter and increasing blood flow.^{2,5-8} In the literature, sitz baths are recommended to be performed three times daily for 1-2 weeks starting from the first postoperative day and after defecation.⁶

The use of aromatic oils in sitz baths plays an important role in recovery and the relief of postoperative pain.⁹ Myrtle, clove, and menthol aromatic oils are used topically and in sitz baths to treat hemorrhoids.⁹⁻¹¹ Due to its anti-spasmodic and anesthetic effects on anorectal sphincters, menthol oil is used in both the medical and surgical treatment of hemorrhoids in a sitz bath.¹⁰⁻¹⁴ Owing to these



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Received: 10.01.2023 Accepted: 06.10.2023

*This article was presented in 2020 as a Master's Thesis in the Department of Surgical Diseases Nursing at the Health Sciences University Health Sciences Institute.



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effects, the application is expected to reduce the pain in the anal area after hemorrhoidectomy and during the first defecation. Clinical studies have shown that topical menthol is safe and effective in treating various painful conditions, including musculoskeletal pain, sports injuries, neuropathic pain, and migraines.¹² Relieving pain has the positive effects of enabling patients to resume feeding earlier, eliminating any gap in self-care, and reducing urinary retention and the use of analgesics, all of which allow the patient to be discharged early and return to normal life in a short time.^{14,15}

After hemorrhoidectomy, the evaluation of the patient's pain by the nurse and the planning and implementation of appropriate nursing interventions are important for pain management. This study will contribute to the literature by providing information on the effect of warm sitz baths with menthol oil given after hemorrhoidectomy on pain intensity, and its use as a non-pharmacologic method in pain control. In addition, it is thought to be important in increasing the comfort of the patient, planning, and implementing holistic nursing interventions, improving the quality of life of individuals, increasing the quality of nursing care, and creating a guide for nurses who provide care after hemorrhoidectomy.

Materials and Methods

Trial Design

This was an interventional study.

Place and Time

This study was conducted in the general surgery clinic of a private hospital in İstanbul between June 2018 and September 2019 and involved patients who had undergone traditional hemorrhoidectomy surgery.

Population and Sample

The study population consisted of patients scheduled for elective hemorrhoidectomy procedures between June 2018 and September 2019 who met the inclusion criteria, agreed to participate, and underwent conventional hemorrhoidectomy surgery (i.e., via electrocautery) and general anesthesia. The use of enemas and diclofenac type 2x1 (dicloron) intramuscularly as an analgesic are routine in clinical practice at the 9th and tenth hours for postoperative pain control. A power analysis of the sample size was performed using G*Power 3.1 software. To exceed the study power of 80% ($df=40$; $t=1,684$), it was necessary to include at least 42 people in the study sample (21 in each group), with a significance level of 5% and an effect size of 0.8. To take possible losses into account and perform better subgroup analysis, 32 people were ultimately recruited for each group.

The inclusion criteria were as follows: 18 y of age or older; absence of any problems that would interfere with communication; continued treatment with a single type of analgesic drug after surgery; non-use of any complementary treatment methods; a 4th-degree hemorrhoid diagnosis; undergoing of elective, traditional hemorrhoidectomy; and willingness to participate in the study. The exclusion criteria were as follows: presence of any known allergies and undergoing of hemorrhoidectomy via the Longo method.

Ethical Statement

Ethical approval and written permission for this study were obtained from the İstanbul Medipol University Non-Interventional Research Ethics Committee (decision no: 10840098-604.01.01.-F21938, approval number: 392; date: 27.06.2018). The identities of study participants were kept confidential. After informing study participants of the purposes and importance of the study, their consent was obtained verbally and in writing.

Data Collection Tools

Data were collected using a patient information form and a numeric rating scale (NRS) to evaluate pain levels.

Patient Information Form: The patient information form was prepared by the study researchers and consisted of 22 questions in line with the literature. The first part of the form collected demographic information, such as age, sex, and nutritional level, as well as frequency of constipation and presence of hemorrhoid-related symptoms.^{7-9,16} The form was completed face-to-face with the study participants 30 min before surgery.

The second part of the form was used to record the hour of the first postoperative defecation, the timepoints when pain was evaluated, and notes about pain levels.

Numeric Rating Scale: Patients' pain levels were determined using numbers on a linear line, with 0 indicating no pain, 1-3 indicating mild pain, 4-6 indicating moderate pain, and 7-10 indicating severe pain.¹⁷

Data Collection

Before data were collected, participants were informed about the purposes of the study, and their consent was obtained. Participant data was collected using the patient information form at least one hour before surgery and at the fourth and eighteenth hours after surgery (before and after the sitz bath), and pain intensity was evaluated before and after the first postoperative defecation using the NRS.

Research Application

Control group: A sitz bath was performed for about 15 minutes in a container filled with water heated to 30-40 °C at the 4th hour after the surgery, after the first defecation, and at the 18th hour. Pain levels were evaluated and recorded

using the NRS just before the sitz bath and 15 minutes after the bath.

Intervention group: At the 4th hour after the surgery, after defecation, and at the 18th hour, 5 drops of menthol oil (measured with a dropper) were added into the container and a sitz bath was performed for approximately 15 minutes. Pain levels were evaluated and recorded with NRS just before the sitz bath and 15 minutes after the bath.

Pain levels were evaluated using the NRS before the enema and after defecation at the 9-10th hour.

Statistical Analysis

Study findings were evaluated using SPSS v. 22.0 statistical software. Descriptive statistical methods, such as mean, standard deviation, frequency, and percentage, were used to evaluate data. The Student's t-test was used to compare

continuous quantitative data between the two groups. Changes between repeated measurements were analyzed using a repeated measures analysis of variance. A chi-squared (χ^2) test was used to analyze the distribution of descriptive features by group. Results were evaluated with a significance level of $p < 0.05$ and a confidence interval of 95%.

Results

Participants' introductory characteristics are shown in Table 1. The mean age of patients was 45.56 ± 13.72 y in the intervention group and 44.59 ± 12.40 y in the control group. No significant differences existed between the two groups in terms of age, sex, marital status, educational level, profession, social security, income status, presence of chronic disease, or constipation ($p > 0.05$) (Table 1).

Table 1. Comparison of participants' descriptive characteristics (n=64)

Descriptive characteristics		Intervention group, (n=32)		Control group, (n=32)		p
		Mean	SD	Mean	SD	
Age (y)		45.56	13.72	44.59	12.40	0.768
Body mass index (kg/m ²)		28.61	5.74	28.27	6.02	0.818
		n	%	n	%	χ^2 /p
Sex	Female	11	34.4	14	43.8	$\chi^2=0.591$; p=0.304
	Male	21	65.6	18	56.2	
Marital status	Married	8	25.0	6	18.8	$\chi^2=0.366$; p=0.382
	Single	24	75.0	26	81.2	
Educational level	Primary school	1	3.1	2	6.2	$\chi^2=4.772$; p=0.311
	Elementary school	0	0.0	3	9.4	
	High school	19	59.4	16	50.0	
	Graduate	12	37.5	11	34.3	
Profession	Housewife	10	31.2	9	28.1	$\chi^2=2.872$; p=0.897
	Worker/Civil servant	4	12.4	3	9.3	
	Retired	5	15.6	7	21.9	
	Self-employment	8	25.0	6	18.8	
	Student	2	6.2	3	9.4	
	Other	3	9.3	4	12.5	
Chronic disease status	Yes	8	25.0	10	31.2	$\chi^{2**}=0.309$; p=0.391
	No	24	75.0	22	68.8	
Constipation	Yes	22	68.8	27	84.4	$\chi^{2**}=2.177$; p=0.119
	No	10	31.2	5	15.6	
Previous anorectal surgery status	Yes	3	9.4	12	37.5	$\chi^{2**}=7.053$; p=0.008
	No	29	90.6	20	62.5	

*More than one option was selected, **Data were analyzed using a χ^2 test, SD: Standard deviation

The mean NRS scores of patients in the intervention and control groups before the first defecation were 3.75 ± 1.95 and 3.94 ± 2.01 , respectively. When the patients in the intervention and control groups were examined according to their NRS scores after the first defecation, the mean scores of the intervention group and control group were 4.56 ± 1.83 and 5.16 ± 2.14 , respectively ($p > 0.05$). The increase in pain intensity after defecation was found to be statistically significant in patients in both groups compared with before the first defecation ($p = 0.001$) (Table 2).

Pain intensity decreased significantly in both groups after the sitz baths given at the fourth and eighteenth hours after surgery ($p < 0.05$). There was no statistically significant difference in pain intensity between the two groups before and after the baths ($p > 0.05$) (Table 3). First postoperative defecation occurred at a mean time of 9.880 ± 2.803 h in the intervention group and 9.280 ± 2.275 h in the control group, and the difference was not statistically significant ($p > 0.05$). The decrease in NRS scores after the first defecation compared with before the sitz bath after the first defecation (mean: 3.160) was found to be significant in both the intervention and control groups ($p = 0.001$ and $p < 0.05$, respectively) (Table 4).

Discussion

Pain is observed in the anorectal region in the early period after hemorrhoidectomy.^{1,2,16} Various medicines and herbal drugs can be added to warm sitz baths to alleviate the symptoms of hemorrhoids before and after surgery, reduce pain, support healing, and increase patient comfort and satisfaction.^{6,7,9-11,17} Some studies recommend the use of conservative and medical pain management strategies, as they are non-invasive and reduce the risk of anal sphincter injury.^{18,19} This study found that pain intensity decreased significantly after sitz baths given 4 and 18 h after surgery. In a study by Hsu et al. on the effect of warm water spray and sitz baths after hemorrhoidectomy, the authors stated that both methods had similar effects after hemorrhoidectomy and that a sitz bath should be performed four times daily after defecation in the first week after hemorrhoidectomy, and twice daily in the following weeks.⁶ Abd-Elmaged et al.²⁰ assert that sitz baths given once before defecation and three times daily for four weeks help relax anal sphincters and reduce pain, burning, and itching in the anorectal region. A study by Lang et al.⁷ evaluating the effectiveness of sitz baths in patients with anorectal diseases emphasized

Table 2. NRS mean scores of the groups before and after the first defecation

	Intervention group, (n=32)		Control group, (n=32)		t*	p
	Mean	SD	Mean	SD		
NRS before the first defecation	3.75	1.951	3.94	2.015	0.378	0.707
NRS after the first defecation	4.56	1.831	5.16	2.142	1.192	0.238
F	21.839		4.929			
p	0.001		0.034			

*Data were analyzed using a Student's t-test. NRS: Numeric rating scale, SD: Standard deviation, F: Repeated measures analysis of variance test

Table 3. Comparison of NRS scores before and after sitz bath

Intervention time		Intervention group, (n=32)		Control group, (n=32)		t*	p
		Mean	SD	Mean	SD		
4 th hour	Pre-application NRS score	5.56	1.76	5.25	2.34	-0.604	0.548
	Post-application NRS score	4.12	1.62	4.25	2.05	0.271	0.788
	F	54.12		35.43			
	p	<0.001		<0.001			
18 th hour	Pre-application NRS score	3.69	2.07	3.88	2.28	0.344	0.732
	Post-application NRS score	2.66	1.77	3.16	1.99	1.063	0.292
	F	28.54		19.36			
	p	0.001		0.001			

*Data were analyzed using a Student's t-test, NRS: Numeric rating scale, SD: Standard deviation, F: Repeated measures analysis of variance test

Table 4. Comparison of NRS mean scores of groups before and after the first defecation and sitz bath

	Intervention group, (n=32)		Control group, (n=32)		t*	p
	Mean	SD	Mean	SD		
NRS score before first defecation and sitz bath	4.56	1.83	5.16	2.14	1.192	0.238
NRS after first defecation and sitz bath	2.66	1.77	3.16	1.99	1.063	0.292
t	8.735		5.173			
p	0.001		0.001			

*Data were analyzed using a Student's t-test. NRS: Numeric rating scale, SD: Standard deviation

that sitz baths should be performed four times per day as well as after defecation to relieve the anorectal region and reduce edema. In a 2015 randomized controlled study investigating the effect of hot water bag use on pain in the early period after hemorrhoidectomy, Balta et al.²¹ found that postoperative pain scores in the hot water bag group were significantly lower than in the control group on the first and third postoperative days.

In the present study, the average pain scores after the first defecation decreased significantly in both groups after the sitz baths. Comparing the effect of water spraying and sitz baths on pain after hemorrhoidectomy, Hsu et al.⁶ reported that there was no statistically significant difference in pain reduction between the two methods after defecation. A study by Lang et al.⁷ investigating the effectiveness of sitz baths in managing symptoms of anorectal diseases reported that pain gradually decreased between the intervention and control groups. Shen et al.²² used warm sitz baths as a control and applied Xiaozhi (an ointment made from a Chinese plant) as an intervention and found that the intervention group experienced not only lower pain levels but also less analgesic consumption than the control group. Joksimovic et al.²³ evaluated the effectiveness of topical hyaluronic acid and tea tree oil gel forms in reducing the symptoms of hemorrhoids and found a statistically significant reduction in pain during defecation in the preoperative period in both intervention groups. These findings suggest that sitz baths stimulate the sensory receptors in the anorectal region, causing relaxation in the inner sphincter and reducing pain during and after defecation.

Menthol has been used as a topical pain reliever since ancient times.¹² This study demonstrates that warm sitz baths, with or without menthol oil, reduce pain intensity after hemorrhoidectomy. A study by Amato et al.²⁴ investigating the effect of menthol on the muscles of the large intestine states menthol oil can be applied topically or as an enema. Menthol oil, an ingredient in some hemorrhoid drugs, has been used for hemorrhoids and in enemas in the preoperative period.²⁵ Kolassa²⁶ report that menthol oil

differs from other essential oils in its mechanism of action, and that the ointment contained menthol oil to alleviate the symptoms of hemorrhoids. Yoshida et al.²⁷ determined that menthol injected into the colon could prevent spasms during colonoscopy. The literature states that, when used topically, menthol oil gives a cooling and then a warming sensation and slows the transmission of calcium in the tissues. These anesthetic and vasodilating properties of menthol oil promote relaxation of the muscles and sphincters in the areas to which it is applied.^{12,13,23,25}

Study Limitations

This study has several limitations. The follow-up period was limited to 24 h because patients were discharged on the first day after hemorrhoidectomy; thus, patients' post-discharge pain intensity was not monitored at home, and the effect of menthol on edema in the surgical field was not evaluated. The short follow-up time may have prevented the study from fully assessing the effects of menthol on pain. The use of sitz baths with menthol oil should be followed up for a minimum of 72 h in future studies to demonstrate their effect on pain. Another limitation of this study is that it cannot be generalized to all patients undergoing hemorrhoidectomy because the study sample was limited to patients undergoing traditional hemorrhoidectomy in the general surgery department of a private hospital.

Conclusion

The findings of this study show that warm sitz baths with menthol oil decrease pain intensity in patients who have undergone hemorrhoidectomy. Further research evaluating the effectiveness of various postoperative pain control methods is necessary to achieve the important goal of relieving pain in patients. The use of at-home remedies alongside pharmacologic methods of pain control is recommended, and more studies on their effects should be conducted in order to reap the full benefits of aromatic oil use in nursing care practice.

Ethics

Ethics Committee Approval: Ethical approval and written permission for this study were obtained from the İstanbul Medipol University Non-Interventional Research Ethics Committee (decision no: 10840098-604.01.01.-F21938, approval number: 392; date: 27.06.2018).

Informed Consent: Their consent was obtained verbally and in writing.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: S.G., **Design:** S.M.T., S.G., **Data Collection or Processing:** S.M.T., **Analysis or Interpretation:** S.G., **Literature Search:** S.M.T., S.G., **Writing:** S.M.T., S.G.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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