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Myrrh sitz bath for wound healing after hemorrhoidectomy: A retrospective study of adverse effects and treatment outcomes

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Abstract

Background and Aim: Hemorrhoids affect 75% of people worldwide. surgical hemorrhoidectomy remains the definitive intervention for severe cases. Post-operative wound care is critical, and alternative treatments, like Myrrh, are of growing interest due to their potential wound-healing properties. This study aimed to compare the safety, efficacy, and treatment outcomes of Myrrh sitz baths with standard clinical care in promoting wound healing after hemorrhoidectomy.

Methods: A retrospective cohort study was carried out using medical records from Abha Private Hospital for the period of January–December 2022. The data of patients who underwent hemorrhoidectomy were collected and categorized based on postoperative wound care into two groups: Group A for Myrrh-based wound care as a self-medication and Group B for standard wound care.

Results: The study included 67 patients who underwent hemorrhoidectomy. Out of these patients, 52 had standard wound care, while 15 used Myrrh-based wound care as self-treatment without medical advice. The Myrrh group patients were significantly older with more comorbidities. The Myrrh group had significant Grade III wound healing outcomes 9/15 (60%) compared to the standard care group 2/52 (3.8%) ($p < 0.001$). However, despite the better healing outcomes, the Myrrh group had a significantly higher complication rate 7/15(46.7%) than the standard care group 1/52 (1.9%) ($p < 0.001$). These results indicate that despite the good healing capacity of Myrrh, cautious usage must be considered.

Conclusion: Myrrh sitz baths appear more effective than standard wound care in enhancing healing after hemorrhoidectomy. However, increased complications suggest the necessity for comprehensive evaluation and research on its safety profile. These findings can guide future research and clinical practices related to postoperative wound care.

KEYWORDS

hemorrhoidectomy, Myrrh, perianal fistula, postoperative, standard care, wound healing

1 | INTRODUCTION

Hemorrhoids are benign disorders confronted by clinicians and surgeons.[1] As predicted, the overall risk of hemorrhoids could be approximately 70% of the population.[2] Though hemorrhoids are mostly treated successfully by various medications and other methods, surgical treatment is suggested in high-risk or complicated cases.[3] Both genders are equally affected by hemorrhoids, typically during the age of 40. However, its incidence in young people is also not unusual.[4] While the prevalence in the world remains undetermined, a clinical study has discovered an overall 39% incidence for Grades 1–4 hemorrhoids, which was categorized according to the international classification of hemorrhoids in the adult population.[5] Treatment modalities for hemorrhoids vary depending on the severity and may include lifestyle modifications, topical medications, and surgical techniques for more complicated cases.[1] One of the most effective treatments for severe hemorrhoids is hemorrhoidectomy, a surgical technique that removes the engorged veins. In the postoperative stage after hemorrhoidectomy, wound healing significantly affects both short-term recovery and long-term outcomes for patients. Standard wound care[6] can minimize complications such as infection, bleeding, and prolonged discomfort, facilitating a quicker return to regular activities. Consequently, there is an ongoing search for wound care treatments that are both effective and safe.

The word "Myrrh" was first time coined from "murr," which means bitter in the Arabic language.[7] It is extracted from plants and chemically composed of mainly[8] gum which is in the form of resin, essential oil containing terpene 2.5%–5%, gum having arabinose, galactose 30%–40%, and the rest is made of about 35%–40% resin. [7,9] Around 60% of the gum resins comprise terpenic acids and alcohols.[9] Resin species are mainly used as pharmacological agents for treating wounds, fractures, stomach diseases, mouth ulcers, body aches, and inflammatory and infectious diseases. In ancient healing practices, that is, Unani medicine, Myrrh as gums are the main medicinal agents used as astringent, carminative, antiseptic, emmenagogue, expectorant, and anthelmintic. In preventive medicine, they are used with other medicines to treat epidemic diseases and as a topical application in joint pains and gout.[7] They have effective healing qualities for wound treatment. Since clinical research on Myrrh for surgical wound healing after hemorrhoidectomy is inadequate and limited in the medical literature, it is important to conduct large-scale studies as a priority for the clinical use of Myrrh as a wound healing agent, mainly during postsurgical treatment. The literature search showed no convincing clinical study in the databases regarding the comparison of Myrrh versus standard care after hemorrhoidectomy, and there was a noticeable information gap in this regard. Therefore, this research study aims to assess the efficacy, safety profile, and treatment outcomes of Myrrh sitz baths compared to clinical standard care in promoting wound healing after hemorrhoidectomy.

2 | MATERIALS AND METHODS

A retrospective study utilizing medical records and clinical data of admitted patients who underwent hemorrhoidectomy at Abha Private Hospital between January and December 2022. The patients in this study were divided into two groups. Group A consisted of patients who self-medicated using Myrrh sitz bath for wound care without any instructions from their physicians, as this traditional method was used to treat wounds. Group B received standard wound care. The physicians prescribed to all patients sitz baths in warm water every 6 h, oral analgesics every 6 h to relieve pain, and laxatives. The patients were advised to maintain a high-fiber diet, drink eight glasses of water a day, and sit to the side to avoid direct support in the area of the surgical intervention. A complete postoperative proctologic examination, including inspection, palpation, and digital rectal examination, was performed on the patients weekly for 3 weeks. The postoperative pain was evaluated at the end of the third week using a visual analog scale scored as 0 (no pain), 1–3 (mild pain), 4–6 (moderate pain), and 7–10 (severe pain). Wounds were categorized into three grades based on their severity—Grade I for fresh wounds with inflammation, Grade II for wounds with granulation tissue, and Grade III for wounds with completed epithelial covering. Complete wound healing was considered achieved when the wound was fully covered with epithelial tissue, and this was assessed 3 weeks after the operation. Patient demographic information, medical history, wound care protocols, treatment outcomes, pain scores, infection rates, and complications were collected from electronic medical records and recorded on a data sheet.

2.1 | Ethical consideration

The ethical approval was obtained from the Institutional Review Board (IRB) or Ethics Committee of King Khalid University before data collection (Approval No. ECM#2023-2009). Patient confidentiality and data security were maintained throughout the study.

2.2 | Statistical analysis

Data were analyzed by SPSS Version 26.0. (IBM Corp.). Categorical descriptive data were presented as numbers and percentages, and continuous descriptive data were expressed as mean ± standard deviation (SD). Comparative analyses, such as chi-square tests for categorical variables and *t* tests for continuous variables, were performed to assess differences between the two treatment groups. A binary logistic regression model was used to identify the factors associated with the occurrence of complications and wound outcomes and to control confounding variables. Two-sided *p* values less than 0.05 were considered statistically significant.

3 | RESULTS

The study included 67 patients who underwent hemorrhoidectomy and were divided into two groups based on postoperative wound treatment: standard care and Myrrh groups. The standard care group consisted of 52 patients, out of which 27 (52%) were males and 25 (48%) were females. The Myrrh group included 15 patients, out of which 7 (46.6%) were males and 8 (53.3%) were females, there was no significant difference in gender distribution between both groups ($p = 0.72$). Patients in the Myrrh group (mean age: 46.1 ± 8.4 years) were significantly older than those in the standard care group (mean age: 37.7 ± 12.2 years) ($p = 0.02$). There was a statistically significant difference between the two groups in terms of comorbidities ($p = 0.01$). In the standard care group, 45 (86.5%) had no comorbidities, 5 (9.6%) had diabetes mellitus, 1 (1.9%) had hypertension, and 1 (1.9%) had bronchial asthma. In the Myrrh group, 7 (46.6%) had no comorbidities, 6 (40%) had diabetes mellitus, and 2 (13.3%) had hypertension. Regarding pain scores, more than two thirds of patients in both groups reported mild postoperative pain without significant difference, 39 (75%) in the standard care group and 13 (86.6%) in the Myrrh group ($p = 0.13$). After 3 weeks post-hemorrhoidectomy, a significant difference was observed between the two groups in terms of wound healing outcome ($p \leq 0.001$). In the standard care group, 50 out of 52 patients (96.2%) showed Grade II wound healing, while only 2 patients (3.8%) showed Grade III or complete wound healing. On the other hand, in the Myrrh group, six patients (40%) showed Grade II wound healing, and nine patients (60%) showed Grade III wound healing. In terms of complications, only 1 patient in the standard care group developed a wound infection, while 51 (98%) patients reported no complications at all. On the other hand, in the Myrrh group, eight patients (53.3%) experienced no complications, four (26.6%) developed a perianal fistula, and three (20%) developed a wound infection. The difference in the occurrence of complications between the two groups was significant ($p \leq 0.001$) (Table 1).

We conducted additional analysis to identify factors affecting the occurrence of complications and found that, out of 67 post-hemorrhoidectomy cases, eight patients (12%) experienced complications in the form of perianal fistula (five patients, 7.5%) and wound infection (three patients, 4.5%). Interestingly, among the complicated cases, seven patients (87.5%) used Myrrh sitz bath as a postoperative treatment, whereas only one case (12.5%) used standard care treatment ($p \leq 0.001$). Furthermore, we observed that the complicated cases had a significantly higher age (49.5 ± 10.8 years) compared to noncomplicated cases (38.3 ± 11.5 years) ($p = 0.01$). However, we did not find any significant differences between complicated and noncomplicated cases in terms of gender, comorbidities, pain score, and wound healing outcome after 3 weeks (Table 2).

A multivariate regression analysis was conducted to assess the impact of various factors on wound healing outcomes after 3 weeks, the occurrence of complications, and to control cofounders. The used models included: different wound treatment types, age, and comorbidities as variables. According to the odds ratio evaluation, the chances of achieving grade III or complete wound healing after 3 weeks of postoperative treatment with Myrrh are approximately 39 times higher as compared to standard care treatment ($p \leq 0.001$) (Table 3). However, the likelihood of developing complications following hemorrhoidectomy with Myrrh wound treatment is about 65 times higher as compared to standard care treatment ($p = 0.01$) (Table 4). It is important to note that age and comorbidities are not significant predictors for either complete wound outcome or the occurrence of complications in both models (Table 4).

TABLE 1 Patient's demographics, clinical characteristics, and treatment outcomes between the standard care and Myrrh wound treatment groups.

Variables	Wound treatment, $n = 67$		p Value
	Standard care, $n = 52$	Myrrh sitz bath, $n = 15$	
Gender			0.72
Male	27 (51.9%)	7 (46.7%)	
Female	25 (48.1%)	8 (53.3%)	
Mean age	37.7 ± 12.2	46.1 ± 8.4	0.02*
Comorbidities			0.01*
No comorbidities	45 (86.5%)	7 (46.7%)	
Diabetes mellitus	5 (9.7%)	6 (40%)	
Hypertension	1 (1.9%)	2 (13.3%)	
Bronchial asthma	1 (1.9%)	0	
Pain score			0.13
Mild pain (1–3)	39 (75%)	13 (86.7%)	
Moderate pain (4–5)	13 (25%)	2 (13.3%)	
Wound healing outcome after 3 weeks			<0.001*
Grade II	50 (96.2%)	6 (40%)	
Grade III	2 (3.8%)	9 (60%)	
Complications			<0.001*
No complications	51 (98.1%)	8 (53.3%)	
Perianal fistula	0	4 (26.7%)	
Wound infection	1 (1.9%)	3 (20%)	

*Significant = p value less than 0.05.

4 | DISCUSSION

Myrrh, also known as *Commiphora molmol*, has been used for its wound-healing properties for many years. It is mostly studied in Iranian and Arabic medicine for its "healing properties" and has been established in clinical studies. Moreover, Myrrh's effects on the immune system, specifically on immune cells and its mechanism of action, are still not fully explained in the literature. It was reported by Tipton et al.[10] using Myrrh for its antiseptic qualities during ancient

TABLE 2 Factors affecting the occurrence of complications in the study patients.

Variables	Complications, $n = 67$		p Value
	No complication, $n = 59$	Complicated cases, $n = 8$	
Gender			0.12
Male	32 (54.2%)	2 (25%)	
Female	27 (45.8%)	6 (75%)	
Mean age	38.3 ± 11.5	49.5 ± 10.8	**0.01***
Comorbidities			0.06
No comorbidities	48 (81.4%)	4 (50%)	
Comorbidities	11 (18.6%)	4 (50%)	
Type of wound treatment			**<0.001***
Myrrh sitz bath	8 (13.6%)	7 (87.5%)	
Standard care	51 (86.4%)	1 (12.5%)	
Pain score			0.72
Mild pain (1–3)	45 (76.3%)	7 (87.5%)	
Moderate pain (4–5)	14 (23.7%)	1 (12.5%)	
Wound healing outcome after 3 weeks			0.14
Grade II	51 (86.4%)	5 (62.5%)	
Grade III	8 (13.6%)	3 (37.5%)	

*Significant = p value less than 0.05.

TABLE 3 Multivariate regression analysis presenting the association between various predictors and the dependent variable "wound healing outcome after 3 weeks."

Variables	*B*	S.E.	Wald	*df*	*p* Value	Odds ratio
Type of wound treatment	3.680	1.012	13.228	1	**<0.001***	39.661
Comorbidities	−0.010	1.039	0.000	1	0.992	0.990
Age	−0.006	0.048	0.015	1	0.902	0.994
Constant	−2.995	1.884	2.527	1	0.112	0.050

*Significant = p value less than 0.05.

healing practices. Due to its effective antimicrobial actions, Myrrh was used alone or with other herbal medicines to treat inflammation and infection. The studies regarding the clinical efficacy and safety of Myrrh compared to standard wound treatment are very scanty in the medical literature. In this current study, we evaluated the effectiveness of Myrrh treatment as compared to the standard wound care in patients undergoing hemorrhoidectomy. This is a rare study as most studies evaluated the healing effects of Myrrh after episiotomy or tooth extraction.

TABLE 4 Multivariate regression analysis presenting the association between various predictors and the dependent variable "complications occurrence."

Variables	B	S.E.	Wald	*df*	*p* Value	Odds ratio
Type of wound treatment	4.179	1.493	7.840	1	**0.01***	65.311
Comorbidities	−0.944	1.236	0.584	1	0.445	0.389
Age	0.126	0.076	2.728	1	0.099	1.134
Constant	9.56	4.05	5.58	1	0.018	0.000

*Significant = p value less than 0.05.

According to our research, patients who underwent Myrrh sitz baths for wound treatment had better outcomes and complete wound healing compared to those who received standard wound care. This is consistent with the results of a randomized controlled trial conducted on 90 primipara females with single gestation after regular vaginal delivery.[11] Study females in the intervention group were exposed to either a 10-min sitz-bath of Myrrh resin or frankincense extract twice a day for 1 week after episiotomy. In comparison, the females in the control group received the betadine sitz-bath for 1 week after episiotomy. Faraji et al.[11] reported a significant improvement in wound healing after episiotomy in women having Myrrh than those taking frankincense or betadine and recommended that Myrrh should be suggested as a safe, natural remedy. In another study related to episiotomy, Sarbaz et al.[12] investigated the effect of hydro-alcohol extract from a Myrrh plant during a sitz bath on wound healing after episiotomy and concluded that Myrrh extract was more effective and efficient in wound healing after episiotomy than the usual standard wound care.[12]

In a study conducted by Eid et al.[13] individuals had dental extraction under local anesthesia using standard practice. The control group had normal saline mouthwash for gargles, and the study group used Myrrh plant extract after the dental extraction and the study group showed greater improvements in pain and swelling after using Myrrh extracts. Eid concluded that Myrrh extracts, when used as a mouthwash during the early period after tooth extraction, promote faster and more effective wound healing at the dental surgical site.[13]

In our study, the rate of complications was significantly higher among the Myrrh Group 7 (46.7%) compared to the standard care Group 1 (1.9%). Perianal fistula, which is usually a rare complication after hemorrhoidectomy,[14] was reported in 4 (26.7%) out of 15 cases in the Myrrh group, while no cases were reported in the standard care group. However, patients in the Myrrh group were older and had more comorbidities, 40% had diabetes mellitus and 13.3% had hypertension, which may act as confounding factors for complication occurrence. Therefore, we conducted logistic regression to control this confounding factor and found that the only significant predictor of wound complication occurrence was the type of wound healing treatment (odds ratio = 65; $p = 0.01$). The possible occurrence of complications due to Myrrh use was also highlighted by Al-

Mobeeriek in a study conducted in Saudi Arabia to assess the effect of Myrrh compared to mouthwashes containing chlorhexidine gluconate and tetracycline on wound healing in an animal model. The study found that treatment with Myrrh improved and repaired damaged tissues in less than 2 weeks. However, prolonged use of Myrrh in high concentrations on open wounds, which is a common traditional practice in Saudi Arabia, should be avoided because its toxicity and inflammation-inducing properties may initiate an overwhelming body response to Myrrh. Therefore, he recommended that using Myrrh to heal and repair damaged tissue is only limited to short-term use and low-concentration.[15]

Contrary to our results, previously mentioned studies[11–13] that examined the effects of Myrrh treatment for dental and episiotomy procedures did not report any complications. There could be a few explanations for this discrepancy. First, hemorrhoidectomy involves creating a surgical wound near the rectum, which has the highest bacterial burden in the human body, making wound healing more challenging than other body sites.[16] Second, differences in study design, such as clinical trial, control usage of Myrrh with appropriate dosage, preparation, and frequency of application, could also account for the difference in results. Therefore, the high rate of complications in our study may be explained by the incorrect usage of Myrrh by patients, especially since medical records did not accurately report the exact dosage and duration of Myrrh exposure in patients. Therefore, it is crucial to conduct controlled clinical trials in the future using appropriate preparations and dosages of Myrrh, as this may lead to significant wound healing effects without complications.

5 | LIMITATION OF THE STUDY

This study has some limitations, as retrospective studies are susceptible to selection bias and might not allow controlling all potential confounders. The available medical records' quality and completeness may also restrict the study's conclusions. Furthermore, the small sample size and unequal distribution in both treatment groups are other drawbacks of this study. However, this study still holds valuable insights into the potential use of Myrrh for postoperative care and inspires future research on Myrrh, informs clinical practice, and improves patient outcomes and satisfaction.

6 | CONCLUSION

Our study showed that Myrrh sitz baths are more effective in wound healing outcomes than standard wound care. If Myrrh was effectively and safely used, it could promote wound healing and provide a natural and complementary option for postoperative care. The findings of this study will contribute to evidence-based decision-making in postoperative care and potentially lead to further research related to the clinical use of Myrrh and the development of alternative treatment approaches that enhance wound healing outcomes and patient well-being.

AUTHOR CONTRIBUTIONS

Fahad Saeed Al Amri: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualization; writing—original draft; writing—review and editing.

CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest.

DATA AVAILABILITY STATEMENT

The data used in this research paper are available upon request. Please contact the author, Fahad Saeed Al Amri, at fsalamri@kku.edu.sa, for further information regarding the accessibility and conditions for data sharing.

TRANSPARENCY STATEMENT

The lead author Fahad Saeed Al Amri affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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