Review Article

Effective Pain Relief Interventions for Post-Hemorrhoidectomy Patients: A Rapid Evidence Review

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Abstract

Background: Hemorrhoid disease, or piles, remains a prevalent global health issue. Hemorrhoidectomy is a common surgical intervention; however, effective postoperative pain management remains a persistent clinical challenge, directly influencing recovery outcomes and patient satisfaction.

Objective: This rapid review aimed to identify the most effective nursing and clinical interventions for managing postoperative pain following hemorrhoidectomy.

Methods: A rapid evidence review was conducted using five electronic databases: PubMed, ScienceDirect, Sage Journals, SpringerLink, and Scopus. The search included studies published between 2016 and 2024 that investigated pain management strategies for patients undergoing hemorrhoid surgery. Articles were screened based on predefined inclusion and exclusion criteria. A total of eight original research articles met the eligibility criteria and were included in the final analysis. Data on study design, sample size, intervention type, and pain outcomes were extracted and synthesized narratively.

Results: Among the various interventions evaluated, the use of absorbable gelatin sponges as hemostatic agents demonstrated superior efficacy in reducing postoperative pain compared to other commonly used materials, such as epinephrine-soaked gauze. Six out of the eight included studies reported significant reductions in pain intensity and improved patient comfort with gelatin sponge application. These findings highlight the potential of this intervention as a cost-effective and clinically practical approach for enhancing postoperative care.

Conclusion: Absorbable gelatin sponges represent a promising option for postoperative pain management following hemorrhoidectomy. Nonetheless, further large-scale and high-quality studies are warranted to strengthen the evidence base and inform broader clinical adoption.

Keywords: Gelatin sponge; Hemorrhoid intervention; Rapid evidence review; Pain relief

INTRODUCTION

Hemorrhoids, also known as piles, are a pathological condition that occurs when hemorrhoidal veins become engorged with blood and protrude, damaging the connective tissue within the anal cushions. Over time, the submucosal muscle tissue weakens, allowing

hemorrhoids to shift, bulge, or prolapse through the anal sphincter. The peak incidence is observed in individuals aged 45-65 years, with symptoms such as rectal bleeding, pain, and discomfort during defecation associated with chronic constipation. Hemorrhoids negatively affect the quality of life (1) External hemorrhoids are located beneath the skin around the anus, while internal hemorrhoids develop in the rectum.

According to the World Health Organization (WHO) data from 2017 (2), the number of hemorrhoid cases reached 230 million and is projected to increase to 350 million by 2030. In the United States, a 2020 study identified hemorrhoids as the fourth most common anorectal disease, resulting in approximately 3.3 million outpatient visits annually. In Indonesia, data from the Ministry of Health (3) and the 2015 Basic Health Research (Riset Kesehatan Dasar) reported a prevalence of around 5.7%, affecting an estimated 12.5 million people (4). Hemorrhoids are often detected during anorectal screenings, with many patients remaining asymptomatic until complications arise.

One of the management strategies for hemorrhoids is surgery, known as hemorrhoidectomy (1). Hemorrhoidectomy involves the excision of hemorrhoidal tissue, typically by removing the varicose veins in the anal canal. After hemorrhoidectomy, pain management becomes a priority, as untreated pain can affect a person's physiological, psychological, and behavioral states ((5). As nurses, our role is to assist patients in managing pain through both pharmacological and non-pharmacological approaches (6).

Inadequate pain management after surgery can lead to complications, delay healing, and trigger stress responses. Pharmacological interventions alone do not enhance the patient's ability to independently manage their pain (7), which is why a combination of pharmacological and non-pharmacological treatments is necessary to alleviate pain and facilitate healing. Non-pharmacological pain management techniques that nurses can apply include skin stimulation, relaxation, distraction, massage, cold and warm compresses, providing comfortable positioning, acupuncture, hypnotherapy, aromatherapy, and Transcutaneous Electrical Nerve Stimulation (TENS) (5).

Although various interventions for post-hemorrhoidectomy pain management exist, their comparative effectiveness remains unclear, and there is no consensus on the most effective nursing techniques to optimize patient outcomes. Therefore, this rapid review seeks to systematically evaluate and compare the effectiveness of pharmacological and non-pharmacological nursing interventions in managing post-hemorrhoidectomy pain, with the goal of identifying the most evidence-based strategies to enhance patient recovery and inform clinical practice.

METHODS

Study Design

This study employed a rapid review design using a library research method to synthesize evidence regarding nursing interventions for pain management in patients with hemorrhoids. A rapid review is an evidence synthesis approach that streamlines systematic review processes to provide timely and relevant findings for decision-making within constrained timeframes while maintaining key methodological rigor (8).

Search Strategy

A comprehensive literature search was conducted in five major electronic databases: ScienceDirect, Sage Journals, Scopus, SpringerLink, and PubMed. The search strategy was guided by the PICO framework: Population (P): Patients with hemorrhoids. Intervention (I): Pain relief interventions (pharmacological and non-pharmacological). Comparison (C): Not specified. Outcome (O): Nursing interventions for pain management. Timeframe: Studies published between 2016 and 2024

The search terms included combinations of the following keywords and MeSH terms: "hemorrhoid", "pain relief", "pain intensity", "pain scale", "pain assessment", and "nursing intervention". Searches were conducted in English and limited to original research articles. Additionally, manual searches of reference lists from selected articles were performed to identify further eligible studies. Studies were selected based on the following criteria were original research studies (quantitative, qualitative, or mixed methods), studies focusing on the effectiveness of pain management interventions in post-hemorrhoidectomy

patients, articles published in English between 2016 and 2024, and studies involving nursing-led or nursing-related interventions Exclusion Criteria were review articles, systematic reviews, editorials, conference abstracts, and commentaries, studies not involving hemorrhoid patients, articles without specific focus on pain relief interventions.

Study Selection Process

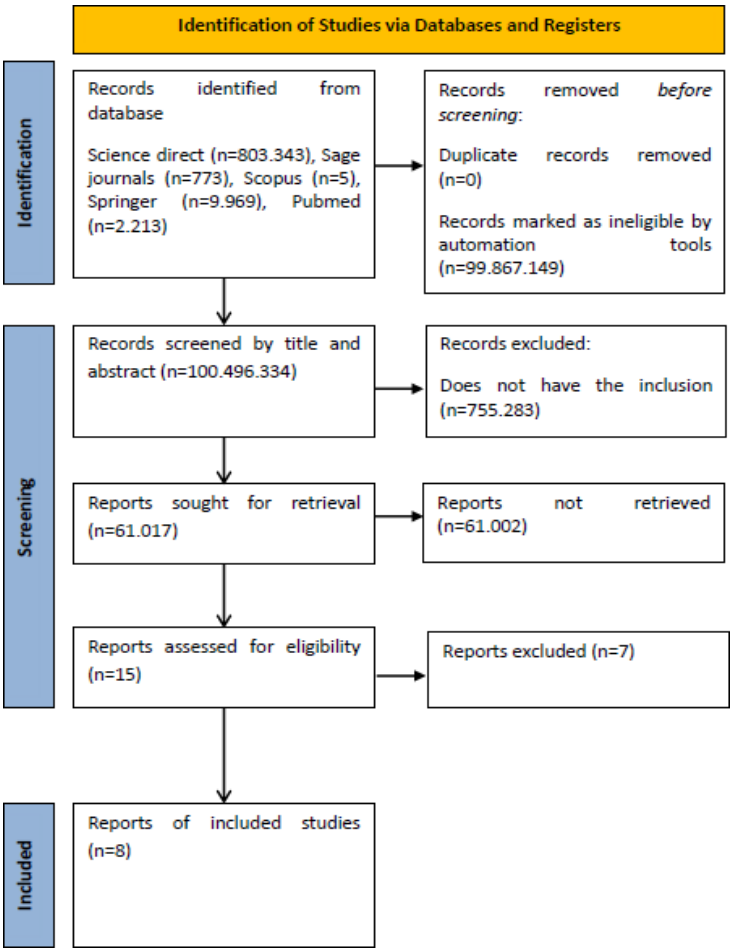
The initial search yielded a total of 15 articles based on title and abstract screening. Following full-text evaluation, 8 articles met the inclusion criteria and were included in the final review. The study selection process was documented using the PRISMA (9)flow diagram (Figure 1).

Data Extraction

A standardized data extraction matrix was developed to collect and organize relevant information from the selected studies. Extracted data included authors and year of publication, country and study setting, study design and sample size, type and description of the intervention, pain assessment tools and outcome measures, and key findings related to pain reduction and healing

Data Analysis

The analysis involved a descriptive and narrative synthesis of the findings. Extracted data were grouped based on the type of intervention (e.g., topical pharmacological agents, acupuncture, cold compresses). Comparisons of effectiveness were made by examining outcomes related to pain intensity reduction, healing progression, and complication incidence. Variability in sample characteristics, study design, and pain measurement approaches were considered in the interpretation of results. The review highlights both pharmacological and non-pharmacological strategies, with particular attention to nursing-led approaches that demonstrated significant efficacy in reducing post-hemorrhoidectomy pain. A PRISMA flow diagram illustrating the study selection process is included in Figure 1.



RESULTS

We reviewed 8 articles conducted in Hungary (n=1), China (n=4), Taiwan (n=2), and India (n=1). The studies involved hemorrhoid patients or patients undergoing hemorrhoidectomy, with sample populations ranging from 18 to 70 years. The research objectives included evaluating various interventions for managing postoperative hemorrhoid pain, including topical sucralfate, electroacupuncture (EA), virtual reality (VR) distraction, transcutaneous acupoint electrical stimulation (TAES), catgut acupuncture, Blumea lacera leaf extract, and absorbable gelatin sponge. A summary of the study characteristics is presented in Table 1.

Table 1. Study Characteristics and Key Outcomes

Author (Year)	Country	Sample Size	Intervention	Pain Measurement Tool	Key Outcome
Study 1	Hungary	Not specified	Topical sucralfate	Visual Analogue Scale (VAS)	Improved pain control and wound healing
Study 2	China	Not specified	Electroacupuncture (EA)	VAS	Reduced postoperative pain and swelling
Study 3	China	Not specified	Virtual Reality (VR) distraction	VAS	Decreased pain during dressing changes
Study 4	Taiwan	Not specified	TAES (Acupoint stimulation)	VAS, Anxiety scales	Reduced pain and anxiety
Study 5	China	Not specified	Catgut acupuncture	VAS	Lower pain scores and faster recovery
Study 6	India	Not specified	Blumea lacera extract	Histological analysis	Reduced inflammation and tissue damage (animal study)
Study 7	Taiwan	Not specified	Catgut needle acupuncture	VAS	Improved pain and bowel function
Study 8	China	Not specified	Absorbable gelatin sponge	VAS	Greater pain relief compared to epinephrine gauze

The reviewed studies explored a variety of interventions to manage postoperative hemorrhoid pain. Topical sucralfate demonstrated good efficacy and tolerability in reducing pain and promoting wound healing. Electroacupuncture (EA) at the Baliao point effectively reduced short-term postoperative complications, including pain and anal swelling. Virtual Reality (VR) distraction significantly decreased perceived pain during postoperative dressing changes, although no significant differences were observed in heart rate and oxygen saturation between groups. Transcutaneous Acupoint Electrical Stimulation (TAES) was shown to effectively reduce both postoperative pain and anxiety levels. Catgut acupuncture provided significant benefits by lowering pain intensity, accelerating recovery, and decreasing the need for additional analgesia. The use of Blumea lacera leaf extract demonstrated notable anti-inflammatory effects and reduced tissue damage in an animal model of hemorrhoids. Similarly, catgut needle acupuncture improved postoperative pain outcomes and enhanced bowel function. Finally, the application of absorbable gelatin sponge resulted in greater pain relief compared to conventional gauze soaked in epinephrine.

DISCUSSION

This review evaluated various interventions for managing postoperative hemorrhoid pain. Topical sucralfate demonstrated good efficacy in pain reduction and wound healing, although minor mucosal irritation was reported. Electroacupuncture (EA) at the Baliao point effectively decreased postoperative pain and anal swelling. Virtual Reality (VR) distraction significantly reduced perceived pain during dressing changes without affecting vital signs. Transcutaneous Acupoint Electrical Stimulation (TAES) showed notable benefits in reducing pain and anxiety, while catgut acupuncture

provided accelerated recovery, less need for analgesia, and improved bowel function. Blumea lacera extract exhibited anti-inflammatory effects in animal models. Alu needle therapy and absorbable gelatin sponges were also effective in reducing pain, with absorbable gelatin sponges outperforming epinephrine-soaked gauze (10).

The use of topical sucralfate aligns with prior findings supporting its role in enhancing mucosal healing (11). Similarly, the analgesic effects of electroacupuncture have been well-documented in postoperative care settings (12). Although VR distraction effectively reduced subjective pain, it did not significantly impact physiological markers, echoing previous research in non-invasive pain management (13). TAES, a needle-free alternative, was consistent with earlier studies demonstrating modulation of autonomic nervous system activity to alleviate pain (14). Catgut acupuncture's benefits were corroborated by Xiaorui et al (15), although the underlying mechanisms require further elucidation. The anti-inflammatory properties of Blumea lacera observed in animal models (16) highlight its potential but also signal the need for human clinical trials. Alu needle therapy and absorbable gelatin sponges provided additional evidence of effective non-pharmacological postoperative pain interventions (17,18).

The reviewed interventions offer promising non-pharmacological options with minimal adverse effects. However, most studies had limitations, including small sample sizes, subjective pain measurements, lack of long-term follow-up, and in some cases, reliance on animal models (19,20). The heterogeneity of methodologies also limits direct comparison across studies. Additionally, economic evaluations and assessments of patient preference were often lacking, posing challenges for widespread clinical adoption. Based on current evidence, interventions such as absorbable gelatin sponges and electroacupuncture appear to be effective adjuncts in managing postoperative hemorrhoid pain. VR distraction and TAES offer non-invasive alternatives that may improve patient comfort during dressing changes. Incorporating these strategies could reduce the reliance on pharmacologic analgesia, minimizing drug-related adverse effects. Nevertheless, the availability of equipment (e.g., TAES devices, VR tools) and training needs should be considered before clinical implementation.

Future studies should focus on large-scale randomized controlled trials comparing these interventions directly, incorporating standardized outcome measures. Cost-effectiveness analyses and assessments of patient satisfaction and preference are also necessary to guide clinical decision-making. Furthermore, mechanistic studies are needed to elucidate the pathways by which catgut acupuncture and Blumea lacera exert their effects. Translational research bridging animal models to human application will strengthen the evidence base for botanical interventions.

CONCLUSION

Hemorrhoids, also known as piles, are characterized by the enlargement (dilatation) of blood vessels in the hemorrhoidal plexus around the anus and perianal area. In severe cases, hemorrhoidectomy — the surgical removal of hemorrhoids is performed to excise the dilated venous structures. Following hemorrhoidectomy, effective pain management is crucial to promote recovery and patient comfort. A review of available interventions highlights several approaches for post-operative pain management, including topical ointments or suppositories containing sucralfate, electroacupuncture (EA), distraction techniques such as virtual reality, transcutaneous acupuncture electrical stimulation (TAES), catgut thread insertion at acupuncture points, needle acupuncture therapy, epinephrine-soaked gauze, and absorbable gelatin sponges used as hemostatic agents. Each intervention presents distinct advantages and limitations. Among these options, the application of absorbable gelatin sponges has shown promising effectiveness in reducing pain after hemorrhoidectomy. Gelatin sponges act as both hemostatic and analgesic agents, offering better pain relief compared to traditional gauze soaked in epinephrine. However, the generalizability of these findings must be interpreted cautiously, as the supporting evidence is based on a limited number of studies, many of which were not randomized controlled trials. Considering their affordability, ease of application, and favorable patient outcomes, the use of absorbable gelatin sponges could be recommended as a pain management strategy, particularly in healthcare settings where resources and accessibility allow. Future research with larger, high-quality randomized trials is necessary to confirm these

benefits and assess cost-effectiveness before advocating for widespread implementation.

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Author Contribution
APP and DN : Conceptualization and Study Design, Methodology, Data Curation, Writing – Original Draft, Writing – Review & Editing
AAR, AS and CRH : Conceptualization and Study Design, Methodology, Formal Analysis,
MFS and SAM : Data Curation, Writing – Review & Editing, Methodology, Formal Analysis

Conflict of Interest
All author declare no conflict of interest

Data Availability
The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request

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