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REVIEW

A Comprehensive Evidence Summary for Pain Assessment and Management After Hemorrhoidal Surgery to Inform Clinical Practice Guidelines

Shengwei Zou[1,2,*], Xiaoyu Li[3,*], Ya Bo Yang[1], Yuxuan Zeng[1], Yang Yang[2], Qin Gan[3], Jiliang Su[4], Caiju Lu[5]

[1]School of Nursing, Jiangxi Medical College, Nanchang University, Nanchang, Jiangxi, People's Republic of China; [2]Department of Respiratory Emergency and Critical Care Medicine, The First Affiliated Hospital, Jiangxi Medical College, Nanchang University, Nanchang, Jiangxi, People's Republic of China; [3]Department of Traditional Chinese Medicine, The First Affiliated Hospital, Jiangxi Medical College, Nanchang University, Nanchang, Jiangxi, People's Republic of China; [4]Jiangxi Provincial Key Laboratory of Hematological Diseases, Department of Hematology, The First Affiliated Hospital, Jiangxi Medical College, Nanchang University, Nanchang, Jiangxi, People's Republic of China; [5]Department of Nursing, The First Affiliated Hospital, Jiangxi Medical College, Nanchang University, Nanchang, Jiangxi, People's Republic of China

*These authors contributed equally to this work

Correspondence: Caiju Lu, Department of Nursing, The First Affiliated Hospital, Jiangxi Medical College, Nanchang University, Nanchang, Jiangxi, 330006, People's Republic of China, Email ndyfy01330@ncu.edu.cn

Objective: To evaluate and summarize the best available evidence on pain assessment and management after hemorrhoidal surgery, thereby providing an evidence-based foundation for the future development of clinical practice guidelines.

Methods: Literature was systematically retrieved using the "6S" evidence model, a hierarchical framework designed to prioritize the highest quality synthesized evidence. Searches were conducted across key databases (PubMed, Embase, Cochrane Library) from inception to February 1, 2025. Two independent reviewers performed screening, data extraction, and quality appraisal, with discrepancies resolved by consensus or a third reviewer.

Results: A total of 22 studies were included, comprising 1 clinical decision, 3 guidelines, 7 expert consensuses, 3 evidence summaries, and 8 systematic reviews. These yielded 29 key evidence statements across seven domains: principles of pain management, pain assessment, pharmacological and non-pharmacological interventions, Traditional Chinese Medicine (TCM), wound cleansing and dressing selection, and health education.

Conclusion: This study consolidates 29 evidence-based recommendations from seven clinical domains essential for post-hemorrhoidectomy pain management. These findings directly inform clinical practice guidelines through the establishment of standardized frameworks for validated pain assessment tools, core pain management principles, multimodal analgesia protocols integrating both pharmacological and non-pharmacological interventions, TCM therapeutic approaches, evidence-based wound cleansing and dressing selection standards, and structured health education programs, thereby enabling evidence-driven clinical standardization to improve outcomes.

Keywords: hemorrhoidal surgery, postoperative pain, pain assessment, pain management, evidence summary

Introduction

Hemorrhoids arise from congestion and swelling of the anal venous plexus, clinically manifesting as prolapse, defecation-related bleeding, and pain.[1] This condition ranks among the most prevalent anorectal disorders worldwide,[2] driving substantial healthcare utilization with approximately 3.3 million annual medical consultations in the United States[3] and affecting 50.10% of the Chinese population where hemorrhoids constitute 98.08% of anorectal diagnoses.[4] The resultant economic burden is significant, exemplified by United States hemorrhoid-related expenditures reaching $1.63 billion in 2014.[5]

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There are several treatment options for hemorrhoids, with surgery being the most effective treatment for hemorrhoids that are associated with recurrent prolapse and for which non-surgical treatments have not been effective.[6] The Milligan-Morgan hemorrhoidectomy is a commonly used surgical procedure, and is often considered a reference standard for open excisional hemorrhoidectomy.[7] In recent years, Procedure for Prolapse and Hemorrhoids (PPH), a standardized form of stapled hemorrhoidopexy, has gained widespread application due to its relative technical simplicity and lower postoperative complication rate.[8] Notably, conventional open excisional techniques, such as the Milligan-Morgan procedure, are generally associated with more intense postoperative pain compared to device-assisted approaches like PPH, primarily attributable to the extent of tissue trauma involved.[9] Furthermore, minimally invasive techniques, including laser hemorrhoidectomy, can also effectively reduce post-operative pain and shorten recovery time.[10] However, regardless of the surgical modality employed, postoperative pain remains a virtually inevitable complication. This stems from the unique physiological characteristics of the anorectal region, characterized by dense innervation, susceptibility to muscle spasm, and frequent stimulation during defecation.[11,12]

Postoperative pain is a significant challenge for patients undergoing hemorrhoidectomy. Studies reported that up to 40% of these patients experience significant pain, with approximately 65% rating their pain as moderate to severe.[13] Pain intensity usually peaks within the first 24–48 hours after surgery, coinciding with the resolution of anesthesia and the acute inflammatory phase of wound healing.[14] During this period, activities such as defecation or dressing changes can further aggravate pain perception, and in some patients, heightened sensitivity may persist for up to one week.[15] Persistent pain not only causes considerable subjective distress but also activates the hypothalamic–pituitary–adrenal (HPA) axis, leading to the release of stress hormones such as cortisol.[16] This neuroendocrine response can induce gastrointestinal hypomotility, urinary retention, immune suppression, and sleep disturbances, all of which may hinder wound healing and delay functional recovery.[17]

Although healthcare professionals widely recognize the importance of postoperative pain management, current strategies for controlling pain after hemorrhoid surgery remain suboptimal.[18] Numerous studies have explored various analgesic approaches, including pharmacological therapy, local anesthesia, and physical modalities;[19–21] however, substantial heterogeneity in study design quality, sample sizes, and outcome measures has resulted in evidence of inconsistent quality.[22] More importantly, standardized, evidence-based clinical practice guidelines specifically addressing postoperative pain management in hemorrhoid surgery are lacking.[23] This gap contributes to considerable variability in the choice of assessment tools, timing of interventions, and management protocols, ultimately compromising the quality of patient recovery. Therefore, the present study aims to develop a comprehensive evidence summary for post-hemorrhoidectomy pain management through systematic literature retrieval, rigorous evidence appraisal, and synthesis to inform the development of standardized, evidence-based clinical practice guidelines and ultimately improve patient outcomes.

Methods

Question Identification

The original question was developed according to the PIPOST principles of the JBI Centre for Evidence-Based Health Care in Australia.[24] In this study, the following criteria were considered. P (Population): The target population refers to patients with pain after hemorrhoidal surgery; I (Intervention): assessment, management, and interventions for post-operative pain after hemorrhoidal surgery; P (Professional): The evidence is primarily directed toward healthcare providers involved in direct clinical care of postoperative pain, with secondary applicability for researchers developing interventions and administrators optimizing care pathways; O (Outcome): patients' pain levels, healthcare professionals' knowledge of pain assessment and management after hemorrhoidal surgery, and the incidence of pain-related complications, and other relevant outcomes; S (Setting): the evidence could be applied in anorectal outpatient clinics and wards, and community health centers; and T (Type of evidence): guidelines, systematic reviews, expert consensuses, evidence summaries, and best practices.

Evidence Retrieval

Evidence retrieval is performed via the "6S" evidence resource model. The databases and websites we searched included UpToDate, BMJ Best Practice, Cochrane Library, Joanna Briggs Institute (JBI) Library, National Institute for Health and Care Excellence (NICE), National Guideline Clearinghouse (NGC), Scottish Intercollegiate Guidelines Network (SIGN), Guidelines International Network (GIN), Canadian Medical Association (CMA), New Zealand Guidelines Group (NZGG), Registered Nurses Association of Ontario (RNAO), Medlive, PubMed, Web of Science, Embase, CINAHL, OVID, ProQuest, CNKI, VIP, Wanfang Database, and SinoMed.

The search was conducted through a combination of subject terms and text words. The search terms were (hemorrhoidal surgery OR hemorrhoidectomy OR haemorrhoidectomy) AND (pain OR ache OR sore OR analgesic) AND (guideline OR best practice OR recommendation OR consensus OR summary of evidence OR evidence summary OR systematic review OR meta-analysis OR guidance OR statement). The search period ranged from database establishment to February 1, 2025.

Literature Inclusion and Exclusion Criteria

The criteria for inclusion were as follows: (1) the literature subjects were patients with pain after hemorrhoidal surgery; (2) the literature focused on the assessment, and management of pain after hemorrhoidal surgery; (3) the types of literature included guidelines, systematic reviews, expert consensus, evidence summaries, and best practices; and (4) the literature was published in Chinese or English. The literature that met any of the following criteria was excluded: (1) the literature was an original study, abstract, draft, or translated or interpreted of evidence; (2) the literature was duplicated, revised, or updated; (3) incomplete literature or unable to find full text; or (4) literature with low quality (AGREE II scores <60% for guidelines, AMSTAR 2 ratings of "critically low" confidence, JBI critical appraisal scores <50%). Two researchers individually reviewed the selected literature by initially examining the titles and abstracts, followed by a thorough reading of the full texts. Any points of contention were addressed through a collaborative discussion with a third researcher.

Criteria for Evaluating Literature Quality

Guidelines

The Appraisal of Guidelines for Research and Evaluation (AGREE II)[25] was used to assess the quality of included guidelines. The tool consists of 6 domains with 23 entries, each of which is classified on a scale of 1–7. Based on AGREE II scores, we classified guidelines into three levels using our predetermined thresholds: A, B, or C.

Systematic Reviews

A tool for assessing systematic reviews (AMSTAR 2)[26] was used to assess the quality of the included systematic reviews. The tool contains a total of 16 items, seven of which have a significant impact on the conclusion of the evaluation. Each item was rated as "yes", "partial yes", or "no" according to the degree of fulfilment of the evaluation criteria, and based on the AMSTAR 2 outputs, we categorized the quality of the included systematic reviews into four levels using our scoring thresholds: high, medium, low, and very low.

Expert Consensuses

The Expert Consensus Criteria developed by the Australian JBI Centre for Evidence-Based Health Care Center (2016 Edition)[24] were used to assess the quality of the expert consensus included. The tool consists of six items, each of which is rated as "yes", "no", "unclear", or "not applicable". Quality classifications were derived from our interpretation of these tool outputs.

Evidence Summaries and Best Practices

For evidence summaries and best practices, we assessed the quality by tracing the original literature and selecting the appropriate evaluation tools on the basis of the types of original literature.

Process for Evaluating Literature Quality and Evidence Extraction

Two researchers conducted independent assessments of the literature's quality and gathered relevant evidence. In instances where discrepancies arose, they consulted a third researcher to reach a consensus. When faced with conflicting conclusions from varying sources, they adhered to established principles: emphasizing the importance of evidence-based findings, prioritizing high-quality studies, and favoring recently published authoritative studies.

Criteria for Determining Evidence and Recommendation Levels

The 2014 edition of the JBI grading of evidence and recommendation system was used to grade included evidence,[27] classify evidence into levels 1 to 5, and then based on the JBI-FAME framework (feasibility, applicability, meaningfulness, and effectiveness dimensions), the recommendation strength is determined as Grade A (strong recommendation) or Grade B (weak recommendation). In addition, under the JBI evidence hierarchy, level 5 evidence (expert consensus) can support Grade A recommendations when there is strong professional agreement based on clinical experience and theoretical rationale.

Results

Search results

A total of 872 studies were retrieved after removing duplicates. Two researchers independently screened the titles and abstracts and read the full texts. Finally, 22 studies were obtained, including 1 clinical decision,[28] 3 guidelines,[29–31] 7 expert consensuses,[19,20,32–36] 3 evidence summaries,[21,37,38] and 8 systematic reviews.[39–46] The literature selection process is shown in Figure 1, and the basic characteristics of the included studies are shown in Table 1.

Quality Evaluation Results of the Included Literature

Guidelines

Three guidelines were included in this study.[29–31] One has a standardized score of 60% or more in 6 fields, with a recommendation level of A. The rest of the guidelines have a recommendation level of B.

Systematic Reviews

Eight systematic reviews were included,[39–46] three were of high quality,[42,44,46] and they had only one non-critical entry that was inconsistent. Five systematic reviews were of medium quality,[39–41,43,45] and they had more than one item that was inconsistent but did not affect the results.

Expert Consensus

Seven expert consensuses were included,[19,20,32–36] and all of them met the first five items. Five expert consensuses[19,20,34–36] were answered as "unclear" in the sixth item. Although domain six of AGREE II was marked "unclear" in five consensuses,[19,20,34–36] the overall quality was deemed high due to clarity, rigor, and consistency across the other domains. Therefore, all expert consensuses were of high quality and were included.

Other Studies

One clinical decision[28] and three evidence summaries[21,37,38] were included. Clinical decisions from UpToDate and evidence summaries from the JBI are considered high quality based on their institutional rigor, comprehensive internal review standards, and widespread acceptance as authoritative sources by clinical consensus. Evidence that fits the clinical context of the study can be directly selected and cited for its strength of evidence and level of recommendation.

Evidence Description and Summary

The evidence was summarized in 7 fields: principles of pain management, pain assessment, pharmacological intervention, non-pharmacological intervention, Traditional Chinese Medicine (TCM), wound cleansing and dressing selection, and health education, with a total of 29 pieces of relevant evidence extracted, as shown in Table 2. Among these domains,

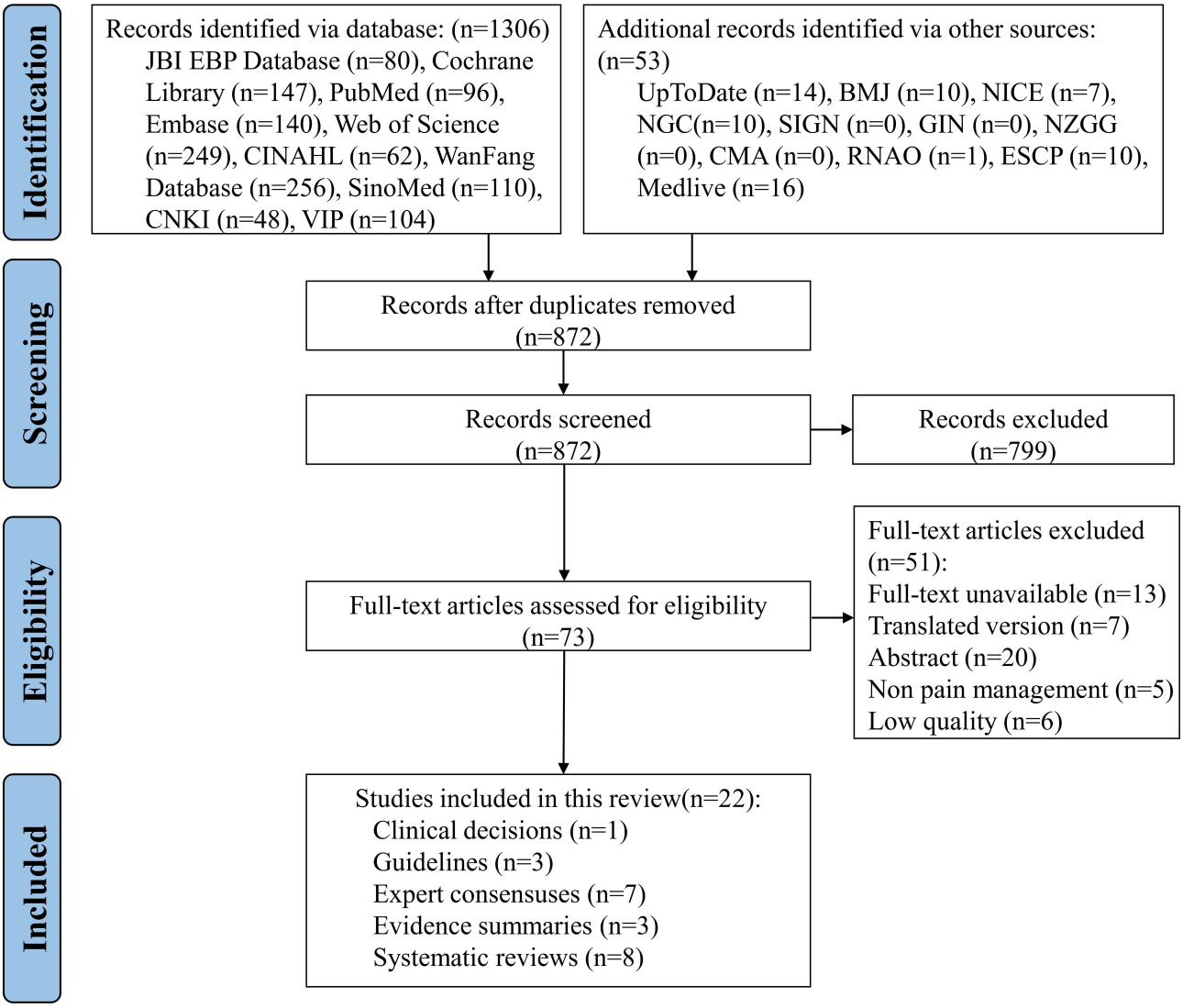

Figure 1 Flow diagram outlining the evidence selection process.

pharmacological interventions and pain assessment yielded the most comprehensive evidence base, while Traditional Chinese Medicine and wound cleansing showed more limited high-quality evidence, indicating areas for future research prioritization.

Table 1 Characteristics of the Included Literature

Included Literature	Year	Literature Sources	Type of Literature	The Literature Theme
Bleday.[28]	2022	UpToDate	Clinical decision	Patient education: Hemorrhoids (Beyond the Basics)
Higuero et al[30]	2016	Web of Science	Guideline	Guidelines for the treatment of hemorrhoids (short report)
Registered Nurses' Association of Ontario.[29]	2013	RNAO	Guideline	Assessment and Management of Pain (Third Edition)
Ternent et al[31]	2015	Medlive	Guideline	Clinical practice guideline for ambulatory anorectal surgery
Gallo et al[33]	2020	PubMed	Expert consensus	Consensus statement of the Italian Society of Colorectal Surgery (SICCR): management and treatment of hemorrhoidal disease

(*Continued*)

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Table 1 (Continued).

Included Literature	Year	Literature Sources	Type of Literature	The Literature Theme
Chen et al[32]	2021	Medlive	Expert consensus	Expert consensus on surgical accelerated rehabilitation surgery for benign anal diseases
Expert Group of Expert Consensus on Clinical Application of Fufang Jingjie for Fumigation and Washing.[35]	2022	Medlive	Expert consensus	Expert consensus on the clinical application of Fufang Jingjie for Fumigation and Washing
Colorectal and Anal Diseases Committee of the World Federation of Chinese Medicine Societies.[34]	2023	Wan fang	Expert consensus	Expert consensus on perioperative management of haemorrhoids
Yu et al[36]	2022	CNKI	Expert consensus	Expert consensus on the clinical application of Gangtai suppository (ointment)
Chinese Society of Anesthesiology.[19]	2017	CNKI	Expert consensus	Expert consensus on pain management after surgery in adults
Chen et al[20]	2020	CNKI	Expert consensus	Consensus of experts on daytime operation for hemorrhoid diagnosis and treatment (2020 Edition)
Lizarondo et al[21]	2023	JBI	Evidence summary	Surgical Patients: Pain Assessment (Adults)
Magtoto et al[38]	2023	JBI	Evidence summary	Pain Management During Wound Care: Wound Care Technique
Johal et al[37]	2022	JBI	Evidence summary	Wound Management: Assessment of Pain During Dressing Change
Perivoliotis et al[43]	2023	PubMed	Systematic review	Comparison of ointment-based agents after excisional procedures for hemorrhoidal disease: a network meta-analysis of randomized controlled trials
Yang et al[45]	2023	PubMed	Systematic review	Comparing the efficacy and safety of different analgesic strategies after open hemorrhoidectomy: a systematic review and network meta-analysis
Ye et al[46]	2022	Web of Science	Systematic review	Three Acupuncture Methods for Postoperative Pain in Mixed Hemorrhoids: A Systematic Review and Network Meta-Analysis
Du et al[39]	2022	Embase	Systematic review	Electroacupuncture for postoperative pain in mixed hemorrhoids: A meta-analysis
Fu et al[40]	2022	Embase	Systematic review	Efficacy and safety of micronized purified flavonoid fractions for the treatment of postoperative hemorrhoid complications: A systematic review and meta-analysis
Huang et al[41]	2018	Web of Science	Systematic review	Topical diltiazem ointment in post-hemorrhoidectomy pain relief: A meta-analysis of randomized controlled trials
Liu et al[42]	2016	Embase	Systematic review	Effect of Glyceryl Trinitrate Ointment on Pain Control After Hemorrhoidectomy: A Meta-analysis of Randomized Controlled Trials
Xia et al[44]	2020	Web of Science	Systematic review	Topical analgesia following excisional haemorrhoidectomy: a systematic review and meta-analysis of randomised controlled trials

Table 2 Summary of Evidence

Category	Content of Evidence	Level of evidence	Recommended level
Principles of pain management	1. Multimodal Analgesia Strategy is recommended to relieve postoperative pain in hemorrhoids.[20,34]	5	A
	1. Pain management goals include achieving a Visual Analogue Scale (VAS) of less than or equal to 3 points, minimizing analgesic-related adverse events, and remaining pain-free during the perioperative period.[32]	4	A
	1. It is recommended to establish an individualized care plan to manage pain.[37]	5	B
Pain assessment	1. The causes of pain include the surgical area being located in the perianal region which has a keen sense of pain, and the surgical trauma can lead to severe pain; the wound is contaminated by feces when defecation occurs after the operation; the nerve compression effect during the scar formation process and the spasm of anal sphincter caused by the wound inflammatory edema.[32,33]	5	A
	1. It is recommended that the assessment of pain should consider the duration of pain, type of pain, impact of pain, severity/intensity of pain, temporal aspects of pain, and provocative factors.[21,37]	5	A
	1. The patient's age, cognitive status, level of consciousness, level of education, and culture and ethnicity should all be taken into account when selecting a pain assessment tool.[21,29]	5	A

(*Continued*)

Table 2 (Continued).

Category	Content of Evidence	Level of evidence	Recommended level
	1. Patients' responses to pain treatment should be monitored using validated pain assessment tools such as the Numerical Rating Scale (NRS), Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), and Wong-Baker Faces pain scale revision (FPS-R).[19–21]	4	A
	1. The assessment of pain relief should consider both static and dynamic pain.[19]	5	B
Pharmacological intervention	1. To anticipate early postoperative pain, analgesics should be administered before surgery or intraoperatively and continued postoperatively.[32]	4	B
	10. Preoperative oral administration of acetaminophen and gabapentin, in combination with intravenous ketamine and dexamethasone, can reduce pain and speed recovery.[30]	3	B
	11. A postoperative injection of liposomal bupivacaine provides long-lasting analgesia.[34]	5	B
	12. Micronized purified flavonoid fractions is recommended at a dose of 1800–2700 mg/day to significantly reduce wound edema and pain.[40]	1	B
	13. Applying topical nitroglycerin is effective for pain relief and wound healing after hemorrhoidal surgery.[31,42]	1	A
	14. Aluminium thiosulphate ointment promotes wound healing after hemorrhoid surgery, reduces postoperative pain, and reduces the number of oral anesthetics.[20]	3	B
	15. Metronidazole is beneficial for significant pain relief on postoperative days 1, 7, and 14.[43,44]	1	B
	16. Topical application of calcium channel blockers such as diltiazem or nifedipine to the perianal skin effectively reduces postoperative pain[40,41,45]	5	A
	17. Analgesic suppository ointment is beneficial in reducing wound swelling and postoperative pain.[36]	5	C
	18. Administration of Butorphanol tartrate nasal spray at times causing pain, such as defecation and medication change, may improve patient comfort.[34]	5	A
Non-pharmacological intervention	19. Psychological interventions such as cognitive behavioral therapy, music, distraction, and relaxation techniques can reduce pain by influencing the way a person thinks, feels, and responds to pain.[29]	5	B
	20. Sitz baths work by improving blood flow and relaxing the internal anal sphincter, which helps to treat and relieve pain.[28]	5	A
	21. Warm water sitz bath 40 °C 5 ~ 10 min, 2–3 times a day, can reduce edema, and pain, and promote the growth of granulation tissue in patients after hemorrhoidal surgery.[34]	4	A
Traditional Chinese Medicine (TCM)	22. Acupuncture therapy enhances overall recovery and reduces pain scores following mixed hemorrhoid surgery. Acupoint application is found to be more effective than auricular plaster and acupoint catgut embedding.[46]	1	A
	23. It is recommended that electroacupuncture is an effective method of pain relief after hemorrhoidal surgery.[39]	1	A
	24. Acupuncture is a simple, safe, and effective treatment, and its benefits for postoperative pain increase over time.[34]	2	A
	25. Applying Fufang Jingjie on the anal area for fumigation and sitz bath can directly treat postoperative trauma of mixed hemorrhoids. This method helps in clearing heat, drying dampness, improving blood circulation, reducing swelling, alleviating pain and bleeding, and promoting the healing of traumas.[35]	3	C
Wound cleansing and dressing selection	26. The use of heated saline to clean the wound is recommended to maintain blood flowing to the bed and to reduce the patient's pain.[38]	5	A
	27. Dressings are applied and removed with minimal trauma and pain, taking into account wear time, moisture balance, and peri-wound maceration. If the dressing causes pain, bleeding, trauma on removal, or requires soaking to remove, the choice of dressing should be reconsidered.[38]	5	A
Health education	28. Healthcare professionals may consider educational interventions as adjunctive interventions in the management of pain.[28]	5	A
	29. It is recommended that a multidisciplinary team of surgeons, anesthesiologists, and charge nurses communicate with patients and relatives about the anesthesia and surgical procedure and pain management strategies to patients, their families, and caregivers through face-to-face, written or multimedia communication.[29]	5	A

Discussion

Principles of Pain Management

Evidence 1–3 summarize the main principles of pain management after hemorrhoidal surgery, which are of high grade and practicality, and are recommended for adoption and application by clinical staff. The concept of multimodal analgesia was first proposed by Kehlet in 1977,[47] and it refers to the simultaneous use of multiple analgesic modalities and analgesic medications for synergistic analgesia. Since multimodal analgesia can block multiple pain receptors simultaneously, block pain pathophysiological mechanisms and target sites, and minimize pain, its analgesic effect is

remarkable and has become the internationally recommended mainstream analgesic mode.[48,49] The European ERAS Society recommends a multimodal analgesic program based on epidural block, postoperative incision long-acting local anesthetic infiltration, and selective COX-2 inhibitors.[50] In addition, as each patient experiences pain differently, an individualized care and management plan should be developed on the basis of the patient's actual situation.[37] After the implementation of a pain management plan, the ideal goals include achieving a Visual Analogue Scale (VAS) of less than or equal to 3 points, minimizing analgesic-related adverse events, and remaining pain-free during the perioperative period.[32]

However, several implementation challenges warrant consideration. Resource limitations in healthcare settings may restrict access to specialized anesthetic techniques such as epidural blockade;[51] Significant variability in surgical approaches and patient populations across published studies limits the direct applicability of standardized protocols;[52] Furthermore, the integration of multimodal regimens requires coordinated multidisciplinary care, which may present logistical challenges in certain clinical environments.[53] These barriers underscore the importance of developing institution-specific protocols that adapt evidence-based principles to local resources and capabilities while maintaining therapeutic efficacy.

Pain Assessment

Evidence 4–8 summarize the aspects of pain assessment after hemorrhoidal surgery, including the causes of pain, what to assess for pain, the choice of assessment tools, and the timing of assessing the effectiveness of analgesia. These pieces of evidence are of high grade and are important for improving the accuracy of pain assessment by healthcare professionals and are recommended for use. The nerve compression effect during the scar formation process and the spasm of anal sphincter caused by the wound inflammatory edema.[32,33] Some Multiple studies have reported that postoperative pain intensity differs significantly according to patients' demographic and psychological characteristics, with female patients, younger individuals, and those with a history of depression or anxiety experiencing more severe pain.[54–56] The pathophysiological basis of this association appears to operate largely at the cognitive level, as depression is frequently accompanied by cognitive dysfunction that may lower the threshold for acute postoperative pain.[57] In addition, depression is associated with immune dysregulation and a higher risk of infection, which can further amplify pain after hemorrhoidectomy.[54] This multifactorial interplay underscores the need to integrate both physiological and psychological dimensions into perioperative pain assessment and management to optimize postoperative outcomes. When assessing patients with postoperative pain after hemorrhoidal surgery, due consideration should be given to the duration of pain, type of pain, impact of pain, severity/intensity of pain, temporal aspects of pain, and provocative factors.[21,37]

When utilizing a pain assessment tool, the patient's age, cognitive status, level of consciousness, level of education, culture, and ethnicity should be considered.[21] Patients' responses to pain treatment should be monitored via validated pain assessment tools such as the Numerical Rating Scale (NRS), Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), and Wong-Baker Faces pain scale revision (FPS-R).[19–21] However, most validated pain assessment tools are universal scales, and there is no operational pain assessment tool for specific cases of postoperative hemorrhoidal trauma. Therefore, future research should explore and develop an assessment tool for postoperative hemorrhoidal pain to establish a basis for standardizing postoperative hemorrhoidal pain assessment. In addition, to assess pain relief in postoperative hemorrhoidal patients, the same tool should be used for the same patient to assess static and dynamic pain.[19]

Pharmacological Intervention

Evidence 9–18 summarize the pharmacological interventions for postoperative analgesia in hemorrhoids, of which evidence 9, 11, 16, 17 and 18 are of high grade and can be directly applied in clinical practice; the rest of the evidence is of lower quality and should be selected for use rationally in the context of the actual clinical situation. Pharmacological intervention is an important intervention modality for reducing postoperative hemorrhoidal pain, and commonly used drugs include non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen, and opioids.[58] Opioids are effective for analgesia, but they can cause addiction and serious adverse effects such as respiratory depression and increased risk of

death, and reducing their use has been a focus of research in recent years.[59,60] Susmallian et al[61] found that "around-the-clock" analgesic treatment (ACAT) can reduce doses of opioids, ranging from 38% to 68%, compared with "on-demand" analgesic treatment.[62] NSAIDs cause hypersensitivity reactions;[63] in addition, they adversely affect the gastric mucosa and should be avoided in patients with peptic ulcers.[64]

Depending on the type of drug delivery, pharmacological interventions can be classified as topical, oral, intravenous, or intrathecal. Topical use of calcium channel blockers reduces postoperative hemorrhoidal pain by decreasing internal sphincter spasms due to myocyte obstruction and subsequent smooth muscle relaxation. However, they may cause adverse effects such as headaches and flushing.[65] Nitroglycerin has a low grade of evidence for pain relief after hemorrhoidal surgery and may also cause headaches and postural hypotension, which are not recommended for clinical use.[66] Compared with non-pharmacological interventions, although pharmacological interventions for pain relief are fast-acting and effective, they present disadvantages such as significant side effects and reliance on a single component in the treatment, which has certain limitations. Therefore, pharmacological interventions should be combined with other interventions to reduce the occurrence of adverse effects and improve the pain relief effect.

The evidence base for pharmacological interventions exhibits substantial heterogeneity in study quality and methodology. Topical interventions appear promising but are constrained by small sample sizes and short follow-up periods. The focus on calcium-channel blockers and local anesthetics seems to reflect regional preferences rather than broad consensus; moreover, the high-grade evidence supporting nitroglycerin (Evidence 13) conflicts with reports of notable clinical adverse effects and therefore requires careful consideration before routine clinical use.

Non-Pharmacological Intervention

Evidence 19–21 summarize non-pharmacological interventions after hemorrhoidal surgery, which are at a high level of evidence and suitable for application in clinical practice. Non-pharmacological pain management offers a variety of options for pain control without drugs, with varying degrees of established efficacy.

Warm sitz baths are often recommended for patients with anal pain and patients undergoing anal surgery; warm sitz baths provide pain relief by relaxing the internal anal sphincter. Healthcare professionals can consider using a warm water sitz bath to optimize patient comfort as early as 6 hours after hemorrhoidal surgery.[67] The evidence demonstrates measurable benefits, with Liao et al[68] showed that sitz baths with ozonated water reduced pain and accelerated healing in patients after hemorrhoidal surgery compared to standard care. While traditional warm water sitz baths are commonly recommended, the enhanced efficacy of ozonated water suggests potential for optimized protocols, though access and cost considerations may limit widespread implementation.[68] Cognitive interventions such as meditation, guided imagery, or hypnosis can divert the patient's attention away from the adverse events and promote relaxation.[69] In addition, physical therapy and music therapy can manage postoperative pain.[70] However, these interventions show considerable variation in implementation protocols and outcome measurement, making direct comparison challenging.

The comparative effectiveness of these interventions remains limited due to the large number of non-pharmacological interventions and the lack of inter-comparison. Current evidence suggests that warm sitz baths may offer the most consistent and accessible first-line approach, while cognitive interventions may be particularly valuable for patients with high anxiety levels or those preferring active coping strategies.[13,71] Therefore, the choice of non-pharmacological interventions in clinical practice should be based on the professional judgment of healthcare professionals and the needs of patients. Healthcare professionals should consider combining multiple modalities when single interventions prove insufficient, while remaining mindful of patient burden and resource constraints in their clinical decision-making process.

Traditional Chinese Medicine (TCM)

Evidence 22–25 summarize Traditional Chinese Medicine (TCM) therapy after hemorrhoidal surgery, which demonstrate heterogeneous evidence quality. While most TCM interventions have a low level of evidence and should be applied selectively according to clinical practice, notable exceptions exist within specific modalities. TCM therapy offers benefits such as ease of use, safety, and minimal side effects.[72]

Acupuncture, as an important part of TCM, primarily consists of auricular molds, acupoint applications, and acupoint catgut embedding.[46] Importantly, this domain shows significant variation in evidence quality: while general acupuncture evidence remains limited, specific interventions demonstrate robust support. Acupoint application, supported by high-quality evidence (Level 1, Grade A), is more effective than auricular plaster or acupoint catgut embedding, and it outperforms analgesics during the postoperative intervals of 24 h, 48 h, and 72 h.[46] However, although acupuncture has an effective analgesic effect after hemorrhoid surgery, its specific mechanism of action is not clear.[73] This paradox illustrates the heterogeneous nature of evidence within the TCM domain, where specific well-studied interventions may have strong evidence despite the generally limited quality of TCM research overall.

TCM interventions is complex and requires careful interpretation. This complexity is exemplified by the contrast between high-quality evidence supporting specific interventions like acupoint application and the generally limited evidence base for other TCM modalities. Although systematic reviews suggest potential benefits of acupuncture-related approaches (Evidence 22–23), the quality of the underlying primary studies remains limited, and most were conducted in Asian healthcare systems where TCM is more fully integrated. Evidence for compound Jingjie formulations (Evidence 25) rests primarily on expert consensus rather than rigorous clinical trials. Healthcare professionals should recognize this evidence heterogeneity when making clinical decisions, giving greater consideration to specific interventions with robust evidence while maintaining appropriate caution regarding interventions with limited support. Healthcare professionals outside Asia should account for needs related to specialist training, protocol standardization, and patient acceptability when implementing TCM-based approaches. These interventions may be useful adjuncts within a multimodal framework but should not replace established analgesic strategies.

Wound Cleansing and Dressing Selection

Evidence 26–27 summarize the methods of wound cleansing and dressing selection after hemorrhoidal surgery, which possess strong evidence and are endorsed for clinical practice. Saline is commonly utilized for wound irrigation as an isotonic solution that does not disrupt the natural wound healing process.[74] The use of heated saline to clean the wound is recommended to maintain blood flow to the bed and to reduce patient pain.[38] Additionally, dressings can adhere to fragile wound surfaces due to exudates from wound dehydration or crusting, and removing dressings with high peeling forces can cause mechanical damage that can lead to pain.[75] Careful dressing selection has been shown to minimize wound pain.[76] If a dressing causes pain, bleeding, or trauma upon removal, or requires soaking for removal, the choice of dressing should be reconsidered.[38]

Health Education

Evidence 28 and 29 summarize pain health education for post-hemorrhoidal surgery patients, which are of a high level of evidence and recommended for clinical practice. Health education interventions improve patient pain knowledge, attitudes, and behaviors by providing a simple, personalized, and inexpensive source of information.[77] The American Pain Society suggests that healthcare providers offer tailored health education to both patients and their families, encompassing details about treatment choices and strategies for managing pain after surgery.[78] Faurie et al[79] showed that health education can reduce patients' pain and reduce its impact on quality of life, especially in individuals with more education and greater baseline pain. Therefore, health education interventions can be used as interventions for postoperative pain management after hemorrhoidal surgery. The content of pain health education mainly includes pain perception and pain management methods.[80] In addition, research in recent years has shown that Pain Neuroscience Education reduces pain by increasing patients' awareness of the biological processes and mechanisms that contribute to pain reduction and can be used as a perioperative educational activity.[81] It is recommended that a multidisciplinary team of surgeons, anesthetists, and charge nurses communicate with patients and relatives about the anesthesia and surgical procedures and pain management strategies to patients, their families, and caregivers through face-to-face, written, or multimedia communication.[29,32]

Integration of ERAS Protocols

The body of evidence compiled here is consistent with key ERAS principles for colorectal surgery—especially multimodal pain control and patient education—yet there remains a clear disconnect between general ERAS guidance and evidence specific to hemorrhoid surgery. While ERAS frameworks promote regional anesthesia and opioid-reduction tactics, the hemorrhoid literature has not thoroughly assessed these strategies. Recommendations for warm sitz baths (Evidence 20–21) fall outside conventional ERAS recommendations, indicating that tailored hemorrhoid protocols might necessitate adjustments to standard perioperative care pathways.

Evidence Synthesis and Translational Pathways

This study used systematic, multi-domain integration and a transparent GRADE evaluation to offer a holistic perspective on postoperative hemorrhoidal pain management that reflects clinical complexity, and it also reveals actionable synergies: pairing rapid-acting pharmacotherapy with non-pharmacological strategies can reduce medication burden, and carefully selected TCM adjuncts may bolster multimodal efficacy. Patient education stands out as a unifying element, supporting neuroscience-informed engagement and culturally adapted assessment to connect and optimize diverse interventions.

Several key limitations emerge from this evidence synthesis. First, the absence of validated, hemorrhoid-specific pain assessment instruments constitute a fundamental gap that impedes the standardization of outcome measurement. Second, substantial discrepancies exist between expert-consensus recommendations and findings from systematic reviews, particularly regarding the optimal duration of analgesia and dosing regimens. Third, the evidence base exhibits geographic bias, with limited representation from diverse healthcare systems and patient populations. These limitations collectively point to risks in translating evidence into practice. When guidelines rely on expert consensus without high-quality validation, they may reinforce regional preferences rather than evidence-based choices. Likewise, unless the geographic concentration of TCM data is reconciled through cross-cultural validation studies, its adjunctive value will be difficult to justify as a basis for global recommendations.

To address these gaps, future research should prioritize the development and validation of hemorrhoid-specific pain metrics to support robust comparative studies. Direct comparisons of pharmacological, non-pharmacological, and TCM modalities within multimodal frameworks are needed to evaluate synergistic effects, and investigations of personalized protocols guided by psychological and demographic predictors should be undertaken. Cross-cultural validation of promising TCM techniques such as acupoint application is essential, alongside assessment of AI-assisted interventions and health-economic evaluations across varied clinical settings.

Conclusion

In summary, this study establishes a framework for evidence-based management of hemorrhoid-related pain across seven key domains. The findings indicate that multimodal analgesic regimens, validated pain assessment instruments, and nonpharmacological interventions are clinically applicable and, in many settings, can be implemented without substantial additional resources. Translating this evidence into actionable clinical practice guidance requires systematic engagement with key stakeholders, including colorectal surgeons, pain management specialists, and nursing staff. Implementation should proceed in phases, starting with well-established interventions while concurrently developing the infrastructure needed for emerging therapies. Quality metrics should incorporate clinical outcomes and patient-reported experience measures to ensure a comprehensive evaluation of intervention impact. Future research priorities include developing and validating hemorrhoid-specific pain assessment instruments, conducting direct comparative effectiveness studies of multimodal versus single-modality approaches, and standardizing adjunctive therapies. Long-term outcome studies that compare surgical techniques and pain management strategies are also urgently needed.

Disclosure

The authors report no conflicts of interest in this study.

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