



Randomized Controlled Trial

Auricular acupressure for postoperative pain and recovery in patients with anal fistula and abscess

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Abstract

BACKGROUND

Anal pain, slow wound healing, and a high risk of complications after surgical treatment of a perianal abscess combined with an anal fistula affect a patient's quality of life and sleep.

AIM

To analyze syndrome-differentiated auricular acupressure for postoperative recovery in patients who underwent anorectal surgery.

METHODS

We included 100 patients hospitalized with anal fistulas and perianal abscesses at the Hebei Provincial Hospital of Traditional Chinese Medicine from January 2022 to June 2023. The patients were divided into two groups using a 1:1 randomized controlled design. Patients in the control group ($n = 50$) were admitted for routine nursing intervention, and those in the observation group ($n = 50$) received auricular acupressure with Wangbuliuxing seeds based on syndrome differentiation and acupoint selection based on routine nursing. The outcomes included urinary symptoms, healing time, pain, sleep, and complications.

RESULTS

The first urinary symptom score (lower abdominal symptoms, waiting time for urination, incomplete urination, and urinary difficulty, healing time) was lower in the observation group (3.90 ± 1.39 , 3.66 ± 1.26 , 3.54 ± 1.16 , 3.48 ± 1.11 , and 16.70 ± 3.05) than in the control group (5.94 ± 0.96 , 5.28 ± 1.29 , 5.40 ± 1.21 , 5.34 ± 1.26 , and 21.26 ± 3.37). Wound healing time was shorter in the observation group than in

the control group. On postoperative days 3, 7, and 14, Pittsburgh Sleep Quality Index scores and visual analog scale scores were lower in the observation group (4.30 ± 0.46 , 3.42 ± 0.50 , 2.26 ± 0.44 , 10.86 ± 2.04 , 8.92 ± 1.21 , and 6.26 ± 1.03) than in the control group (4.90 ± 0.42 , 3.92 ± 0.27 , 2.78 ± 0.42 , 12.46 ± 2.12 , 10.36 ± 1.38 , and 8.02 ± 1.24). The incidence of complications was significantly lower in the observation group (4.00%) than in the control group (16.00%).

CONCLUSION

Syndrome-based auricular acupressure in patients with anal fistula/abscess improved postoperative urination, pain, wound healing, and sleep and reduced complications.

Key Words: Perianal abscess; Anal fistula; Syndrome differentiation and acupoint selection; Auricular acupressure with seeds; Pain; Sleep

Core Tip: This study applied auricular acupressure with seeds based on syndrome differentiation and acupoint selection for the postoperative care of perianal abscesses complicated by anal fistulas. The feasibility of achieving rapid postoperative recovery by selecting auricular acupressure with seeds based on syndrome differentiation and acupoint selection was verified by observing effective indicators such as the first postoperative urinary symptom score, wound healing time, pain, sleep status, and complications from traditional Chinese medicine and dialectical nursing, which provide a safe and new approach for postoperative pain relief.

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INTRODUCTION

Anal and perianal fistulas are the most prevalent proctological conditions. Approximately 26%-37% of patients with perianal abscesses may develop anal fistulas, making surgical intervention a common clinical necessity[1]. Despite its necessity, surgery often leads to considerable postoperative pain, wound contamination, and delayed healing, which can severely hinder recovery and adversely affect patients' physical and mental wellbeing[2].

The management of postoperative pain remains a considerable clinical challenge. These mechanisms are multifactorial and involve surgical trauma, potential wound infection, and psychological stress responses. Conventional management typically relies on oral or topical analgesics, which often provide insufficient relief and may be associated with side effects, highlighting a significant gap in optimal pain control strategies[3].

Auricular acupressure is a non-pharmacological therapeutic modality used in traditional Chinese medicine (TCM)[4,5]. The TCM theory posits that the auricle is a microsystem representing the entire body, where specific points correspond to internal organs and structures. Stimulating these points may regulate physiological functions and treat corresponding disorders[6]. This method can manage pain and improve outcomes in various clinical contexts owing to its potential to modulate pain pathways and promote relaxation.

However, the specific application of syndrome-differentiated auricular acupressure in the postoperative care of patients with anal fistulas or perianal abscesses lacks sufficient study. High-quality evidence is needed to determine its efficacy in improving postoperative recovery outcomes. Therefore, this study aimed to investigate the effect of syndrome-differentiated auricular acupressure on postoperative pain, urination, wound healing, sleep quality, and complications in this patient population to provide an effective complementary approach to postoperative management.

MATERIALS AND METHODS

Participants

We selected 100 patients hospitalized with anal fistulas and perianal abscesses at Hebei Provincial Hospital of TCM from January 2022 to June 2023. The inclusion criteria were as follows: Patients who met the diagnostic criteria of western[7] and traditional Chinese[8] medicine for perianal abscess; diagnosis confirmed by clinical manifestations, ultrasound, or rectal digital examination; syndrome differentiation characterized by excessive heat and toxins; first occurrence of low anal fistula and perianal abscess; age between 20 and 60 years; underwent partial fistula incision surgery; no use of painkillers or other medications that may affect a condition before enrollment; and provided informed consent and signed relevant documents. The exclusion criteria were as follows: Absence of digestive tract infectious diseases or other anal diseases; combined dysfunction of important organs such as the liver, kidney, and heart; conditions such as diabetes, cardiovascular and cerebrovascular diseases, mental system disease; malignant tumors; abnormal coagulation function; poor treatment compliance; skin damage, scars, or infections at acupoint sites; pregnant and lactating women; and

voluntary withdrawal, discharge, transfer, or death during the study period. This prospective study was approved by the Ethics Committee of Hebei Provincial Hospital of TCM.

The participants were divided into two groups using a 1:1 randomized controlled design, and each group included 50 patients. A total of 33 men and 17 women were included in this study. The age of the patients in this group was between 24 and 58 years (43.46 ± 10.58 years). The disease course was 6-18 days (12.22 ± 3.37 days). The average body mass index was $19.82\text{--}25.18$ kg/m² (22.45 ± 1.63 kg/m²). Meanwhile, the control group comprised 30 men and 20 women. Their age was between 23 years and 56 years (42.89 ± 9.64 years). Their disease course was 6-17 days (12.29 ± 3.41 days). Their mean body mass index was $19.41\text{--}25.13$ kg/m² (22.50 ± 1.75 kg/m²). Age, disease course, and body mass index did not significantly differ between the two groups ($P > 0.05$).

Treatment methods

The control group received routine nursing interventions including health education, daily life guidance, psychological care, and dietary guidance. On postoperative day 3, the patients were orally administered paracetamol and dihydrocodeine tartrate tablets (Weihai Lutan Pharmaceutical Co., Ltd., national medical approval No. H20030920, specification: Each tablet contained 10 mg of dihydrocodeine tartrate and 0.5 g of acetaminophen, China) twice daily for 14 consecutive days.

The observation group received auricular acupressure with seeds based on syndrome differentiation and acupoint selection based on routine nursing. Starting 6 hours postoperatively, auricular acupressure with seed therapy was administered at the following acupoints: Double ear Shenmen, heart, endocrine, subcortical, sympathetic, rectal, anal, kidney, spleen, and stomach acupoints. First, a filiform needle handle was used to press individually within the range of the above acupoints, identify the sensitive points, and mark them. The selected acupoints were disinfected with 75% ethanol, a 5 mm × 5 mm adhesive tape was cut, and Wangbuliuxing seeds were applied to the center of the tape before attaching them to the aforementioned acupoints. Patients or family members were instructed to press on the above acupoints every day, 2-3 minutes each time at 3-5 times a day at a fixed time from 7:00 to 9:00 (stomach), 9:00 to 11:00 (spleen), 11:00 to 13:00 (heart), and 17:00 to 19:00 (kidney). This method as indicated for patients who experienced local soreness, numbness, swelling, pain, and fever. When pressing, the strength was controlled to avoid skin damage, and both ears were pressed alternately. The ear patch was replaced every 3 days for 14 days of continuous intervention.

Observation indicators

First urinary symptom score and wound healing time: Two groups of patients were evaluated for their first urinary symptoms postoperatively using the "Diagnostic Criteria and Therapeutic Efficacy Assessment for Diseases and Syndromes in TCM"[9], including lower abdominal symptoms, waiting time for urination, incomplete urination, and urinary difficulty. Severe, moderate, mild, and asymptomatic symptoms were scored 9 points, 6 points, 3 points, and 0 point, respectively. The healing times of the two wound groups were recorded.

Pain: Two groups of patients were evaluated for anal pain using the visual analog scale (VAS) preoperatively and on postoperative days 3, 7, and 14[10]. A Vernier ruler with a 0-10 scale was selected, with 0 indicating no pain, 1-3 indicating pain during defecation, 4-6 indicating intermittent but tolerable pain, 7-9 indicating persistent and intolerable pain, and 10 indicating severe pain. The patients selected a scale based on their condition.

Sleep: The two groups were evaluated using the Pittsburgh Sleep Quality Index (PSQI) preoperatively and on postoperative days 3, 7, and 14[11]. The scale included 19 self-evaluation items and 5 other-evaluation items; other evaluation items were not included in the scoring. Nineteen self-evaluation items were summarized into the following seven dimensions: Sleep quality, time to fall asleep, sleep efficiency, sleep time, adjunctive drug use, sleep disorders, and daytime dysfunction. Each dimension was rated on a 4-point scale between 0 and 3, and the cumulative score of all dimensions comprised the total scale score, which ranged from 0 to 21. A total score of 0-5 points signified excellent sleep quality, 6-10 points indicated average sleep quality, 11-15 points indicated poor sleep quality, and 16-21 points indicated very poor sleep quality.

Complications: The incidences of postoperative wound infection, anal incontinence, and urinary retention were recorded in both groups.

Statistical analysis

Data were processed using the SPSS version 24.0. For the preliminary analysis of the measurement data, normality was first verified using the Shapiro-Wilk test. Normally distributed data are described as mean ± SD, and a *t*-test was conducted. Count data are described as percentages, and an χ^2 test was conducted. Statistical significance was set at $P < 0.05$.

RESULTS

A comparison of the first urinary symptom scores and wound healing time between the two groups is summarized in Table 1. The observation group demonstrated lower incidences of abdominal symptoms, waiting time for urination, incomplete urination, and urinary difficulty (3.90 ± 1.39 , 3.66 ± 1.26 , 3.54 ± 1.16 , 3.48 ± 1.11 , and 16.70 ± 3.05 , respectively) than the control group (5.94 ± 0.96 , 5.28 ± 1.29 , 5.40 ± 1.21 , 5.34 ± 1.26 , and 21.26 ± 3.37 , respectively) ($P < 0.001$). Wound

Table 1 Comparison of first urinary symptom score and wound healing time between the two groups (mean $\pm$ SD)

Groups	Patients	First urinary symptom score				Wound healing time (days)
		Lower abdominal symptoms	Waiting time for urination	Incomplete urination	Urinary difficulty	
Observation group	50	3.90 $\pm$ 1.39	3.66 $\pm$ 1.26	3.54 $\pm$ 1.16	3.48 $\pm$ 1.11	16.70 $\pm$ 3.05
Control group	50	5.94 $\pm$ 0.96	5.28 $\pm$ 1.29	5.40 $\pm$ 1.21	5.34 $\pm$ 1.26	21.26 $\pm$ 3.37
T value		8.555	6.353	7.825	7.846	7.088
P value		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

healing time was shorter in the observation group (16.70 $\pm$ 3.05) than in the control group (21.26 $\pm$ 3.37) ($P < 0.001$).

A comparison of anal pain levels between the two groups is summarized in Table 2. Preoperative anal pain level (VAS score) did not differ significantly between the two groups (5.92 $\pm$ 1.26 *vs* 5.98 $\pm$ 1.22, $P > 0.05$). Compared with the preoperative scores, the VAS scores of both groups gradually decreased on postoperative days 3, 7, and 14, and the VAS scores in the observation group (4.30 $\pm$ 0.46, 3.42 $\pm$ 0.50, and 2.26 $\pm$ 0.44, respectively) were significantly lower than those in the control group (4.90 $\pm$ 0.42, 3.92 $\pm$ 0.27, and 2.78 $\pm$ 0.42, respectively, $P < 0.001$).

A comparison of sleep conditions between the two groups is summarized in Table 3. No significant difference in the preoperative sleep status (PSQI score) was observed between the two groups ($P > 0.05$). The PSQI scores for both groups gradually decreased on postoperative days 3, 7, and 14 compared with the preoperative results, and the PSQI scores in the observation group (10.86 $\pm$ 2.04, 8.92 $\pm$ 1.21, and 6.26 $\pm$ 1.03, respectively) were lower than those in the control group (12.46 $\pm$ 2.12, 10.36 $\pm$ 1.38, and 8.02 $\pm$ 1.24, respectively) ($P < 0.001$). A comparison of complications between the two groups is summarized in Table 4. The incidence of complications in the observation group was significantly lower ($P < 0.05$) than that in the control group (4.00% *vs* 16.00%).

DISCUSSION

Currently, postoperative pain and slow wound healing in patients with anal fistulas and perianal abscesses are important clinical challenges that are closely related to factors such as surgical trauma, hematoma, infection, and irritating secretions [12]. According to TCM, a perianal abscess combined with an anal fistula is mainly caused by the accumulation of damp heat in the anus, which leads to necrosis and pus formation. Additionally, surgical injuries, such as “incised (metal-inflicted) wounds” and “pain syndrome”, can cause pain because of venous obstruction and stagnation of qi and blood. Therefore, methods that promote blood circulation, detoxify and dissipate heat, and reduce swelling and pain are required [13].

In this study, the observation group demonstrated lower first urinary symptoms and VAS scores and shorter wound healing time than the control group on postoperative days 3, 7, and 14. Thus, using auricular acupressure with seeds based on syndrome differentiation and acupoint selection could effectively alleviate postoperative pain symptoms and promote wound healing and recovery in patients with anal fistulas and perianal abscesses. In this study, it was mentioned in “Lingshu Kouwen” that “all twelve meridians are connected to the ear” and “the ear is the gathering point of the ancestral lineage”. The “Lingshu Xieqi Zangfu Bingxing” has indicated that “the twelve meridians, 365 collaterals, their other qi flows through the ear for listening”. All organs corresponding to ear acupoints on the auricle may exhibit redness, swelling, and pain at their corresponding points of the auricle. Stimulating the corresponding acupoints can regulate the organs and promote disease prevention and treatment [14]. Auricular acupressure with seeds is a commonly used TCM for pain relief in clinical practice. This study selected the double-ear Shenmen, heart, endocrine, subcortical, sympathetic, rectal, anal, liver, kidney, spleen, and stomach acupoints. Subcortical and sympathetic stimulation of the Shenmen acupoints can tranquilize and delay excitement. The stimulation of endocrine acupoints regulates the endocrine system. Stimulating the rectum and anal acupoints can regulate the perianal surgical area through meridian circulation [15]. When the human body’s qi and blood flow through the meridians, qi and blood have an orderly circulation in the 12 meridians, which presents corresponding fluctuations according to the changes in Yin and Yang over 12 hours [16]. This study matched the acupoints of the heart, kidney, spleen, and stomach, and selected pressing time points from 11:00 to 13:00, 17:00 to 19:00, 9:00 to 11:00, and 7:00 to 9:00, which corresponded to the above acupoints. Performing auricular acupressure with seed therapy at the time of qi and blood circulation to treat organs can effectively and accurately unblock the meridians, regulate qi and blood, reduce swelling and pain, regulate organ function, improve postoperative pain, and promote wound healing. Modern medicine has shown [17,18] that auricular acupressure with seeds can accelerate blood circulation in the surgical area, promote the entry of painful substances and inflammatory factors into the bloodstream, and alleviate local pain and inflammatory reactions, thereby alleviating pain, accelerating wound healing, and promoting recovery. By contrast, auricular acupressure with seeds can stimulate the hypothalamus, promote the secretion of large amounts of opioid peptide neurotransmitters, and relieve pain. Other studies have shown that auricular acupressure with seeds can also reduce the reflex contraction of the anal sphincter in patients by alleviating their negative emotions, thereby alleviating pain [19]. Our results showed that the PSQI scores in the observation group were significantly lower than those in the control group on postoperative days 3, 7, and 14, with 16.00% and 4.00%

Table 2 Comparison of anal pain levels between the two groups (mean $\pm$ SD)

Groups	Patients	Visual analog scale score			
		Preoperative	Postoperative day 3	Postoperative day 7	Postoperative day 14
Observation group	50	5.98 $\pm$ 1.22	4.30 $\pm$ 0.46 ^a	3.42 $\pm$ 0.50 ^{a,b}	2.26 $\pm$ 0.44 ^{a,b,c}
Control group	50	5.92 $\pm$ 1.26	4.90 $\pm$ 0.42 ^a	3.92 $\pm$ 0.27 ^{a,b}	2.78 $\pm$ 0.42 ^{a,b,c}
<i>T</i> value		0.242	6.813	6.214	6.033
<i>P</i> value		0.809	< 0.001	< 0.001	< 0.001

^a*P* < 0.05, preoperative value compared with the same group.^b*P* < 0.05, postoperative values compared with the same group on postoperative day 3.^c*P* < 0.05, postoperative comparison with the same group on postoperative day 7.**Table 3 Comparison of sleep conditions between the two groups (mean $\pm$ SD)**

Groups	Patients	PSQI score			
		Preoperative	Postoperative day 3	Postoperative day 7	Postoperative day 14
Observation group	50	15.18 $\pm$ 3.43	10.86 $\pm$ 2.04 ^a	8.92 $\pm$ 1.21 ^{a,b}	6.26 $\pm$ 1.03 ^{a,b,c}
Control group	50	15.26 $\pm$ 3.27	12.46 $\pm$ 2.12 ^a	10.36 $\pm$ 1.38 ^{a,b}	8.02 $\pm$ 1.24 ^{a,b,c}
<i>T</i> value		0.119	3.844	5.545	7.742
<i>P</i> value		0.905	< 0.001	< 0.001	< 0.001

^a*P* < 0.05, preoperative value compared with the same group.^b*P* < 0.05, postoperative values compared with the same group on postoperative day 3.^c*P* < 0.05, postoperative comparison with the same group on postoperative day 7.

PSQI: Pittsburgh Sleep Quality Index.

Table 4 Comparison of complications between the two groups, *n* (100%)

Groups	Patients	Wound infection	Anal incontinence	Uroschesis	Total
Observation group	50	0 (0.00)	1 (2.00)	1 (2.00)	2 (4.00)
Control group	50	1 (2.00)	3 (6.00)	4 (8.00)	8 (16.00)
χ^2 value					4.000
<i>P</i> value					0.046

complications in the control and observation groups, respectively, suggesting that the application of auricular acupressure with seeds based on syndrome differentiation and acupoint selection in patients with anal fistulas and perianal abscesses could also effectively improve sleep quality and reduce the incidence of complications, which is in accordance with the results of previous studies[20,21]. The effect of auricular acupressure with seeds on tranquilizing and allaying excitement, reducing postoperative pain in wounds, effectively improving blood circulation, accelerating postoperative wounds, reducing the effect of wound pain on sleep, and shortening wound recovery time could help prevent postoperative complications; however, the specific mechanism requires further analysis.

CONCLUSION

The application of auricular acupressure with seeds based on syndrome differentiation and acupoint selection in patients with anal fistulas and perianal abscesses could effectively shorten wound healing time, improve urination, alleviate postoperative pain symptoms, improve sleep quality, and reduce the risk of complications. This should be promoted during clinical treatment. However, this study is limited by its small sample size, short study period, and focus on a single disease. Further improvements are required to extend the observation time and conduct large-scale surveys to draw more convincing conclusions.

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FOOTNOTES

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Author contributions: Wang LN performed the majority of experiments and wrote the manuscript; Shi BX designed the study and revised the manuscript; Liu MJ performed the statistical analysis; Wang YY collected data. All authors have read and approved the final manuscript.

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Institutional review board statement: This study was approved by the Hebei Provincial Hospital of Traditional Chinese Medicine (Hebei, China, approval No. HBZY2021-KY-072-01).

Clinical trial registration statement: This single-center, prospective, observational clinical study aimed to investigate the effect of auricular acupressure on postoperative recovery in patients with perianal abscesses and fistulas. The study design was approved by the institutional ethics committee and adhered to the principles of the Declaration of Helsinki. However, it has not been prospectively registered in the Chinese Clinical Trial Registry for several reasons.

Informed consent statement: All study participants, or their legal guardian, provided informed written consent prior to study enrollment.

Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.

Data sharing statement: The technical appendix, statistical code, and dataset are available from the corresponding author upon request.

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