A Review on Role of Traditional Chinese Medicine in the Prevention and Treatment of Postoperative Complications of Mixed Hemorrhoid Surgery

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ABSTRACT:

Anorectal diseases such as hemorrhoids, anal fistulas, and perianal abscesses are common clinical conditions suffered by large population of patients. The primary treatment for this condition is surgery. However, patients often time suffered from various postoperative complications such as urinary retention, bleeding, pain, and edema significantly impact patient recovery and daily life. Western medicine is considered as first line treatment in many countries to overcome this situation. However, the side effects are major limitations. Traditional Chinese medicine (TCM) has unique advantages in preventing and treating postoperative complications of anorectal diseases due to its simplicity, minimal adverse effects, and significant efficacy. This manuscript discusses the definition of mixed hemorrhoids, the TCM etiology and pathogenesis, the causes of postoperative complications, and summarizes the unique methods of TCM in treating these complications, advocating for an integrated approach of internal and external treatment, and syndrome differentiation. This approach can effectively prevent postoperative complications of mixed hemorrhoids, improve patient health, and highlight the unique role of TCM in developing new paradigms for postoperative care in anorectal diseases, which is of great significance.

1. Introduction

Hemorrhoids, also known as piles in layman's term, are classified based on their location and clinical symptoms into internal hemorrhoids, external hemorrhoids, and mixed hemorrhoids [1]. This is a common disease occurred at the anal region, with a high clinical incidence, affecting people regardless of age. Mixed hemorrhoids, a common condition in anorectal medicine, are usually caused by venous plexus varicosities at the anal margin, rectal lower end, and anal canal, leading to symptoms like perianal pain, rectal bleeding, and constipation [2]. Lifestyle habits such as prolonged standing and sitting, consumption of spicy foods, and extended periods spent on the toilet have increased one's chances of developing hemorrhoids and the need for surgery have increased [3]. Recent epidemiological surveys in mainland China have shown that the incidence rate of anorectal diseases among urban residents aged 18 and above is as high as 51.14%, with hemorrhoids accounting for 50.28% of cases, far exceeding other common diseases [4-5].

Surgical intervention is proposed as the mainstay treatment method for mixed hemorrhoids, both domestically and internationally [6-7]. However, due to the unique anatomical structure of the perianal region, postoperative complications such as perianal pain and bleeding often occur due to open wounds being exposed to fecal contamination and irritation, leading to increased patient suffering, delayed wound healing, and reduced quality of life [8].

Postoperative complications of mixed hemorrhoid surgery are discussed here:

a. **Postoperative Pain:** It is common that the patients suffered from postoperative pain due to the wound and it requires time for the wound to completely close up and healed. Patients might suffer from varying degrees of pain and this will severely affecting daily life and bowel movements.
b. **Postoperative Bleeding:** Before the wound is completely healed, there are chances that bleeding still occurs during or after defecation. While mild bleeding is common, severe, persistent bleeding or sudden discharge of fresh blood and clots requires immediate medical attention.
c. **Urinary Retention:** Although this is not a common postoperative complication, but some patients experience difficulty to urinate after surgery. This might be caused by the effects of anesthesia, sphincter tension, or bladder muscle weakness.
d. **Anal Stenosis:** Anal stenosis can be a result of damaged sphincter or anal muscle layer during surgery, leaving scar during the healing process. This condition will require regular dilation and early detection and intervention.
e. **Wound Infection:** Wound infection is common as the operation site frequently contacts with fecal. This makes the wound healing process slow and complicated. Preventive measures include maintaining wound cleanliness, sitz baths, regular dressing changes, and adequate drainage.
f. **Perianal Edema:** Postoperative local tissue swelling is common and can be alleviated with hot compresses, sitz baths, and appropriate medication.
g. **Defecation Issues:** In the early stages post-surgery, bowel habits may be affected, including constipation, painful defecation, or a sense of incomplete evacuation.
h. **Anal Function Disorders:** Anal function disorders are rare. It can be caused by poor surgical technique or excessive damage that lead to anal incontinence, gas leakage, or abnormal anal sensations.

In view of complications might worsen the quality of life of patients, effective pain relief and prevention of postoperative complications are important to be explored. In many countries, Western medicines are used primarily for symptomatic relief using analgesics, anti-infectives, and hemostatic agents post-surgery, but their effectiveness in promoting rapid recovery and preventing complications remains limited [9]. In recent years, TCM external treatments have been proven to exert multi-target effects such as anti-inflammatory, analgesic, wound immune regulation, and scar reduction, demonstrating significant advantages in promoting wound healing [10].

2. Definition of Mixed Hemorrhoids and TCM Etiology and Pathogenesis

Mixed hemorrhoids are characterized by the varicosity of the internal and external hemorrhoidal venous plexuses above and below the dentate line, which merge without a clear boundary. Clinically, they exhibit the dual symptoms of internal hemorrhoids (e.g., rectal bleeding, prolapse of hemorrhoidal tissue, discomfort in the anal area) and external hemorrhoids (e.g., perianal swelling, pain, and a sensation of a foreign body) [11].

Hemorrhoids are not modern disease. It has been well described in Chinese ancient medical encyclopaedia. The classical Chinese medical text *Su Wen: Sheng Qi Tong Tian Lun* states: "Overeating leads to the loosening of sinews and veins, causing intestinal nodes to develop into hemorrhoids." This shows that the ancient practitioner believed that hemorrhoids was related to dietary excess. Overconsumption would result in pressure on the internal veins, leading to impaired blood flow and the formation of hemorrhoids [11].

Additionally, the *Wai Ke Shi San Fang Kao* mentions: "There are twenty-four types of hemorrhoids. Although the names of these hemorrhoids different, but their root cause is all due to the downward flow of damp heat, or damage caused by excessive drinking, sexual activity, and fatigue. Hemorrhoids are rarely diagnosed in the young, but more common after the age of forty or fifty." This explanation emphasizes that hemorrhoids stem from the downward flow of damp heat or from overindulgence in food and alcohol, with a higher prevalence in middle-aged individuals due to the weakening of vital energy (Qi) and the subsequent stagnation of damp heat. The description is almost similar to the modern understanding of the etiology of hemorrhoids [11].

The *Zhu Bing Yuan Hou Lun* notes: "Suppressing the urge to defecate for too long leads to Qi hemorrhoids," and the *Yi Zong Jin Jian* adds: "Prolonged diarrhea or dysentery can result in hemorrhoids." These references have pointed out that regular and healthy bowel habits and defecation practices are important to reduce the incidence of hemorrhoids. In addition, prolonged sitting or standing, as well as carrying heavy loads for a long distances, can affect the flow of Qi and blood in the anal region, causing blood stasis and leading to hemorrhoids over time [11].

In modern Western medicine, hemorrhoids are primarily attributed to anatomical variations. Current theories include the "varicose veins" hypothesis, the "anal cushion displacement" theory, and the "vascular hyperplasia" hypothesis. Internal hemorrhoids are categorised into four grades [11]:

- **Grade I:** Primarily characterized by bleeding during defecation.
- **Grade II:** Hemorrhoidal tissue prolapses during defecation but retracts spontaneously afterward.
- **Grade III:** Hemorrhoidal tissue prolapses frequently and must be manually repositioned.
- **Grade IV:** Hemorrhoidal tissue remains prolapsed and cannot be repositioned.

3. Causes and Research on Postoperative Complications of Mixed Hemorrhoid Surgery

Ancient Chinese medical practitioners had a deep understanding of anorectal diseases over two thousand years ago and accumulated effective treatment experiences [12]. From the various ancient Chinese medical records, the causes of postoperative complications of anorectal surgery are often attributed to Qi stagnation, blood stasis, Qi and blood deficiency, and the accumulation of damp heat [13]. In TCM, surgery is classified as "metal wounds" or "injuries by sharp objects," where sharp objects injure the meridians, leading to impaired Qi flow and blood stasis, resulting in local pain [12]. As stated in the Chinese medical book, *Xue Zheng Lun*, "Pain is generally caused by blood stasis obstructing the flow of Qi." The injury caused by surgery inevitably leads to the depletion of Qi and blood [13]. As Xue Ji mentioned in *Xue Shi Yi An*, "The hip is part of the Bladder meridian though it is rich in blood, Qi circulation is difficult, and blood is rare to reach the area." Despite the Bladder meridian being rich in Qi and blood, the anal region is isolated, and Qi and blood are not easily supplied, leading to poor wound healing and pain [14]. The *Yi Zong Jin Jian* also notes: "Injuries to the meridians cause pain due to blood deficiency." When the meridians are injured, the flow of body fluids is disrupted, leading to fluid retention, edema, and poor wound healing.

TCM believes that surgical procedure will deplete Qi and consumes blood, injuring the meridians and blood vessels, resulting in Qi deficiency, blood stasis, and pain due to blockage. Furthermore, damage caused by the operation to the muscles and blood vessels around the anus can lead to impaired Qi and blood circulation, resulting in edema [12]. The TCM philosophy further explains that Qi deficiency and sinking can cause a sensation of heaviness in the anus post-surgery, and impaired bladder Qi can lead to urinary retention. Therefore, the main causes of postoperative complications are insufficiency of Qi and blood, the accumulation of damp heat, and the obstruction of blood stasis [13].

Modern medical research attributes the occurrence of postoperative complications of anorectal diseases to multiple factors, including the local anatomical structure of the anorectal region, the type of surgery and anesthesia, intraoperative injury, postoperative packing, psychological and emotional factors, diet, infection, and the volume of postoperative fluids [14 – 16]. These factors are the contributing factors to the development

of complications. The surgical interruption of local meridians and blood vessels can cause perianal pain due to obstruction, leading to insufficient nourishment of muscles and slow wound healing [17]. Patients with repeated hemorrhoidal bleeding suffer from the loss of Qi, blood, and body fluids, which, coupled with surgical bleeding, further depletes these resources. The lack of fluid in the intestines can cause difficulty in defecation, while fear of pain during defecation may lead to delayed bowel movements [15]. Emotional stress and anxiety can cause the liver's Qi to become stagnant, leading to further complications such as hemorrhoids due to prolonged bowel movements. The obstruction of Qi and blood in the local meridians after surgery can also lead to urinary retention due to impaired bladder Qi [16].

4. TCM Internal Treatments for Postoperative Complications of Mixed Hemorrhoid Surgery

Oral administration of TCM is the preferred method of treatment for internal diseases. The Chinese ancient medical book, *Yi Xue Yuan Liu* states: "External diseases are mainly treated with external methods," Internal medicine can be used an essential auxiliary and complimentary treatment to enhance the therapeutic outcome [18]. The Chinese TCM philosophy believes that oral administration of medicine aims to regulate the balance of Yin and Yang within the body by adjusting the properties and effects of the medicine, seeking to restore harmony and health [19]. There are various factors affecting the effectiveness of oral administration of TCM and these include the disease satte, constitution, and form of the medication, timing, frequency, and temperature of the medicine taken. Therefore, caregivers must be familiar with the different forms and functions of TCM medicines and master various administration methods to provide correct and high-quality TCM medication care [18].

Another Chinese ancient medical encyclopaedia, *Su Wen Yi Pian: Ci Fa Lun* states: "When the righteous Qi is present within, evil cannot invade." Zhu Danxi in *Danxi's Methods* said, "What is inside will inevitably be reflected on the outside," indicating that the state of the surface wounds often reflect the overall health status of the body. By taking TCM decoctions, patients can regulate the balance of Yin and Yang within their bodies, strengthening their vital energy (righteous Qi) after mixed hemorrhoid surgery, thus promoting wound healing [19].

Besides oral and topical herbs administration method, TCM also covers external treatment methods such as "dissipating, draining, and tonifying." Dissipating methods are used to eliminate necrotic tissue and promote the growth of new tissue. Draining methods can be categorized into penetration and supplementation method. Penetration is used when the body's righteous Qi is not yet weakened, and supplementation is applied when the righteous Qi has already declined. Tonifying methods are employed when wounds are not recovered after a prolonged period of treatment, and the patient's Qi and blood are insufficient to support wound healing [20].

The Pain-Relieving Decoction, recorded in the *Wai Ke Qi Xuan*, is a classic TCM formula for relieving pain in anorectal diseases. Research has shown that using this decoction post-PPH (Procedure for Prolapse and Hemorrhoids) surgery effectively reliefs pain with low rates of adverse reactions [20]. Inspired by the Pain-Relieving Decoction, Wang Huimin and colleagues formulated a modified Shaoyao Gancao Decoction (from the *Shang Han Lun*) combined with a Jinhua Gancao Decoction (from the *Wai Ke Shi Fa*) to treat 180 patients with damp-heat type mixed hemorrhoids. The patients were randomly divided into a treatment group and a control group. The treatment group received the modified Shaoyao Gancao Decoction orally and the Jinghuang Sitz Bath, while the control group received Zhikang Tablets orally and the same sitz bath treatment. The results showed that the internal administration of the modified Shaoyao Gancao Decoction combined with the Jinghuang Sitz Bath significantly relieved postoperative pain, edema, and shortened wound healing time [20].

Zhang Chuanju in his study confirmed that the Pain-Relieving Decoction, when adjusted, has a positive effect on postoperative pain and wound healing in mixed hemorrhoid patients. The formula includes Qin Jiao as the sovereign herb, with Danggui, Tao Ren, Cangzhu, Zexie, Huangqi, Shengma as ministerial herbs,

Huangbai, Fangfeng, Shudahuang, and Baimaogen as assistant herbs, and Gancao as the guiding herb. The formula has the effects of clearing heat, detoxifying, activating blood circulation, dispelling wind-dampness, and relieving pain, using both dissipating and tonifying methods [21].

Wang Donghong and colleagues in their study have dispensed Liangxue Dihuang Decoction to patients who have undergone mixed hemorrhoid surgery. The study confirms that its combination with Xiaozhi Suppositories had better therapeutic effects than using the suppositories alone. Patients in the group of taking Liangxue Dihuang Decoction during treatment showed lower levels of inflammatory markers, higher levels of serum epidermal growth factor (EGF), type I collagen (COL-I), and transforming growth factor-beta (TGF-β), and improved hemorheology indicators [22].

The Liangxue Dihuang Decoction is a unique herbal formula that combining various Chinese herbs with different medicinal benefits. In the formula, it contains Danggui, Chishao, Shengdi, which clear heat, cool blood, nourish and activate blood; Huanglian and Tianhuafen clear heat, reduce swelling, and dry dampness; Chuanxiong activates blood circulation and regulates Qi; Zhizi and Di Yu cool blood, stop bleeding; Zexie and Binglang regulate Qi, promote water metabolism, and reduce swelling; Taoren activates blood circulation, dispels blood stasis, relieves pain, and moistens the intestines, thus effectively accelerating wound healing; Baizhu and Fuling strengthen the spleen, eliminate dampness, and replenish Qi and blood; Gancao harmonizes the effects of the herbs. The formula combines dissipating and tonifying methods, demonstrating the comprehensive therapeutic approach of TCM [22].

Unlike western medicine that focusing on a pure extract of a small molecule active ingredient or a large molecule peptide based medicine, TCM uses a combination of active ingredients from various plants and believing in their synergistic effects to treat patient holistically. In clinical practice, oral administration of TCM decoctions is usually based on a holistic diagnosis that considers the patient's condition at various stages, with adjustments made to the prescription as needed. Research focusing on the effectiveness of single herbs in promoting wound healing and relieving pain is limited, with most studies exploring the effects of TCM formulas [22].

Studies have shown that oral TCM can contribute to significant recovery process in postoperative recovery from mixed hemorrhoids. By regulating the spleen and stomach, clearing heat and dampness, stopping bleeding, and detoxifying, TCM improves the overall condition of patients [23]. For example, Maizhiling (a plant-derived medicine) is often used to promote venous blood return, reduce local swelling and pain, while compound TCM formulas with blood-activating, stasis-dispelling, swelling-reducing, and pain-relieving effects can effectively lower the incidence of postoperative complications and accelerate wound healing [24]. The internal treatment with TCM is based on principles such as clearing heat and dampness, cooling blood and stopping bleeding, replenishing Qi and blood, and dispersing blood stasis and relieving pain, with the formula adjusted according to different syndromes [25].

Yang Genfeng used a self-formulated Yi Qi Xing Shui Decoction for the oral treatment of postoperative urinary retention, with results showing that it effectively improved symptoms of urinary retention and reduced pain [23]. Zheng Hongyan found that the Pain-Relieving Decoction could effectively alleviate postoperative pain. Xu Cheng observed that the oral administration of a self-formulated Qing Xiao Decoction after anorectal surgery effectively prevented wound infection, reduced bleeding, and relieved pain [25].

5. TCM External Treatments for Postoperative Complications of Mixed Hemorrhoid Surgery

5.1 TCM Sitz Baths

TCM sitz baths are a common external treatment method used after mixed hemorrhoid surgery. There are evidence from previous research showing that using specific TCM sitz bath solutions, such as Qudu Decoction and Zhilou Sitz Bath Formula, effectively reduces wound edema, relieves pain, shortens wound healing time, and lowers the risk of infection [26]. External application of TCM ointments, such as Shengji Yuhong Ointment and Ma Yinglong Hemorrhoid Ointment, directly to the surgical wound can help reduce

inflammation, alleviate pain, remove necrotic tissue, promote the growth of new tissue, and accelerate wound healing. The use of TCM suppositories, such as Puzhi Hemorrhoid Suppository, which is inserted directly into the anus, can have anti-inflammatory, analgesic, and astringent effects, helping to alleviate postoperative symptoms and promote recovery [26 – 27].

5.1.1 The Mechanism of TCM Sitz Baths

TCM sitz baths, is believed to enhance the therapeutic effects of the medicine by allowing the active ingredients to penetrate the skin and mucous membranes through the physical thermal effects of warm water, stimulating local nerve endings, and promoting the relaxation of muscles, the regulation of blood circulation, and the smooth flow of Qi and blood. TCM sitz baths are commonly used after circumferential mixed hemorrhoid surgery to reduce postoperative perianal edema, anal pain, and bleeding, and promote wound healing [27].

The ancient text *Li Ji* mentions: "If the head has sores, wash it; if the body has ulcers, bathe it." This indicates that in ancient times, bathing was an important external treatment for sores and ulcers. "Sitz baths" and "baths" are different methods, but they are often used together in clinical practice, usually by performing the sitz bath after the steam bath [28]. In steam bath, volatile medicinal vapor is used to stimulate specific areas, which promotes local blood circulation, smooths the meridians, enhances the flow of Qi and blood, and stimulates the nerves in the anal region. The sitz bath method can be used to soak the anus in the medicinal decoction to clean the anal area, especially for patients who avoid wiping the anus due to postoperative wounds. The direct contact between the medicinal decoction and the wound enhances the absorption of the medicine's active ingredients, promoting wound healing or reducing edema [27].

Zhang Jin conducted experiments comparing the serum levels of substance P (SP) between two groups of patients and found that TCM sitz baths effectively shorten the time for the improvement and disappearance of postoperative complications and accelerate wound healing. It was suggested that the mechanism by which TCM sitz baths promote wound healing may be related to the upregulation of SP expression at the wound site [28].

Liang Xiaoqing has conducted a study to observe the effects of Kulao Decoction sitz baths on postoperative edema, pain, and wound healing in hemorrhoid surgery patients. The study showed that Kulao Decoction sitz baths effectively reduce the occurrence of postoperative complications and alleviate symptoms [29]. Yejie Yang used Huanglian Ointment in hemorrhoid patients and observed that the external application of Huanglian Ointment reduced inflammation, promoted edema absorption, and enhanced wound healing [30].

Li Man treated postoperative mixed hemorrhoid patients with Kushen Decoction sitz baths combined with Ma Yinglong Hemorrhoid Ointment, comparing the results between the two groups using visual analog scale (VAS) pain scores, granulation morphology scores, and wound exudate scores. It was confirmed that the combination of TCM sitz baths with Ma Yinglong Hemorrhoid Ointment promoted wound healing, restored anal canal function, and relieved postoperative pain [31]. The formula of Kushen Decoction includes:

- **Kushen**: Clears heat, cools the blood, and dries dampness.
- **Baibu**: Relieves pain, reduces swelling, and detoxifies.
- **Baixianpi**: Clears heat, reduces fire, detoxifies, and expels wind.
- **Fangfeng**: Expels wind, relieves the exterior, and alleviates pain.
- **Difuzi**: Promotes urination, reduces swelling, and relieves itching.
- **Jinyinhua and Juhua**: Enter the Lung meridian, disperse wind-heat, and resolve abscesses.
- **Baizhi**: Relieves the exterior, disperses cold, and reduces swelling and pus.
- **Baichangpu**: Kills parasites, relieves itching, and resolves blood stasis and pain.

The formula clears heat, promotes urination, and detoxifies, facilitating wound healing. Wang Xiaowan and colleagues used Qingzhi Decoction sitz baths to treat postoperative complications of mixed hemorrhoids, comparing it with potassium permanganate solution sitz baths. The results showed that patients using Qingzhi

Decoction sitz baths had lower VAS scores on the third and seventh days post-surgery, with less wound edema compared to the control group [32].

5.1.2 The Effects of TCM Sitz Baths

Different TCM formulas have various pharmacological effects from a modern medical perspective. When combined, they can promote wound healing and match the patient's clinical syndrome, enhancing the therapeutic effect. In summary, TCM sitz baths, through the effects of the medicine and the moist heat, directly act on the postoperative wound, relaxing the internal anal sphincter, dilating small blood vessels, and promoting the return of hemorrhoidal veins and lymphatic vessels, effectively relieving edema and pain [33-34].

5.2 TCM External Application Methods

Besides internal consumption of TCM, TCM are often used as external application by applying herbal pastes, ointments, or plasters directly to the affected area or acupoints, allowing the active ingredients to provide a localised and continuous effect. These methods are used to relieve pain, reduce swelling, clear heat, detoxify, activate blood circulation, and promote the healing of wounds [35].

5.2.1 Acupoint Application

Acupoint application is defined as a TCM external application method in which specially formulated TCM pastes or ointments are applied to specific acupoints, exerting continuous therapeutic effects on the body through these points. The technique is adopting the principles of TCM to regulate the flow of Qi and blood, thereby alleviating pain and promoting recovery [36].

Qiu Lijuan and colleagues, in their research have applied Gangtang Xiaojiao Gel on relieving postoperative pain in mixed hemorrhoid patients to evaluate the effectiveness of Acupoint application method. The study involved 100 patients randomly divided into two groups: one group received acupoint application with Gangtang Xiaojiao Gel, while the control group received a placebo gel application. The results indicated that acupoint application with Gangtang Xiaojiao Gel significantly reduced postoperative pain and the need for analgesics. This study concludes that Acupoint application method effectively releases the active ingredients continuously, providing long-lasting pain relief and improving patient quality of life [36].

Wu Dingqi and colleagues have also conducted a study to evaluate the effectiveness of TCM application to Acupoint. In this retrospective study, data of106 mixed hemorrhoid surgery patients were evaluated, comparing the effects of pure Magnesium Sulfate external application with a combination of Four-Yellow Paste and Magnesium Sulfate. The results showed that the combination treatment group had significantly higher quality of life scores across various dimensions compared to the Magnesium Sulfate group, indicating that the combined application of Four-Yellow Paste and Magnesium Sulfate effectively reduced pain, alleviated local edema, and promoted wound healing. Four-Yellow Paste, commonly used in anorectal departments, is composed of a mixture of herbs that provide anti-inflammatory, swelling-reducing, pain-relieving, and hemostatic effects [37].

Other studies have compared the combination of Wubeizi Decoction sitz baths and Four-Yellow Paste application with 1:5000 potassium permanganate solution sitz baths, revealing that the combined use of Four-Yellow Paste and Wubeizi Decoction sitz baths effectively alleviated postoperative pain and edema, with fewer adverse reactions, demonstrating the safety and efficacy of this TCM nursing method [38].

5.2.2 Wet Dressing with TCM Decoctions

Another type of external application is by application of wet dressing with TCM decoctions to the affected area. In this method, it involves soaking gauze or cloth in a herbal decoction and applying it directly to the affected area. This method allows the delivery of active ingredients to the targeted local area and providing

direct and continuous therapeutic effects to the wound, such as promoting blood circulation, reducing inflammation, and alleviating pain [35].

Qiao Donghong and colleagues have conducted a research where 152 hemorrhoid patients who underwent external stripping and ligation surgery were included in the study to evaluate the effects and safety of applying Xiaozhizhitong Decoction wet dressings. The study involved administering non-steroidal anti-inflammatory drugs orally, followed by TCM sitz baths. The treatment group received local wet dressings with Xiaozhizhitong Decoction, while the control group received 50% Magnesium Sulfate wet dressings. The patients were given treatment twice daily, for 30 minutes each time, from the first postoperative day until the day before discharge. The results showed that the treatment group had a lower incidence of moderate or severe postoperative pain and wound edema on the 5th, 7th, and last days before discharge compared to the control group, indicating that Xiaozhizhitong Decoction wet dressings were more effective than Magnesium Sulfate in relieving postoperative pain and edema, with no significant adverse effects [39].

5.2.3 TCM Wound Dressing

The TCM has a set of wound dressing principles that were well documented in ancient texts and involves cleaning, medicating, and bandaging wounds related to sores, trauma, insect bites, burns, and hemorrhoid fistulas. Depending on the combination of herbs used, this method can clear heat, detoxify, promote the discharge of pus, regenerate tissue, and relieve pain and itching, making it applicable across various medical fields [35].

Zigui Jiedu Ointment is one of the traditional herbs combination ointment used for wound healing. It consists of a mixture of Zicao (Lithospermum), Danggui (Angelica Sinensis), Bingpian (Borneol), sesame oil, and beeswax. When applied to wounds, this ointment cools the blood, detoxifies, removes necrotic tissue, and promotes the growth of new tissue [40]. Wang Shuqing and colleagues conducted a research to investigate the effectiveness of Zigui Jiedu ointment. The study has recruited 160 mixed hemorrhoid patients, randomly dividing them into a treatment group and a control group. From the first postoperative day, the treatment group received wound dressings with Zigui Jiedu Ointment, while the control group received petroleum jelly dressings. The treatment was applied twice daily. The results indicated that the treatment group experienced significantly less postoperative pain, edema, and bleeding compared to the control group, with faster wound healing times, suggesting that Zigui Jiedu Ointment effectively alleviates postoperative complications and promotes wound healing in mixed hemorrhoid surgery patients [40].

5.2.4 Auricular Therapy

Auricular therapy, is a specialized TCM external application that deliver TCM through ears. It involves stimulating specific points on the ear's surface to alleviate symptoms and treat diseases [41]. The medical record produced during the Qin and Han Dynasties such as *Zhou Bi Suan Jing* and *Yin Yang Eleven Channels Moxibustion Classic* have well documented this method. Based on the ancient medical books, ear channels are connected to various organs and body parts. TCM views the ear as a microcosm of the entire body, where each organ and body part has a corresponding point on the ear. Stimulating these points can influence physiological functions and help treat diseases [42 -43].

Modern medicine and human anatomy have confirmed that the ear is richly supplied with nerve endings and blood vessels, and stimulating ear points can influence the nervous and endocrine systems, regulate the body's functions, and alleviate symptoms [44]. Recent studies suggest that the parasympathetic nervous system might underlie auricular therapy's effects, as the ear has numerous arterial branches and sensory nerves closely linked to the autonomic nervous system [45]. By stimulating ear points, auricular therapy can modulate neurotransmitter secretion, impact visceral activities, relieve symptoms, and even improve mental states [46 – 47].

Auricular therapy has become an increasingly important method to treating postoperative complications of anorectal diseases with positive outcomes [48]. For instance, Pan Qiong found that auricular therapy

significantly shortened the time to first urination post-circular hemorrhoidectomy, improved urinary flow, and reduced the need for catheterization [48 - 52]. Lorna Suen treated and observed 40 patients with International Prostate Symptom Scores (IPSS) of 12 or higher, measuring IPSS, quality of life related to urinary symptoms, maximum urinary flow rate, residual urine volume, and Pittsburgh Sleep Quality Index after four weeks. The study found that magnetic ear therapy significantly improved these parameters, suggesting a bidirectional regulatory effect depending on the stimulus [53].

Chen Xueling, in her study, has compared auricular and no-auricular treatment group patients. She observed 908 postoperative anorectal disease patients and found that auricular therapy was particularly effective in reducing pain, with the auricular therapy group experiencing significantly lower pain rates than the control group [54]. Auricular therapy is widely used in anorectal disease treatment, and its true efficacy warrants further research. Studies have shown that stimulating ear points with Wang Bu Liu Xing seeds can promote recovery after mixed hemorrhoid surgery. The therapy involved pressing specific ear points such as Shenmen, Cortex, Sympathetic, Lung, Spleen, and others to achieve anti-inflammatory, analgesic, decongestant, and Qi-regulating effects [55].

Feng Qunhu used auricular therapy to treat abdominal distension in mixed hemorrhoid surgery patients. Through the auricular therapy, specific points such as Stomach, Large Intestine, Small Intestine, Sympathetic, Liver, and Spleen are stimulated and in general, the digestive function is improved and reduce abdominal distension [56]. Gao Xi applied auricular therapy to patients with postoperative pain and urinary retention after anorectal surgery, comparing it with oral loxoprofen. The study found that auricular therapy was effective in reducing postoperative pain and urinary retention [51].

5.3 Acupuncture Treatment

Acupuncture, based on the theory of meridians in TCM, involves stimulating specific points on the body using needles or moxibustion to regulate the flow of Qi and blood, relieve symptoms, and promote healing [57 – 58]. Acupuncture has been reported as one of the TCM method to treat postoperative complications in anorectal diseases, such as pain, urinary retention, and constipation [59 – 62].

Liu Fang, in his research has concluded that by combining acupuncture with moxibustion, the viscera can be regulated effectively, improved bladder Qi transformation, and promoted urination [63]. In another research conducted by Lin Quanying, 132 postoperative anorectal disease patients were observed and found that combining acupuncture with TCM sitz baths quickly relieved anal sphincter tightness and pain [64]. Huang Bei's research indicated that acupuncture of the Baliao points of the body can reduce the effort required for defecation and alleviated postoperative constipation effectively by relaxing the pelvic floor muscles [65].

Wu Wenjiang conducted a study by recruiting 100 patients who underwent traditional hemorrhoidectomy under lumbar anesthesia, comparing abdominal acupuncture with intramuscular injection of tramadol hydrochloride. The results revealed that abdominal acupuncture provided comparable pain relief to tramadol, with faster onset and fewer adverse effects. The study concluded that abdominal acupuncture is effective in alleviating postoperative pain in mixed hemorrhoid surgery [66 - 67].

5.4 Electroacupuncture

Electroacupuncture is a newer technique comparing to conventional TCM by combining the technique of acupuncture and electric stimulation to treat diseases by applying low-frequency electrical currents to acupuncture needles. Different pulse patterns can produce various physiological effects, such as reducing muscle tension, relieving pain, promoting circulation, and calming the mind [68 - 70].

Wu and colleagues conducted a single-center, single-blind, randomized controlled trial with 72 postoperative hemorrhoidectomy patients, dividing them into an electroacupuncture group and a control group [71 – 73]. The electroacupuncture group received treatment for 30 minutes within 15 minutes post-surgery, while the control group received simulated electroacupuncture. The results showed that electroacupuncture effectively reduced postoperative pain and improved bowel movements, with no serious adverse effects,

suggesting that electroacupuncture is an effective method for postoperative pain management in hemorrhoid surgery [74 - 76].

5.5 Hot-Sensitive Moxibustion

Hot-sensitive moxibustion is a modern moxibustion technique developed by Professor Chen Rixin, characterized by a small stimulus and significant response. It has been widely used in hospitals and has gained international recognition [77 - 79].

Lu Pingping used this technique to prevent urinary retention after mixed hemorrhoid surgery. The study showed that patients treated with hot-sensitive moxibustion had better postoperative urinary function compared to those who did not receive the treatment [80]. The research involved selecting acupuncture points with strong hot-sensitive responses, such as Zhongji, Guanyuan, and Qihai, which are located along the Ren meridian and near the lower abdomen, to warm the meridians, regulate organ function, and promote blood circulation [80].

Liu Xinhong applied hot-sensitive moxibustion to postoperative mixed hemorrhoid patients, showing that the treatment group had better pain relief, reduced anal edema, smoother urination, and faster wound healing compared to the control group [81].

5.6 Five-Element Music Therapy

TCM philosophy believes that different organs in the human body corresponding to an element in the ancient chines Five-Element belief (wood, fire, earth, metal, water). Five-Element Music Therapy is using the concepts of the five elements to influence the body's internal organs and treat diseases. According to TCM, each of the five elements corresponds to specific musical tones, which are believed to affect the corresponding organs and meridians in the body. The therapy involves playing music with specific tones to promote physical and emotional healing [82].

The earliest reference to the relationship between the five elements and music can be found in the *Huangdi Neijing: Lingshu: Five Tones and Five Flavors*, which discusses how the five tones—Gong, Shang, Jue, Zhi, and Yu—correspond to the five elements and the internal organs. Ancient Chinese physicians used this understanding to diagnose and treat diseases, proposing that "illness arises from Qi and can be stopped by sound." [82]

Ling Yan and colleagues studied the effectiveness of Five-Element Music Therapy in relieving postoperative pain in patients with damp-heat type hemorrhoids. The study has recruited 60 patients who underwent anorectal surgery. The patients were randomly divided into a treatment group (Five-Element Music Therapy based on the patients' personality assessments during sitz baths, dressing changes, and aftercare, for 30 minutes at a time with a volume below 20 decibels) and a control group (standard postoperative care). The results revealed that the treatment group had scored a lower Visual Analog Scale (VAS) pain scores on the 5th postoperative day compared to the control group and the difference was statistically significant. This suggests that Five-Element Music Therapy can effectively alleviate postoperative pain in patients with damp-heat type hemorrhoids [83].

Sun Jingyi and colleagues has studied the effect of combination therapy of Five-Element Music Therapy and TCM sitz baths in the postoperative care of hemorrhoid patients, observing and recording pain, constipation, anxiety, and sleep quality. The results suggested that the combined therapy was more effective than TCM sitz baths alone in reducing pain and improving bowel movements, mood, and sleep quality. These research findings have established the effectiveness of Five-Element Music Therapy as an adjunct therapy which is non-invasive and can be beneficial in postoperative care [84].

From a modern scientific perspective, music therapy is effective in regulating mood and pain relief. Soft music can relax the body, divert attention, stimulate the pituitary gland to release endorphins, and induce a sense of comfort. Since the auditory center in the brain is located near the pain perception center, music can inhibit the perception of pain. Additionally, music therapy can reduce anxiety and tension, creating a positive therapeutic environment that enhances cooperation between patients and healthcare providers [85 – 86].

Zhang Li and colleagues applied Five-Element Music Therapy to postoperative hemorrhoid patients, using the theory of the five elements to determine the appropriate music based on the TCM diagnosis of pain and edema. The study confirmed that Five-Element Music Therapy had a positive effect on relieving postoperative pain in hemorrhoid patients [87]. Song Haihong applied Five-Element Music Therapy to treat anal pain and perianal edema after hemorrhoid surgery, combining it with Wubeizi Decoction sitz baths. The study found that music therapy enhanced the therapeutic effects of the sitz baths, promoting relaxation and emotional well-being [88].

5.7 Moxibustion Therapy

Moxibustion is a TCM technique that applying burning moxa (dried mugwort) on or near the skin at specific acupuncture points to warm the meridians, promote the flow of Qi and blood, and stimulate the body's natural healing processes. The TCM believes that heat generated by moxibustion can penetrate the body and restore balance, helping to prevent and treat diseases [35].

The Ming Dynasty physician Li Shizhen wrote in *Compendium of Materia Medica*: "When medicine fails, acupuncture cannot reach, moxibustion must be used." This suggests the usefulness of this technique when other TCM methods are inappropriate. Previous Research has proven that moxibustion when applied at specific points can effectively relieve postoperative pain and edema in hemorrhoid surgery patients [89].

Lin Dongyin and colleagues selected Baihuanshu, Yaoshu, and Huiyang points for moxibustion box therapy in patients who underwent hemorrhoid surgery. The control group received intramuscular injections of diclofenac sodium, while the treatment group received moxibustion box therapy. The results indicated that both treatments reduced pain levels at 0.5 and 1 hour after therapy, but the moxibustion group experienced significantly less pain 6 hours post-treatment and had a lower incidence of edema. The study concluded that moxibustion box therapy effectively alleviates postoperative pain and edema, improving patients' postoperative quality of life with fewer side effects [90].

5.8 Acupoint Thread Embedding Therapy

Acupoint thread embedding therapy is a form of acupuncture providing prolonged effect by embedding absorbable threads (such as catgut) into specific acupuncture points so that these points can be continuously stimulated to promote body's self-regulation and healing over time. This technique is often used for chronic conditions and offers prolonged therapeutic effects compared to traditional acupuncture [91].

Ye Mengqi and colleagues conducted a systematic review to analyse the results from 24 randomized controlled trials involving 2087 patients. The study aimed to evaluate the effectiveness and safety of acupoint thread embedding for relieving postoperative pain in mixed hemorrhoid patients. From this systematic review, all the studies have similar positive results showing that acupoint thread embedding effectively reduced postoperative pain duration and intensity [91].

Studies have shown that acupoint thread embedding have long-lasting pain relief effect but the onset of pain relief is expected to be slower compared to electroacupuncture. The studies suggest that combining thread embedding with electroacupuncture has been found to enhance the overall pain-relieving effects, offering quicker onset and longer-lasting relief than either method alone [92].

Tang Huili conducted a three-group comparative trial on the prevention and treatment of postoperative pain in mixed hemorrhoid patients using acupoint thread embedding. The first two treatment groups received either a preoperative single-point or multi-point thread embedding, while the control group received no embedding. The results revealed that preoperative acupoint thread embedding effectively reduced postoperative pain. However, the study also showed that there was no significant difference between single-point and multi-point embedding [93].

5.9 Tui Na Therapy

Tui Na is a TCM massage therapy that involves massaging specific areas or acupuncture points to regulate the flow of Qi and blood, relieve pain, and promote healing. Tui Na is easy to learn, effective, and has a low incidence of side effects, making it widely used in clinical practice [35].

Wang Xiumin and colleagues have conducted a study to compare standard postoperative care and Tui Na to relieve pain in postoperative hemorrhoid patients. In the study, 60 postoperative hemorrhoid patients were selected and randomly divided them into a control group and a treatment group. The control group received standard postoperative care, while the treatment group received Tui Na therapy on Hegu, Neiguan, and Quchi points. The results revealed that the treatment group experienced significantly less postoperative pain and edema compared to the control group, indicating that Tui Na therapy is effective in relieving postoperative symptoms and can be widely implemented in clinical practice [94].

6. Integrated Therapy for the Treatment of Postoperative Complications of Mixed Hemorrhoid Surgery

In clinical practice, it is common to employ a multiple treatment approach than using a single treatment approach to achieve optimum therapeutic outcome. For example, pain relief may involve a combination of acupuncture, thread embedding, and oral analgesics. Wound healing may involve combining TCM sitz baths with oral TCM decoctions to enhance the therapeutic effects [35].

Recent research has shown the effectiveness of internal and external TCM treatments combination to provide the most comprehensive care. For instance, oral TCM formulas or pills may be combined with TCM sitz baths, steam baths, topical ointments, or suppositories to address both the root cause and symptoms, achieving the best postoperative recovery results [95].

Chen Xiaoguang compared the use of Puzhi Hemorrhoid Suppository alone with a combination of Puzhi Hemorrhoid Suppository, TCM sitz baths (using Huangbai, Jinyinhua, Yanhuosuo, Kushen, Baizhi, Cangzhu, and Kufen), and acupoint application therapy. The results indicated that the combined approach has shown better clinical outcome in improving anal function and reducing VAS pain scores on the 14th postoperative day than the use of the suppository alone [95].

Li Min conducted a comparative study on the use of Kushen Decoction sitz baths alone versus a combination of Kushen Decoction sitz baths and oral Shen Pain-Relieving Decoction for pain and edema relief. The results indicated that the combined treatment was more effective than the sitz baths alone [96]. Another study found that combining Shen Pain-Relieving Decoction with acupoint injection therapy was more effective in relieving postoperative anal heaviness than using Diosmin tablets alone [97].

Studies have also shown that combining TCM sitz baths with moist burn ointment is more effective than using potassium permanganate solution and standard wound care alone in preventing postoperative complications of mixed hemorrhoid surgery [98].

7. Current Challenges and Needs in Preventing and Treating Postoperative Complications of Mixed Hemorrhoid Surgery

Postoperative recovery and wound healing from mixed hemorrhoid surgery is challenging due to the unique body position of the surgical site that often time prone to contamination, cannot be directly sutured, and is sensitive to pain due to the rich innervation below the dentate line. As a results, complications such as pain, edema, urinary retention, and anal heaviness, which often occur simultaneously and exacerbate each other [98].

For example, the anus and bladder are both innervated by the pelvic nerve. Post-surgical pain in the anal area can trigger spasms of the anal and urethral sphincters, causing difficulties in defecation and urination. Consequently, dry and hard stools rubbing against the surgical area can cause pain and bleeding, creating a fear of defecation and leading to further complications [99].

The primary challenges and needs include:

a. **Pain Management:** Even though some latest technology aided mixed hemorrhoid surgery are minimally invasive techniques, postoperative pain remains a significant concern for patients. Therefore, effective pain

management strategies are needed and these include the rational use of analgesics, anesthetic techniques (such as local anesthesia and nerve blocks), and non-pharmacological treatments (such as TCM therapies like acupuncture and auricular therapy).

b. **Effective Hemostasis and Prevention of Recurrent Bleeding:** It is crucial to improve hemostatic techniques and postoperative use of hemostatic agents, along with early identification of bleeding signs to ensure patient safety and increase patients' confidence on the risk of surgery.
c. **Prevention of Anal Function Disorders:** Issues such as anal stenosis and incontinence require meticulous surgical techniques to avoid unnecessary sphincter damage. Postoperative care should include anal function exercises, regular dilation, and, if necessary, the use of biomaterials to repair damaged tissues.
d. **Infection Prevention and Wound Healing:** Due to the susceptibility of the anorectal area to infection, perioperative antibiotic management, wound care, sitz baths, dressing changes, and drainage measures are essential for preventing infection and promoting healing.
e. **Early Rehabilitation and Quality of Life Improvement:** Encouraging early postoperative activity, individualized diet plans, and bowel movement guidance can reduce the incidence of urinary retention and other bowel-related issues. Psychological support is also important for reducing anxiety about postoperative complications and improving overall quality of life.
f. **Pursuit of Minimally Invasive and Intelligent Techniques:** As medical technology advances, there is a need to develop more minimally invasive surgical methods with faster recovery times. Technologies such as laser, radiofrequency, and endoscopic mucosal resection should be explored to reduce the incidence of complications. Additionally, smart monitoring systems could be used to track patient recovery and enable personalized management and precise interventions.

8. Advantages and Potential of TCM in Postoperative Rehabilitation of Mixed Hemorrhoid Surgery

The advantages and potential of TCM in postoperative rehabilitation include:

a. **Pain Management:** TCM offers unique advantages in pain relief through its holistic approach and syndrome differentiation, using both internal and external treatments, such as blood-activating and stasis-dissolving herbs, to effectively alleviate postoperative pain. Non-pharmacological methods like acupuncture, cupping, and auricular therapy can also significantly reduce pain.
b. **Promotion of Wound Healing:** TCM sitz baths and topical applications improve local blood circulation, reduce inflammation, and help clean wounds, preventing infection and accelerating healing.
c. **Prevention of Complications:** TCM can enhance overall health by regulating the spleen and stomach functions, improving bowel habits, and reducing the incidence of postoperative complications like constipation and urinary retention. Techniques such as TCM massage combined with medication can relax muscles and prevent scar contracture-related anal stenosis.
d. **Improvement of Quality of Life:** TCM treatment and care can aid in the rapid recovery of strength and mental well-being, reduce psychological stress, and improve overall quality of life. Personalized TCM treatment plans can be tailored to the patient's constitution and the stage of recovery.
e. **Integrated Therapy:** In a combined approach of TCM and Western medicine, TCM's mild and lasting effects complement the rapid and targeted effects of modern medical technology, providing a comprehensive and nuanced postoperative rehabilitation plan.

TCM has shown unique effectiveness and features in preventing and treating postoperative complications of mixed hemorrhoid surgery, including pain management, infection prevention and wound healing, prevention

of anal stenosis and edema, regulation of bowel function and holistic and individualized care. Hence, TCM has be used as mainstay therapy or as adjunct therapy to improve the quality of life of patients post mixed hemorrhoid surgery.

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