DOI: 10.53469/jcmp.2025.07(06).15

Study on the Mechanism of Action of Using Simmering Pus and Growing Meat Method to Promote Postoperative Wound Healing of Anal Fistula under the Guidance of Chang'an Niu's School of Anal and Intestinal Diseases

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Abstract: ***Anal fistula is one of the common infectious diseases in anus and intestines, but also a chronic disease, recurrent episodes, can not be self-healing, at present, surgery is the most effective way to cure anal fistula. However, due to postoperative wound infection, surgical damage to the anorectal peripheral tissues, the patient's physical weakness and other factors, resulting in patients prone to postoperative anal fistula wound healing slow problem, which affects the quality of the surgery, but also in turn damage to the family economy and the patient's physical and mental health. Therefore, how to accelerate postoperative wound healing is one of the problems that anorectal surgeons need to solve. At present, there are a large number of domestic studies show simmering pus and long meat method to make the postoperative healing effect of anal fistula has significantly improved. Chang'an Niu's academic school of anorectal disease originated in Xianyang, Shaanxi Province, which focuses on the study of Chinese medicine diagnosis and treatment of anal and intestinal diseases, and the use of traditional Chinese medicine in clinical practice, the clinical results show that the healing effect of postoperative anal fistula is excellent. The article will describe the experience of Chang'an Niu's School of Anorectal Disease in promoting postoperative healing of anal fistula through the theory of 'simmering pus and growing flesh', which will provide a new idea and a new way for postoperative clinical treatment of anal fistula.***

Keywords: Chang'an Niu's Academic School of Anorectal Disease, Simmering pus and growing flesh method, Anal fistula, Wound healing, Mechanism of action**.**

1. Introduction

Due to the changes in people's dietary structure and life, the prevalence of anal and intestinal diseases is increasing year by year, especially the prevalence of anal fistula is increasing day by day. Anal fistula belongs to one of the most common diseases in anorectal department, most of them are caused by anal gland infections, and most of them are the sequelae of perianal abscess in clinic. At present, anal fistula cannot heal by itself through medication, and it needs to be cured by surgical treatment of the internal port and tube [1]. However, because the postoperative wounds are usually open and easily contaminated by faeces, resulting in wounds that mostly develop into chronic hard-to-heal wounds, and seriously affecting the quality of life of patients. Chang'an Niu's academic school of anal and intestinal diseases mainly research the use of traditional Chinese medicine methods such as traditional Chinese medicine on the diagnosis and treatment of anal and intestinal diseases, for example, in the promotion of postoperative wound healing of anal fistula using Chinese herbal medicines paste fumigation and external methods, which has achieved very good clinical efficacy. Simmering pus and growing flesh method to promote wound healing is one of the key directions of the genre research, and is a characteristic treatment of Chinese medicine surgical treatment, which is mainly used for the treatment of some chronic hard-to-heal wounds that occur in the clinical process [2]. In this paper, based on the study of relevant literature and combining the ideas of Chang'an Niu's academic school of anal and intestinal disease and the relevant clinical experience of the school workshop, we make a review of the mechanism of the role of simmering pus and growing flesh method to promote wound healing after anal fistula surgery. Provide new ideas and new ways.

2. Simmering Pus and Growing Meat Method and Postoperative Wound Healing of Anal Fistula Correlation

2.1 'Simmering Pus and Growing Flesh' Theory

The 'simmering pus and growing flesh' method is a special concept of dressing change in the field of traditional Chinese medicine and surgery, as well as a special method of dressing change, which promotes wound healing through the local application of traditional Chinese medicines or Chinese medicinal preparations, and it is mainly used to promote muscle regeneration and wound closure in the wound healing stage of post-ulcer wounds, as well as to promote the healing of intermediate- and late-stage wounds. It was first recorded in Surgery Qixuan - Sore and Ulcer Appropriate Ointment Theory [3], in which the text broadly expresses the scope of clinical use of the Simmering Pus and Growing Flesh Method, including the late stage of ulcers in which the poison of the sores has been suppressed, the putrefied flesh has been shed, and the wounds have stopped spreading and expanding; or sores and ulcers in which the pain and itching of the wounds are alleviated, and hardly any new flesh grows. During the

Ming and Qing dynasties, Wang Weide also suggested in the Surgical Quan Sheng Jie that 'the transformation of poison must be caused by pus, and the transformation of pus must be caused by qi and blood [4]. This points out that only when the human body has sufficient qi and blood can pus be produced, and pus can carry the poison out of the point of view, which explains the importance of pus in the process of wound healing. According to the above records, we can clearly conclude that the 'simmering pus and growing flesh method' appears in the case of wounds that are difficult to heal, through the use of topical ointment, which is applied to the surface of wounds to promote the secretion of pus on the wounds, and to promote the transformation of 'bad pus' to 'good pus'. Through the use of external ointment, it will be applied on the surface of the wound to promote the secretion of pus on the wound, promote the transformation of 'bad pus' to 'good pus', drive the poison out, so that the qi and blood can be converged to form a local environment suitable for the growth of traumatic tissues, so as to accelerate the repair of the wound.

2.2 The Basic Situation of Wound Healing after Anal Fistula Surgery

The incidence of anal fistula accounts for 1. 67% to 3. 60% of the anal and intestinal diseases [5], most of the anal fistulas can relieve the symptoms by the topical application of traditional Chinese medicine or antibiotic treatment, but ultimately still need surgery to solve the problem fundamentally. Anal fistula surgery mostly adopts semi-open or open wound, because of the special location of its wound, coupled with postoperative wound infection, surgical damage to the tissues around the anorectal canal and the patient's frailty and other factors, it is easy to cause anal pain, anal itching, and slow healing of the wound, and so on. Among them, the problem of slow wound healing is particularly noteworthy. Because under the influence of various factors, the wound after anal fistula surgery is very easy to form a chronic hard-to-heal wound. The so-called chronic intractable wounds are those that have not healed or tend to deteriorate after 1 month or more of treatment [6], which can cause unpredictable consequences once formed.

2.3 The Theory of Simmering Pus and Growing Flesh Method to Promote Healing of Postoperative Wounds after Anal Fistula Surgery

As the postoperative wound of anal fistula is easily affected by various factors, chronic difficult-to-heal wounds are formed. There are many principles used to guide the treatment of chronic non-healing wounds in the clinic, such as the TIME principle proposed by Schultz et al [7], which is tissue debridement, infection control, moisture balance and wound edges, which has a lot of similarities with the theory of 'simmering pus and growing flesh', which is 'lifting the pus to remove the decay, simmering pus and growing flesh'. There are many similarities with the theory of 'simmering pus and growing flesh'. The Compendium of Ulcerology says that there are two kinds of pus, thin pus and thick pus, and emphasises that pus should be thick rather than thin. Among other things, the state of thinness and thickness of pus reflects the health of the body; thick pus indicates that there is sufficient qi and blood, and the prognosis for the later stages of the disease is good, while thin pus, on the contrary, implies the weakness of the body. Because pus has different connotations in different diseases, or even in different stages of development of the same disease, pus is divided into 'good pus' and 'bad pus'. The 'bad pus' refers to the product of local tissue inflammatory exudation and necrotic tissue liquefaction, composed of a large number of bacteria and bacterial infections produced by the material, its visual observation for the yellow, thick, cloudy or thin, thin, smelly state; and 'good pus' is composed of plasma in the microcirculation blood vessels at the wound, visible mostly yellow. On the other hand, 'good pus' is composed of blood plasma in the microcirculation vessels of the wound, which is mostly yellowish-white, thick, and brightly coloured to the naked eye, so the truth behind the state of 'good pus' is 'qi and blood'. Therefore, in the postoperative wound healing process, how to quickly turn 'bad pus' into 'good pus', from 'lifting pus to remove decay' to 'simmering pus to grow flesh 'This is an important transformation point. The 'pus' simmered in traditional Chinese medicine can not only carry evil qi to the outside and defend against new evils, but also stimulate the body's defence mechanism to promote wound healing [8]. In recent years, studies have also shown that the pus generated by 'simmering pus and growing flesh method' is a kind of benign liquid mixture secreted by blood vessels under the control of the body's immune system, and many cells with immune-regulating functions are included in it, which can stimulate the generation of growth factors in the local wounds, and the growth factors can induce the generation of granulation tissue and accelerate the healing of wounds. wound healing [9].

3. Simmering Pus and Growing Flesh Method in the Postoperative Treatment of Anal Fistula Clinical Application

3.1 Application of Shengmiao Yuhong Cream in Postoperative Anal Fistula Treatment

Kong detailed Yun et al [10] through the postoperative anal fistula patients were randomly divided into drug treatment group (raw muscle jade red cream gauze) and drug control group (Vaseline gauze), treatment group postoperative wound dressing based on the 'simmering pus long meat method' guidance, daily stool with heated swelling and pain cleansing agent smoked and then washed, and then use the raw muscle jade red cream gauze for stuffing and changing the operation, after changing the dressing, external sterile gauze wrapping The control group was washed with complex iodine to disinfect the anal verge and anal canal after stool, and then used petroleum jelly gauze to change the medication, and then used sterile gauze to wrap it externally. The results show that in the postoperative wound healing rate of anal fistula, the treatment group is more effective than the control group, and the wound healing time comparison, the treatment group is shorter than the control group, which indicates that its clinical efficacy is good.

3.2 Application of Wu Gu Qilin Cream in Postoperative Anal Fistula Treatment

Yin Xinyuan et al [11] randomly divided postoperative anal fistula model rats into blank group, model group,

Jingwanhong Cream group (positive drug group) and Wugu Kirin Cream high and low concentration group. Among them, Wugu Qilin Cream is a kind of Chinese medicinal preparation developed under the guidance of Chang'an Niu's school of anal and intestinal disease and based on the theory of 'simmering pus and growing flesh method' to promote healing. The experimental results showed that, comparing the healing time of the wounds of rats in each group, the healing time of the high, medium and low concentration groups of Wugu Kirin Cream was shorter than that of the model group, and the healing rate of the wounds of the rats was generally higher than that of the model group on the 7th, 11th and 15th days of the treatment with Wugu Kirin Cream. This suggests that compared with the two drugs, Vaseline and Jingwanhong Cream, Wugu Kirin Cream has obvious healing-promoting effects, especially the high concentration of Wugu Kirin Cream.

3.3 Application of Purple Yellow Sheng Muscle Cream in Postoperative Anal Fistula Treatment

Yang Jianhua et al [12] divided the postoperative anal fistula patients into drug treatment group (Zi Huang Sheng muscle cream gauze) and drug control group (Vaseline gauze), the treatment group with 'simmering pus and long meat method' Zi Huang Sheng muscle cream gauze external, the control group to be Vaseline gauze external. The experimental results show that from the third day after surgery, the patients' wound healing rate and the growth of granulation tissue, there is no significant difference between the treatment group and the control group, but from the seventh day after surgery, the wound healing of the patients in the treatment group of Zi Huang Sheng Muscle Ointment is significantly more than that of the patients in the control group of Vaseline, and the patients in the treatment group did not see any significant other adverse reactions.

3.4 Application of Traditional Chinese Medicine Hot Amphorae Packet of Zi Huang San in the Postoperative Treatment of Anal Fistulae

Liu Qinlang et al [13] randomly divided patients with damp-heat infiltration type anal fistula into treatment group (Vaseline gauze combined with Ziguanshen hot amphibian bag stuffing) and control group (Vaseline gauze stuffing), the treatment group should be based on 'simmering pus and long meat method' developed traditional Chinese medicine hot amphibian bag Ziguanshen stuffing the wounds, the experimental results show that in terms of the healing time of traumas, the treatment group is better than the control group, in the wound healing time, the treatment group is better than the control group, in the wound healing time, the treatment group is better than the control group. The experimental results showed that in terms of wound healing time, the treatment group was better than the control group, and in terms of the basic condition of the wound, the difference between the two groups was not obvious on the third day, but the therapeutic efficacy of the treatment group was better on the seventh day and the 14th day. This shows that Ziguanshan can effectively promote the repair of wound healing, and safe, effective, for the healing of postoperative wounds after anal fistula to provide a new treatment and new concepts.

4. Simmering Pus and Growing Meat Method to Promote the Healing Mechanism of Postoperative Wound after Anal Fistula Surgery

4.1 Simmering Pus and Growing Meat Method Regulates Related Inflammatory Factors

Postoperative wound healing after anal fistula can also be called postoperative trauma repair after anal fistula, the inflammatory response is involved in the whole process of trauma repair from beginning to end. At the same time, the inflammatory response process is closely related to cytokines, which are divided into two categories according to their biological functions, namely pro-inflammatory cytokines and anti-inflammatory cytokines. Pro-inflammatory cytokines include TNF-α, IL-2, IL-6, IL-12, IFN-γ, etc., while anti-inflammatory cytokines include IL-4, IL-13, IL-10, transforming growth factor (TGF)-B, etc. Among them, anti-inflammatory cytokines can cause macrophages to shift from M1-type to M2-type, control inflammatory responses, inhibit the production of pro-inflammatory cytokines, and promote wound healing and neovascularisation [14]. Dong Xiaopeng et al. [15] used bioinformatics methods to analyse and suggest that the promotion of wound healing by the Yuhong Cream developed on the basis of the theory of 'simmering pus and growing flesh method' may be mainly achieved by inhibiting the production of inflammatory factors IL-6 and IL-1β. Even if the toxic light powder was removed at the late stage of the experiment, the reduced flavour of Shengmian Yuhong Paste could still treat difficult-to-heal wounds and improve the healing rate of ulcerated wounds by down-regulating the levels of TNF-α and IL-6.

4.2 Simmering Pus and Growing Flesh Method to Regulate Related Growth Factors

Growth factors, also known as substances that promote cell growth, have the ability to regulate the cellular response to the migration, proliferation and differentiation process of wound healing as well as the proliferative phase to promote the role of fibroblasts, collagen, and other proliferation and differentiation of the main factors. The growth factors that have been clinically proven to play a key role in wound healing include platelet-derived growth factor (PDGF), epidermal growth factor (EGF), and VEGF [16]. Xu Jianjian et al [17] used purple elm cream to treat postoperative wounds of perianal necrotising fasciitis, and HE staining and serological tests showed that it could increase the level of serum growth factors such as VEGF and b-FGF, improve the regenerative capacity of epidermal cells, accelerate the formation of neovascularisation, and promote wound healing.

4.3 Simmering Pus and Growing Flesh Method to Regulate Related Signalling Pathways

With the improvement of the experimental and theoretical level of contemporary surgeons, the study of signalling pathways has now become one of the new research directions for the general public. Nuclear factor-κB p65 (NF-κB p65) is one of the five components that constitute the NF-κB family of transcription factors, which can participate in the

inflammatory response of the human body. p65 subunit content affects the expression of anti-inflammatory factors and pro-inflammatory factors, and the three are in a negative proportionality, which leads to an imbalance in the function of the cell, thus inhibiting the tissue repair process [18]. Mei pingping et al [19] used Jiawei shengmian yuhong cream in a rat model of postoperative trauma after anal fistula surgery, and found that it could inhibit the expression of NF-κB p65 and IL-1β proteins and increase the expression of VEGF proteins through the NF-κB signalling pathway, as a way to promote the formation of new vascular endothelial cells, reduce inflammatory response, and make good progress in healing of the traumatic lesions after anal fistula surgery. Zhai Min et al [20] will add flavour to the muscle jade red cream for postoperative anal fistula trauma rat model, found that it can regulate the NF-κB pathway, so that the expression of inflammatory factors to reduce the inflammatory response to reduce the water channel protein AQP3, so that the skin and mucous membrane barrier repair accelerated, and then promote the healing of the wound.

4.4 Simmering Pus and Growing Flesh Method Regulates Apoptotic Substances

In the process of wound healing, cell proliferation and apoptosis play a key role. In recent years, apoptosis in the process of wound healing is a hot research topic. The process of apoptosis is controlled by several genes, including Bcl-2 family, Caspase family, oncogene C-myc, oncogene P53, etc. In the process of apoptosis, Bcl-2, Caspase family, oncogene C-myc, oncogene P53, etc. play a key role. The Bcl-2 family plays a great role in apoptosis, and the key to unlocking the apoptotic treasure trove lies in the synergistic action of anti-apoptotic and pro-apoptotic members. Among the many apoptotic pathways, the mitochondrial pathway is one of the most important intrinsic pathways, and in the mitochondrial pathway, the Bcl-2 family occupies a dominant position. The Bcl-2 family is divided into two categories, including Bcl-2, Bcl-xl, Bcl-W, etc., which regulate apoptosis inhibitory genes, and Bax, Bak, Bcl-Xs, Bax, Bik/ Nbk, Bid, etc., which regulate apoptosis promoting genes. Nbk, Bid, etc [21]. Miao Mi et al. [22] used Wu Gu Qilin cream in a rat model of postoperative trauma after anal fistula surgery, and the experimental results showed that Wu Gu Qilin cream could reduce the ratio of Bcl-xl/Bak, which inhibited the excessive apoptosis of traumatised granulation tissue cells and promoted the healing of traumatic injuries after anal fistula surgery.

5. Summary and Prospect

Chang'an Niu's school of anal and intestinal science has long been committed to the treatment of anal and intestinal diseases with traditional Chinese medicine, especially in the promotion of traditional Chinese medicine for the treatment of difficult-to-heal wounds after anal fistula surgery has a unique insight, but also achieved fruitful results. From the simmering pus and growing flesh method characteristic theory as the theoretical entry point, to promote the healing of anal fistula wounds with the external treatment of traditional Chinese medicine cream as the landing point, the inheritance and development of the external treatment theory of traditional Chinese medicine, to improve the clinical efficacy of treatment, to enhance the external treatment of traditional Chinese medicine method of academic connotation, the inheritance of Chang'an school of thought and innovation of important significance.

Acknowledgements

1) Chang'an Niu's Anorectal Disease Academic School Inheritance Workshop SXZYLP-2024006.

2) Study on Macrophage Polarization Mediated by PI3K/AKT/mTOR Signaling Pathway Based on the Anti-Inflammatory and Pro-Healing Mechanism of Five-Grain Kirin Cream on Anal Fistula Wound 2025JC-YBMS-1071.

3) Shaanxi University of Traditional Chinese Medicine Graduate Innovation and Practice Ability Improvement Project CXSJ202406.

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