

# *Analysis of Traditional Chinese Medicine on the Treatment of Periodontal Disease*

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**Abstract:** Periodontal disease is one of the important causes of tooth loss in young adults, and the treatment process is long and prone to recurrence, which seriously endangers human oral health. At present, Western medicine treats periodontal disease mostly for local cleaning treatment, coupled with antibiotics such as chlorhexidine and spiramycin to inhibit bacteria and reduce inflammation. However, the long-term application of such drugs is bound to destroy the oral flora, resulting in an increase in drug resistance and reducing clinical efficacy. In contrast, Chinese medicine is guided by a holistic view, emphasizing the unity of teeth and the meridians of the human body's internal organs, connecting parts with the whole, dispelling evil spirits, removing standards, and correcting and consolidating the foundation. It has accumulated rich experience in the prevention and treatment of oral diseases, and has a variety of treatment methods. In addition, TCM's unique external treatment methods such as acupuncture, gargling, tooth rubbing, etc. also provide more methods for the treatment of periodontal disease.

## 1. Introduction

Periodontal disease refers to chronic, degenerative, and atrophic lesions caused by oral bacteria that occur in the periodontal tissue, which occur repeatedly and are difficult to cure [1]. Its pathological manifestations are gradual, accompanied by tooth abscess and bleeding, gingival inflammation, and alveolar bone resorption. In severe cases, teeth become loose and fall off, and even cause systemic diseases such as cardiovascular, cerebrovascular, or respiratory systems [2]. It is a key oral disease that endangers human teeth and physical and mental health. Modern medicine believes that bacterial deposition of dental plaque and tartar is the initial irritant factor that causes periodontal disease and caries. Therefore, prevention and treatment of periodontal disease mainly focus on cleaning dental plaque and pollutants, making the gum root surface flat, and using antibiotics to control inflammation and infection. However, traditional Western medicine curettage can easily cause periodontal tissue damage and incomplete cleaning, with a long treatment cycle,

multiple adverse reactions, and easy recurrence [3]. Clinical application still needs further improvement. Compared to the use of local drugs in Western medicine to alleviate the pain of patients, traditional Chinese medicine values a holistic approach and emphasizes the connection between the whole and the local area. It can effectively address the shortcomings of Western medicine and has fewer adverse reactions. Therefore, the combination of traditional Chinese and Western medicine in the diagnosis and treatment of periodontal disease has been widely accepted in clinical practice. The following explores the etiology and pathogenesis of periodontal disease from the perspective of traditional Chinese medicine theory, summarizes the clinical characteristics of traditional Chinese medicine therapies, in order to fully leverage the advantages of traditional Chinese medicine treatment and provide reference for the treatment of periodontal disease with traditional Chinese medicine. Compared with Western medicine using local drugs to relieve the pain of patients, traditional Chinese medicine attaches importance to the overall concept, emphasizes the connection between the whole and the part, treats both the symptoms and the root causes and has fewer adverse reactions, which can effectively make up for the shortcomings of Western medicine, so the combination of traditional Chinese and Western medicine in the treatment of periodontal disease has been generally accepted clinically [4]. The following discusses the etiology and pathogenesis of periodontal disease from the theory of traditional Chinese medicine, and summarizes the clinical characteristic therapies of traditional Chinese medicine, so as to give full play to the advantages of traditional Chinese medicine treatment and provide reference for the treatment of periodontal disease by traditional Chinese medicine.

## 2. Etiology and pathogenesis

Periodontal disease always belongs to the categories of "tooth leakage", "tooth pain", "tooth spread", and "tooth carbuncle" in traditional Chinese medicine [5], which have been recorded in medical records of various dynasties. Yellow Emperor's Internal Canon of Medicine first recorded the morphology of teeth and the related pathogenesis of periodontal disease, as stated in the "Lingshu Meridian": "If the Yin Qi of the foot is depleted, the bones will wither... If the bones and flesh are not close, the flesh will be soft; if the flesh is soft, the teeth will grow and become dirty." It pointed out the clinical manifestations of gingival atrophy, dry tooth length, and accumulation of tartar in the later stage of periodontal disease, and proposed that this is due to the inability of the foot Shaoyin kidney meridian to nourish the bone marrow and the loss of bone for nourishment. In the "Ten Methods of Surgery", it is mentioned that "when the teeth are swollen, the roots are completely swollen, and the teeth are exposed to the outside", which is equivalent to modern chronic periodontitis. In Inspection Zunjing (the Classic of the Inspection of the Teeth), the theory of disease knowledge is discussed in detail, that is, the rise and fall of the essence and qi of the viscera and the lesions are judged by the shape, color and texture of the teeth. It is proposed that the decay and loss of the teeth is the omen of chancres and the prognosis is poor. Will choose an all the teeth in the mouth with human viscera, pointed out four front teeth is in the heart, from the front to the back teeth of the order for the heart, liver, stomach, spleen, lung, kidney, six viscera. Therefore, it can get rid of the limitation of local unilateral medication, extend from the local mouth to the whole viscera, and multi-target comprehensive treatment, which is also one of the characteristics of traditional Chinese medicine in the treatment of periodontal disease. This breaks free from the limitations of local and one-sided medication, and extends from the local oral cavity to the whole viscera. Multi target comprehensive treatment is also one of the characteristics of traditional Chinese medicine in treating periodontal disease.

Traditional Chinese medicine believes that although the onset of periodontal disease is located in the oral gums, it is nothing more than internal and external deficiency and excess. Unclean gums

and accumulation of tartar are external causes of the disease, while imbalance of the organs and yin yang imbalance are internal causes. The stomach, kidney, and large intestine are the three most closely related organs throughout the body. The book "Miraculous prescription" states: "The disease of teeth and teeth is related to the two meridians of hand and foot yang and ming, and the shaking and detachment of gums. It is mainly due to the lack of yin in the feet, so these three meridians dominate." Therefore, the clinical classification of periodontal disease mainly focuses on three aspects: burning of Stomach meridian, deficiency of kidney essence, and weakness of qi and blood [6].

### 3. Syndrome differentiation and treatment

There are various causes of periodontal disease, but there are always two aspects: deficiency and excess. Deficiency syndrome is often characterized by kidney essence depletion and weak qi and blood, while excess syndrome is often characterized by excessive stomach fire and upper gingival steaming. In clinical practice, there may also be a combination of deficiency and excess. In terms of treatment, the basic principles include tonifying the kidney and tonifying essence, clearing heat and swelling, and tonifying qi and teeth. For patients with acute inflammation, the target should be first cleared of heat and pus, and then the inflammation should be controlled, followed by nourishing the kidney and teeth.

#### 3.1 Steaming on Stomach Heat, Yang Ming Hot Sheng

According to the "The Golden Mirror of Medicine", "This syndrome involves swelling of the gums... and dew of the teeth. It is always caused by the accumulation of heat in the stomach meridian, external external wind, and cold and cold fighting." The Yangming stomach meridian enters the gums and is fond of spicy, dry, and thick food. The spleen and stomach accumulate heat and fire, which can invade the gums along the meridian. Over time, it can damage the blood vessels of the gums, cause the gums to rot and bleed, and even cause the gums to wither and root dew, eroding and loosening. This is suitable for distinguishing between deficiency and excess, using Qingwei ShiGaoTang excess fire, purging fire, dispersing nodules, and reducing swelling. Deficient fire should be attributed to Guishao DiHuang Tang, which nourishes blood, nourishes yin, and solidifies roots. Peng Yuzhi et al. [7] used Li Dongyuan's "Spleen and Stomach Regulation for the Treatment of Spleen and Stomach" as a basis to choose Qingwei San for the treatment of stomach fire upward attacking periodontal disease. The experiment confirmed that Qingwei San can effectively alleviate gum swelling and inflammatory infections, while preventing plaque accumulation, and has a positive effect on the clinical treatment and later maintenance of periodontal disease. Zheng Simin et al. [8] believe that the most common type of periodontitis is inflammation caused by stomach fire. Treatment methods such as clearing heat, reducing swelling, cooling blood, and relieving pain are used, and Gegen Qinlian Tang combined with tinidazole is used for treatment. The results show that both plaque index (PLI) and serum inflammatory factors (hs CRP, TNF)-  $\alpha$ 、 IL-1  $\beta$ ) Both were lower than the control group, indicating that the combination of Chinese herbal medicine Gegen Qinlian Tang and Western medicine antibacterial drug Tinidazole can effectively reduce the inflammatory response of patients and jointly treat periodontal disease.

#### 3.2 Loss of renal essence and loss of dental bone nourishment

The kidney stores essence and fills the bone, while the teeth are the rest of the bone. Both originate from the same source. The kidney essence is passive, so the teeth lose their foundation and

weaken and shake themselves. Kidney yin deficiency and excessive fire can cause inflammation on the gums and flesh, and over time, teeth may become sparse and open. Therefore, the "Jing Yue's Complete Works" states: "Teeth are the end of bones, and bones are the main part of the kidneys." Therefore, throughout history, doctors in clinical practice often used traditional Chinese medicine such as asparagus, Talxilli Herba, black sesame, and mulberry to nourish the essence and fill the marrow, in order to achieve the effect of tonifying the kidneys and teeth. Xue Lizhai said in response to tooth loss, "If it is due to yin deficiency of the kidney meridian, use Liuwei Pill; if it is due to yang deficiency of the kidney meridian, use Bawei Pill; if both yin and yang are deficient, use Shibu Pill; if it is due to spleen and kidney deficiency and cold, use Anshen Pill." This provides important basis and treatment reference for early intervention and preventive care of kidney deficiency type periodontal disease. Liu Jiayin [9] started from the two-way influence of chronic diabetes and periodontitis, combined with the pathogenesis characteristics that both diseases belong to spleen and kidney weakness, selected Liuwei Dihuang Pill and Buzhong Yiqi Pill for treatment. The results showed that the combination of the two can reduce patients' blood sugar and reduce gingival inflammation, with few side effects and high safety. Yan Wei [10] based on the theoretical basis of traditional Chinese medicine that "kidney failure leads to tooth dilation, and kidney consolidation leads to tooth firmness", in addition to the treatment of periodontal curettage, he took Yishen Gujian Tang to achieve the effect of clearing stomach heat and tonifying kidney deficiency. After treatment, the confirmed effective rate is as high as 98%, the patient's own immune system is enhanced, the clinical efficacy is clear, and adverse reactions are reduced, which is worthy of further promotion.

### 3.3 Insufficient Qi and Blood, Disharmony between Camp and Guard

The "General Records of Holy Universal Relief" proposes that the Qi and blood of the body are weak, and there are also six pathogenic factors of Climate, which invade the flesh of the gums and invade the teeth. As a result, the teeth are painful and the roots are exposed. Qi deficiency prevents the circulation of blood to absorb blood, and blood does not flow through the meridians and seeps out from between the gums, resulting in gingival atrophy and root bleeding; Therefore, the overall principle for the treatment of periodontitis with deficiency of qi and blood is to replenish qi, promote blood circulation, and protect gums and teeth. In the "Medical Zong Jin Jian", it is mentioned that "for those with toothache and weak stomach pulse, the Buzhong Yiqi Tang should be added to the glutinous rehmannia and Moutan Cortex." Zhang Xiangyang [11] takes the overall principle of Qi and blood dual tonification, teeth fixation and bone regeneration, and from the perspective of traditional Chinese medicine's "seeking the root cause of disease", selects Bazhen Tang combined with basic Western medicine scraping therapy. This formula can promote the regeneration of periodontal osteoblasts, reduce plaque index, and have a moderate cost, which is more worthy of promotion and use at the grassroots level. astragalus hoangtchy, a traditional Chinese medicine, is an essential medicine for tonifying qi and consolidating the surface. It can nourish the qi in the spleen and lungs, elevate yang, transform yang qi into blood and expel pus, and relieve pain when pus is released. Therefore, it is commonly used in the treatment of periodontal disease. Han Yakun et al. [12] believed that periodontitis is caused by the patient's physical deficiency and various bacterial infections. A rat model of periodontitis was prepared using the method of inducing bacteria to analyze the effect of astragalus polysaccharides on alveolar bone resorption and related inflammatory factors. The results confirmed that Astragalus polysaccharides can effectively reduce gingival inflammation, regulate the body's oxidative and stress states, and maintain the integrity of periodontal tissue.

## 4. Other governance methods

In addition to the treatment of oral Chinese herbal decoction, traditional Chinese medicine adheres to the principle of simplicity, convenience, efficiency and cheapness, and has also proposed a unique treatment for oral diseases. The common treatments are acupuncture and moxibustion, plaster, tooth rinsing, scraping, etc., which have constantly developed and formed a complete set of ideas of diagnosis, treatment, prevention and treatment.

### 4.1 Acupuncture

The meridians of the human body are connected to the internal organs and extend to the limb segments. By needling disease-related meridians and acupoints, the function of tonifying deficiency, reducing excess, and dredging qi and blood can be achieved. The hand and foot Yangming meridian enters the upper and lower teeth along the meridian, and the upper toothache is mostly due to the stomach meridian being filled with fire and steaming up, and the fire rises to the teeth. When treating, you can choose acupoints such as the Neiting, Buccal Che, and Shousanli on the foot Yangming stomach meridian to clear the stomach and release fire. Lower teeth pain is often caused by excessive heat in the large intestine meridian. You can choose acupoints such as Hegu, Quchi, and Shousanli on the hand Yangming large intestine meridian to clear and relieve intestinal heat. The acupuncture and moxibustion and Moxibustion Collection also records that "the cheek car can heal the teeth by moxibustion". Modern relevant research shows that the combination of traditional Chinese medicine prescriptions with acupuncture and moxibustion treatment has achieved significant clinical effects. For example, Mao Kaiping [13] used the combination of prescription Qingwei Powder and acupuncture therapy to select the acupoints of the Stomach Meridian of Foot Yangming to apply the method of purging to study the treatment of periodontal disease with stomach fire. After acupuncture treatment, the patient's gingival pain and redness were significantly relieved, with a significant therapeutic effect. This suggests that acupuncture at various acupoints has the function of nourishing yin, clearing the stomach, cooling blood, and relieving pain. Tang Yuanyun et al. [14] simulated the effect of electroacupuncture on the healing of alveolar fossa in a mouse model of periodontitis. The researchers selected five acupoints of the Hand and Foot Yangming Meridian and tested the microcirculation and alveolar fossa bone in mice. It was confirmed that electroacupuncture acupoints can significantly improve the healing speed of alveolar fossa bone, promote wound healing after tooth extraction, and have positive significance for postoperative care of clinical periodontitis patients.

### 4.2 Plaster and gargle

- The traditional Chinese medicine external treatment method has a long history of origin. After consulting relevant literature, the author found that for patients with periodontal disease, external treatment method has advantages such as less medicinal taste, low cost, easy to obtain, convenient processing, and fast local medication effect. It has huge development potential in clinical practice. In the "New Compilation of Experimental Prescriptions", willow branch withy and Sophora branches are used as references, boiled with salt to make powder, and teeth are wiped and eyes are washed to strengthen teeth and improve eyesight. The combination of willow branch withy and Sophora branches can dispel wind and dampness, disinfect and relieve pain. In "handbook of prescription for emergency", it is specifically used to gargle with Yiwei Duhuo and decoct it with hot wine to aid in the treatment of wind tooth pain, swollen and red gingival grooves. In "Qian Jin Fang", three taels of Duhuo and three taels of raw Rehmannia were used to gargle and treat toothache. Duhuo dispels cold and relieves pain, while Dihuang nourishes yin, tonifies kidney, and



solidifies its foundation. The specimen also takes into account the treatment of dental bleeding. With the increasing attention paid to the inheritance of traditional Chinese medicine and new research in pharmacy, ancient Chinese medicine has also emerged in new forms. The study found that [15], the traditional Chinese patent medicines and simple preparations Sanhuang gargle, mainly composed of *Scutellaria baicalensis*, *astragalus hoangtchy* and Siberian Solomonseal Rhizome, can effectively inhibit the growth of oral fungi, relieve pain and infection, improve the immunity of the body, have a definite effect on local swelling, pain and decay of the oral cavity, and can effectively treat periodontal disease or prevent and treat caries. Wang Xiaoyu et al. [16] selected *Scutellaria baicalensis* and *Eucommia ulmoides* from heat clearing and tonifying drugs and developed their own traditional Chinese medicine Huangdu mouthwash. After investigation, it was found that Huangdu mouthwash has a significant inhibitory effect on periodontal disease pathogens, but has little effect on oral probiotics. And it was found that the drug can regulate oral microbiota and fundamentally prevent and treat periodontal disease and related oral diseases. Conventional Western medicine such as chlorhexidine, tinidazole, and other antibiotic mouthwashes can easily develop drug resistance and reduce treatment effectiveness after long-term use. Traditional Chinese patent medicines and simple preparations gargle makes up for this. The combination of Chinese medicine and western medicine promotes the further improvement of clinical efficacy. Zhao Yajun et al. [17] adopted the principle of combining traditional Chinese and Western medicine for diagnosis and treatment, and combined the improved Yinpu Jiedu Gargle with basic treatment of periodontal disease. Yinpu Jiedu Formula can clear fire, reduce inflammation, astringe wounds and relieve pain, and quickly alleviate local redness and swelling symptoms; Basic treatment cleans dental plaque and prevents tartar deposition. The combination of the two is used to achieve the goal of treating periodontitis.

## 5. Conclusion

Traditional Chinese medicine has been widely used in Chinese history and plays an irreplaceable role in the prevention and treatment of periodontal disease and other oral diseases. In the diagnosis of periodontal disease, traditional Chinese medicine is not solely focused on clearing fire, reducing swelling, and killing bacteria. Instead, it focuses on the human body, examines the pathogenesis of deficiency and excess, adopts the principles of clearing heat, tonifying deficiency, and consolidating the root, distinguishes urgency, and treats according to syndrome differentiation, presenting the unique advantages of traditional Chinese medicine. In terms of treatment, traditional Chinese medicine has the characteristics of treating both symptoms and symptoms, reducing toxic and side effects, diverse treatment methods, and a complete compatibility system. With further exploration of traditional Chinese medicine pharmacology, it has been found that traditional Chinese medicines such as *Scutellaria baicalensis*, Honeysuckle, *Gardenia jasminoides*, and *Fructus cnidii* have obvious antibacterial, analgesic, and anti-inflammatory effects, high safety, and great potential in treating oral bacterial infections [18]. Extracting new and effective antibacterial ingredients from traditional Chinese medicine to treat periodontal disease will be a major direction in the future. In addition, in-depth research on the pharmacological analysis and therapeutic mechanisms of effective prescriptions still requires our joint efforts.

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