

# *Study on Prevention and Treatment of Facial Wrinkles by Acupuncture and Moxibustion*

Zhen Peng<sup>1,a</sup>, Jianrong Hui<sup>1,2,b,\*</sup>

<sup>1</sup>*Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712046, China*

<sup>2</sup>*Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, 712000, China*

*<sup>a</sup>1397114878@qq.com, <sup>b</sup>jrjianrong99@163.com*

*\*Corresponding author*

**Keywords:** Acupuncture and Moxibustion Therapy, Facial Wrinkles, Wrinkle Removal, Acupuncture Cosmetology, Ageing

**Abstract:** Facial wrinkles are the most intuitive manifestation of skin aging. Preventing wrinkles and delaying aging have become the focus of modern medical cosmetology. Modern medicine is mostly used. Laser, radiofrequency, botulinum toxin injection and other treatments to eliminate wrinkles, these methods have many adverse reactions. This article analyzes and summarizes the mechanism of facial wrinkles from the perspective of Chinese and Western medicine by consulting the relevant literature on acupuncture and moxibustion prevention and treatment of facial skin wrinkles in CNKI, Wanfang Data, VIP, SinoMed, PubMed. The theoretical basis of acupuncture and moxibustion prevention and treatment of facial wrinkles, the types of acupuncture and moxibustion therapy, the selection of needles and the specific operation are elaborated. This paper provides some references for clinicians to apply acupuncture therapy to treat wrinkles, and provides reference for follow-up research and standardization of acupuncture therapy to treat wrinkles.

## 1. Introduction

Facial wrinkles refer to the phenomenon in which all skin tissues on the face cause skin elasticity to decrease, sag and wrinkle for various reasons, which is a clinical manifestation of skin aging [1]. The effect of modern medical treatment is rapid and significant, but most of these wrinkle removal methods only improve wrinkles by local treatment of the affected area. His method has certain traumatic and side effects, often causing allergic reactions, pigmentation, stiff expression, or uneven absorption resulting in facial unevenness and other adverse reactions. Acupuncture and moxibustion have attracted a great deal of attention due to its advantages of both specimens, internal and external treatment, lasting curative effect and non-toxic side effects [2].

Traditional Chinese medicine classifies facial wrinkles as "skin aging", and "Huangdi Neijing" has records such as "the face begins to burn", "withered". Doctors of past dynasties have accumulated rich experience in acupuncture and moxibustion to delay aging. And through laboratory research and clinical research, modern medicine has found that acupuncture has a good effect on cosmetic wrinkle removal. Acupuncture wrinkle removal is mainly used to stimulate the

corresponding acupuncture points, adjust the internal functional state of the human body through the operation of the meridians, and improve the operation of local qi and blood, to achieve the purpose of beauty in form and spirit. This article analyzes and summarizes the mechanism of facial wrinkles from the perspective of Chinese and Western medicine, the theoretical basis of acupuncture and moxibustion prevention and treatment of facial wrinkles, and the types of acupuncture and moxibustion therapy. Hope to provide a theoretical basis for the prevention and treatment of clinical acupuncture and moxibustion of wrinkles.

## **2. The Mechanism of Wrinkles**

### **2.1. Modern Medicine**

The morphological and structural changes of collagen fibers, elastic fibers, and matrix in the dermis, as well as the reduction of subcutaneous fat and the loss of skin moisture, and accompanied by the activity of the limb joints and the continuous pulling of local subcutaneous muscles, wrinkles appear on the skin [3]. Natural aging and photoaging are the two main factors leading to facial wrinkles [4]. In the process of aging, the body will produce excessive free radicals to cause oxidative stress, accelerate collagen degradation, and, moreover, produce propylene glycol-bound lipids, thus damaging skin cells, resulting in wrinkles [5-6]. Furthermore, the function of antioxidants that resist free radical damage in the body decreases with aging, which will further deepen wrinkles [7]. Currently, studies have shown that ultraviolet radiation is the main mechanism leading to skin photoaging [8]. Ultraviolet-induced production of peroxides and superoxide anions can damage cell DNA, membranes, and proteins [9] and affect collagen synthesis. When photoaging occurs in the body, the dermis is significantly thickened, forming a large number of elastic fibers that are dysfunctional and easily degraded, thus relaxing and wrinkling the skin [10]. In addition, wrinkles are also affected by skeletal muscle movement, gravity, environmental pollution, living habits, and other factors.

### **2.2. Traditional Chinese Medicine**

Chinese medicine believes that the generation of facial wrinkles is related to the operation of the meridians, the deficiency of the zang-fu organs, the invasion of six evils, and emotional changes [11]. The head and face are the meeting of the Yang, and the Yang meridians are all along the head and face. When the meridians are blocked, the Yang Qi cannot rise and the facial skin is lost to the nourishment of the Yang Qi. The striae cannot resist external evil, and it is susceptible to wind evil. When the wind is strong, it is dry, and the skin is lost to nourishment, over time, the skin will produce wrinkles. In addition, the generation of facial wrinkles is closely related to the lungs, kidneys, spleen, and stomach. The lung governs the fur. If the hair is unfavorable, the skin loses the nourishment of qi, blood, and body fluid, and the fur is haggard and withered. The kidney is hidden by the essence of the five zang organs and six fu organs, the essence is refined, and the blood is refined. Deficiency of the kidney causes deficiency of essence and qi, blood is passive, skin loses its nourishment, skin appears wrinkles. Spleen and stomach are the foundation of acquired, spleen and stomach are out of control, fine distribution of water and grains is unfavorable, skin is dystrophy, withered and dull. Emotional disorders can damage the viscera, consume qi and essence, damage yin and yang, and accelerate the aging of the human body [12].

## **3. Theoretical basis for the Prevention and Treatment of Acupuncture Wrinkles**

With the support of the theory of meridian theory, acupuncture and moxibustion is used to

remove wrinkles through the use of various acupuncture and moxibustions, to stimulate the meridians and acupuncture points of the whole to mobilize the various factors of the human body. Acupuncture and moxibustion regulate the functions of various viscera, promote the movement of qi and blood, and achieve the purpose of nourishing the face, eliminating wrinkles and delaying the aging of the body [13].

### **3.1. Reconcile Yin and Yang**

"Lingshu" says: "The key to using needles is to know how to adjust Yin and Yang". "Those who are sick in the yang of the yang will stab the yang." Zusanli is one of the acupuncture points of the lower stomach, the stomach meridian, and the Huiyang nine nips. The stomach meridian is the most widely distributed on the face, and the stomach meridian has the most qi and blood in the Sanyang meridian. Therefore, Zusanli, the point of Weijie, can treat the "Yang of Yang" in the stomach meridian, that is, the disease of facial skin.

### **3.2. Communication Inside and Outside**

Stimulating the meridians on the body surface can regulate the internal organs and maintain the normal function of the organs, thus promoting the general operation of the body's qi and blood. The meridians, tendons, and skins of the stomach meridian of foot yangming are all on the face. By stimulating the acupuncture points on the face, such as sibai and juliao, it can stimulate the stomach meridian of foot yangming to produce qi and blood, so that the five zang organs and six fu organs can be nourished by qi and blood, and play their respective functions. Therefore, the acupuncture points of the Yangming Meridian, including Dicang, Buche, Xiaguan, Sibai, Daying, Zusanli, etc., are often selected for acupuncture cosmetology[14].

### **3.3. Regulating Qi and Blood**

Stimulating acupuncture points can dredge the meridians by stimulating the meridian qi, so that qi and blood run on the head and face, filling the yangming and solid three yang. Local acupuncture in facial wrinkles can improve local blood circulation and promote the disappearance of wrinkles. Stimulating the spleen and stomach acupuncture points can maintain the normal function of the spleen and stomach in transporting water and transforming qi and blood, and the skin has enough qi and blood to moisten [15]. Among the many acupuncture and moxibustion acupuncture points, Zusanli, Hegu, and Taichong can replenish qi and promote qi, Sanyinjiao and Xuehai can nourish blood and activate blood, Baihui can replenish qi and promote qi, and the above six acupuncture points jointly regulate the operation of qi and blood in the whole body.

## **4. Acupuncture Treatment Methods**

### **4.1. Techniques of Filiform Needle Acupuncture**

The filiform needling method is to stimulate acupuncture points or local skin using different specifications of filiform needles, relax the meridians and dredge collaterals, and regulate qi and blood to achieve the goal of making facial skin glossy and lustrous. The mechanism of acupuncture wrinkle removal has been found to be that stimulating acupuncture points can increase the activity of antioxidants such as superoxide dismutase and catalase on the skin, while reducing the content of malondialdehyde, thus protecting the oxidative defense system in the body [16]. In addition to that, acupuncture can promote fibroblast synthesis in the dermis, thus increasing collagen content; it can

also promote collagen fiber repair in the reticular layer and resist wrinkle formation. At the same time, it can also promote local muscle contraction, improve muscle elasticity, prevent muscle relaxation, and avoid wrinkle formation [17]. Clinically, according to the growth characteristics of the wrinkles, doctors often use filiform needles to tie 3-4 needles in the wrinkles to form a row, which can directly stimulate the subcutaneous capillaries and promote blood circulation at local skin folds, thus promoting the generation of subcutaneous collagen and improving muscle elasticity, to achieve the effect of treating skin wrinkles [18].

#### **4.2. Catgut Implantation at Acupoint**

The formation process of skin wrinkles is long-term, and Ling Shu says: "Those who have been ill for a long time, the evil spirits are deep, and those who stab this disease stay deep and stay for a long time." Catgut embedding therapy can balance yin and yang, and stimulate qi and blood circulation by placing the thread in the meridian points and continuously needling the acupoints. Modern medical research has shown that catgut embedding can maintain the activity of antioxidants, such as superoxide dismutase, in skin tissue against free radical damage, in order to achieve the effect of antioxidation [7]. Some scholars have found that [19] catgut embedding at facial skin acupuncture points can produce a fine connective tissue hyperplasia zone under the skin of the catgut embedding site, resulting in a bypass effect, so that the loose epidermis can be fixed and the formation and production of wrinkles can be inhibited. In summary, the acupoint catgut embedding can accelerate the microcirculation of local skin tissue, enhance cell regeneration and tissue repair capacity, and maintain the activity of antioxidants in the body to achieve the effect of antiwrinkle and wrinkle removal.

#### **4.3. Electroacupuncture**

Electroacupuncture stimulation has dual effects of excitement and inhibition. Scientific research has confirmed that the RF current is a current with a frequency of more than 10000. When it passes through human tissues, it will generate a lot of heat energy locally and directly act on dermal tissues, thus promoting the contraction of collagen fibers. After the tissues are heated, a series of physical and chemical effects will appear, which will increase metabolism and make fiber cells generate new collagen fibers, thus restoring the original elasticity of the skin and making the facial skin full and smooth again [20]. The generation of facial wrinkles is also related to the decrease in the water content of facial skin with age, and electroacupuncture can improve the water content of skin [21]. Zhao Chengzhe [22] used dense wave strong electroacupuncture to penetrate the acupuncture points around the patient's facial wrinkles. After one month of treatment, the skin moisture content on the wrinkles was found to increase significantly and the wrinkles were significantly lighter. It can be seen that electroacupuncture not only can effectively stimulate collagen regeneration, improve the intracellular environment, but can also increase the water content of the skin to make the skin smooth and glossy.

#### **4.4. Moxibustion**

Moxibustion can resist the invasion of external pathogens by dredging the meridians of the body, promoting the operation of qi and blood, and regulating the function of zang-fu organs, thus delaying the aging of the body, and at the same time regulating the metabolism of the human body to beautify the appearance [23]. Modern medical research generally believes that the thermal penetration of moxibustion increases skin temperature, causes chemical reactions, opens pores, strengthens sweating, promotes local skin metabolism, and accelerates tissue repair and

regeneration. Therefore, facial moxibustion can promote facial blood circulation, make facial skin delicate, and increase skin elasticity, thereby reducing wrinkles. In addition, 5-tert-butyl pyrogallol, which has a strong antifree radical ability, is stronger than the artificial antioxidant BHT and the natural antioxidant VC [24]. And Zhang [25] found that moxibustion at the distal acupuncture point Zusanli can significantly increase the content of collagen and estradiol in the body, and increase the expression of various growth factors in the skin, thus reducing the oxidation of the skin caused by aging.

#### 4.5. Needle Roller

Rolling needle can stimulate qi defense by stimulating the skin, thus enhancing external function of the skin, reconciling qi and blood, dredging the meridians, and balancing yin Yang, make the skin soft, striae close [26-27]. Scientific research has confirmed that rolling needle can promote the circulation of blood and tissue fluid from the skin by stimulating the superficial layer of the skin, thus accelerating the metabolism of the skin, increasing the nutritional supply around the skin, and improving the internal environment of the skin [28-31]. Not only that, the skin is rich in nerve endings. The 'pain reflex arc' formed by the rolling needle during the rolling of the skin can make the peripheral nerve and the central nervous system produce a benign regulatory response to the immune, endocrine, and humoral systems, thus regulating the physiological function of the body [32-33].

#### 5. Conclusions

Modern medicine believes that the generation of facial wrinkles is closely related to the redox reaction caused by excessive free radicals in the skin, which damages the skin and affects the synthesis and degradation of collagen. Therefore, the key to wrinkle removal is antioxidation, repair of local skin tissue, and promotion of collagen synthesis. Acupuncture and moxibustion therapy has been widely used in the field of facial wrinkle removal, including filiform needle acupuncture, catgut acupuncture point embedding, electroacupuncture, moxibustion, and rolling needle therapy. Acupuncture and moxibustion stimulation of meridians and acupuncture points can effectively regulate the function of human nerves, body fluids and endocrine organs [34-36], antioxidant reaction, scavenging free radicals, improving skin microcirculation, promoting metabolism, nourishing skin, stimulating the generation of subcutaneous collagen, making facial skin smooth and elastic.

As a non-invasive and effective wrinkle removal method, acupuncture cosmetology not only shows good clinical efficacy, but also relatively reduces the treatment cost of patients and concerns about side effects. While patients are treated with acupuncture and moxibustion, they can also regulate the viscera, and treat both internal and external to achieve the beauty of the body and spirit. Acupuncture and moxibustion to remove wrinkles with its characteristics of treating both symptoms and root causes show its unique value here. The mechanism of acupuncture and moxibustion is expected to be fully utilized in the treatment of more skin diseases in the future, and the dominant diseases of acupuncture and moxibustion treatment will be expanded. At present, acupuncture cosmetology as a comprehensive multi-effect treatment, its mechanism of action is complex, modern scientific research is not complete, the number of clinical cases reported in the literature is small, the sample size is small, and the lack of long-term efficacy observation. In addition, there is a lack of standardized and unified standards for the evaluation of facial wrinkles and clinical efficacy evaluation. Therefore, in the follow-up study, it is necessary to explore an internationally recognized and unified relevant standard. In clinical research, the sample size of medical records should be increased, the efficacy of acupuncture and moxibustion in preventing and treating facial



wrinkles should be comprehensively evaluated in multiple directions, and the duration of its efficacy should be tracked.

## Acknowledgement

This work was supported by Key R & D Program of Shaanxi Province Key R&D Program (2023YBSF300).

## References

- [1] Guo Rui, Zhou Ping, Zhu Dongsheng, Li Wei, Huang Siyao. Analysis of TCM disease names and syndrome differentiation and treatment of facial wrinkles. *China Cosmetic Medicine*, 2022, 31 (10): 159-162. DOI: 10.15909/j.cnki.cn61-1347/r.00522.
- [2] Duan Yanjuan, Guo Dongjie, Li Fulun. Application of acupuncture combined with radio frequency in facial wrinkle removal and clinical observation. *Bulletin of Dermatology*, 2019, 36 (02): 216-220+176.
- [3] He Li. *Cosmetic Dermatology*. 2nd ed. Beijing: People's Medical Publishing House, 2011: 12.
- [4] Fisher GJ, Kang S, Varani J, Bata-Csorgo Z, Wan Y, Datta S, Voorhees JJ. Mechanisms of photoaging and chronological skin aging. *Arch Dermatol*. 2002 Nov; 138 (11): 1462-1470. DOI: 10.1001/archderm.138.11.1462.PMID: 12437452.
- [5] Mamalis A, Nguyen DH, Brody N, Jagdeo J. The active natural anti-oxidant properties of chamomile, milk thistle, and halophilic bacterial components in human skin in vitro. *J Drugs Dermatol*, 2013 Jul; 12 (7): 780-784. PMID: 23884490.
- [6] Battie C, Jitsukawa S, Bernerd F, Del Bino S, Marionnet C, Verschoore M. New insights in photoaging, UVA induced damage and skin types. *Exp Dermatol*. 2014 Oct; 23 Suppl1: 7-12. DOI: 10.1111/exd.12388.PMID: 25234829.
- [7] Zhou Shuanglin. Clinical and experimental study on the treatment of facial skin aging by catgut embedding at Foot Yangming meridian. *Beijing University of Chinese Medicine*, 2014.
- [8] Bogdan Allemann I, Baumann L. Antioxidants used in skin care formulations. *Skin therapy letter*, 2008, 13 (7).
- [9] Gilchrist BA. Photoaging. *J Invest Dermatol*. 2013 Jul 1; 133 (E1): E2-6. DOI: 10.1038/skinbio.2013.176. PMID: 23820721.
- [10] Sugimoto M, Yamashita R, Ueda M. Telomere length of the skin in association with chronological aging and photoaging. *J Dermatol Sci*. 2006 Jul; 43 (1): 43-47. DOI: 10.1016/j.jdermsci.2006.02.004.Epub 2006 Mar 9. PMID: 16524700.
- [11] Pan Fei, Yang Renda. On the advantages of acupuncture in wrinkle removal. *Journal of traditional Chinese medicine, Hunan*, 2015, 31 (12): 94-95. DOI: 10.16808/j.cnki. ISSN: 1003-7705.2015.12.044.
- [12] Shen Yanyan. Study on the correlation between emotion and senile diseases. *Guangzhou University of Chinese Medicine*, 2009.
- [13] Xue Kaiyang, Cui Jin. Analysis of the present situation of acupuncture wrinkle removal. *Journal of Guizhou University of Traditional Chinese Medicine*, 2021, 43 (06): 74-78. DOI: 10.16588/j.cnki. ISSN: 2096-8426. 2021.06.016.
- [14] Sun Jianlan, Chen Lifang. Beauty concept of Huangdi Neijing and its clinical guidance for acupuncture and moxibustion beauty. *Journal of Zhejiang University of Traditional Chinese Medicine*, 2021, 45 (02): 185-189. DOI: 10.16466/j. ISSN: 1005-5509.2021.02.016.
- [15] Li Yadong, Gao Hongquan, Zhu Mei, Wang Ying, Zhou Yingchun. Experimental study on the effect of acupuncture at Zusanli and Guanyuan points on NO, SOD, MDA and immunity in aged rats. *China Acupuncture*, 2002 (11): 52-54.
- [16] Liu Bin, Wang Yeqiu, Chen Qiaoyun, et al. Protective effects of acupuncture and moxibustion "Zusanli" and "Guanyuan" on photoaging of rat skin. *Journal of clinical acupuncture and moxibustion*, 2010, 26 (8): 56-58. DOI: 10.3969/j. ISSN: 1005-0779.1000810816.
- [17] Lu Yuan. Effect of "Periacupuncture" on the content and ultrastructure of hydroxyproline in the dermis of naturally aging rats. *China Acupuncture and Moxibustion*, 2008, 28 (1): 61-64.
- [18] Pan Fei. Clinical observation on the treatment of crow's feet due to liver and kidney deficiency by local intensive needling on wrinkles combined with routine acupoint acupuncture. *Hunan University of Traditional Chinese Medicine*, 2015.
- [19] Fengjun Qi. Repairing wrinkles with partial embedding and bridging. *Journal of traditional Chinese medicine*, 2006, 47 (5): 366-367. DOI: 10.3321/j. ISSN: 1001-1668.2006.05.027.
- [20] Lin Yong, Li Shirong, Cao Chuan. Application of radio frequency technology in beauty field. *China Cosmetic Medicine*, 2008, 17 (1): 102-104. DOI: 10.3969/j. ISSN: 1008-6455.2008.01.037.
- [21] Zhang Miao, Liu Yi, Pan Limin, et al. 30 cases of facial wrinkles treated by new painless acupuncture needle

- feeder combined with electroacupuncture. *China Cosmetic Medicine*, 2022, 31 (2): 17-20.
- [22] Zhao Chengzhe. Clinical observation of Miboqiang electroacupuncture on improving facial wrinkles. *Chengdu University of Traditional Chinese Medicine*, 2013.
- [23] Li Bin, Yu Yanqiao, Liu Qingyun. Clinical analysis of the treatment of stable localized vitiligo with fire acupuncture combined with moxibustion. *Sichuan Traditional Chinese Medicine*, 2018, 36 (04): 182-184.
- [24] Myrica rubra. Pharmacological study on the effective components of the burning products of *Artemisia argyi*. Hubei: South-Central University for Nationalities, 2009. DOI: 10.7666/d.d070700.
- [25] Zhang Miao, Ji Feng, Chen Youyi. Anti-aging effect of anti-moxibustion at Zusanli on skin of naturally aging rats. *China Journal of Basic Medicine of Traditional Chinese Medicine*, 2020, 26 (07): 912-916.
- [26] Wang Shihan, Wu Jingdong. Discussion on TCM mechanism of skin aging. *Journal of traditional Chinese medicine, Liaoning*, 2003 (10): 800-801. DOI: 10.13192/j.ljcm.2003.10.24.wangshh.016.
- [27] Yu Maoji. *Meridian Therapy and Beauty*. Shanghai University of Traditional Chinese Medicine Press, 2001.
- [28] FAN Yu-shan. Probe into shallow needling. *China Acupuncture*, 2003 (02): 29-31.
- [29] Lin Minhong, Chen Fengli. Application of Skin Needle in Acupuncture and Beauty Therapy. *China Medical Beauty*, 2016, 6 (08): 67-69. DOI: 10.19593/j. ISSN: 2095-0721.2016.08.034030206
- [30] Ding Xi, Tao Kun. Clinical observation on 202 cases of herpes zoster treated with skin needle roller. *Heilongjiang Traditional Chinese Medicine*, 2006 (5): 3. DOI: CNKI: Sun: HLZY.0.2006-05-031.
- [31] Ma changming. Research progress of percutaneous microneedle drug delivery and its application in cosmetic plastic surgery. *China cosmetic medicine*, 2012, 21 (5): 4. DOI: CNKI: sun: mryx.0.2012-05-073.
- [32] Luo Ling. Study on the effect of skin massage on the immune function of skin cells. *China Association of Acupuncture-Moxibustion. Proceedings of the 2011 annual meeting of China Acupuncture Association (abstract). Proceedings of the 2011 annual meeting of China Acupuncture Association (abstract)*, 2011: 129-134.
- [33] Deng Hangxing. Comparative study on the effects of needle roller and moxibustion on skin cellular immune function. *Sichuan: Chengdu University of Traditional Chinese Medicine*, 2011.
- [34] Wang Caixia. Study on the anti-aging effect of acupuncture on the skin of subacute aging mice. *China Journal of Basic Medicine of Traditional Chinese Medicine*, 2014, 20 (11): 1544-1546. DOI: 10.19945/j.cnki. ISSN: 1006-3250.2014.11.034.
- [35] Lu Mingxia, Yu Jianchun, Yu Tao, et al. Effect of acupuncture at single point on the expression of aging-related genes in rapidly aging rats. *Journal of traditional Chinese medicine*, 2003 (06): 424-426+5. DOI: 10.13288/J.11-2166/R.2003.06.018.
- [36] Wangtong, Pang Ying, Ding Xiaorong, et al. Study on the effect of acupuncture for regulating and invigorating qi and blood on the neurotransmitter content in SAMP10 brain center. *Journal of traditional Chinese medicine, Liaoning*, 2003 (08): 663-664. DOI: 10.13192/j.ljtm.2003.08.63.wangt.046.