



Acupuncture (針灸 Zhēn Jiǔ) – An Emerging Adjunct in Routine Oral Care

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ABSTRACT

Acupuncture (針灸 Zhēn Jiǔ) ('acus' (needle) + 'punctura' (to puncture)) is the stimulation of specific points along the skin of the body involving various methods such as penetration by thin needles or the application of heat, pressure, or laser light. Acupuncture (針灸 Zhēn Jiǔ) aims to treat a range of medical and dental ailments, though is most commonly used for pain relief. This article reviews about the various possible roles of acupuncture (針灸 Zhēn Jiǔ) in clinical dental practice. Acupuncture (針灸 Zhēn Jiǔ) has potential in supplementing conventional treatment procedures by its diverse applicability outreach. Role of acupuncture (針灸 Zhēn Jiǔ) in dental practice has been well supported by clinical trials. Its role in alleviating facial pain, pre-operative and post-operative dental pain has led to its widespread application. Its role as sole analgesic for treatment procedure has to be tested. It's a thought that acupuncture (針灸 Zhēn Jiǔ) may prove an indispensable supplement to conventional treatment modalities and more of clinical trials and studies are required to prove the efficacy. Acupuncture (針灸 Zhēn Jiǔ) is not a miracle cure and is not going to replace the drill. However, the technique can be a supplement to conventional treatments in TMDs, facial pain, pain management Sjogrens syndrome, and in phobias and anxiety. The application and use of Acupuncture (針灸 Zhēn Jiǔ) comes with some side effects. Proper training needs to be obtained before commencement of any procedure related to acupuncture (針灸 Zhēn Jiǔ). Various training programs are offered to train clinical practitioners the apt method to use acupuncture (針灸 Zhēn Jiǔ).

Key words: Acupuncture (針灸 Zhēn Jiǔ), Dentist, Dentistry, Health, Oral health, Traditional Chinese medicine

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DOI: 10.4103/2225-4110.139113

INTRODUCTION

Acupuncture (針灸 Zhēn Jiǔ) is one of the “complementary and alternative medicine (CAM)” techniques used to treat a variety of diseases and disorders. Up to one third of the public in many countries has been shown to consult a CAM practitioner at least once a year.

Acupuncture (針灸 Zhēn Jiǔ) is defined as the stimulation of the so-called ‘acupoints’ for disease prevention, treatment or maintenance of health. Acupuncture (針灸 Zhēn Jiǔ) can utilize various methods including solid needles, lasers, electro-acupuncture (針灸 Zhēn Jiǔ) and transcutaneous nerve stimulation.

Evidence of origin of Acupuncture (針灸 Zhēn Jiǔ) dates back to 3000 years.^[1] It was China which came up with the idea of Acupuncture (針灸 Zhēn Jiǔ). The earliest account of this is found in the book called *Nei Jing* which in English means the Yellow Emperor’s Classic of Internal Medicine. The contents of this book date somewhere around 200 BC. Back then, they did not use metal needles and instead used those made out of stone, moxibustion and herbs to treat a patient. It is being relied and used practically as an useful adjunct in various medical and allied health sciences. Several studies are suggestive of the pivotal role of acupuncture (針灸 Zhēn Jiǔ) in healing of several diseases and alleviating pain.^[2] Literature has proved the role of acupuncture (針灸 Zhēn Jiǔ) in withdrawal of narcotics.^[3] There are several smoking cessation medications and therapies available presently. However acupuncture (針灸 Zhēn Jiǔ) is a recommended alternative procedure, especially where conventional therapies have already failed. We feel, however, that serious consideration of this issue is beyond the scope of this paper. It is thought that acupuncture (針灸 Zhēn Jiǔ) is a technique involving ancient knowledge of Chinese philosophy and is of no use in dentistry as it works on the placebo concept but the tremendous research on acupuncture (針灸 Zhēn Jiǔ) has proved it wrong.^[4] Acupuncture (針灸 Zhēn Jiǔ) is effective in numerous conditions like temporomandibular disorders (TMDs), pain management, and clinical conditions like Sjogren’s syndrome.^[5-7] As because the use of acupuncture (針灸 Zhēn Jiǔ) has evolved since last few decades, Skeptics shrug off the positive effects of acupuncture (針灸 Zhēn Jiǔ) as merely placebo effects. Believers in acupuncture, (針灸 Zhēn Jiǔ) however, say that the benefits have simply not yet been proven. Believers promote that the treatment is harmless and can be used as a complement to western medicine.

Published controlled studies on the effect of acupuncture (針灸 Zhēn Jiǔ) in dentistry are still relatively few, but those which fulfill predefined methodological criteria are reviewed to assess if acupuncture (針灸 Zhēn Jiǔ) is effective in this field. Anxiety related to dental treatment is rife, and there is a clinical impression that acupuncture (針灸 Zhēn Jiǔ) can offer an alternative to the sedative drugs commonly used although no controlled Studies are available.

In recent years interest for acupuncture (針灸 Zhēn Jiǔ) in dentistry has increased at least partly because of published results of its efficacy. However the literature is not extensive and results vary considerably: from no effect to significant improvement. The main of this article is to discuss and review methodologically the

published clinical trials to determine whether clear conclusions can be obtained with the use of acupuncture (針灸 Zhēn Jiǔ).

DEFINITION AND TYPES

Acupuncture (針灸 Zhēn Jiǔ) is a medical technique in which needles are inserted into the skin and underlying tissues. One or more small metal needles are inserted at precise points along 12 meridians (pathways) in the body, through which the vital life force (qi) is believed to flow, in order to restore yin-yang balance and treat disease caused by yin-yang imbalance. Practitioners of Chinese traditional medicine believe in energy flows. This energy, called Qi, circulates around the body using pathways called meridians. Meridians run very close to the surface of the skin in certain areas and can be accessed by needles. Much like plumbing, these pipes can get blocked or go the wrong way, causing health problems. The insertion of needles at these points is aimed to help loosen blocks and normalize flow. The Chinese describe acupuncture (針灸 Zhēn Jiǔ) by the character “Chen,” which literally means “to prick with a needle,” a graphic description of this therapeutic technique. It is a treatment procedure in which generally steel, silver, or gold needles are inserted into specific acupuncture (針灸 Zhēn Jiǔ) points.^[8,9]

Various techniques used in acupuncture (針灸 Zhēn Jiǔ) are as follows:^[2,6,9-14]

- Traditional body acupuncture (針灸 Zhēn Jiǔ) (It uses eight principles of complementary opposites to create harmony in the body. These include yin/yang, internal/external, excess/deficiency, hot/cold.)
- Microsystems acupuncture (針灸 Zhēn Jiǔ) such as ear acupuncture (針灸 Zhēn Jiǔ)
- Electro-acupuncture (針灸 Zhēn Jiǔ)
- Trigger point acupuncture (針灸 Zhēn Jiǔ)
- Laser treatment
- Moxibustion
- Acupressure
- Okibari – Japanese style

At times, acupuncture (針灸 Zhēn Jiǔ) is more effective when the needles are first heated. This technique is known as “moxibustion.” Here, the acupuncturist lights a small bunch of the dried herb called moxa or mugwort and holds it above the needles. The herb, which burns slowly and gives off a little smoke and a pleasant, incense-like smell, will never directly touch one’s body. Another variation is electrical acupuncture. (針灸 Zhēn Jiǔ) Here, electrical wires are hooked up to the needles and a weak current runs through it which may cause no or little sensation at all. There is also auricular acupuncture (針灸 Zhēn Jiǔ) where it is believed that the ear is a microcosm of the body. This means that acupuncture (針灸 Zhēn Jiǔ) needles are placed on certain points on the ear so it can treat certain addiction disorders.

HISTORICAL EVIDENCE

In traditional Chinese Medicine (TCM), The history of acupuncture (針灸 Zhēn Jiǔ) can be dated back to 2000 years ago i.e during the Warring states and the Qin and Han dynasties.^[15]

Authors cite about the use of acupuncture (針灸 Zhēn Jiǔ) among the wounded soldiers of a battle.^[16,17] Chinese mythology says, Acupuncture (針灸 Zhēn Jiǔ) practice began in the Stone Ages, when the sharp edged tools called as “Bian” were used to puncture and drain abscesses.^[2,6,7,14,18,19]

Acupuncture (針灸 Zhēn Jiǔ) is a tried and tested system of traditional medicine, which has been used in China and other eastern cultures for thousands of years to restore promote and maintain good health. Its benefits are now widely acknowledged all over the world and in the past decade traditional acupuncture (針灸 Zhēn Jiǔ) has begun to feature more prominently in mainstream healthcare in the UK. In conjunction with needling, the practitioner may use techniques such as moxibustion, cupping, massage or electro-acupuncture (針灸 Zhēn Jiǔ). They may also suggest dietary or lifestyle changes.

Traditional acupuncture (針灸 Zhēn Jiǔ) takes a holistic approach to health and regards illness as a sign that the body is out of balance. The exact pattern and degree of imbalance is unique to each individual. The traditional acupuncturist's skill lies in identifying the precise nature of the underlying disharmony and selecting the most effective treatment. The choice of acupuncture (針灸 Zhēn Jiǔ) points will be specific to each patient's needs. Traditional acupuncture (針灸 Zhēn Jiǔ) can also be used as a preventive measure to strengthen the constitution and promote general wellbeing.

ACUPUNCTURE POINTS AND FEATURES

In general, acupuncture (針灸 Zhēn Jiǔ) is believed to stimulate the nervous system and cause the release of neurochemical messenger molecules. The resulting biochemical changes influence the body's homeostatic mechanisms, thus promoting physical and emotional well-being. Stimulation of certain acupuncture (針灸 Zhēn Jiǔ) points has been shown to affect areas of the brain that are known to reduce sensitivity to pain and stress, as well as promoting relaxation and deactivating the ‘analytical’ brain, which is responsible for anxiety.

The Acupuncture (針灸 Zhēn Jiǔ) points are basically areas of low electrical resistance. The insertion of needles is made into the skin and muscle. The needles used in acupuncture (針灸 Zhēn Jiǔ) are very small and one probably feels a slight twitch when the needle goes in. They will be inserted carefully to 1/2” or an inch in depth and will stay there from 45 minutes to an hour depending on the condition of the patient. If inserted properly, patient should feel some cramping, distention, electric sensation or tingling which means that the treatment is working. Around 70-80% of these acupuncture (針灸 Zhēn Jiǔ) points are similar to the trigger points and most of the acupuncture (針灸 Zhēn Jiǔ) points are also similar to muscular motor points.^[20-24] There are various acupuncture (針灸 Zhēn Jiǔ) points which play their role in dentistry, such as body points, relevant trigger points, and ear points.

The General points are described as under:

General points

- LI.4 Features: Located in the middle of the second metacarpal bone on the radial side it is used as a distal point for all conditions in the face and is regarded as an excellent point for pain in face and teeth

- Ht7 Features: Located at the palmar flexion crease of the wrist, radial to the tendon of the ulnar flexor muscle of the wrist it is regarded as the best point to relax the patient
- PC.6 Features: Located 2 cun proximal to the palmar flexion crease of the wrist that lies proximal to the pisiform bone, between the tendons of the palmaris longus muscle and the radial flexor muscle of the wrist and is regarded as the best point to be used when patient is suffering from vomiting and nausea
- LR3 Features: Located on the dorsum of the foot between the first and second metatarsals, approximately 2 cm from the margin of the web between the toes, it is regarded as a powerful point to relax the patient relaxing action on muscles
- Gb. 34 Features: Located in a depression located antero-inferiorly to the head of the fibula, it is used for general muscle relaxation
- LI.11 Features: Located at the lateral end of the transverse cubital crease midway between LU5 and the lateral epicondyle of the humerus and is used to improve the immune system.
- TE.3 Features: This point is located in the groove formed by the tendons of the fourth and fifth fingers behind the knuckles and is indicated in some conditions related to ear.

MECHANISM OF ACTION

Acupuncture (針灸 Zhēn Jiǔ) prevents and treats diseases by inserting very fine needles into the skin specifically at the anatomic points of the body. The principle behind this concept is that illnesses occur because there is an imbalance in your life force otherwise known as Qi. It is believed that this flows in 14 channels in the human body known as meridians which branch out to bodily organs and functions. If there is a blockage or obstruction in any of them, this is when you succumb to a disease or an illness. The imbalance in the Qi may go one way or the other because of Yin and Yang. The person can only be normal if there is harmony between the two which is what acupuncture (針灸 Zhēn Jiǔ) is trying to achieve. This can only be restored by stimulating these acupuncture (針灸 Zhēn Jiǔ) points so your Qi can be adjusted, balanced and harmonized. Apart from using needles, practitioners also use friction, heat, impulses of electromagnetic energy and pressure to stimulate these points in order to balance the movement of energy in the body to reduce one's health.

The mechanism used in Acupuncture (針灸 Zhēn Jiǔ) basically stimulates the myelinated nerve fibres in muscles which activates midbrain and pituitary-hypothalamus via spinal cord. The various neurotransmitters playing role are Enkephalin, b-endorphin, Dynorphin, Serotonin, and Noradrenalin.^[25] The insertion of a needle in an acupuncture (針灸 Zhēn Jiǔ) point creates a small inflammatory process with release of neurotransmitters such as bradykinin, histamine, etc., and subsequently stimulate A δ fibers located in the skin and muscle. The A δ fibers terminating in the second layer of the black horn inhibit the incoming painful sensations by release of enkephalin. This step acts as a Pain relieving step for Acupuncture (針灸 Zhēn Jiǔ).^[26] From the second layer of the back horn, the A δ fiber continues to the fifth layer of the black horn, crosses over to the opposite side, and ascends via spinothalamic tract to the midbrain where the raphe magnus nucleus is stimulated.^[27,28]

ACUPUNCTURE (針灸 ZHĒN JIǔ) ORAL AND DENTAL HEALTH

According to the World Health Organization, here is a list of some illnesses where acupuncture (針灸 Zhēn Jiǔ) is used. These include acute bronchitis, the common cold, cataract, toothaches, hiccups, ulcers, constipation, diarrhea, headache and migraine, Meniere's disease, osteoarthritis and a lot more. In the US, acupuncture (針灸 Zhēn Jiǔ) is often used to treat chronic pain conditions and mind body disorders.

Management of dental pain (pre-op and post-op), TMDs, oro-facial pain and facial palsy

Like other clinical disciplines dentists sometimes meet problems which do not respond to orthodox treatment. Facial pain may give rise to diagnostic difficulties, sometimes though failure to consider musculoskeletal causes. Orthodox treatment may involve surgery for instance on sinuses, trigeminal nerve ablation, or removal of teeth, occasionally unnecessarily. There are many causes of facial pain and there is often a musculoskeletal component but in general high percentage respond to acupuncture (針灸 Zhēn Jiǔ) clinically.

According to TCM theory, local acupuncture (針灸 Zhēn Jiǔ) points on facial regions such as ST6 and ST7 and distant points like LI4 can be used to treat dental pain. Acupuncture (針灸 Zhēn Jiǔ) in dental considerations might not be involved in treating the cause of dental pain but it acts as an adjunct in achieving anesthesia before dental procedures are carried out. In some countries, acupuncture (針灸 Zhēn Jiǔ) has even been used to replace chemical anaesthesia prior to surgery as there are some patients who are not able to tolerate regular anaesthesia. Studies have shown that the onset time for regional anesthesia after administration of prilocaine hydrochloride is around 2 min. A pilot study was conducted to investigate whether the induction time of local anesthetic can be reduced if acupuncture (針灸 Zhēn Jiǔ) is given before injection.^[10,29] In 1995 and 1999 randomized placebo-controlled trials conducted by Lao *et al.* reported that the group that received acupuncture (針灸 Zhēn Jiǔ) treatment after the surgical removal of impacted lower third molar had significantly longer pain-free postoperative time compared to the placebo group.^[30,31] Subjects treated with acupuncture (針灸 Zhēn Jiǔ) reported 181 min pain-free time compared with 71 min in the placebo group. More randomized controlled clinical trials may be necessary to verify the role of acupuncture (針灸 Zhēn Jiǔ) therapy in dental pain management, particularly in postoperative pain.

Although acupuncture (針灸 Zhēn Jiǔ) therapy may not be helpful in treating the cause of TMD but it may aid in relieving the pain caused by TMD and can provide comfort to the patient. It has been documented that acupuncture (針灸 Zhēn Jiǔ) can help in muscle relaxation and reduce muscle spasms. A systematic review of randomized controlled trials for assessing the efficacy of acupuncture (針灸 Zhēn Jiǔ) for symptomatic cure of TMDs was conducted.^[32] Raustia *et al.* compared the effectiveness of acupuncture (針灸 Zhēn Jiǔ) and conventional treatment modalities in the management of TMD and found no difference in the two modalities as far as subjective and objective variables are concerned.^[33]

There are several case reports and case series in Chinese literature on successful acupuncture (針灸 Zhēn Jiǔ) treatment for patients with trigeminal neuralgia. Studies have shown that by the use of filiform needles and using both local and distal points, trigeminal neuralgia can be treated.^[34] Positive results have also been obtained with combined use of three needling and point injections.^[35] Researches were also done with the combination of acupuncture (針灸 Zhēn Jiǔ) and Chinese herbs which also showed positive results.^[36]

The use of acupuncture (針灸 Zhēn Jiǔ) to treat Bell's palsy is based on the TCM concept that needle manipulation at both the local and distal sites can regulate the flow of qi in the meridians, harmonize qi-blood balance, and strengthen the body's resistance to external wind pathogens. It may also help in increasing the excitability of nerves and in promoting the regeneration of nerve fibers. Some local acupuncture (針灸 Zhēn Jiǔ) points used include ST6 Jiache, located near the angle of the mandible at the prominence of the masseter muscle, and ST7 Xiaguan, located at the depression between the zygomatic arch and the mandibular notch. These two points are found to be anatomically close to branches of the facial nerve.^[37-39]

Acupuncture (針灸 Zhēn Jiǔ) for orofacial pain and facial paralysis works primarily through cranial nerve stimulation of primarily the trigeminal and facial nerves, respectively. In treating xerostomia, needles stimulate parasympathetic function. Acupuncture (針灸 Zhēn Jiǔ) for craniomandibular pain targets sensitive spots primarily in the muscles of mastication. The value of practicing acupuncture (針灸 Zhēn Jiǔ) from a neurophysiologic perspective is that one can more readily and justifiably extrapolate treatments from humans onto animals, based on neuro anatomically relevant transposition of acupuncture (針灸 Zhēn Jiǔ) points across species.

Management of dental anxiety and gag reflex

Several reports on the use of auricular acupuncture (針灸 Zhēn Jiǔ) for treating chronic and acute anxiety have shown promising results.^[40,41] There was no difference in the efficacy of Midazolam and auricular acupuncture (針灸 Zhēn Jiǔ) in the management of anxiety related to dental treatment.^[42]

The stimulation of acupuncture (針灸 Zhēn Jiǔ) points like PC6 Neiguan and CV24 Chengjiang has proved to significantly reduce gag reflex.^[43] Reports suggest auricular acupuncture (針灸 Zhēn Jiǔ) to be helpful in treating severe gag reflex.^[44] The points known to reduce anxiety are: Top inside of ear (relaxation), Lower inside of ear, just above where the lobe attached to the side of the face (tranquilizer), Lower inside of the ear and near the upper part of the lobe (master cerebral). Stimulation of an acupuncture (針灸 Zhēn Jiǔ) point on the ear prior to undergoing treatment effectively controls the gag reflex, allowing dentists to perform a variety of procedures without compromising the patient's safety and comfort. More studies should be carried out to verify the effectiveness of acupuncture (針灸 Zhēn Jiǔ) in controlling gag reflex.

EFFICACY AND PROGNOSIS OF TREATMENT

The cure of Acupuncture (針灸 Zhēn Jiǔ) is not a miraculous. Not everyone is impressed with acupuncture (針灸 Zhēn Jiǔ) itself.

Most western medical professionals have expressed either doubt or indifference to the oriental method while others have downright driven it down into the earth with criticisms and brutal skepticism. However, recent research shows the efficacy (or lack thereof) of acupuncture (針灸 Zhēn Jiǔ), and while more research has to be done, it has been proven to actually positively affect some, but not all, forms of ailments that it claims to cure. The mechanism does not work in all patients, so its efficacy varies from one person to other. A lack of response should always result in re-examination and refinement of diagnosis.^[45] Adequate positive results have come out in treatment of pain in teeth and bite problems, various types of neuralgia, anxiety, etc.

ADVERSE EFFECTS OF ACUPUNCTURE (針灸 ZHĒN JIǔ)

Like other strategies used in treating health conditions, acupuncture (針灸 Zhēn Jiǔ) may have some side effects. Medications have side effects and allergic reactions, surgeries have risk of infection and complications. There have been numerous reports of adverse effects following acupuncture (針灸 Zhēn Jiǔ). These are (to mention a few) risk of injury, rare infections, minor bleeding, small bruises, some dizziness, pneumothorax, endocarditis, and hepatitis, some resulting in fatalities.^[46] However, it must be appreciated that most of these results are due to the lack of basic anatomical knowledge or because of not applying aseptic procedures by non-medical/dental qualified practitioners. When these are factored out of analysis, acupuncture (針灸 Zhēn Jiǔ) proves to be a very safe technique in the hands of a properly trained practitioner.^[47-55]

To promote acupuncture (針灸 Zhēn Jiǔ), the NIH or National Institute of Health in 1997 has stated that this technique is very useful in treating various health conditions. These include ear, nose, throat, respiratory, gastrointestinal, eye, nervous system and muscular disorders. In some cases, acupuncture (針灸 Zhēn Jiǔ) is able to prevent some of them from happening. This was further strengthened by the fact that the side effects of acupuncture (針灸 Zhēn Jiǔ) are much less than that of conventional drugs that are being sold by pharmaceutical companies.

CONCLUSION

Although, the application of acupuncture (針灸 Zhēn Jiǔ) has a long history, it still proves to be an effective treatment modality in TCM sector. With the growing acceptance of alternative medicine in Western cultures, acupuncture (針灸 Zhēn Jiǔ) is quickly becoming a popular practice. More and more people today are choosing acupuncture (針灸 Zhēn Jiǔ) over western medicine to treat bodily pains, relieve stress, or to promote overall health. In the control of postoperative pain or in the management of TMD and facial pain, it has come out to be a useful alternative to the conventional therapeutic armamentarium of the general dental practitioner. But acupuncture (針灸 Zhēn Jiǔ) is not risk free. Hematoma may develop if the needle punctures a circulatory structure. It is also possible that pneumothorax may occur if the needle is inserted too deep. There is also the risk of HIV and hepatitis if the needle is not properly sterilized. One must not forget that it is merely an alternative and not a proper form of medical treatment. This means one

should still be examined by a professional in the medical field who can determine the severity of the illness or disease. Some physicians may wish to expand the scope of their practice by taking additional training to administer acupuncture (針灸 Zhēn Jiǔ).^[46,55-60] Unfortunately, standards of acupuncture (針灸 Zhēn Jiǔ) have not been fully approved by the FDA due to many unregulated practices that still exist such as the re-use of needles.

RECOMMENDATIONS

- Dentists should treat their patients with acupuncture (針灸 Zhēn Jiǔ) only after obtaining the relevant knowledge and ability.
- Acupuncture (針灸 Zhēn Jiǔ) should only be employed after a thorough diagnosis of the patient's condition. Meanwhile, employment of conventional therapies may be considered as appropriate.
- A separate informed consent for acupuncture (針灸 Zhēn Jiǔ) may be required. Standard infection control procedures must be in place.
- Single use of needles must be employed.
- As it is the case with all therapeutic measures, the use of acupuncture (針灸 Zhēn Jiǔ) has to be documented appropriately and detailed records must be kept.
- Multidisciplinary research into the effective use of acupuncture (針灸 Zhēn Jiǔ) in dentistry is encouraged.
- Teaching and professional training in acupuncture (針灸 Zhēn Jiǔ) could be considered as an optional part of undergraduate, postgraduate and continuing professional development.^[6,46]

ACKNOWLEDGMENTS

Our (Dr. Devanand Gupta and Dr. Dalai) most humble and sincere thanks to: Dr. Amama Furkan and Dr. Ankita Jain for their uncondescending cooperation and support in formatting the manuscript. I (Dr. Dalai) thank god everyday for you, Guudia. With everything inside of me I want to thank you for being there and bearing with me in my hard times.

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