

Review Article

Acupressure therapy in orthodontics: A review

ABSTRACT

Acupressure (acupuncture + pressure) is an alternative medicine technique derived from acupuncture. Here, physical pressure is applied to acupuncture points by the elbow, hand, or with various devices. There are literally thousands of acupressure points on the body. Many of the problems encountered in dental clinics can be curbed using these pressure techniques very easily and it is not an invasive process like acupuncture. The article provides a review of pressure techniques and its use (focusing on gagging, dental anxiety, and temporomandibular joint pain) in orthodontic as well as any other dental setup.

Key words: Acupressure; orthodontics; painless technique.

Introduction

Acupuncture (Zhēn Jiǔ) means “to puncture with a needle.”^[1] The term acupuncture comprised two different words from Latin: Acus means needle and puncture means insertion.^[2]

Traditional Chinese Medicine (TCM) defines acupuncture as, the stimulation of certain points on and/or near the surface of the body through any technique of point stimulation with/without the insertion of needles, which include the use of electrical, magnetic, light, and sound energy and cupping, to stabilize physiologic functions or to treat certain conditions of the human body.^[3]

The puncture technique originated in China around 3000 years ago and involves insertion of needles into different parts of the body with the intention of curing disease. With time, the puncture is replaced by pressure but the points remain the same.

Blom *et al.* have demonstrated its value in Sjögren's disease.^[4] A commonly held view of acupressure technique is that it is a complicated technique which involves a substantial knowledge of age-old Chinese philosophy whose action is mainly a placebo effect and has limited application to dentistry. However, Richardson and Vincent^[5] have demonstrated it to be effective

in a wide range of musculoskeletal conditions, Lundeberg^[6] has shown that it may improve the immune response, and Tao recommends its use in stress management,^[7] a topic that interfaces with dental practice.

History

The oldest account is found in a book called Nei Jing which means the Yellow Emperor's Classic of Internal Medicine. Book's content dates somewhere around 200 BC.^[8] Some believes that some soldiers wounded in a battle by the arrows were cured of chronic afflictions that were otherwise untreated,^[9] and there are variations on this idea,^[10] hieroglyphs and pictographs have been found dating back from the Shang Dynasty (1600-1100 Before Common Era), which suggests that it was practiced along with moxibustion.^[11] The art originated in China and soon spread to Japan, the Korean peninsula, and elsewhere in Asia.

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In 1979, the World Health Organization (WHO) endorsed its use to treat 43 symptoms, which was later discussed by Wong.^[12] In 1996, this was extended to 64 conditions.

In the report of Geneva WHO 2003, pain in dentistry (including temporomandibular dysfunction and dental pain), postoperative pain, and facial pain were listed among the conditions for which it has been proven to be successful through controlled experiments, to be an effective treatment.

In dentistry, the ability of pressure technique has been proven for managing numerous chronic orofacial disorders. There are various reports of randomized controlled trials (RCTs) on the analgesic effect of acupuncture for postoperative pain caused by different dental procedures and by other chronic disorders.^[13] According to the literature, it is more effective than a placebo. Thus, acupressure can be considered as a sensible alternative and/or supplement to present dental practice, both as an analgesic and for addressing different dental disorders.

Research on acupressure

A recent systematic review of published literature was able to recognize 74 publications concerning the use of acupressure and acupuncture in dentistry, of which 17 reported RCTs.^[4,14-29] As three of these covered the same study,^[20-22] they were regarded for analysis as one trial resulting in a total of 15 RCTs. These were scored according to predefined and accepted criteria^[29] to review the methodological quality. A score of 72% was used as an acceptable criterion. Nine of the trials reached this level; of these, four investigated the use of acupuncture in postoperative pain management and four temporomandibular disorder (TMD). All four trials covering TMD^[15,18-22] showed some benefit comparable to occlusal splint therapy. Three of the trials on postoperative pain management found acupressure effective.^[16,17,23]

Acupressure in Dental Disorders

According to Naik *et al.*, acupressure can be used to manage a wide range of disorders in dentistry.^[30] It may provide new hope for patients having disorders that cannot be managed with usual treatment modalities. Some of the conditions for which acupuncture can be used effectively include the followings:

- a. Dental anxiety and gag reflex
- b. Temporomandibular joint (TMJ) pain or TMD
- c. Dental pain
- d. TMJ clicking and locking
- e. Chronic muscle pain or spasm
- f. Atypical facial pain
- g. Headache (migraine, tension headache)
- h. Xerostomia (dry mouth)

- i. Nerve pain (neuralgia, especially trigeminal neuralgia, nerve injury)
- j. Paresthesia or anesthesia of the oral and paraoral structures.

Review of Clinical Trials

Acupuncture for dental pain

There is a complicated network of nerve fibers in the dental pulp within the tooth and the periodontium surrounding it, and pain is triggered quickly when stimuli activate these nerve endings. Managing dental pain includes identifying and eliminating the etiological factors (such as caries, gingivitis, and/or periodontitis), followed by prescribing or administering analgesic medication, if required.

The role of acupressure in dental pain may not involve eradicating the cause of the pain, but rather serving as an adjunct in achieving pain relief. The National Institutes of Health Concord Statement on Acupuncture and Acupressure of November of 1998 states that promising results have been shown for postoperative dental pain.^[31] A systematic review by Ernst and Pittler assessed the effectiveness for treating acute dental pain.

This review contains 16 controlled trials, most of which implied that it was effective in dental analgesia. The reviewers concluded that technique could alleviate dental pain.

Chapman *et al.*^[32] stated that the tooth pain threshold to electrical stimulation was significantly raised. It may help relieve dental pain by^[33] stimulating the nerves located in muscles, which results into release of endorphins and other neurohumoral factors (e.g., neuropeptide Y, serotonin).

- Changing perception and processing of pain in the brain and spinal cord
- Reducing the cardiovascular reflex elicited by toothache (related with the adrenergic system)
- Increasing the release of adenosine, which has antinociceptive properties
- Influencing the activity of the limbic–paralimbic–neocortical network
- Reducing inflammation, by promoting release of immunomodulatory and vascular factors
- Increasing local microcirculation, which helps disperse swelling.

There are various acupressure points for relieving toothaches and the pain associated with gum disease. Working on these points can help get better quickly. We do not have to use all of these points. Using just one or two of them whenever you have a free time can be effective.

Points (A): Facial beauty [Figure 1]

Location: At the bottom of the cheekbone, situated directly below the pupil. Benefits: Relieves head congestion, toothaches, and sinus pain.

Points (B): Jaw chariot [Figure 2]

Location: In between upper and lower jaws, on the muscle that bulges in front of the earlobe when the back teeth are slightly clenched. Benefits: Relieves jaw pain and spasm, lockjaw, TMJ problems, dental neuralgia, and toothaches.

Points (C): Shoulder meeting point [Figure 2]

Location: On the outer surface of the upper arm, one thumb width in back of the base of the deltoid muscle and two finger widths higher up toward the shoulder. Benefits: Relieves toothaches, shoulder pain, elbow pain, and painful arm extension.

Points (D): Joining the valley [Figure 2]

Caution: This point is forbidden for pregnant women as its stimulation can evoke premature contractions in the uterus. Location: Between the webbing of the thumb and index finger at the muscle when the two are brought close together. Benefits: Relieves toothaches and headaches; also traditionally used as a general pain reliever, decongestant, and anti-inflammatory point.

Temporomandibular joint pain temporomandibular disorders

The TMJ is the most complicated joint in our body. The TMJ is often predisposed to degenerative changes and pathologies as a result of frequent and repetitive stresses that the TMJ undergoes. Common symptoms associated with TMD includes pain in the TMJ, generalized orofacial pain, chronic headaches, jaw dysfunction, including hyper- and hypo-mobility, limited movement or jaw locking, painful clicking and/or popping sounds with opening or closing of the

mouth, and difficulty in speaking or chewing. TMJ disorders are of following three categories: (1) Masticatory muscle disorder; (2) internal derangement; and (3) degenerative joint disease.

While acupressure therapy may not be useful for removing the cause of TMD which results from structural anomalies, it mainly helps relieve the pain and discomfort associated with the conditions. It has been documented that it can help muscle relaxation and reduce muscle spasms, if the spasms are indeed muscular in origin.^[12]

Management of Dental Anxiety and Gag Reflex

Several reports on the use of auricular acupressure for treating acute and chronic anxiety have shown promising results.^[34-36] There was no difference in the efficacy of auricular acupuncture and midazolam in the management of anxiety related to dental treatment.^[37]

The stimulation of acupuncture points like PC6 Neiguan and CV24 [Figure 3] Chengjiang has proved to significantly reduce gag reflex^[38] using pressure at these points. Reports suggest this technique to be helpful in treating severe gag reflex.^[39] The points which reduce anxiety are as follows: top inside of ear (relaxation), lower inside of ear, just where The lobe attached to the side of the face, and just near the upper part of the lobe (master cerebral). Stimulation of this point before undergoing treatment successfully controls the gag reflex, which allows a dentists to perform a variety of clinical methods without compromising the patient's safety and comfort.

Temporomandibular joint clicking

Anterior disc displacements are the most common cause of joint sounds, specifically clicking. Demonstration of the

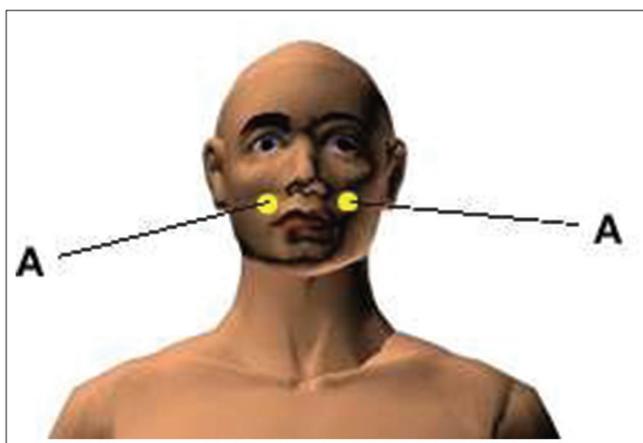


Figure 1: Point A

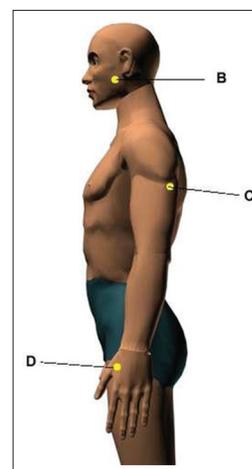


Figure 2: Point B, C and D

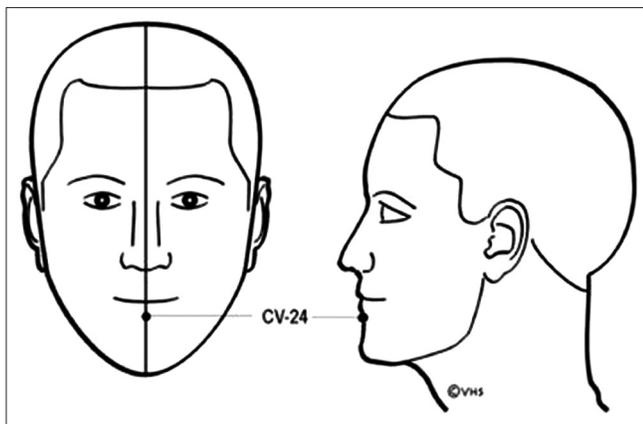


Figure 3: Point CV 24

lateral pterygoid's attachment to this disc has led to the theory that some anterior disc displacements are related to dysfunction of lateral pterygoid muscle. The theory suggests that hyperactivity of the superior head of the muscle pulls the disc forward from its normal position over the mandibular condyle. Acupressure helps minimize TMJ clicking sound by relaxing the muscles and thereby reducing the anterior displacing force on the meniscus of the TMJ.^[12,40]

Myofascial pain

It is characterized by localized, hypersensitive myofascial trigger points. These trigger points may result from muscle overload from trauma and repetitive activities which cause abnormal stress on specific muscle groups. Clinically, patients complain of headaches, tenderness, restricted movement of jaws, muscle stiffness, and weakness. Park *et al.*^[41] took a more specific approach. A randomized clinical trial was performed by Shen *et al.*^[42] to evaluate the effectiveness of acupressure for myofascial pain of the jaw muscles. Twenty-eight patients aged > 18 years, who were diagnosed with chronic myofascial pain of the jaw muscles, received the pressure therapy. General head and neck pain ratings were obtained both before and after treatment on a numerical scale. A mechanical pain stimulus on the masseter muscle was administered before and after the procedure and rated on a visual analog scale to measure pain-tolerance level. Patients who received verum acupuncture experienced a reduction in jaw pain, jaw/face tightness, and neck pain, and also had an increase in pain tolerance of the masseter muscle.

Atypical facial pain

Originally, the term atypical facial pain was coined to describe those patients whose response to neurosurgical procedures was "atypical." The term has been used for various facial pain problems and represents a psychological disorder although no specific criteria for diagnosis have been established. Acupuncture is generally believed to stimulate the nervous

system which causes the release of neurochemical messenger molecules. These biochemical changes monitor the body's homeostatic mechanisms and help in promoting physical and emotional well-being of patients. Stimulation of certain acupressure points affects areas of brain known to reduce sensitivity to pain and stress.^[43]

Conclusion

Although the application of acupressure has a long history, it still proves to be an effective treatment modality in TCM sector. With increasing acceptance of alternative medicine in Western cultures, acupuncture is quickly becoming a popular practice. More and more clinicians today are opting acupuncture over western medicine to treat bodily pains, relieve stress, or enhance overall health. In the control of postoperative pain or management of TMD and facial pain, it emerged as a useful alternative to the conventional therapeutic armamentarium of the general dental practitioner. The technique can be mastered by any dentist after a short training program.^[44-52]

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Conflicts of interest

There are no conflicts of interest.

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