



Libyan International Medical University
Faculty of Basic Medical Science

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Acupuncture for Dental Pain

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Abstract:

Traditional Chinese acupuncture has a history of more than 2500 years and is one of the best-known complementary and alternative therapies. Acupuncture stimulates the nervous system and alters the processing and perception of pain signals and also releases natural painkillers, such as endorphins and serotonin in the nervous system. Acupuncture's successful use for various dental conditions has been proven. Thus, it is important for the dental clinicians to be familiar with the applications of acupuncture for dental disorders.

Introduction:

In dentistry, the ability of acupuncture has been proven for managing various chronic orofacial disorders. There are numerous reports of randomized controlled trials on the analgesic effect of acupuncture for postoperative pain caused by various dental procedures and by other chronic disorders. According to the literature, acupuncture is more effective than a placebo or sham acupuncture. Thus, acupuncture can be considered as a sensible alternative or supplement to current dental practice, both as an analgesic and for addressing various dental disorders.¹

- The aim of this report is to assess Acupuncture Alternative Therapy in Dentistry.

Acupuncture in Dental disorders:

Acupuncture can be used to manage a wide range of disorders in dentistry. Acupuncture may provide new hope for patients with disorders that cannot be managed with conventional treatment modalities. Some of the conditions for which acupuncture can be used effectively include: Dental pain, Dental anxiety and gag reflex, Temporomandibular joint (TMJ) pain or temporomandibular disorder (TMD), TMJ clicking and locking, Chronic muscle pain or spasm, atypical facial pain, Headache (tension headache, migraine), Xerostomia (dry mouth), Nerve pain (neuralgia, especially trigeminal

neuralgia, neuropathic pain, nerve injury), Paresthesia or anesthesia of the oral and paraoral structures.³

Acupuncture for Dental Anesthesia:

Acupuncture can act as an adjunct for achieving anesthesia during dental procedures. Studies have shown that the onset time for regional anesthesia after administration of prilocaine hydrochloride is 2 minutes. A study was conducted by Rosted and Bundegardin 2003, to investigate if the induction time of a local anesthetic can be reduced if acupuncture is administered before injection. In the group who received local acupuncture before injection of an inferior alveolar nerve block (with prilocaine hydrochloride), the induction time was 62 seconds versus 2 minutes in the control group in whom only the nerve block was administered. Findings from this study suggested that regional acupuncture can accelerate the induction time after a nerve block is administered.⁴

Acupuncture for Postoperative Dental Pain:

Tavares et al. evaluated the efficacy of EA on postoperative pain control after mandibular third-molar surgery. Twenty-four young patients with symmetrically impacted mandibular third molars were selected. Each patient was submitted to two separate surgical procedures under local anesthesia. On one side, extraction was carried out, using both prior (24 hours) and immediate postoperative application of EA, while on the contralateral side surgery was carried out without any EA treatment. Postoperative pain intensity (rated on a 10-cm visual analogue scale [VAS]) was significantly lower for the EA side and analgesic intake decreased for all evaluated periods. The researchers concluded that EA controlled postoperative pain following mandibular third-molar surgical removal.⁵

Dental Anxiety and the Gag Reflex:

Various controlled trials have shown that ear acupuncture is as effective as intranasal midazolam for reducing dental anxiety and reducing the gag reflex. A randomized controlled trial conducted by Karst et al. assessed auricular acupuncture for addressing dental anxiety. This study compared the efficacy of verum auricular acupuncture with intranasal midazolam, sha, acupuncture, and no treatment for reducing dental anxiety in patients undergoing dental extractions. Compared to the control and sham acupuncture groups, the verum auricular acupuncture and midazolam groups were significantly less

anxious. In addition, patient compliance assessed by the dentist was significantly improved with auricular acupuncture and intranasal midazolam. The researchers concluded that auricular acupuncture and intranasal midazolam were equally effective for treating dental anxiety. In 2010, Rosted et al. examined the effect of acupuncture administered prior to dental treatment on patients' level of anxiety. Eight dentists submitted 21 case reports regarding their treatments for dental anxiety. Anxiety levels were assessed by the Beck Anxiety Inventory (BAI). BAI score was assessed before and after acupuncture treatment. All patients received an acupuncture treatment for 5 minutes prior to the planned dental treatment. There was a significant reduction in median value of BAI scores after treatment with acupuncture (26.5 reduced to 11.5; $P < 0.01$), and it was possible to perform the planned dental treatment in all 20 cases after acupuncture treatment.⁶

Xerostomia:

Johnstone et al. and Furness et al.³¹ found that acupuncture treatment may provide relief for pilocarpine-resistant xerostomic patients following radiotherapy for head and neck malignancies. The mechanism of how acupuncture can help increase salivary flow is still not fully understood, but various researchers have suggested possible hypotheses, including: Acupuncture therapy produces a release of neuropeptides, affecting blood flow with anti-inflammatory properties and trophic effects on the salivary-gland acini, Neuronal activations; activation of the parasympathetic nerves increases salivary secretion, Acupuncture therapy may tap into the neuronal circuit, which activates the salivary nuclei in the pons and, subsequently, the salivary glands via the cranial nerves.⁷

Material and methods:

Detailed methods and materials are described in our previous report.²⁸ In brief, all patients were recruited from the outpatient pool of the Oral and Maxillofacial Surgery Clinic at the University of Maryland at Baltimore Dental School. Patients were aged 18 to 40 years, in good health (American Society of Anesthesiologists class I or II), eligible for extraction of 1 mandibular (lower) partial bony impacted third molar, and had no history of prior treatment with acupuncture. Excluded patients were those who presented with any oral dental disease, those taking medications that might confound the results,

those with a history of bleeding diathesis or allergy to the medication used in the study, or women who were pregnant or lactating. No race or sex was excluded from the study. After initial screening, the purposes and procedures of the study were explained, and the patients read, understood, and signed an informed consent that was approved by the Institutional Review Board of the University of Maryland. The dental procedure was performed by one surgeon (S.B.) blinded to treatment assignment. All patients were given the same local anesthetic of 3% mepivacaine hydrochloride (Carbocaine) without any vasoconstrictor. No other preoperative medication was used.

The patients were randomly assigned to either real acupuncture or placebo acupuncture immediately after the surgical removal of a partial bony impacted third molar. Randomized blocks of 4 and 6 were used to attain balanced allocation. Patients were assigned to a treatment group using sequentially numbered opaque sealed envelopes. A licensed acupuncturist (L.L.) administered all treatments and was the only investigator who knew what type of treatment the patient received. In the real acupuncture group, the acupuncture points *Hegu* (LI 4), *Jiache* (St 6), *Xiaguan* (St 7), and *Yifeng* (SJ 17) were used unilaterally on the tooth extraction side. All needles remained in place for 20 minutes, and each was manually manipulated (no electrical stimulation was applied) for 20 to 30 seconds 3 times: immediately after insertion, at the midpoint, and at the end of treatment. The "de qi" sensation (a sensation of soreness, numbness, or distention at the needling site) was obtained for each manipulation. In the placebo group, the procedure was identical to that used in the treatment group except without needle insertion into the skin. An empty plastic needle tube was tapped on the bony area next to each acupuncture point to produce some discernible sensation, and a needle with a piece of adhesive tape was then taped to the dermal surface for 20 minutes. Manipulations were made by palpating the surface of the skin with a blunt dental instrument at the same 3 points in time as the treatment group. In both groups, the patients' eyes were covered with patches so they could not view the treatment procedure. A pair of electrodes from a mock electrical stimulator was attached to the ends of the needles in the real and placebo acupuncture groups. A second treatment was given after patients reported moderate pain

on a 4-point scale. For each subject, the second treatment was the same as the first treatment (acupuncture or placebo).⁸

Results

Forty-two volunteers enrolled in the study. Three patients were excluded from further participation because the anesthetic administered during surgery failed to block pain completely; they requested and received "rescue" pain medication following surgery and completed no postsurgery questionnaire. The remaining patients were randomized into treatment (n=19) and control (n=20) groups after surgery. There were no significant differences between the acupuncture and placebo groups on age, sex, or race (Table 1) based on χ^2 analyses. Neither the surgeon-reported patient trauma from the surgical procedure nor the amount of local anesthetic administered were found to be associated with outcomes.⁸

Table 1. Demographic Variables in Treatment and Control Groups*

Variable	Group, No. (%)	
	Acupuncture (n = 19)	Control (n = 20)
Sex		
Male	11 (58)	11 (55)
Female	8 (42)	9 (45)
Race		
Asian	1 (5)	0 (0)
Black	1 (5)	2 (10)
Hispanic	1 (11)	1 (5)
White	15 (79)	17 (85)
Age, y		
18-22	8 (42)	8 (40)
23-27	7 (37)	10 (50)
28-34	4 (21)	1 (10)

* No significant differences observed based on χ^2 analyses or t test (age continuous). Mean (SD) age for the acupuncture group was 23.4 (4.7) years and for the control group was 24.0 (3.8) years.

Discussion:

The therapeutic action of acupuncture is brought about through its regulatory actions on various systems, so it can be regarded as a nonspecific therapy with a broad spectrum of indications, particularly in functional disorders.²

The results of this study demonstrate the superiority of acupuncture over placebo in preventing pain before it starts, and are consistent with our previous studies.^{28,34} However, acupuncture was not more effective than placebo after the patient reported "moderate" pain, suggesting that acupuncture may be better at preventing acute postoperative pain than at controlling existing pain. Neither psychological factors nor study procedures had a significant effect on study outcomes; patient reports suggested that the treatment and control procedures were equally credible until pain differences between the groups increased the accuracy of their perceptions about which treatment they were receiving. This study has validated a noninsertion control mode⁸

Conclusion:

Acupuncture is a tried and experienced method of traditional medicine. Acupuncture has been used in China and other Eastern cultures for thousands of years to promote and uphold good oral health. Various clinical trials tested and concluded that acupuncture could play a promising role in complementing conventional treatment modalities because acupuncture is generally safe and nontoxic, and produces very negligible adverse reactions. Research has been performed, and there has been some recognition of acupuncture's therapeutic effects, even though the mechanisms for these effects are still not understood completely.

Reference:

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