

Acupuncture Anesthesia for Complicated Dental Extractions in Patients with Lidocaine Allergy

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Clinical presentation of the soft tissue abscess and periodontitis of the buccal gingiva of the upper right first molar after the metal crown was removed.

Introduction

ACUPUNCTURE ANESTHESIA is a method of inducing an anesthetic effect through needling for a surgical operation;¹ it was first implemented in the 1950s. It originates from Traditional Chinese Medicine and is considered one of the most important achievements in modern medicine. Acupuncture anesthesia was developed vigorously and applied widely during the 1960s and 1970s.² In dentistry, most tooth

extractions using acupuncture anesthesia are completed in less than 15 minutes,^{3,4} but difficult extractions requiring gingival incision and those taking a significantly longer time need combined acupuncture anesthesia and local anesthesia.⁵ Even though acupuncture-assisted anesthesia is the current developmental tendency in acupuncture anesthesia,⁶ we treated a single case illustrating the potential application of acupuncture anesthesia without local anesthesia for complicated dental extractions lasting for over an hour.

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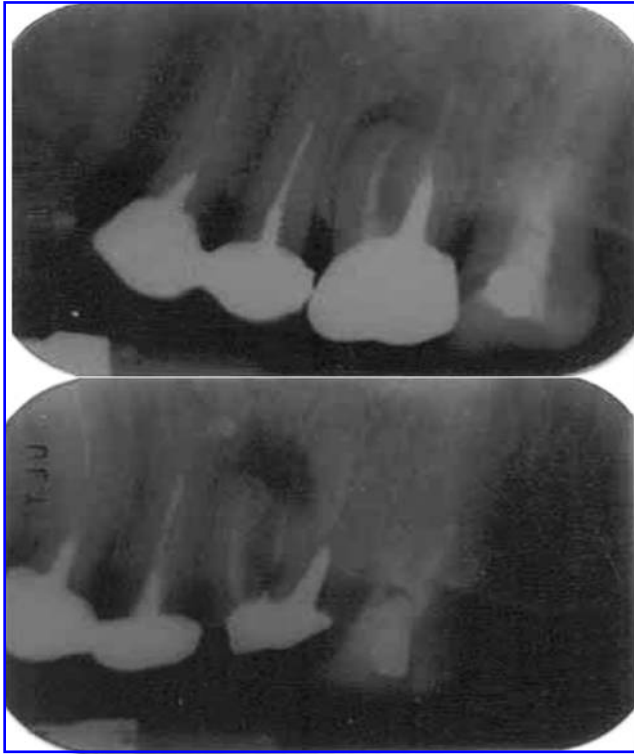


FIG. 1. Intraoral periapical radiographs showing radiolucency at the apex of the upper right first molar root, suggestive of periapical pathosis. A cast post and core can also be seen.

Case Report

History and examination

On August 10, 2005, a 59-year-old housewife (height, 148 cm; weight, 55 kg) visited our dental clinic for swelling and pain in the upper right first molar buccal gingiva (photograph on first page). Her past history revealed infection with hepatitis B, arrhythmia, and postoperative neurilemmoma (near the esophagus). She was allergic to lidocaine, rifampin, pyrimines, and diclofenac. A large cast post and core and a residual root were noted after removing the metal crown on the upper right first molar. Intraoral periapical radiographs revealed periapical pathosis of this tooth (Fig. 1). The condition was diagnosed as an oral soft tissue abscess with a retained root and periodontitis. We decided to perform incision and drainage initially, followed by complicated extraction 1 week later. Because the patient was allergic to lidocaine, we decided to use acupuncture anesthesia instead of conventional local anesthesia during the procedures. We obtained written informed consent from the patient for the use of acupuncture anesthesia.

Acupuncture anesthesia procedure

For the incision and drainage and for the complicated extraction, we selected six acupuncture points on the extremities, including bilateral *Hegu* (LI4), *Zusanli* (ST36), and *Neiting* (ST44). Stainless steel acupuncture needles were inserted to an appropriate depth at the acupuncture points after skin sterilization. The needles were manipulated by rotating back and forth, during which the patient should have a sensation of obtaining *qi* (*de qi*, causing the acupuncture needle to elicit the



FIG. 2. Debridement of the soft tissue abscess during the incision and drainage procedure. Curettage was performed to debride the abscess, following which a Penrose drain was inserted and fixed for drainage.

patient's feeling of soreness, numbness, distension, heaviness, or even sensation like an electric shock around the point together with the practitioner's feeling of tenseness around the needle).¹ Then, the needles were connected to an electrical stimulator (Model-05B; Ching-Ming Medical Device Co., Taipei, Taiwan). Electricity was generated as an output of programmed pulse voltage at 1.2 Hz with a regular wave, 390- μ s square pulse at a maximal tolerable intensity of 500 Ω (12–18 V; a strong but not painful sensation for the patient). The electroacupuncture was applied for 15 minutes for induction and then converted to a 15-Hz dense-disperse wave to maintain the anesthetic effect.

Surgical procedures

The incision and drainage procedure (Fig. 2), performed on August 11, 2005, was started at 2:05 PM and completed at 2:20 PM. After incising the abscessed first molar gingiva, the lesion was debrided and a bacterial culture sample was obtained. A Penrose drain was inserted and fixed for drainage. The complicated extraction, performed 1 week later (on August 18), was started at 2:10 PM and completed at 3:20 PM. The upper right first molar gingiva was incised and dissected to extend the surgical field. The cast post and core and the residual root were sectioned for removal (Fig. 3). Hemostasis was achieved and sutures were placed at the end of the surgery. Both operations proceeded smoothly under effective acupuncture anesthesia. The operator (T-Y. S.) acknowledged that acupuncture anesthesia was as effective as conventional local anesthesia in controlling the patient's pain threshold. The patient was conscious and comfortable during both sessions of acupuncture anesthesia.

Discussion

Acupoints to elevate a patient's pain threshold are an important element of acupuncture anesthesia. *Qi* refers both to the refined nutritive substance that flows within the human body as well as to its functional activities.¹ According to the theory of Traditional Chinese Medicine, pain results

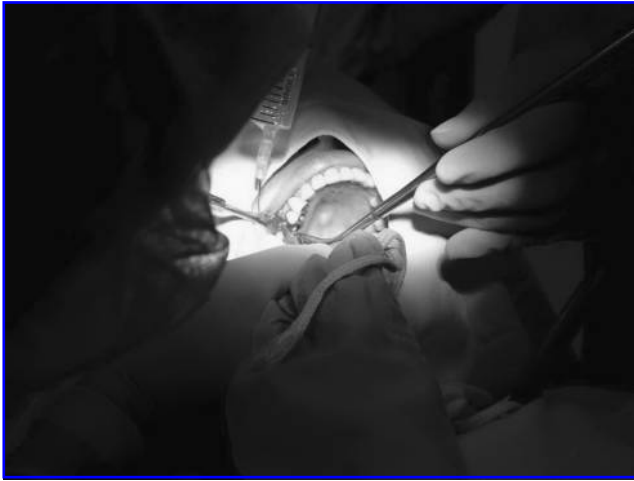


FIG. 3. Sectioning of the retained root stump, and cast post and core for removal. A surgical drill was used for the sectioning, with normal saline as the coolant (syringe). Hemostasis was achieved and sutures were placed at the end of the surgery.

from blood stasis due to *qi* stagnation⁷ (a pathological change in which a long-standing or severe stagnation of *qi* impedes the flow of blood, a condition characterized by coexistence of *qi* stagnation and blood stasis).¹ We selected the acupoints on both *yang-Ming* meridians because these meridians pass through the gingivae. LI4 is the source point (*Yuan* point, point where the original *qi* of the visceral organs pours, passes, or stays)¹ of the large intestine meridian.⁸ It is involved in heat clearing and fire purging (a therapeutic method of clearing pathogenic heat and removing pathogenic fire),¹ freeing the meridians and collateral vessels (a therapeutic method used to relieve obstruction of meridians and collateral vessels),¹ and moving *qi* to relieve pain (a therapeutic method of promoting the flow of *qi* to relieve pain caused by stagnant *qi* movement).¹ ST36 is the sea point (*He* point, one of the five transport points, mostly located near the elbows or knees, where the meridian/channel *qi* goes deep into the body just as a river flows into the sea)¹ of the stomach meridian.⁸ It affects the freeing meridians and collaterals, harmonizes *qi* and blood (a therapeutic method of using *qi*-regulating and blood-activating acupuncture maneuvers to treat disharmony of *qi* and blood),¹ and reinforces the healthy *qi* and eliminates the pathogenic factors (two general principles of treatment—to reinforce the patient's healthy *qi* and to eliminate the invading pathogenic factors, which can be applied separately or in combination according to the particular condition of the case).¹ ST44 is the brook point (*Ying* point, one of the five transport points, mostly located distal to the metacarpophalangeal or metatarsophalangeal joints, where the meridian/channel *qi* starts to spout)¹ of the stomach meridian,⁸ and is involved in heat clearing and fire purging as well as in moving *qi* to relieve pain. The combined use of these acupoints bilaterally (six points) is therefore effective in clearing the Wind-Fire (a pattern/syndrome caused by externally contracted Wind and Fire in combination)¹ of *yang-Ming*, anti-inflammation, and analgesia. The selected acupuncture points in this case

(LI4, ST36, and ST44) were beyond the face rather than on the face,^{3,4,9–11} causing the least interference for the operator.

Acupuncture activates brain structures such as the nucleus raphe magnus and periaqueductal gray, contributing to descending inhibitory modulation, and deactivates multiple limbic areas, including the insula and anterior cingulate cortex, contributing to the modulation of pain emotion. The opioid peptides and their receptors in the arcuate nucleus-periaqueductal gray-nucleus raphe magnus-spinal dorsal horn pathway play a pivotal role in mediating acupuncture analgesia.¹² It has been suggested that acupuncture can modulate central homeostasis for analgesia, which is compatible with the efficacy of acupuncture for pain relief by moving *qi* and activating blood, as described in Traditional Chinese Medicine theory.

Acupuncture anesthesia is considered a good method for inducing anesthesia in dental extractions.^{3,5,13,14} It is convenient, easy to use, economical, and safe. Moreover, unlike conventional anesthetics, this method has no influence on physiologic functions and no toxic side-effects; physiologic functions can be regulated, immune function is strengthened, the vital signs remain stable, and the patient remains conscious during the operation. There are few complications after surgery, and recovery is rapid.

The main drawback of acupuncture anesthesia for dental extractions is incomplete analgesia, which also exists in some cases under local anesthesia.¹⁰ The main reasons for the success of both of the operations with acupuncture anesthesia alone, particularly the complicated dental extraction (with bony involvement and lasting for over an hour), are as follows. (1) We recognized the individual variations with respect to the effects of acupuncture, and were able to communicate with the patient and gain her trust. (2) Adequate induction of acupuncture anesthesia was achieved, as indicated by the attainment of *qi* (an important sign of effectiveness). (3) The acupuncture points were a practical application based on the theory and experience of selecting acupuncture points along the meridians described in the science of acupuncture-moxibustion. (4) Electroacupuncture strengthened the effects of acupuncture anesthesia. (5) The operator was able to apply a steady, accurate, gentle, and fast technique following acupuncture anesthesia.

Conclusions

Acupuncture anesthesia was successfully applied for the complicated dental extraction in this case. We suggest that it can be used as an alternative anesthesia for complicated extractions in patients with lidocaine allergy.

Disclosure Statement

No competing financial interests exist.

References

1. World Health Organization Regional Office for the Western Pacific (WPRO). WHO International Standard Terminologies on Traditional Medicine in the Western Pacific Region. Manila, Philippines: WPRO, 2007:18, 56, 123, 204, 207, 211, 218, 219, 237, 241, 250.
2. Liu TY, Yang HY, Chu LX, et al. The present situation and analysis of acupuncture anesthesia [in Chinese]. *Zhongguo Zhen Jiu* 2007;27:914–916.

3. Liu WT, Zhang ZY. Clinical observation of 37 extractions under acupuncture anesthesia [in Chinese]. *J Clin Acupunct Moxibustion* 2004;20:24.
4. Tang YF. Clinical observation on 28 cases of dental extraction based on acupuncture anaesthesia [in Chinese]. *Guiding J TCM* 2006;12:72–73.
5. Taguchi R. Acupuncture anesthesia and analgesia for clinical acute pain in Japan. *eCAM* 2008;5:153–158.
6. Chen HL, Wang MS, Wang SD. Prospects on acupuncture analgesia: Its clinical application and research. *Int J Anesth Resus* 2006;27:347–350.
7. Shi DB, ed. The encyclopedia of traditional Chinese medicine [e-book in Chinese]. Version 1.0 for PC. Taipei: Yuan-Liou, 2002.
8. Yang JS, ed. The Science of Acupuncture and Moxibustion [in Chinese]. Taipei: Zhi-Yin, 2000:215, 303, 309, 559.
9. Chen W, Wang Y, Wu H, Gu Z. Analysing the effects of tooth extraction under acupuncture anesthesia in 825 cases of senior. *Zhen Ci Yan Jiu* 1991;16:1–3, 14.
10. Gu ZQ, Wang YQ, Yin XR, et al. Clinical research on tooth extraction under acupuncture anesthesia. *Acta Acad Med Wuhan* 1985;5:255.
11. Gerschman JA, Wikström PO. The use of acupuncture as an alternative dental analgesic in an individual with multiple allergies. *Swed Dent J* 1984;8:225–230.
12. Zhao ZQ. Neural mechanism underlying acupuncture analgesia. *Prog Neurobiol* 2008;85:355–375.
13. Gao K. Probe into the effective law of acupuncture anesthesia [in Chinese]. *Chin J Ethnomed Ethnopharm* 2001;52:252–255.
14. Zhang XR. Acupuncture: Review and analysis of reports on controlled clinical trials. Geneva: World Health Organization, 2002:11.

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