International Journal of Pediatric Otorhinolaryngology 110 (2018) 12–15

Contents lists available at ScienceDirect

International Journal of Pediatric Otorhinolaryngology

journal homepage: www.elsevier.com/locate/ijporl

2016 ESPO Congress

# Intraoperative pediatric acupuncture is widely accepted by parents

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ARTICLE INFO

*Keywords:*
Acupuncture
Children
Postoperative pain
Surgery
Tonsillectomy
Tympanostomy tubes

ABSTRACT

*Objective:* Medical acupuncture is increasingly recognized for reducing postoperative pain, nausea and emergence agitation. Anesthetic induction is an ideal time to perform acupuncture in an effort to reduce the adverse side effects of surgery. Acupuncture is safe, inexpensive and does not lengthen the duration of anesthesia. There are however no published reports of how often patients will choose intraoperative acupuncture when given the opportunity to do so.

*Methods:* A retrospective review of all surgical procedures performed by one surgeon over 12 months was done. This yielded 401 unique patients ranging in age from 3 months to 21 years with a mean of 6 years. Five of these patients had emergent surgery and 396 patients had scheduled surgery; there were a total of 822 surgical procedures performed on these individuals. Intraoperative acupuncture was offered only to the scheduled surgical patients.

*Results:* 388 of 396 (98%) parents chose to have intraoperative acupuncture done for their child. No complications of acupuncture were encountered.

*Conclusion:* These results demonstrate strong acceptance of intraoperative acupuncture by parents. We hope this report encourages surgeons to become trained in medical acupuncture.

## 1. Introduction

Medical acupuncture reduces postoperative pain, nausea and emergence agitation, according to an accumulating body of evidence [1] from clinical trials. Two recent systemic reviews and meta-analyses concluded acupuncture improved postoperative pain [2] and reduced nausea and vomiting [3]. In addition, a randomized controlled trial from Boston Children's Hospital showed acupuncture not only reduced pain but also emergence agitation in children having tympanostomy tubes [4].

The practice of pediatric otolaryngology often involves performing high-volume outpatient surgery. A frequent challenge in all of pediatric surgery is the reluctance of young children to swallow oral pain medication after surgery. These children are vulnerable to dehydration, which can require intravenous fluids and analgesics in the emergency department. Children recovering from tonsillectomy in particular often suffer severe pain that can last beyond 10 days [5]. In addition, the Food and Drug Administration banned the use of codeine after tonsillectomy in children in February 2013 after it was found unsafe [6].

Intraoperative medical acupuncture offers an opportunity to reduce the adverse side effects of surgery. Medical acupuncture is safe for pediatric patients [7], inexpensive (about 10–50 cents per needle) and does not lengthen the duration of anesthesia [8].

Despite these documented benefits, we were unable to find published articles about how frequently patients will choose acupuncture if given the opportunity to do so. The intent of this retrospective review is to demonstrate the nearly universal acceptance of acupuncture by the parents of children having surgery.

## 2. Methods

### 2.1. Participants

The lead author performed all surgeries and acupuncture techniques at Rady Children's Hospital in San Diego. This report includes all patients who had surgery from November 1, 2016 through October 31, 2017. The University of California, San Diego Human Research Protections Program granted an exemption for this retrospective review.

401 unique patients met the above criteria during the 12-month study period. 234 (58%) patients were boys and 167 (42%) were girls. The ages ranged from 3 months to 21 years with a mean of 6 years. Five patients had emergent surgery and the remaining 396 were scheduled. Intraoperative acupuncture was offered only to the scheduled patients

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https://doi.org/10.1016/j.ijporl.2018.04.014
Received 20 January 2018; Received in revised form 19 March 2018; Accepted 15 April 2018
Available online 19 April 2018

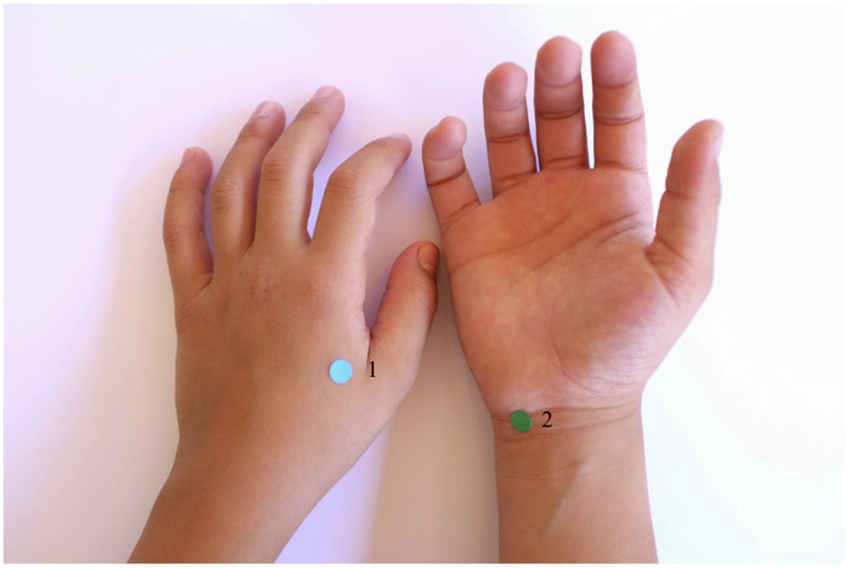


**Fig. 1.** Acupuncture points for myringotomy and tube insertion and also adenoidectomy. Sterile stainless steel needles were placed at 1) LI4 and 2) HT7 in both upper extremities upon induction.

at the time of the office consultation. The nature, purpose, alternatives and risks of the proposed surgery and medical acupuncture were discussed with the parents at the time of the visit. To remove financial concerns, acupuncture was offered at no cost. No effort was made to find out why patients declined medical acupuncture so as to not influence their decision.

### 2.2. Medical acupuncture

Medical acupuncture was done in the operating room immediately after induction and before intubation or the start of surgery. The acupuncture strategy used varied depending upon the type of surgery performed.

The acupuncture done for myringotomy and tube insertion as well as adenoidectomy was the same. Single-use stainless steel acupuncture needles [9] (SEIRIN-America, Weymouth, MA) with a shaft 15 mm in length and 0.16 mm in diameter were placed at Large Intestine 4[1] (LI4) and Heart 7[2] (HT7) bilaterally on the upper extremities (Fig. 1) and taped in place. Stimulation of LI4 has been shown to increase activity in the midbrain periaqueductal gray, a control center for pain modulation [11]; acupuncture at HT7 decreases anxiety-like behavior in animals [12]. This is the identical acupuncture treatment used in the previously cited study demonstrating decreased pain and emergence agitation in children undergoing myringotomy and tubes [4]. Upon completion of surgery, all four needles were removed and the patient was transported to the post-anesthesia care unit.

For adenotonsillectomy, a Pointer Plus acupuncture point finder (Lhasa OMS, Weymouth, MA) was used to identify Shen Men, Point Zero [13] and Oropharynx I [14] in each outer ear (Fig. 2). This was followed by placement of intradermal semi-permanent 24-karat gold-plated Aiguille Semi-Permanente (Sedatelec, Irigny, France) needles with a shaft of 2 mm. The needles were left in place after surgery and allowed to extrude, which typically takes a week or so. Patients with these indwelling needles are able to pursue all usual activities and can swim, shower and bathe *ad lib*.

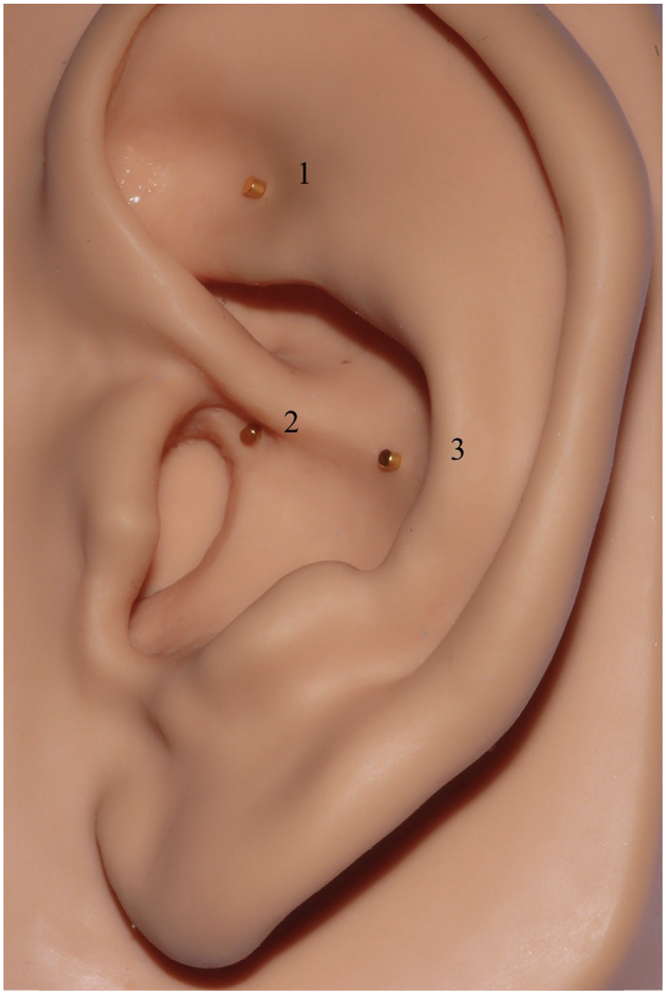


**Fig. 2.** Auriculotherapy points for tonsillectomy in ear model. Intradermal needles were placed at 1) Shen Men, 2) Oropharynx I and 3) Point Zero in both outer ears.

[1] LI4 is located on the dorsum of the first interosseous space of the hand at the level of the midpoint of the shaft of the second metacarpal bone in the belly of the first interosseous dorsalis muscle [10].

[2] HT7 is located on the ulnar side of the anterior carpal region on the palmar crease of the wrist, radial to the pisiform bone [10].