**ORIGINAL ARTICLE**

# Whether Does Acupressure (P6) Prevent Nausea and Vomiting in Patients Undergoing Ear Surgery

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**ABSTRACT**

**Objectives:**

1. To investigate whether acupressure (P6) prevents nausea and vomiting in patients undergoing ear surgery
2. To compare effect and placebo effect of acupressure (P6) in preventing nausea and vomiting in patients who have undergone ear surgery

**Methods:**

This was double blind randomized study in which sixty patients were enrolled. They were divided into three equal groups. First group received acupressure with bilateral stimulation of P6 (A), second group received bilateral placebo stimulation (P) and a third group received no acupressure stimulation and served as a reference group(R).We observed how many patients developed nausea ,vomiting and needed rescue antiemetics in each group

**Results:**

It is clear from the results that 9,7,6 patients in groups A,P,R respectively developed nausea only while 1, 1 and 8 patients had nausea(8 Vs 1with P <0.05) 24 h after surgery in A,P,R groups respectively. When compared to placebo acupressure (2 patients vomited and 5 needed rescue medication) significantly (P< 0.05) fewer needed rescue antiemetic medication after acupressure at P6 (no vomiting and rescue medication).When compared to the reference group (5 vomited and 4 needed rescue medication) significantly fewer vomited after acupressure (P< 0.05).

**Conclusion:**

It has been concluded from our study that acupressure (P6) has significantly reduced vomiting and need of rescue medication in patients undergone ear surgeries. While placebo effect of acupressure decreased nausea 24 h after surgery

**Key words:**

Nausea, vomiting, acupressure, antiemetics, ear surgery

## INTRODUCTION

Postoperative nausea and vomiting (PONV) are common in patients undergoing ear surgeries (Tympanoplasty, Mastoidectomy, Otoplasty, Osciculopasty) and are the main symptoms which delay discharge from recovery. Even though the most efficient pharmacological treatments decrease the incidence of PONV by about 50%[1,2] but are not without their adverse effects and their cost benefit could also be questioned[3]. Acupuncture towards the P6 (Neiguan) point, which is located three fingers' breadth proximal to the proximal flexor palmar crease between the tendons of flexor carpi radialis and palmaris longus[4], has been shown to be effective in decreasing the incidence of nausea and vomiting to about the same extent as pharmacological treatments[5]. Acupressure is a method where pressure is applied to acupuncture points. A finger, a round stick or a pea-size pearl is used. Acupressure towards P6 has been shown to be effective in several recent studies[6,7,8,9,10], including studies from Great Britain in the 1990s[11,12]. No adverse effects have been reported. Acupressure has not reached widespread use and is not even mentioned in recent reviews of the subject[1,2]. Because the placebo effect of a treatment like acupressure is probably considerable[13], we used a design in which true effect and placebo effect could be measured. For placebo stimulation
we used a sensory stimulation of a non-acupressure point of similar intensity as the active acupressure stimulation[10], and a control group to measure the placebo effect. Our aim was to investigate the effect and placebo effect of acupressure on the incidence of nausea and vomiting after ear surgeries

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## MATERIAL & METHODS

After obtaining intuitional review board approval from Dec. 2006 to July 2007, sixty patients aged (18—45 yrs) ASA I and II who were scheduled for ear surgeries were enrolled in the study.

The study design was randomized double blind. Patients with history of severe adverse reactions to NSAIDS, bronchial asthma, kidney or liver dysfunctions, bleeding disorders, or history of steroids within 24h of surgery were excluded. All patients were divided into three equal groups. First group (A) received active treatment (n=20), second group (P) received placebo treatment (n=20) and third group (R) was used as a reference group (n=20). Anesthesia protocol was similar for all patients .They were given midazolam 0.1 mg /kg as oral premedication two hours prior to induction. After arrival in operating theatre, an intravenous catheter was placed, infusion of crystalloid D5 + 0.45% saline started and standard monitoring was established. esthesia was induced with the following drugs

1. Inj. Fentanyl 1.5microgram/kg
2. Inj. Propofol 2.5mg/kg
3. Inj. Cisatracurium 0.15mg/kg followed by 0.05mg/kg increments as necessary.
4. Oxygen, Nitrous oxide and sevoflurane to maintain anaesthesia via trachea tube and mechanical ventation.

Supplementary Fentanyl 0.25-0.5 microgram /kg was given intravenously as required. All patients received inj. Ketoprofen 100 mg intramuscularly as postoperative analgesic before extubation. Group A received acupressure at P6 (Neiguan), a point located on the pericardial meridian, which is found three fingers' breadth (approximately 5 cm) proximal to the proximal flexor palmar crease, about 1 cm deep, between the tendons of flexor carpi radialis and palmaris longus, is supposed to have an effect on post- operative nausea and vomiting[4]. A Sea-Band carries a plastic pearl which is fastened to apply pressure on P6. Both forearms were used. These points were marked with water-resistant ink so that the bands could be properly replaced if removed. The areas were draped with a dressing during the stay in the hospital. Group 'P' was given placebo acupressure. A point on the dorsal side of both forearms, four fingers' breadth proximal to the proximal flexor palmar crease was used for placebo stimulation. These points were marked in the same way as with the active acupressure. Sea-Band was used for stimulation, and the same precautions were taken to keep the stimulation blinded. The nurses giving anesthesia and the nurses on the postoperative ward, although aware that stimulation was being performed, were not aware of the location of P6. Group 'R' received neither true acupressure nor placebo acupressure. But anesthesia protocol, instructions for post operative care and assessment were the same. Nausea was estimated by the patients on a horizontal visual analogue scale (VAS), 100 mm. The endpoints were assigned ''no nausea'' to the left and ''worst possible nausea'' to the right. The patients were asked to assess their degree of nausea 30, 60 and 120 min after arriving at the postoperative ward. Metoclopramide 10 mg was administered i.v. at the patient's request. If this antiemetic was not effective, Droperidol 1.25 mg i.v. was given. Vomiting was noted by the nurses, as was the need for antiemetics. After discharge, the patients were asked to assess the degree of nausea at 6 pm, when going to bed, at breakfast time and at noon the day after surgery. They were also asked to note vomiting. A scoring on the VAS over 10 mm was classified as nausea and scoring below 10 mm was classified as no nausea. Nausea score 24 h after surgery[16] was used as the patients' evaluation of the treatment. Pain was assessed by the patient on a horizontal VAS, 100 mm. The endpoints assigned were ''no pain'' to the left and ''worst possible pain'' to the right. Morphine was used on the postoperative ward in doses of 2mg i.v. if additional analgesic was needed (Table 1). The patients received Paracetamol 1 gram six hourly orally for 24 hours after discharge from recovery when oral sips allowed. Demographic data are given as median (range). Kruskal-Wallis test was used to test for differences between demographic data. Comparison of treatment effects was performed with Fisher's exact test, using the Ciba-Geigy table. The outcome was number of patients experiencing nausea (only), vomiting, need for rescue medication, and nausea after 24 h. A *P*-value of <0.05 was considered to be significant.

## RESULTS

Demographic data and factors prognostic for PONV are given in Table 1 and results as number of patients are given in table 2. No patient (0%) in the acupressure group vomited, but 2 patients (10%) in the placebo acupressure and 5 patients (25%) in the reference group (*P*< 0.05, vs. acupressure) vomited. No patient (0%) in the acupressure group requested rescue medication, but 5 (25%) patients in the placebo group (*P*< 0.05, vs. acupressure) and 4 patients (20%) in the reference group did as shown in figure 1. There were no differences in the postoperative need for morphine between the groups (Table 1). Twenty-four hours after surgery, one patient (5%) in the acupressure group and one patient (5%) in the placebo group reported nausea, while 8 patients (40%) in reference group developed nausea as shown in figure 2.

Table 1: Demographic variables of three groups of patients

| | Reference group (n=20) | Acupressure (n=20) | Placebo(n=20) |
|---|---|---|---|
| Weight (kg) | 64(51-91) | 60 (53-81) | 63 (49-85) |
| Height (cm) | 167 (155-182) | 168 (150-75) | 163 (153-175) |
| Age (year) | 25 (19-45) | 26 (20-43) | 30 (18-40) |
| Previous PONV or motion sickness (n) | 7 | 8 | 7 |
| Patients given morphine on the postoperative ward | 8 | 7 | 7 |
| Morphine (mg) given on the postoperative ward | 0(0-4) | 0(0-8) | 0(0-5) |

Table 2: Results in nausea (only), vomiting, rescue medication & nausea after 24h. Values given as No. of pts..

| | Reference group (n=20) | Acupressure (n=20) | Placebo (n=20) |
|---|---|---|---|
| Nausea (only) | 6 | 9 | 7 |
| Vomiting | 5 | 0 | 2 |
| Rescue medication | 4 | 0 | 5 |
| Nausea 24 hour after operation | 8 | 1 | 1 |

Fig. 1: Comparison of percentage of three groups

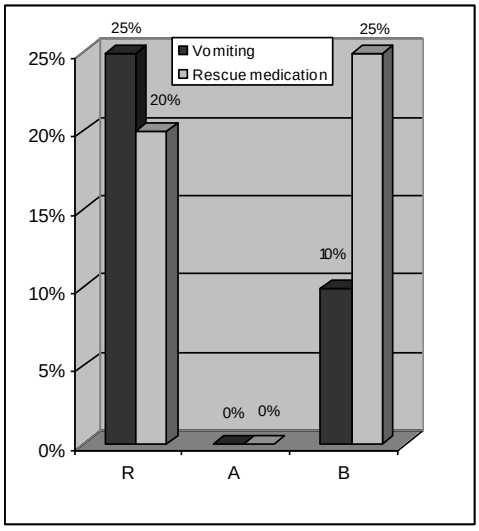
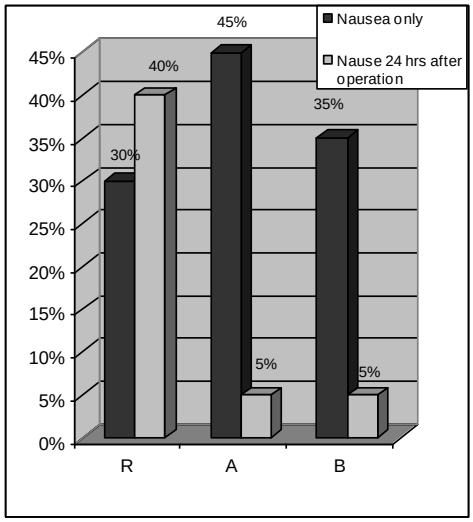



Fig. 2: Comparison of percentage of patients




## DISCUSSION

An effect of acupressure[6,7,9] as well as of acupuncture[5] on nausea and vomiting after gynecological surgery has been reported before. But in our study, we observed the effect of acupressure on nausea and vomiting after ear surgeries( Tympanoplasty, Osciculoplasty, Mastoidectomy, Otoplasty)The mechanism of action of acupuncture and acupressure on nausea and vomiting has not been established, and a placebo-type mechanism has been suggested[10]. Autonomic dysfunction seems to have a correlation to nausea[19]. Considering the multifactorial etiology of PONV, it is unlikely that a single drug or treatment could counteract all causative factors[20]. Different types of surgery could have different profiles with reference to etiology factors. Most studies on acupuncture and acupressure have investigated gynecological patients. Methodological considerations that have to be evaluated are whether a bilateral stimulation is superior to a unilateral stimulation and whether the timing is important. An effect of timing on acupressure has been suggested by two studies, one reporting no effect of acupressure with start of stimulation after opioid medication[21] and one reporting an effect when stimulation was started before opioid medication[12]. How to measure nausea and vomiting has been debated during the last decade, as nausea and vomiting have been identified as a major quality factor from the patient's point of view. Nausea can be assessed by the nurse or the patient. A poor correlation between the assessments has been demonstrated[14]. The assessment can be performed by using a nausea questionnaire, verbal categorical scales or visual analogue scale. Similar results have been obtained with these three methods[22]. We have used nausea (only), vomiting, need for antiemetic, and nausea after 24hr as

outcome measures. That is, part of the outcome measurement is dependent on nurse assessment, and part on the patient's assessment with a visual analogue scale. To further clarify the usefulness of acupressure on PONV, we propose a study group with a higher incidence of PONV but a similar design as in this study so that the placebo effect could be measured. If the patients were not only randomized but also stratified according to age, sex, history of postoperative nausea or vomiting or motion sickness, additional strength would be added[23].

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