لینک های مفید

- عضویت در خبرنامه
- کارگاه‌های آموزشی
- سرویس ترجمه تخصصی STRS
- فیلم‌های آموزشی
- بلاگ مرکز اطلاعات علمی
- سرویس های لینک ویژه

40% تخفیف به مناسبت سالروز تاسیس مرکز اطلاعات علمی
Acupressure using Ondansetron versus Metoclopramide on Reduction of Postoperative Nausea and Vomiting after Strabismus Surgery

Alireza Ebrahim Soltani MD¹, Hossein Mohammadinasab MD¹, Mehrdad Goudarzi MD¹, Shahriar Arbabi MD¹, Robab Mohtaram MD², Khasro Afkham MD², Sirus Momenzadeh MD¹, Mohammad Esmaeil Darabi MD²

Abstract:
Objective: To compare the clinical efficacy of acupressure with treatment induced by ondansetron and metoclopramide on reduction of the severity of postoperative nausea and vomiting (PONV) after strabismus surgery.

Methods: There were 200 patients with ASA classes I-II, ages 10 to 60 years old, who underwent strabismus surgery that were included in this randomized, prospective, double-blind, placebo-controlled trial. Group I was the control, group II received metoclopramide 0.2 mg/kg, and group III received ondansetron 0.15 mg/kg intravenously immediately prior to anesthesia induction. In Group IV, acupressure wristbands were applied at the P6 points. Acupressure wristbands were not placed appropriately for subjects of groups I-III. The acupressure wristbands were applied 30 minutes before anesthesia induction and removed six hours after surgery completion. Anesthesia was standardized. PONV was evaluated within 0 – 2 hours and 2 – 24 hours after surgery by a blinded observer. Results were analyzed by the Chi-square or Fisher exact test. A P value of <0.05 was considered significant.

Results: The incidence of PONV was not significantly different among acupressure, metoclopramide and ondansetron groups during 24 hours. Also, the severity of PONV was not significantly different between acupressure, metoclopramide, and ondansetron in the recovery and ward.

Conclusion: Acupressure at the P6 point causes a significant reduction in the incidence and severity of PONV 24 hours after strabismus surgery as well as metoclopramide (0.2 mg/kg) and ondansetron (0.15 mg/kg) intravenous for patients aged 10 or older. (Irct ID: IRCT138807152556N1)

Keywords: nausea, P6 acupressure, strabismus surgery, vomiting

Introduction

Strabismus surgery is one of the most common operations which is accompanied by postoperative nausea and vomiting (PONV).¹ ² These postoperative troubles have been explained as: “big little problem”, “final therapeutic challenge” and a “big big problem” by anesthesiologists.³ ⁴ The precise etiology of postoperative nausea and vomiting following strabismus surgery is still unknown⁵; however, there are a variety of reasons suggestive of the high incidence of PONV after strabismus surgery.⁶ Different factors influence the incidence of PONV, such as the anesthetic technique and prophylactic administration of antiemetic agents.² Various pharmacological agents and non-pharmacological methods have recently been utilized in order to prevent PONV following strabismus surgery. One of the non-pharmacological methods is P6 acupressure. It has been shown that this method reduces the drug requirement as well as the incidence of PONV after
A study indicated that Korean hand acupoints also prevents PONV and reduces postoperative vomiting after strabismus surgery by 25%. PONV is a common complication after anesthesia and sedation in which no suitable treatment has thus been identified. In addition, prophylactic antiemetic drugs are not recommended in all patients undergoing strabismus surgery. On the other hand, prophylactic influence and the mechanism of action of non-pharmacological treatments on PONV are still unclear. The control of this phenomenon is still under debate amongst anesthesiologists. Regarding the aforementioned controversy, the present study is aimed to compare the effect of the acupressure method with treatment induced by ondansetron and metoclopramide on reduction in severity of PONV after strabismus surgery.

**Patients and Methods**

The study was approved by the Ethics Committee of the Tehran University of Medical Sciences, Tehran, Iran. Written informed consent was obtained from all patients. A total of 200 individuals with ASA classes I- II, ages 10 – 60 years old, who underwent strabismus surgery in Farabi Eye Hospital, Tehran, Iran during 2007 – 2008 were included in this randomized, prospective, double-blind, placebo-controlled study.

Patients were randomized into four groups using random numbers, with 50 cases in each group as follows: group I (control), group II (metoclopramide), group III (ondansetron), and group IV (acupressure). In groups I, II and III, the spherical beads of the acupressure wrist bands were placed inappropriately on the posterior surface of both forearms 30 minutes before anesthesia induction. Patients of group II received metoclopramide 0.2 mg/kg intravenously immediately prior to induction. Group III patients received intravenous (iv) ondansetron 0.15 mg/kg just before induction. In group IV patients, acupressure bands were applied at the P6 point on both forearms 30 minutes before anesthesia induction. Bands were removed six hours later. For blinding, a saline (1 mL, intravenously) solution was administered to patients of groups I and IV immediately prior to anesthesia induction.

In the present investigation, the following definitions were clarified as listed below. Retching: an unproductive effort to vomit; nausea: an uneasiness of the stomach that often preceded vomiting without muscle spasms; vomiting: the forcible voluntary or involuntary emptying of stomach contents through the mouth. Numeric analog scales were graded as
follows: lack of retching, nausea and vomiting (0); incidence of nausea (I); incidence of retching (II); incidence of vomiting (III).9-10

Statistical analysis
Our statistical power calculation showed that 50 patients were needed in each group for 90% power, with a PONV risk of 50% and an alpha of 95%. Age and other normally distributed data were compared with ANOVA. In this study the incidence of retching, nausea and vomiting in addition to other nominal data were compared with Chi-squared or Fisher’s exact tests. In this study, \( P<0.05 \) was considered significant. SPSS version 13.00 software was used for all computations.

Results
Patients were comparable in all groups with regard to age, sex, weight, and duration of surgery. There were no statistically significant differences with respect to demographic data between groups in the study (Table 1). Also, in this study, no patient was excluded after admission to the study.

The incidence of vomiting during recovery following strabismus surgery in the placebo group was 16%. The metoclopramide, ondansetron and acupressure groups had a significant decrease in the incidence of vomiting during the recovery (6%, 0% and 0%, \( P=0.001; \) Figure 1). The incidences of retching, nausea and vomiting in the ward after strabismus surgery in the placebo group were 20%, 38%, and 49%, respectively. The metoclopramide, ondansetron and acupressure groups showed a significant decrease in the incidence of retching during recovery (10%, 2%, and 8%; \( P=0.025, \) respectively). There was also a significant decrease in the incidence of nausea in the metoclopramide, ondansetron, and acupressure groups (14%, 18%, 12%; \( P=0.004 \)) as well as vomiting (10%, 18%, 20%; \( P=0.000, \) respectively) in the ward after strabismus surgery (Figure 2).

In this study, it was noted that the acupressure group showed a significant decrease in the incidences of nausea and vomiting when compared to the placebo group during the recovery time and in the relevant ward. A comparison between the acupressure and ondansetron groups implicated and proved no significant difference between the acupressure and metoclopramide groups in PONV incidence (Table 2).

The severity of PONV in the acupressure group was significantly reduced in comparison with the placebo group in both the recovery room and ward (\( P<0.05 \)). However, the severity of this event was not significantly different between the acupressure group and the patients who received metoclopramide in both the recovery room and ward (\( P>0.05 \)). Similarly, the severity of PONV between the acupressure and ondansetron groups in the recovery room and

### Table 1: Demographic and relevant data

<table>
<thead>
<tr>
<th></th>
<th>Acupressure ((n=50))</th>
<th>Metoclopramide ((n=50))</th>
<th>Ondansetron ((n=50))</th>
<th>Placebo ((n=50))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.44±10.12</td>
<td>17.68±8.52</td>
<td>22.04±11.97</td>
<td>18.06±9.29</td>
</tr>
<tr>
<td>Sex ratio (Male:Female)</td>
<td>31:19</td>
<td>28:22</td>
<td>27:23</td>
<td>22:28</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>46.54±19.91</td>
<td>43.52±18.43</td>
<td>52.86±17.56</td>
<td>45.46±20.59</td>
</tr>
<tr>
<td>Duration of surgery (min.)</td>
<td>70±40.54</td>
<td>63.30±17.54</td>
<td>63.50±17.12</td>
<td>71.30±20.29</td>
</tr>
</tbody>
</table>
ward was not significant, as well ($P>0.05$; Figures 3 and 4).
β-endorphin has been demonstrated following acupressure.\textsuperscript{18–19} Alternatively, it has been proposed that this technique activates the serotonergic and norepinephrinergic fibers and possibly changes in the seroton levels have a preventive effect on PONV.\textsuperscript{18–19} There is also a possible role of central dopaminergic receptors in the acupressure antiemetic mechanism, and P6 acupressure might indirectly cause an affect through these central dopaminergic receptors.\textsuperscript{20}

There are numerous research that has clarified the protective role of P6 acupressure against PONV.\textsuperscript{18,21–23} The key points in the effectiveness of this method is the correct placement of stimulation as well as the stimulation time.\textsuperscript{21,24,25} In order to perform a useful acupressure technique for prevention of PONV, it is necessary to apply it before the onset of nausea and vomiting. A meta-analytical study has investigated the preventive effect of non-pharmacological techniques on PONV.\textsuperscript{26} Subsequently the practical influence of non-pharmacological methods on prevention of PONV in adults in comparison with a placebo group (>10 years old) during the first six postoperative hours according to one study\textsuperscript{26} is consistent with the present research. However, regarding the performed P6 acupressure in previous investigations, some conflicts have been observed in the clinical cases. Therefore, the P6 acupressure technique would not be a useful method to reduce PONV after strabismus and tonsillectomy surgeries in children.\textsuperscript{27–29} Moreover, this technique is not a useful method on PONV after endoscopy and urology surgery, in addition to nausea and vomiting during the pregnancy period.\textsuperscript{30–32} It would not also be a good procedure to prevent PONV following cardiac surgery.\textsuperscript{32} On the other hand, it has been reported that it is an applicable and useful method in preventing the PONV following cesareans.\textsuperscript{33}

Our data is in agreement with a recent report that showed a significant reduction of PONV in an acupressure-treated group in comparison with a placebo group in both the recovery room and ward, as we did not observe any vomiting in the patients in the recovery room. The present findings are consistent with other studies.\textsuperscript{36–34} It should be noted that the technique to be used after strabismus surgery plays a crucial role in preventing PONV and we suggest that it could be used in the future investigations. Although there are considerable progresses in the anesthetic techniques and antiemetic agents in order to treat PONV, however, it seems that more research is needed in the future.

**Conclusion**

PONV is an unpleasant symptom. It seems that prophylactic antiemetic agents tend not to eliminate PONV, but significantly reduce this postoperative side effect. Using the correct selection process of patients and improving techniques in order to control PONV, would enable physicians to successfully prevent this side effect. Over all, there is not a definite clinical recommendation based on non-pharmacological methods, however, it could be suggested that in order to achieve the useful effect of acupressure against PONV, thus P6 stimulation must be applied prior to the onset of nausea and vomiting.

**References**


لینک های مفید

- عضویت در خبرنامه
- کارگاه های آموزشی
- سرویس تترجمه تخصصی
- فیلم های آموزشی
- بلاگ
- مرکز اطلاعات علمی

40% تخفیف به مناسبت سالروز تاسیس مرکز اطلاعات علمی