Acupuncture in preventing postoperative anaesthesia-related sore throat: a comparison with no acupuncture

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ABSTRACT

Background Postoperative sore throat occurs frequently in surgical patients as a result of tracheal intubation. Despite advances in medical and anaesthetic care, the incidence of postoperative sore throat remains high. Our study aimed to assess the efficacy of acupuncture in the prevention of postoperative sore throat following general anaesthesia.

Methods A non-randomised clinical study (NRS) was carried out in a tertiary care hospital in Tehran, Iran on 228 consecutive patients undergoing elective surgeries under general anaesthesia. Of these, 114 patients were assigned to the acupuncture group and treated with body acupuncture at the PC6 point, while the remaining 114 patients received no preventive care and were treated with routine medical treatment where necessary. The incidence of sore throat within the first 24 h postoperatively was then compared between the two study groups.

Results Of the 114 patients in the acupuncture group, 16 patients (14%) experienced sore throat within the first 24 h postoperatively, which was significantly lower compared to the 34 patients (29.8%) with sore throat in the medical treatment group (p<0.05). However, the frequency of patients with severe sore throat requiring medical treatment did not differ significantly (12.3% vs 16.7%, p>0.05).

Conclusions Our study suggests that acupuncture could be considered as an option in prevention of postoperative anaesthesia-related sore throat.

INTRODUCTION

Postoperative sore throat occurs in up to 67% of the patients as a result of tracheal intubation. In ambulatory settings, incidence of sore throat is strongly related to female gender, lower age, administration of succinylcholine and surgeries on the upper airway, with a higher prevalence in cases of tracheal intubation rather than laryngeal mask airway or facial mask application.1–4

Despite advances in medical pharmacology and other preventive interventions for prevention and treatment of postoperative sore throat,1–4,6 the number of patients experiencing this remains significant.6 Acupuncture has shown potential in prevention and treatment of postoperative intubation-related sore throat.7 However, few studies have evaluated the efficacy of acupuncture in this regard.7,8 Therefore, we aimed to assess the effectiveness of acupuncture in preventing postoperative sore throat.

METHODS

In total, 228 surgical patients were enrolled in a non-randomised controlled study (NRS), conducted at the Tehran University of Medical Sciences. Our Institutional Review Board approved the study protocol for human subjects and all the patients completed an informed consent form before enrolment in the study.

All patients who were candidates for elective surgery were consecutively invited to join this study. Inclusion criteria were an American Society of Anesthesiologists (ASA) score of I or II, duration of operation not more than 1–1.5 h, no history of glucocorticoid administration within the past month, no need for a nasogastric (NG) tube following the surgery and no history of common cold or sore throat in the past 2 weeks. Those patients who
two groups in terms of patient demographics and primary clinical characteristics (p>0.05).

Postoperative outcomes are summarised in table 2. Patients in the two groups did not differ significantly in terms of postoperative surgical and anaesthetic events. Moreover, there was no significant difference between the two groups for receiving analgesic derivatives or opiate sedatives that may have adversely affected postoperative sore throat incidence. However, the prevalence of sore throat in the acupuncture group (14%) was significantly lower when compared to the control group (29.8%) (p<0.05) (table 2). The difference was not significant in regard to severe sore throats needing medical treatment (12.3% in intervention group vs 16.7% in control group, p>0.05).

**DISCUSSION**

The first reported successful experience of acupuncture in relieving postoperative pain was in 1990 after tonsilllectomy.9 10 Despite further studies showing the effectiveness of this alternative approach in treating sore throats, evidence regarding its effectiveness in the postoperative setting is lacking. Our study showed that postoperative sore throat is less prevalent in patients who have received acupuncture while under anaesthesia in the operating room. While our initial

Table 1  Demographics and primary clinical characteristics

<table>
<thead>
<tr>
<th>Gender:</th>
<th>Control group (N=114)</th>
<th>Intervention group (N=114)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>70 (61.4%)</td>
<td>76 (66.7%)</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Female</td>
<td>44 (38.6%)</td>
<td>38 (33.3%)</td>
<td></td>
</tr>
<tr>
<td>Age (mean±SD years)</td>
<td>35.69±13.22</td>
<td>40.54±14.10</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surgery type:</th>
<th>Control group (N=114)</th>
<th>Intervention group (N=114)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholecystectomy</td>
<td>49 (43%)</td>
<td>44 (38.6%)</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>32 (28%)</td>
<td>35 (30.7%)</td>
<td></td>
</tr>
<tr>
<td>Thyroid</td>
<td>14 (12.3%)</td>
<td>12 (10.5%)</td>
<td></td>
</tr>
<tr>
<td>Herniorraphy</td>
<td>11 (9.6%)</td>
<td>13 (11.4%)</td>
<td></td>
</tr>
<tr>
<td>Mastectomy</td>
<td>8 (7%)</td>
<td>10 (8.8%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2  Comparison of postoperative outcomes between the study groups

<table>
<thead>
<tr>
<th>Postoperative complication:</th>
<th>Control group (N=114)</th>
<th>Intervention group (N=114)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>21 (18.4%)</td>
<td>19 (16.7%)</td>
<td>&gt;0.05</td>
</tr>
<tr>
<td>Bleeding</td>
<td>12 (10.5%)</td>
<td>11 (9.6%)</td>
<td></td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>54 (47.4%)</td>
<td>58 (50.9%)</td>
<td></td>
</tr>
<tr>
<td>ICU admission</td>
<td>6 (5.3%)</td>
<td>4 (3.5%)</td>
<td></td>
</tr>
<tr>
<td>Total sore throats</td>
<td>34 (29.8%)</td>
<td>16 (14%)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Sore throats needing medical care</td>
<td>19 (16.7%)</td>
<td>14 (12.3%)</td>
<td>&gt;0.05</td>
</tr>
</tbody>
</table>

ICU, intensive care unit.
policy was to avoid enrolment of cases with other causes of sore throat (pharyngitis, allergy, drug reaction) rather than intubation-related trauma to the pharynx, inclusion of such patients was inevitable because the cause cannot always be determined.

Although there are similar reports of acupuncture’s effectiveness in treating sore throat, the number of studies are not sufficient and there is heterogeneity in the literature due to the acupuncture techniques used and study populations.7 In a study by Joshi et al.,11 16% of patients undergoing ventilation by laryngeal mask and 26% of those with tracheal tube experienced sore throat, which interestingly was comparable to our findings in which 29.8% of the control group and 14% of the intervention group reported discomfort in their throats. This suggests two things: firstly, the frequency of postoperative sore throat was relatively similar in the control groups of both studies, making a comparison more reliable. Secondly, acupuncture may offer such a significant benefit in reducing the incidence of sore throat that it is comparable to the use of a less invasive airway protection technique. The incidence of postoperative sore throat has been reported to be slightly higher in the literature than in these studies, which could be due to different selection criteria for study populations.1 2 12

It has been shown that acupuncture point stimulation is effective for pain relief by increasing neural signals in the spinal cord and via endorphin release centrally, which inhibits the perception of pain.13 Release of specific neuropeptides,14 activation of descending antinociceptive pathways and deactivation of multiple pain-processing regions in the limbic area are the suggested mechanisms for this pain-relieving effect.15 In a study by Park et al.,7 application of capsicum plaster at the Korean hand acupuncture point showed effectiveness for reducing postoperative sore throat. Findings suggest the importance of use of an acupuncture point in the hand region.16 The rationale for acupuncture at the PC6 point in this study was its previously documented effectiveness in reducing postoperative complications.12 17–19 and specific attention to the acupuncture points over the hand region as effective targets for intervening in postoperative issues.

Gender is a relevant factor in the development of postoperative sore throat as it has been shown that women tend to experience this symptom 1.5 times more often than men.20 However, in our study gender was not a significant parameter probably due to a similar male/female ratio in the two groups.

The important effect of the tracheal cuff pressure during the intubation period on development of postoperative sore throat should be noted and concisely controlled.21 In addition to its painful effect in the laryngeal region, excessive cuff pressure may result in impairment of local perfusion and subsequent tissue damage. Some limitations of the current study should be taken into account when its findings are being interpreted. The current study has a larger sample size than previous similar studies but was not randomised, which limits its strength of prediction and the strength of the conclusions. In addition, the cause of sore throat was not categorically determined and its severity was not objectively quantified. It would have been preferable if all medications received by the patients during postoperative assessment had been measured by a standardised approach. Future randomised studies are justified, considering all the current study’s pitfalls.

CONCLUSIONS
Our study suggests that acupuncture may play an effective role in prevention of postoperative anaesthesia-related sore throat. However, further randomised controlled studies with larger sample sizes and higher statistical power are needed before a conclusive recommendation could be made.

Summary points

- Sore throat is common in the postoperative period.
- In a non-randomised study of 228 patients, 14% had sore throat after acupuncture compared with 30% without acupuncture.

Contributors SE gathered the data, drafted the manuscript and approved the final version of the manuscript. RA designed the study, performed the acupuncture procedures and participated in final drafting of the manuscript. SS analysed and interpreted the data, prepared the first draft and revised and gave final approval to the manuscript. MN participated in revising the manuscript and gave final approval to the whole work. NS interpreted the data and critically revised the final work.

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Competing interests None.

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Provenance and peer review Not commissioned; externally peer reviewed.

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