ORIGINAL ARTICLE

Protocol for Post-tonsillectomy Pain Control in Outpatient Adults

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KEYWORDS
Tonsillectomy; Post-tonsillectomy haemorrhage; Postoperative complications; Postoperative pain; Nursing; Education and information

Abstract
Introduction: Even though notable advances in anaesthetic and surgical techniques have appeared in recent years, morbidity, and especially pain, associated with tonsillectomy is still an important clinical problem.

Objectives: Assess the influence of a specific protocol for the control of postoperative pain and compare the frequency of complications in patients with and without it.

Methods: This was a descriptive, observational and prospective study on adult tonsillectomy patients in outpatient surgery. There were 2 groups: group 1, with 65 patients to whom a variable analgesic treatment was given; and group 2, with 50 patients with analgesic protocol and preoperative nursing interview. For the evaluation of pain, a numerical scale from 0 to 10 was used. The surgical techniques used were cold dissection or electric dissection.

Results: On the 4th day, group 1 (without protocol) presented a mean pain of 4.8 points on a numerical scale from 0 to 10, while group 2 (with protocol) presented mean of 3 (P= .0002). From group 1, 22 patients (36%) had to go to the emergency service, while 8 (16%) in group 2 did so (P=.019). On the 4th day, patients operated with cold dissection presented 3.7 points, as opposed to those operated with electric dissection, who presented 4.4 points.

Conclusions: A specific protocol applied to adult tonsillectomy patients in outpatient surgery is useful to obtain less pain and fewer complications.

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Introduction

Tonsillectomy is defined as a surgical procedure that completely removes the tonsils, including their capsule, by dissecting the peritonsillar space between the tonsil capsule and the muscle wall.\(^1\)

Tonsillectomy in adults is undoubtedly one of the surgical procedures with most postoperative pain performed as Major Outpatient Surgery (MOS).

Although in recent years there have been significant advances in anaesthetic and surgical techniques, the morbidity associated with tonsillectomy, especially pain, is still a major clinical problem.\(^2\)

In a prospective study conducted with 65 patients, the authors report that tonsillectomy caused severe postoperative pain and its management was often not optimal. To date, there is no clear guide for the treatment of postoperative pain after this surgical procedure. It should be noted that specific advice on the possibilities of postoperative treatment can significantly reduce the intensity of pain.\(^3\)

Scheduled administration of drugs is widely accepted, but there is no evidence to show that this method is more effective than drug administration on demand. However, other studies conclude that a major factor contributing to a poor postoperative control of pain is non-compliance with guidelines and treatment.\(^1\)

Haemorrhage is the second leading cause of morbidity in the postoperative period following tonsillectomy. Some studies directly relate it to pain, considering that adequate analgesia in the first week after surgery is essential to maintain the rate of secondary haemorrhage within an acceptable range.\(^4\)

It is crucial that caregivers of patients undergoing outpatient tonsillectomy are given training related to the possible perioperative events associated with tonsillectomy and, specifically, on the assessment of pain, as this can improve compliance with the administration of medication.\(^1\)

The application of a specific protocol consisting of a preoperative nursing interview and a protocolised analgesic treatment for adult patients undergoing tonsillectomy could reduce the incidence of pain and other postoperative complications.

Therefore, our objective is to evaluate the influence of a specific protocol for the control of postoperative pain in adult patients undergoing outpatient tonsillectomy and to compare the frequency of complications between patients with and without such a protocol.

Material and Method

Type of Study and Design

This was a descriptive, observational and prospective study, conducted at a university hospital with adult patients from the Otolaryngology Service who had undergone tonsillectomy as outpatients during the period between January 2008 and December 2010. Patients included in the study were divided according to 2 time periods: group 1 (January 8, 2008 to October 15, 2009) consisting of 65 patients who were administered a variable medical treatment as prescribed: different combinations of paracetamol, ibuprofen and metamizole; and group 2 (October 22, 2009 to December 16, 2010) consisting of 52 patients who were administered the specific protocol in which analgesic treatment consisted of a combination of metamizole, tramadol, metoclopramide...
and omeprazole for 4 days, followed by a change to a combination of ibuprofen, metamizole, paracetamol and omeprazole (Annex 1).

In the preoperative nursing interview conducted with patients and their families before surgery we informed about the procedure and postoperative care. Patients were also trained in the handling of the numerical scale (NS) between 0 and 10 for the evaluation of postoperative pain, which was then given to them, and were explained the analgesic protocol and the recommended diet (Annex 2).

Both groups were subject to the inclusion/exclusion criteria dictated by the Spanish Society of Otorhinolaryngology and Cervicofacial Pathology, as well as the inclusion/exclusion criteria for major outpatient surgery (MOS).

The surgical techniques of choice were cold dissection with ligation (technique 1) or electrodissection (technique 2). The anaesthetic technique used was general anaesthesia with propofol and remifentanil for anaesthetic induction and remifentanil for anaesthetic maintenance. Likewise, patients were administered the protocol for prevention of nausea and vomiting (ondansetron 4 mg) at the beginning of the intervention, 80 mg of corticosteroids and paracetamol 1 g and dextropropoxyphene 50 mg as analgesia administered before the end of surgery. The anaesthetic gases employed were oxygen, nitrous oxide and sevoflurane.

We collected data on age, gender and surgical technique through a review of the medical histories. We designed a telephone log sheet, in which we collected the data for pain, primary and secondary haemorrhage, fever, aphthas, anxiety, diarrhea, constipation, infection, dizziness, nausea/vomiting, admission and readmission, on the fourth, seventh and fifteenth days.

Statistical Analysis

The data were transferred to an Excel® spreadsheet. We used the software package MedCalc® version 11.1.0 for the statistical analysis. The comparison of quantitative variables was performed using Student’s t test, whilst for qualitative variables we used the chi-square test.

Results

Characteristics of Patients

Group 1

Of the 65 patients who underwent tonsillectomy between January 8, 2008 and October 15, 2009, 30 were males and 35 were females, aged between 14 and 52 years. Most patients were intervened due to recurrent tonsillitis (60 cases) and the rest due to recurrent peritonsillar abscess.

Group 2

A total of 52 patients underwent tonsillectomy between October 22, 2009 and December 16, 2010, of which 29 were males and 21 were females, with ages between 15 and 52 years. The procedure took place due to recurrent tonsillitis in most cases (47) and due to recurring peritonsillar abscess in 3 cases. Two patients discontinued treatment and were excluded from the study, thus leaving a final sample of 50 patients.

Both groups were comparable regarding age and gender, with a statistically significant difference regarding the surgical technique employed (Table 1).

Evaluation of Pain

On the fourth day, group 1 (without protocol) presented a mean 4.8 ± 2.8 points in the numerical scale NS 0–10 compared to group 2 (with protocol), which presented a mean of 3.0 ± 2.05 points on the NS 0–10, with a statistically significant difference ($P$=.0002) (Fig. 1A).

On the seventh day, group 1 presented a mean 3.4 ± 2.7 points in the NS 0–10 compared to group 2, which presented a mean of 1.8 ± 1.9 points on the NS 0–10, with a statistically significant difference ($P$=.0005) (Fig. 1B).

On the fifteenth day, group 1 presented a mean 0.9 ± 1.5 points in the NS 0–10 compared to group 2, which presented a mean of 0.4 ± 1.3 points on the NS 0–10, with no statistically significant difference.

Complication Rate (Table 2)

With the exception of diarrhoea and vomiting, overall complications were less frequent in group 2 (with a specific protocol). In terms of admissions and visits to the Emergency Unit, there were statistically significant differences in favour of group 2. For the remaining complications studied (readmission, primary and secondary haemorrhage), although there were no statistically significant differences, there were fewer cases in group 2 (Table 2).

### Table 1 Group Homogeneity.

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (no protocol) (%)</th>
<th>Group 2 (with protocol) (%)</th>
<th>Value of $P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>22.9 ± 5.8</td>
<td>25.7 ± 9</td>
<td>.58</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>30 (46.15)</td>
<td>29 (58.0)</td>
<td>.24</td>
</tr>
<tr>
<td>Female</td>
<td>35 (53.85)</td>
<td>21 (42.0)</td>
<td></td>
</tr>
<tr>
<td>Surgical technique</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Cold dissection</td>
<td>33 (50.8)</td>
<td>39 (78.0)</td>
<td></td>
</tr>
<tr>
<td>2: Electrodissection</td>
<td>32 (49.2)</td>
<td>11 (22.0)</td>
<td>.005</td>
</tr>
</tbody>
</table>

Complications:

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (no protocol) (%)</th>
<th>Group 2 (with protocol) (%)</th>
<th>Value of $P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemorrhage</td>
<td>6 (9.2%)</td>
<td>2 (3.8%)</td>
<td>.58</td>
</tr>
<tr>
<td>Infection</td>
<td>1 (1.5%)</td>
<td>2 (3.8%)</td>
<td>.36</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>5 (7.7%)</td>
<td>1 (1.9%)</td>
<td>.04</td>
</tr>
<tr>
<td>Pain</td>
<td>33 (50.8)</td>
<td>29 (58.0)</td>
<td>.0002</td>
</tr>
<tr>
<td>Other</td>
<td>5 (7.7%)</td>
<td>4 (7.7%)</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Table 2 Frequency of Complications in Both Groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Without protocol (65 cases) (%)</th>
<th>With protocol (50 cases) (%)</th>
<th>Value of P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission</td>
<td>7 (10.7)</td>
<td>0</td>
<td>.018</td>
</tr>
<tr>
<td>Readmission</td>
<td>12 (18.46)</td>
<td>4 (8)</td>
<td>.17</td>
</tr>
<tr>
<td>Primary haemorrhage</td>
<td>5 (7.7)</td>
<td>0</td>
<td>.06</td>
</tr>
<tr>
<td>Secondary haemorrhage</td>
<td>10 (15.38)</td>
<td>3 (6)</td>
<td>.13</td>
</tr>
<tr>
<td>Aphthas</td>
<td>4 (6.6)</td>
<td>1 (2)</td>
<td>.47</td>
</tr>
<tr>
<td>Fever</td>
<td>4 (6.6)</td>
<td>1 (2)</td>
<td>.47</td>
</tr>
<tr>
<td>Anxiety</td>
<td>5 (8)</td>
<td>2 (4)</td>
<td>.60</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>0</td>
<td>4 (8)</td>
<td>.07</td>
</tr>
<tr>
<td>Infection</td>
<td>8 (13)</td>
<td>2 (4)</td>
<td>.10</td>
</tr>
<tr>
<td>Constipation</td>
<td>3 (5)</td>
<td>0</td>
<td>.30</td>
</tr>
<tr>
<td>Vomiting</td>
<td>6 (10)</td>
<td>7 (14)</td>
<td>.5</td>
</tr>
<tr>
<td>Dizziness</td>
<td>5 (8.3)</td>
<td>4 (8)</td>
<td>1</td>
</tr>
<tr>
<td>Visit to Emergency Service</td>
<td>22 (36)</td>
<td>8 (16)</td>
<td>.0019</td>
</tr>
</tbody>
</table>

Relationship Between the Different Variables and Pain

Overall, there was no relationship between age and pain intensity at any point of the evaluation.

Regarding gender, females presented slightly higher pain scores, 4.1±2.9 versus 3.8±2.3 for males.

As for the surgical procedure, those patients intervened using technique 1 presented less pain on the fourth, seventh and fifteenth days than those who underwent surgery with technique 2 (Table 3), with no statistically significant differences for any of these variables.

Influence of Surgical Technique (Table 3)

Although patients who underwent surgery with technique 1 presented lower pain scores and fewer cases of haemorrhage and readmissions than patients undergoing surgery with technique 2, the only statistically significant difference was observed in connection to visits to the Emergency Unit (P=.014).

Discussion

Conducting outpatient tonsillectomy is controversial and some MOS units in our country have excluded it from their portfolio of procedures due to the morbidity associated with the intervention and, especially, to the difficulty in controlling postoperative pain in the home environment, as well as the risk of haemorrhage.

In our series of cases, the application of a specific protocol allowed patients to achieve pain scores of 3 in the NS 0–10, which are acceptable for MOS patients.

However, we believe that the use of a specific protocol does not affect the frequency of admissions, since this occurs within 24 h after surgery and before administration of the analgesic protocol. Similarly, the ultimate goal of the preoperative nursing interview is to offer healthcare information and education, psychological counselling and to promote self-care, having no protective role on primary haemorrhage, which can be related to previous infectious processes, the experience of the surgeon, the surgical technique and intrinsic factors to the patient, among others.7

Regarding the rate of secondary haemorrhage, a value of 3% is considered acceptable.8 Our work presented figures around 6%, making it necessary to develop strategies

Figure 1 Evaluation of Pain in Groups 1 and 2 on the Fourth (A) and the Seventh (B) Days.
that allowed us to improve these results, still outside the acceptable range in other published series. Secondary haemorrhage rates range between 1.7% in a study conducted on 4118 patients, in which tonsil interventions during cold months were excluded, and 9.2% in a study conducted on 153 adult patients intervened due to chronic tonsillar infection.

We could study whether hospital admission of patients undergoing tonsillectomy protects them against secondary haemorrhage, considering that, in some countries such as Germany, patients are admitted between 5 and 7 days in order to control pain, food intake and possible haemorrhage. In a review work conducted in this country on 105 patients who suffered post-tonsillectomy haemorrhage, this haemorrhage occurred after hospital discharge in 77 cases. Thus, it appears that longer hospital stays do not help to decrease this complication, which may depend more on the surgical technique employed.

The higher number of cases with nausea/vomiting observed in the group following a specific protocol could be related to non-compliance with metoclopramide intake 20 min before administration of tramadol by all patients who presented this complication.

Nevertheless, only 2 patients discontinued analgesic treatment, representing an adherence rate of 97.4%, which shows the ease of complying with the specific protocol.

When evaluating our results, we must bear in mind that the number of patients in both groups was relatively small. This could be a possible reason why no statistically significant differences were obtained.

Conclusions

The application of a specific protocol, comprised by a preoperative nursing interview and standardised analgesic treatment, was useful to achieve lower pain scores and a reduced complication rate (readmissions, secondary haemorrhage, visits to the Emergency Unit) among patients undergoing tonsillectomy on an outpatient basis, compared to patients who did not follow a specific protocol.

Conflict of Interests

The authors have no conflict of interests to declare.

### Annex 1. Analgesic Protocol

**First and second days**

After 24 h the patient will take:
- One tablet of Neobrufen® 600 mg
- One packet of Paracetamol 1 g

At 8 h the patient will take:
- One capsule of Omeprazol® 20 mg
- One tablet of Neobrufen® 600 mg

At 12 h the patient will take:
- One or 2 capsules of Nolotil®

At 16 h the patient will take:
- One tablet of Neobrufen® 600 mg

At 20 h the patient will take:
- One or 2 capsules of Nolotil®

**Third, fourth, fifth and sixth days**

At 24 h the patient will take:
- One tablet of Primperan® 20 min before
- One tablet of Adolonta® 50 mg

At 4 h the patient will take:
- One or 2 capsules of Nolotil®

At 8 h the patient will take:
- One tablet of Primperan® 20 min before
- One tablet of Adolonta® 50 mg

At 12 h the patient will take:
- One or 2 capsules of Nolotil®
- One capsule of Omeprazol® 20 mg

At 16 h the patient will take:
- One tablet of Primperan® 20 min before
- One tablet of Adolonta® 50 mg

At 20 h the patient will take:
- One or 2 capsules of Nolotil®

**Seventh, eighth and ninth days**

At 24 h the patient will take:
- One tablet of Neobrufen® 600 mg
- One packet of Paracetamol® 1 g

At 8 h the patient will take:
- One capsule of Omeprazol® 20 mg
- One tablet of Neobrufen® 600 mg

At 12 h the patient will take:
- One or 2 capsules of Nolotil®

At 16 h the patient will take:
- One tablet of Neobrufen® 600 mg

At 20 h the patient will take:
- One or 2 capsules of Nolotil®

### Table 3 Relationship Between Surgical Technique and the Variables Evaluated.

<table>
<thead>
<tr>
<th>Surgical technique</th>
<th>Cold dissection (65 cases) Mean (SD)</th>
<th>Electrodissection (50 cases) Mean (SD)</th>
<th>Value of P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain on fourth day</td>
<td>3.7 (2.5)</td>
<td>4.4 (3.0)</td>
<td>.25</td>
</tr>
<tr>
<td>Pain on seventh day</td>
<td>2.3 (2.3)</td>
<td>3.2 (2.7)</td>
<td>.1</td>
</tr>
<tr>
<td>Pain on fifteenth day</td>
<td>0.6 (1.4)</td>
<td>0.8 (1.5)</td>
<td>.4</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>9 (12.5%)</td>
<td>9 (20.9%)</td>
<td>.29</td>
</tr>
<tr>
<td>Readmission</td>
<td>7 (10%)</td>
<td>9 (20.9%)</td>
<td>.1</td>
</tr>
<tr>
<td>Visit to Emergency Service</td>
<td>13 (18%)</td>
<td>17 (39.53%)</td>
<td>.014</td>
</tr>
</tbody>
</table>

SD, standard deviation.
Annex 2. Diet and Recommendations Following Tonsillar MOS

- "Until the fourth day" after the intervention the patient will only consume cold or room temperature foods: ice cream, yoghurt, custard, jelly, fruit and milk shakes, cocoa with cookies, etc.
- "From the fifth day" onwards the patient can start with French omelettes, ham, pasta, purees and lukewarm meals.
- Other foods will be progressively incorporated depending on the difficulty in avoiding pain.
- The patient will drink at least 2 l of fluid per day including fruit juices (but not orange or lemon), infusions and broths.
- Suggestion: boil 1.5 l of water with 5 bags of lime flower tea and 5 tablespoons sugar and drink it cold or at room temperature.
- Patients should drink whenever they wake up at night.
  - Common symptoms that can appear include:
  - Pain on swallowing, in the ears or in the back of the head, which may be more intense in the mornings and evenings.
  - Fever of 38 °C and a few degrees at specific times (in the morning and evenings).
  - Bad smell and taste in the mouth.
  - Swollen and numb tongue.
  - Bleeding (gurgling with ice water and ice on the back of the head) for at least 20 min.
- Patients should see their primary care physician if the fever remains above 38 °C for more than 1 day.
- If bleeding is persistent and abundant patients should attend the Emergency Unit of this hospital.

References