International Journal of Pediatric Otorhinolaryngology 96 (2017) 47–54

Contents lists available at ScienceDirect

International Journal of Pediatric Otorhinolaryngology

journal homepage: http://www.ijporlonline.com/

Self-reported postoperative recovery in children after tonsillectomy compared to tonsillotomy☆

Mats Eriksson [a], Ulrica Nilsson [a], Ann-Cathrine Bramhagen [b], Ewa Idvall [b], Elisabeth Ericsson [a, *]

[a] School of Health Sciences, Faculty of Medicine and Health, Örebro University, S-701 82 Örebro, Sweden
[b] Faculty of Health and Society, Department of Care Sciences, Malmö University, S-205 06 Malmö, Sweden

ARTICLE INFO

Article history:
Received 18 October 2016
Received in revised form
20 February 2017
Accepted 25 February 2017
Available online 1 March 2017

Keywords:
Patient-reported outcome measures
Postoperative recovery
Pain
Tonsillectomy tonsillotomy

ABSTRACT

Objectives: Tonsil surgery is associated with significant morbidity during recovery. Patient-reported outcome measures (PROM) are the golden standard for the planning and follow-up of delivered care, which should also be an axiom for children. The current aims were to describe self-reported postoperative recovery in children after tonsil surgery, and to compare tonsillotomy and tonsillectomy in this respect.

Methods: In total, 238 children (4–12 years old) with a history of obstructive problems and/or recurrent tonsillitis, and undergoing tonsil surgery were included. Forty-eight per cent were operated with partial tonsil resection/tonsillotomy (TT) and 52% with total tonsillectomy (TE), all in day surgery.
Postoperative recovery was assessed on days 1, 4 and 10 using the validated self-rating instrument PRiC, Postoperative Recovery in Children. This includes 23 items covering different aspects of recovery after tonsil surgery. A higher score indicates worse status in the respective items.

Results: Daily life activities (sleeping, eating and playing), physical symptoms (e.g., headache, stomach ache, sore throat, otalgia, dizziness, nausea, defecation, urination), and emotional aspects (sadness, frightening dreams) were affected during the recovery period.
The TE-girls showed higher scores than the boys regarding stomach ache, defecation and dizziness.
Children above 6 years of age reported higher values for the physical comfort variables, while the younger group showed worse emotional states.
Postoperative recovery improved from day 1–10 in all surgical groups. The TE-group showed lower recovery compared to the TT-group ($p < 0.01–0.001$) in most items.

Conclusion: The goal of postoperative management is to minimize or eliminate discomfort, facilitating the recovery process and avoiding complications. Children are able to describe their recovery, and thus, PRiC seems to be able to serve as a PROM to obtain patient-centered data after tonsil surgery. The recovery process after TT causes less postoperative morbidity and a quicker return to normal activity compared to TE.

1. Introduction

Pediatric tonsil surgery with or without adenoidectomy is still the most common form of surgery in the field of Ear Nose and Throat (ENT) [1–4]. Although classified a minor procedure, tonsillectomy is one of the most painful surgical childhood procedures and the significant morbidity during recovery lasts for many days. Furthermore, children suffer more pain after tonsillectomy compared to other types of outpatient surgeries [4–11]. Compared with total tonsillectomy, partial tonsillectomy or tonsillotomy are associated with less morbidity and postoperative pain, and there is a quicker return to routine daily activities. The main drawbacks of tonsillectomy are potentially serious postoperative bleeding, postoperative pain, eating and drinking difficulties [2,3,12], as well as reduced immune function in the early stages after the operation [13]. The risks associated with tonsillotomy are infections in the tonsillar remnant and regrowth of tonsillar tissue [2,3,12,14].

☆ The results from this paper have partly been presented at the ESPO Conference, Lisbon, Portugal June 2016.

* Corresponding author.
E-mail address: elisabeth.ericsson@oru.se (E. Ericsson).

http://dx.doi.org/10.1016/j.ijporl.2017.02.029
0165-5876/

Approximately 71% of all tonsil surgery in children in Sweden is performed as day surgery on an outpatient basis [15]. The need for one or more nights of observation in hospital is related to comorbidities [16]. Most children under the age of 3 with Obstructive Sleep Apnea (OSA) also require one night's observation due to possible airway complication [16,17].

Postoperative recovery is an individual process with subjective experiences, and it is influenced by several factors [18]. Most studies about postoperative recovery after tonsil surgery describe an intense pain on the day of surgery that gradually decreases over the first week but does not disappear until the end of the second week. The main cause for morbidity after tonsil surgery is oropharyngeal pain. Referred otalgia is also common during that same period. Despite pharmacological advances in treating postoperative nausea and vomiting, both are common after tonsil surgery [4]. Postoperative pain is related to side effects in terms of fatigue, impaired breathing and impaired mood [19], sleep disturbances, night terrors [9,20,21], and dehydration due to poor oral intake [6,8,22]. Resumption of average dietary intake and normal physical activity after tonsil surgery are the measures of successful postoperative recovery [2,8,23].

Patient-reported outcome measures (PROM) are the golden standard for the planning and follow-up of delivered care, which should also be an axiom for children. The development of valid and reliable assessment tools for self-reported postoperative recovery in children (aged 4–12 years) after tonsil surgery has been an important step towards improving children's recovery [24].

The aim of the study was to describe postoperative recovery in children after tonsil surgery and to compare tonsillotomy and tonsillectomy in this respect, as well as compare age and gender.

2. Material and methods

A consecutive sample of 390 children undergoing tonsil surgery (tonsillectomy or tonsillotomy/partial tonsillectomy) were invited to participate in the study. They were recruited from five different settings; four hospitals and one private day-surgery clinic in Sweden in 2012–2014, with different consecutive time intervals at the five settings. The inclusion criteria were: healthy children without any chronic disease between the ages of 4 and 12, and whose parents could read, understand, and speak Swedish.

TT was performed with radiofrequency instruments (ArthroCare Coblation® and Ellman Surgitron®) while TE was performed with cold knife and blunt dissection. All surgery was performed by the clinics' ordinary otolaryngologists.

2.1. Postoperative recovery in children

Postoperative recovery was measured with the questionnaire PRiC, Postoperative Recovery in Children [24], which includes 23 items: 21 items concerning different aspects of recovery in general and two items that are tonsil surgery specific (ear ache and blood in mouth). The item “sore throat” is also highly specific for tonsil surgery but seen also as general due to postoperative sore throat after general anesthesia with endotracheal intubation or laryngeal mask. The items concern the previous 24 h and are assessed on a four-grade scale: *1 = not at all, 2 = a little, 3 = much,* and *4 = very much*, where *very much* indicates the lowest level of recovery. PRiC also includes one item of a more general nature addressing the children's current general health, which is answered with: *1 = very well, 2 = pretty well, 3 = pretty bad* or *4 = very bad*. PRiC has been developed and tested in a Swedish context of children undergoing tonsil surgery and found to be valid and reliable [24]. Cronbach's alpha for the total instrument was 0.83. Demographic and medical data regarding gender, age, surgical procedure and type of anesthesia, and postoperative complications were collected.

2.2. Procedure

Children were invited to participate together with their parents, and they received verbal and written information about the study. At discharge from the hospital, the children received the PRiC questionnaire in order to assess postoperative recovery on the first, fourth, and tenth day postoperatively, along with prepaid envelopes. No reminder was sent. PRiC was distributed as a traditional text questionnaire and for the other 50% as a questionnaire with photo illustrations with the same wording as in the text questionnaire [24]. In the present study, no difference between the answers with the text questionnaire was found compared to the photo questionnaire. Thus, the results are presented as deriving from one single instrument.

2.3. Ethics

The study was approved by the Research Ethics Committee of Uppsala (No. 2012/106). Parents provided their written informed consent for the study, and the children provided assent. The children could either write their name or draw a picture on the consent form.

2.4. Statistics

Descriptive statistics are presented as numbers and percentages for categorical variables and with means, standard deviations (SD), medians and ranges. The self-reported items of PRiC are presented with mean and SD but also as the proportion of children who reported “much” or “very much” on the respective items.

For comparison between the two groups, Fisher's exact test was used for dichotomous variables. The Mantel-Haenszel Chi2-test was used for ordered categorical variables and Mann–Whitney *U* test was used for comparison of continuous variables between the two groups on the items in PRiC. Wilcoxon signed rank test in case of significance was used to analyze the change over time, day 1–4 and day 4–10 within TT and TE. Statistical significance (alpha) was set at p-value < 0.05. To control for Type 1 errors, the upper limit of expected number of false significances for all the familywise (e.g. items on the same day) outcome variables were calculated by the following formula: (number of tests-number of significant tests on the significant level alpha) x alpha/(1-alpha) [25]. Data were analyzed with SPSS version 22 (Armonk, NY: IBM Corp.).

3. Results

A total of 236 children (response rate 61%) accepted to participate in the study and answer the PRIC questionnaire the first day after the surgical procedure. There were no significant differences between responders and non-responders regarding age, gender, surgical techniques or main indication for the total sample or within the groups tonsillotomy or tonsillectomy respectively.

On day four after surgery, 226 of the children answered the questionnaire and on day ten there were 207 respondents. Patient demographic and medical characteristics according to the surgical techniques tonsillotomy or tonsillectomy are shown in Table 1. Of the children who responded the first day, 116 (49%) underwent tonsillotomy (TT) and 120 (51%) tonsillectomy (TE). More children in the TT-surgery group also had adenoidectomy compared to the TE-group ($p < 0.001$). Mean age was 6.0 years (SD 2.3) with 6.1 years (SD 2.4) and 5.9 (SD 2.1) years for girls and boys, respectively, whereas the TE-group was older (6.4 years, SD 2.4) than the TT-group (5.6 years, SD 2.1) ($p = 0.015$). The groups of children were