International Journal of Pediatric Otorhinolaryngology (2009) 73, 263–273

ELSEVIER

International Journal of Pediatric Otorhinolaryngology

www.elsevier.com/locate/ijporl

The effect of preoperative fasting on postoperative pain, nausea and vomiting in pediatric ambulatory tonsillectomy

Seija Klemetti [a,b,1], Ilpo Kinnunen [c,1], Tarja Suominen [a,d,2], Heikki Antila [e,3], Tero Vahlberg [f,4], Reidar Grenman [c,*], Helena Leino-Kilpi [g,2]

[a] *University of Turku, Department of Nursing Science, 20014 University of Turku, Finland*
[b] *University Hospital of Turku, Department of Otorhinolaryngology – Head and Neck Surgery, 20014 University of Turku, Finland*
[c] *University Hospital of Turku, Department of Otorhinolaryngology – Head and Neck Surgery, Box 52, 20521 Turku, Finland*
[d] *University of Kuopio, Department of Nursing Science, Finland*
[e] *University Hospital of Turku, Department of Anaesthesiology, Intensive Care, Emergency Care and Pain Therapy, Box 52, 20521 Turku, Finland*
[f] *University of Turku, Department of Biostatistics, 20014 University of Turku, Finland*
[g] *University of Turku, Department of Nursing Science and South-Western Hospital District, 20014 University of Turku, Finland*

Received 3 September 2008; received in revised form 16 October 2008; accepted 21 October 2008
Available online 4 December 2008

KEYWORDS
Child;
Tonsillectomy;
Preoperative fasting;
Postoperative pain;
Postoperative nausea and vomiting

Summary

Objective: The aim of this prospective randomized study was to examine whether active counseling and more liberal oral fluid intake decrease postoperative pain, nausea and vomiting in pediatric ambulatory tonsillectomy.
Methods: Families, whose child was admitted for ambulatory tonsillectomy or adenotonsillectomy, were randomly assigned to the study groups ($n = 116$; 58 families in each group). The intervention group received the fasting instructions with face-to-face counseling for the child's active preoperative nutrition, and the control group the

* Corresponding author. Tel.: +358 2 313 1500; fax: +358 2 313 3550.
E-mail addresses: seija.klemetti@utu.fi, seija.klemetti@tyks.fi (S. Klemetti), ilpo.kinnunen@tyks.fi (I. Kinnunen), tarja.suominen@utu.fi, tarja.suominen@uku.fi (T. Suominen), heikki.antila@tyks.fi (H. Antila), tero.vahlberg@utu.fi (T. Vahlberg), reidar.grenman@tyks.fi (R. Grenman), helena.leino-kilpi@utu.fi (H. Leino-Kilpi).
[1] Tel.: +358 2 313 1556; fax: +358 2 313 3550.
[2] Tel.: +358 2 333 8409; fax: +358 2 333 8400.
[3] Tel.: +358 2 313 556.
[4] Tel.: +358 2 333 8543.

0165-5876/$ – see front matter
doi:10.1016/j.ijporl.2008.10.014

fasting instructions according to the hospital's standard procedure. The level of postoperative pain and nausea was scored in the postanesthesia care unit (PACU) during the first postoperative hour, as well as at 2, 4, 8 and 24 h postoperatively. The first scoring in PACU was performed by the attending nurse with a 0—10 scale. The rest of the estimations were made independently and simultaneously by the children using a VAS scale, and by the parents using a 0—10 scale.

Results: The children in the control group were in more pain in the PACU than the children in the intervention group, and the difference between the groups was statistically significant ($p = 0.0002$). All pain scores, according to the children and the parents, increased after the surgery. In both groups the highest score values were found at home 8 h after surgery, and no significant difference was found between the study groups. On the first postoperative morning, the children in the control group were in pain ($p = 0.047$). The children did not have significant nausea in the PACU, but the nausea increased postoperatively. Four hours after surgery the children were most nauseous according to all estimations (60%, $n = 116$). More than half of the children vomited and most vomited clotted blood. Nausea and vomiting decreased during the evening of the surgery, but six children vomited the next morning, four of them vomited blood. The incidence and intensity of postoperative nausea and vomiting between the intervention and control groups were not statistically significant. However, preoperative nutritional counseling and more liberal per oral fluid intake appeared to have a positive effect on the children's well-being and helped them to better tolerate postoperative nausea and vomiting.

Conclusions: The preoperative counseling about active preoperative nutrition significantly reduces the child's pain during the first posttonsillectomy hours and might prepare the child to better tolerate the stress of potential postoperative nausea and vomiting.

1. Introduction

Pediatric tonsillectomy and adenotonsillectomy are common procedures and often performed in ambulatory settings. Children have postoperative pain and difficulties in drinking and eating. The most severe pain is experienced during the first 24 h after surgery and it is worst during swallowing [1]. Furthermore, nausea is a common problem after pediatric tonsillectomy and, according to the literature, more than half of the children vomit [2—4]. Posttonsillectomy bleeding is also one of the risks and swallowed blood may be a reason for postoperative nausea and vomiting [5,6].

Postoperative pain cannot be avoided after tonsillectomy [6]. Pre and postoperative medications [7,8], local anesthetics [9,10], antibiotics [11], surgical techniques [12], postoperative pain management [13—15,1,16] and also non-pharmacological methods [17,18] have been studied. However, the issue of posttonsillectomy pain has not been satisfactory totally solved [19,20,9], and to the best of our knowledge, the effect of active preoperative nutrition on posttonsillectomy pain has not been studied.

The child's nutrition is at risk because of postoperative nausea and vomiting. Medical interventions have been reported to be effective ways of preventing nausea [21,22], but, according to some other studies, no benefit has been found [23]. Gastric aspiration has been used for reducing posttonsillectomy nausea and vomiting [15] but no decrease in the incidence of vomiting after tonsillectomy was found [3]. Other non-pharmacological methods, such as different ventilation techniques and electroacupuncture, have also been studied but no greater significance effect has been found [24,25]. The child's nausea and vomiting is probably multifactorial [2,4] and swallowed blood may be one of the probable reasons for a child's vomiting after tonsillectomy [26,5,27,1].

The purpose of preoperative fasting is to reduce the risk of nausea, and to prevent aspiration of stomach contents [28]. However, long-lasting preoperative fasting has been shown to have a connection with postoperative nausea [29], while shorter preoperative fasting times have been shown to be safe and recommendations in guidelines have changed [30,15]. Children have been allowed to drink clear fluids 2 h [31] and eat solids 4—6 h before surgery [15]. However, children are still often fasting preoperatively for longer periods in spite of the changed guidelines [32,33]. If it is possible to influence a child's postoperative well-being by counseling about proper preoperative nutrition, it is worth closer examination. The purpose of this study was to