Intensive and Critical Care Nursing (2014) 30, 318—324

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/iccn

ORIGINAL ARTICLE

Sore throat in women after intubation with 6.5 or 7.0 mm endotracheal tube: A quantitative study

Linda Gustavsson [a], Irene Vikman [b], Cecilia Nyström [c], Åsa Engström [d,*]

[a] *Department of Anaesthesia, Central Operation Ward, Sunderby Hospital, Luleå, Sweden*
[b] *Division of Health and Rehabilitation, Department of Health Science, Luleå University of Technology, Luleå, Sweden*
[c] *Intensive Care Unit 57, Sunderby Hospital, Luleå, Sweden*
[d] *Division of Nursing, Department of Health Science, Luleå University of Technology, Luleå, Sweden*

Accepted 9 July 2014

KEYWORDS
Endotracheal intubation;
Nursing;
Quantitative;
Sore throat;
Women;
Postanaesthesia care unit

Summary
Background: Women experience more sore throats than men after endotracheal intubation.
Aim: The aim of this study was to investigate the incidence of self-rated sore throat immediately, and 2—4 hours postoperatively, in women after elective gynaecological surgery under general anaesthesia using an endotracheal tube (ETT) size 6.5 or 7.0 mm in inner diameter.
Method: Eighty-two female participants who had undergone elective gynaecological surgery participated, 44 and 38 were intubated with size 6.5 mm ETT and 7.0 mm ETT respectively. They estimated the occurrence of sore throat preoperatively and postoperatively, according to a 4-point Likert scale. Statistical data were analysed using the Package for Social Science (SPSS) 19.
Results: Sore throat was present in 29.5% of participants who were intubated with size 6.5 mm ETT immediately postoperatively and in 39.5% of those who were intubated with size 7.0 mm ETT.
Conclusion: Nurses specialising in the supervision of daily care specific to the intubated patient should note and alleviate sore throat as part of their nursing care.

* Corresponding author at: Department of Health Science, Luleå University of Technology, SE-971 87 Luleå, Sweden. Tel.: +46 920 49 38 75; fax: +46 920 49 38 50.
E-mail address: asa.engstrom@ltu.se (Å. Engström).

http://dx.doi.org/10.1016/j.iccn.2014.07.003
0964-3397/

Implications for Clinical Practice

- Women who were intubated with a size 6.5 mm endotracheal tube (ETT) estimated they had fewer and milder symptoms of sore throat postoperatively.
- Nurses specialising in anaesthesia and intensive care should note and alleviate sore throat after ETT intubation as part of their nursing care.
- Sore throat after ETT intubation should be acknowledged and documented in the patient's record.

Introduction

Waking up with an endotracheal tube (ETT) in the throat is a choking and stressful experience for the patient; expressed as feelings of being unable to breathe or communicate properly (Grap et al., 2002). In addition to this psychological complication, sore throat is commonly reported (Jaensson et al., 2010) as a contributory factor to unpleasant feelings and dissatisfaction (Johnson and Sexton, 1990). Therefore, reducing and minimising a sore throat is an important intervention. Sore throat has been studied extensively over the last few decades and the incidence is reported to vary between 21 and 74 percent (%) (Al-Qahtani and Messahel, 2005; Bunker Fuller, 1992; Hamdan et al., 2007; Jaensson et al., 2010; Porter et al., 1999). This considerable variation is possibly due to differences in measurements used, as well as the types of surgery and populations studied. The incidence is reported as higher among females (Ahmed et al., 2007; Biro et al., 2005; Chen et al., 2004; Higgins et al., 2002; Jaensson et al., 2010; McHardy and Chung, 1999; Myles et al., 1997; Stoelting and Miller, 1994; Stout et al., 1987), which may be because because women have a thinner mucosa covering their vocal cords. In endotracheal intubation, the tube is placed below the vocal cords and may cause irritation of the mucosa (Stoelting and Miller, 1994). More extensive surgery related to the throat, such as thyroid surgery, is also a contributory factor to increased incidence of sore throat (Kadri et al., 2009). If sore throat is present, it occurs immediately after extubation, and then subsides over 24—72 hours postoperatively (Biro et al., 2005; Hamdan et al., 2007; Jaensson et al., 2010; Stoelting and Miller, 1994).

Risk factors mentioned as associated with sore throat are, amongst others, the use of muscle relaxants, the design of the laryngoscope blade, the humidity of inhaled gases (Bunker Fuller, 1992) and, the size of the endotracheal cuff. The size of the ETT has also been shown to impact on the incidence rate of sore throat in females. In a recently published review, ETTs with a small inner diameter were significantly associated with a reduction in the incidence of sore throat in the post-anaesthesia care unit and 24 hours after surgery (Hu et al., 2013). Moreover, ETTs with a smaller inner diameter have been shown to reduce the risk of airway trauma and to ease extubation (Koh et al., 1998), but there is a lack of studies describing the incidence of sore throat among women using ETTs with the size 6.5 respectively 7.0 mm. Therefore, the aim of this study was to investigate the incidence of self-rated sore throat immediately and 2—4 hours postoperatively among women after elective gynaecological surgery under general anaesthesia using an ETT with size 6.5 or 7.0 mm inner diameter.

Method

Setting and participants

Participants in this non-randomised study were recruited from April 2011 through January 2012 from the surgical ICU at a county hospital located in the northern part of Sweden. One hundred women undergoing elective gynaecological surgery were consecutively enrolled in the study (Fig. 1).

Inclusion criteria were:

- Female, aged more than or equal to 18 years.
- Undergoing elective gynaecological surgery.
- No sore throat.
- American Society of Anesthesiologists' physiological status classification (ASA) I—II (ASA I = healthy, ASA II = mild systemic disease, no functional limitation, Wolters et al., 1996).

The exclusion criteria were:

- Not undergoing elective gynaecological surgery.
- Female under 18 years old.
- Male.
- ASA's physiological status classification of more than II, and has functional limitation (Wolters et al., 1996).
- Surgery involving the cervical region.
- More than two intubation attempts.
- Rapid Sequence Induction (RSI).

During the data collection period the participants were intubated with size 6.5 mm ETTs or 7.0 mm ETTs depending on which day their surgery took place, i.e. all patients fulfilling the inclusion criteria undergoing surgery on Mondays for instance were intubated with size 6.5 mm ETTs and all patients on Thursdays were intubated with size 7.0 mm ETTs. All participants were given similar general anaesthesia, administrated by experienced anaesthetists and anaesthesia nurses, following standard procedure used in the hospital. Pre-intubation pain relief was generally administered in the form of fentanyl. However, for two patients, this was replaced by remifentanil. Propofol was used to induce sleep. However, three participants were allergic to the drug, and were injected with thiopenthal intravenously instead. Before intubation, all participants received muscle relaxants. Most participants were given rocurium bromide, but some participants received succinylcholine (suxamethonium) or mivakuriumchloride. The ETT cuff was filled with air after intubation and the cuff pressure was measured.