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Nasal speculum for submental intubation

Hamid Mahmood Hashemi[a], Hosein Heidar[a*], Talieh M. Hashemi[b], Ali M. Hashemi[b], Shohreh Zahraei[b]

a Department of Oral and Maxillofacial Surgery, School of Dentistry AND Craniomaxillofacial Research Center, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran; b Private Practice

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**Corresponding author:* Hosein Heidar, *Department of Oral and Maxillofacial Surgery, School of Dentistry AND Craniomaxillofacial Research Center, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran*
Tel: +98-2184902473
Fax: +98-2184902473
Email: drheidar@yahoo.com

ABSTRACT

In 1986 Altemir, for the first time, described submental intubation for maxillofacial cases. A problem with the technique is that the edges of the tube may damage the anatomic tissues of the mouth floor. To avoid such damages, a modification of this technique using nasal speculum is presented here. Moreover, with this technique blood and detached tissues cannot enter into the endotracheal tube while passing through submental tissues.

Keywords: Submental Intubation, Speculum, Maxillofacial Fracture

Introduction

In 1986 Altemir, for the first time, described submental intubation for maxillofacial cases [1]. This technique has indications in patients with simultaneous mandible and nose fractures where nasal and oral intubations are not indicated [2]. In these situations, another alternative is tracheostomy, which has some adverse effects [3].

In the submental technique, after normal oral intubation, the endotracheal tube is passed through a submental incision [1]. A problem with the technique is that the edges of the tube may damage the anatomic tissues of the mouth floor. To avoid such damages, a modification of this technique using nasal speculum is presented here.

Technique

After oral intubation a 2 cm incision is developed in the submental region. A nasal speculum is inserted into this incision and is passed through subcutaneous, platysma, mylohyoid, submucosal, and mucosal layers to touch the floor of the mouth, where it can enter the mouth through a small incision (Figure 1). Then, the speculum is opened to serve as a path for the endotracheal tube. The pneumatic cuff of the tube is deflated and the tube passes through the speculum and exits the submental region (Figure 2). The speculum does not allow the tube to traumatize tissues. When the correct location of the tube is confirmed and the tube is connected to the anesthesia machine, it is fixed to the skin with sutures. Upon extubation, the skin sutures are cut, and the tube cuff is deflated and exited from the mouth. The tube may remain for a while in its place dependent on the opinion of the anesthesiologist. After removing the tube, the submental incision is closed with three to four interrupted sutures.

Figure 1. Entrance of speculum through the submental incision (Palpation of the mouth floor will help the locating of the speculum head

Figure 2. Endotracheal tube exits through the path provided by the speculum

Discussion

Tracheostomy has many adverse effects. It has been reported that in 14 to 45% of cases this technique has led to at least one adverse effect [4]. These adverse effects include infection, bleeding, subcutaneous emphysema, pneumothorax, and pneumomediastinum, damage to recurrent laryngeal nerve, tracheal stenosis, and tracheoesophageal fistula [3]. Thus, as an alternative to this high-risk technique, submental intubation provides many benefits.

The other alternatives for tracheostomy are oral and nasal intubations. However, oral intubation cannot be done when a need for intermaxillary fixation exists. This technique also interferes with operative maneuvers [3]. Contraindications for nasal intubation include situations in which the facial fractures involve the nasal pyramid or irradiate towards the skull base [2]. In all these situations submental intubation can beneficial. Moreover, it makes orothracheal intubation possible in candidates for maxillary orthognathic surgery whose nasal airway is not open, and in cases with lip and palate clefts [3]. The adverse effects of submental intubation include infection in the mouth floor, risk of submental fistula, and development of scar in the submental region. These adverse effects, however, are ignorable compared to those of tracheostomy [4].

Submental intubation has been used and modified successfully by many teams and some technical details of it have been described [3, 5-8]. Through a review of literature and experiences with three patients, Caubi et al. identified submental intubation as a simple, secure, and effective procedure for operative airway control in major maxillofacial trauma patients [9]. In the technique presented here for submental intubation, trauma to soft tissues of the mouth floor is avoided. Moreover, blood and detached tissues cannot enter into the endotracheal tube while passing through the submental tissues.

Conflict of Interest: 'None declared'.

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