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Submental Intubation Versus Tracheostomy In panfacial Trauma Patients.

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ABSTRACT

Endo tracheal intubation is always a challenge in pan facial trauma. This article compares submental intubation with tracheostomy in pan facial trauma. The incidence of complications are more with tracheostomy when compared with submental intubation. Submental intubation can always be used as an effective and safer alternative to tracheostomy.

Keywords: Pan facial trauma, submental intubation, tracheostomy, maxillofacial trauma.

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INTRODUCTION

Panfacial fractures involve the cranium, midface and the mandible [1]. Early reconstruction of patients with panfacial fractures by open reduction and rigid internal fixation is now the standard of care. An important consideration at the time of surgery is the maintenance of airway without interfering with the reconstruction of fractured segments. Essentially the anaesthesiologist and the surgeon are competing for the same space. The surgeon needs access to an unobstructed field; and in most instances; maxillomandibular fixation is required intraoperatively for adequate reconstruction of the facial fractures [2,3]. In most of the maxillofacial trauma cases the airway is secured by nasotracheal intubation (NTI) without interfering with the maxillomandibular fixation and surgical approaches [4]. Unfortunately, surgical reconstruction in panfacial fracture doesn't recommend NTI, or requires switching the endotracheal tube from the nasal to the oral route at a certain stage of the operation. This may compromise the airway.

A traditional method for airway control in such cases, considered the method of choice by many is tracheostomy [5]. Tracheostomy has a 14% to 45% complication rate documented in the literature and its use should be judiciously considered [6,7].

Hernandez Altemir, a Maxillofacial Surgeon, first described an alternative for tracheostomy in 1986 [8]. The sub-mental route for endotracheal intubation consists of pulling the free end of an endotracheal tube (universal connector removed) through a sub-mental incision, after the usual orotracheal intubation has been performed. This technique provides a secure airway, optimal field, allows maxillo-mandibular fixation while avoiding the drawbacks and complications of nasotracheal intubation and tracheostomy.

Surgical Procedure

After the induction of general anaesthesia, patient is intubated orally by standard direct laryngoscopy with a reinforced, spiral embedded, tracheal tube.

The oral route of intubation is converted into the transcutaneous latero-submental route using the following procedure.

A skin incision of approx. 2cm is made parallel to the inferior border of the mandible in the submental area beside the midline. The right side is preferred over the left whenever possible because it allows better visualization of the position of the tube with direct laryngoscopy [9]. Another incision is made intraorally at the junction of lingual attached gingival and free mucosa of the floor of the mouth. Both incisions are connected by blunt dissection. A closed strong curved artery forceps is then inserted into the mouth through the dissected canal.

At this point, the endotracheal tube is briefly disconnected from the breathing circuit and the tube connector is removed. The deflated pilot tube cuff followed by the endotracheal tube are grasped by artery forceps and pulled outside in sequence. During this maneuver, the tube is fixed in the mouth to prevent slipping from the trachea either manually or with McGill's forceps. The tube is then reconnected and secured to the skin of the submental area by strong silk suture after verifying unchanged tracheal insertion of the tube by auscultation of the chest and checking the proper intraoral positioning of the tube in the paralingual groove. At the end of the procedure, the deflated pilot cuff and the skin wound is sutured, while the intraoral wound is left to heal secondarily.

DISCUSSION

The main reason for avoidance of nasotracheal intubation in panfacial fracture patients is the danger of accidental passage of tracheal tube into the carnail cavity. Nasal intubation can also be hindered by deviated nasal septum, polypsis or other intranasal pathologic conditions.

Retromolar intubation has been advocated as a simple way to avoid nasotracheal intubation as well as interference with dental occlusion [10]. Another traditional method for securing the airway in such situations is tracheostomy. Complications of tracheostomy include bleeding, injury to adjacent structures, surgical emphysema, pneumothorax or pneumomediastinum, blockage of tracheostomy cannula,

displacement of cannula, tracheitis, cellulitis, pulmonary atelectasis, trachea-innominate fistula, tracheomalacia, tracheal stenosis, excessive scarring and failure to decannulate. Although meticulous surgical and perioperative management helps to avoid the majority of these complications, indications for tracheostomy should be carefully considered [11].

Submental intubation is a method of securing the airway without interference with the intraoral operative field and maxillomandibular fixation. It is technically easier, less time consuming, and accompanied by lower morbidity than tracheostomy. The main consideration in choosing this method is length of postoperative period requiring airway control. However, some authors report keeping the patients with a submental tube for up to 48 postoperative hours [12,13]. Submental intubation is contraindicated in patients requiring long term airway maintenance. Reported complications include detachment of pilot balloon [14] or damage during externalization [15] damage to the cuff of the tracheal tube, infection of submental wound, abscess formation in floor of the mouth, salivary fistula, development of mucocele [16] and hypertrophic scarring. All these complications are relatively rare and avoidable with meticulous technique.

CONCLUSION

According to literature reports and our experience, submental endotracheal intubation is an extremely useful technique with low morbidity and is suitable to replace tracheostomy in selected cases of maxillofacial trauma, where nasotracheal is impossible or contraindicated and long term ventilation support is not required.

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