

**Case Report**

**SUBMENTAL INTUBATION IN A PAN FACIAL TRAUMA PATIENT  
WITH NASAL ADENOIDS – A CASE REPORT AND REVIEW**

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**ABSTRACT**

Airway management in complex mid facial fractures and panfacial trauma patients often requires a Tracheostomy to insure a free operating field. Nasal endotracheal intubation is often contraindicated in the presence of fracture of base of the skull or obstruction due to congenital or acquired conditions. Comminuted panfacial fractures cause physical obstruction to the passage of nasotracheal tube. Further, the presence of nasotracheal tube can interfere with surgical reconstruction of fractures of the Naso Orbital Ethmoid (NOE) complex. Surgical reconstruction often involves intermaxillary fixation in the intraoperative period to restore patient's occlusion. This precludes the use of oral endotracheal intubation. This case report discusses a panfacial trauma patient requiring reduction and fixation of mandible intubated through Submental route as nasal intubation was contraindicated because of enlarged adenoids.

**Key Words:** Submental Intubation, Nasal Adenoids, Tracheostomy

**INTRODUCTION**

Management of the airways in panfacial trauma patients requires special consideration as the treatment procedure requires maxillomandibular fixation. Different methods of intubation including nasal intubation, tracheostomy, oral intubation and different surgical airways have been described in the literature (Mayer *et al.*, 2003), with no consensus existing to date as to the best way of controlling the airway when orotracheal or nasotracheal intubations are contraindicated (Caron *et al.*, 2000). Tracheostomy remains an excellent alternative for establishing a surgical airway, although it involves a significant risk of iatrogenic complications, such as tracheal stenosis, internal emphysema, and damage to the laryngeal nerves, tracheoesophageal fistula and scarring (Taicher *et al.*, 1996; and Amin *et al.*, 2002). A simple alternative to more complicated tracheostomy is the submental route for tracheal intubation which allows free intraoperative access to the dental occlusion and nasal pyramid. This case report discusses a facial trauma patient requiring reduction and fixation of mandible and maxillomandibular fixation, suffering with nasal adenoids intubated through Submental route.

**CASES**

A 45 year old male patient reported to our centre with facial trauma resulting from a road traffic accident two days back. Clinical and radiological examination revealed bilateral fracture of mandible requiring open reduction and internal fixation under general anesthesia. Computed tomography revealed enlarged nasal adenoids (Figure 1) contraindicating nasotracheal intubation and as the procedure requires maxillomandibular fixation oral intubation also was contraindicated making submental route of tracheal intubation only safe alternative.

**Surgical Procedure**

After the induction of general anesthesia, the patient's trachea is intubated orally by standard laryngoscopy with a reinforced, spiral embedded, tracheal tube. It is important to release the sealed connector from the proximal end of the tube before intubation so that it can be easily disconnected during the procedure. A skin incision of approximately 2 cm is made parallel to the inferior border of the

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mandible in the submental area lateral to the midline. Another incision is made intraorally at the junction of lingual attached gingiva and mucosa of the floor of the mouth. Both incisions are connected by blunt dissection progressing from outside to inside through the subcutaneous fat, platysma, deep cervical fascia, and mylohyoid muscle. 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. During this manoeuvre, 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 (Figure 2) by silk suture after verifying unchanged tracheal insertion of the tube by auscultation of the chest. At the end of the procedure, the deflated pilot tube cuff and the tube are pulled back in the reverse order and the skin wound is sutured, while the intraoral wound is left to heal secondarily.



**Figure 1: CT scan showing enlarged nasal adenoids**



**Figure 2: Submental intubation into trachea**

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### **DISCUSSION**

Submental intubation was first described as an alternative route for oral or nasal intubation or tracheostomy in cases of pan facial trauma, other indications such as systemic pathology or cases of simultaneous orthognathic and plastic surgery have been reported (Gordon and Tolstunav, 1995). Our case describes a facial trauma patient with nasal obstruction due to adenoids, contraindicating nasotracheal intubation in which submental intubation was performed. Many authors have studied and reported the clinical uses of submental route of intubation since it was first described by Altemir (1986) two decades ago, with very low rates of complications. Submental intubation combines the advantages of nasotracheal intubation, which allows the mobilization of the dental occlusion, and those of orotracheal intubation, which allows access to frontonasal fractures, while avoiding the risks of iatrogenic meningitis, tracheal stenosis, injury to cervical vessels or the thyroid gland, related to tracheostomy (MacInnis and Baig, 1999). Tracheotomy is agreed to be a safer procedure than endotracheal intubation in cases requiring multiple surgeries or prolonged airway management. There are certain disadvantages of submental intubation which are easily avoidable by taking proper precautions, like infection in the floor of the mouth, risk of submental fistulae and anomalous scars. The route of the tube does not need to be in the submental region; it can be in the anterior submandibular region few centimetres further along the masseter muscle (Stoll *et al.*, 1994). The route at the angle of the mandible should be avoided because of the greater risk of injury to the submandibular salivary gland and its duct, or to the lingual nerve and the facial blood vessels. For these reasons, several authors prefer to call the technique “submento-submandibular intubation” which has proven effective in terms both of results and of surgical time required, in addition to reducing stress for the patient and for the surgeon. Complications from this approach are more hypothetical than real (Stoll *et al.*, 1994; Caron *et al.*, 2000 and Amin *et al.*, 2002). The rare complications associated with submento-submandibular intubation are attributable to errors of surgical technique. The technique is not limited to extreme cases in which the surgeon wishes to avoid tracheostomy in the treatment of panfacial injuries, on the contrary it is indicated even in borderline cases, for example in isolated lesions with a slight alteration in occlusion that require intraoperative intermaxillary fixation. It is also useful in the treatment of lesser lesions, such as lesions of the nasal pyramid associated with mandibular fractures that require an occlusive guide for treatment, as in our case of nasal adenoids. Submento-submandibular intubation is important even in mild mandibular lesions in which nasal intubation is difficult or impossible because of congenital or post-traumatic defects of the nasal pyramid.

### **CONCLUSION**

Submental intubation should be chosen whenever possible in cases of maxillofacial trauma or cases where nasal intubation is contraindicated. It demands a certain surgical skill, but it is simple, safe and quick to execute with no significant complications. It also allows operative control of the dental occlusion and concomitant surgery of the nasal pyramid in pan facial trauma patients with a low incidence of operative and postoperative complications and eliminates the risks and side effects of tracheostomy.

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