

Comparision Between Nasotracheal Intubation and Submental Intubation in Pan Facial Trauma

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DOI: <http://dx.doi.org/10.13005/bpj/790>

(Received: July 25, 2015; accepted: September 10, 2015)

ABSTRACT

Submental orotracheal intubation is a simple, quick and effective alternative to oral and nasal tracheal intubation or tracheostomy in the surgical management of selected patients with craniomaxillofacial injuries. It has a low morbidity and it does not impede the surgical field, allowing for temporary maxillomandibular fixation intra-operatively, and nasal assessment, manipulation and bone grafting, either simultaneously or as an independent procedure. It is a gold standard procedure in pan-facial fracture where nasotracheal intubation cannot be done.

Key words: Craniomaxillary trauma, Anaesthesia equipment, Endotracheal tube, Intubation tracheal, submental.

INTRODUCTION

Oral & Maxillofacial surgical patients is difficult to intubate because of the complication associated. All the procedures move around dealing with the airway ,so The surgeon and the anaesthetist have to operate using good teamwork so that maximum safety can be provided to the patients with no interruption during surgery and to reduce post-op morbidity .

Anatomy of submandibular and nasal area

The extension of the nasal cavity starts from the nares (nostrils) to the posterior part of the septum ,opening into the naso-pharnx.The hard palate forms the floor of the nasal cavity.The medial wall of the cavity is formed by the nasal septum, consisting of cartilage anteriorly and bone posteriorly. The bony part is formed by the ethmoid superiorly and the vomer inferiorly The medial walls of the orbit and the medial walls of maxillary sinus forms the lateral wall of the nasal cavity.The lateral

wall of the nasal cavity also contains the turbinates ,which are formed thick specialised mucosa. The inferior turbinates, is the the largest of the three conchae .On examination they may look like nasal polyps.

Submandibular anatomy

The submandibular triangle (or submaxillary or digastric triangle) corresponds to the region of the neck immediately beneath the body of the mandible.

Boundaries and coverings

It is bounded

Above

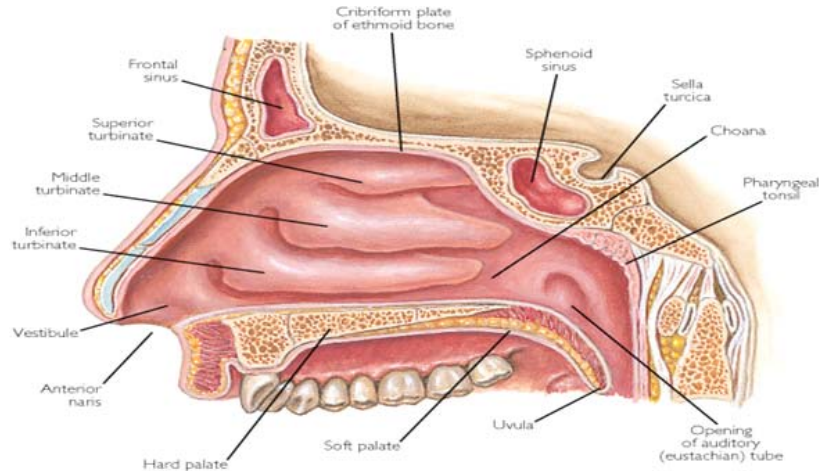
By the lower border of the body of the mandible, and a line drawn from its angle to the mastoid process;

Below

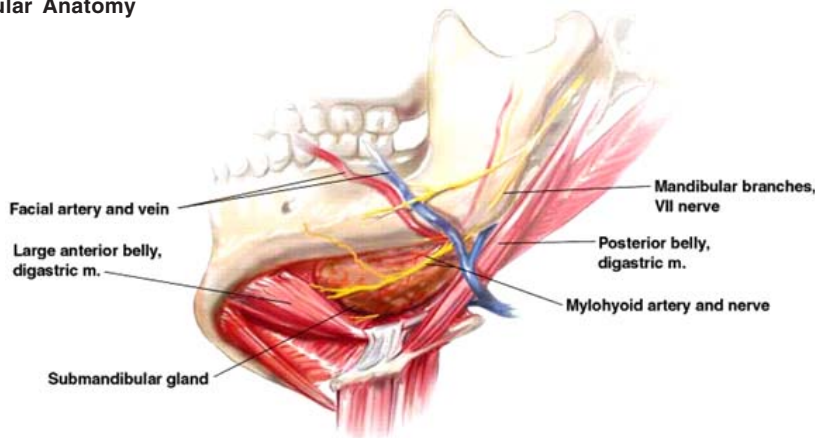
By the posterior belly of the Digastricus; in front, by the anterior belly of the Digastricus.It is

covered by the integument, superficial fascia, Platysma, and deep fascia, ramifying in which are branches of the facial nerve and ascending

filaments of the cutaneous cervical nerve. Its floor is formed by the Mylohyoideus anteriorly, and by the hyoglossus posteriorly.



Submandibular Anatomy



Nasotracheal intubation

The first method of nasotracheal intubation was described by Kuhn in the year 1902[1], according to Kuhn it was a more physiologic approach to intubate the trachea. Magill in 1920 popularised this method as he preferred this technique for intra-oral surgery². It was popular as a technique for prolonged intubation of patients in the intensive care setting², but risk of sinusitis³ has reduced this use. The use of this method for routine intubation gradually decreased, owing to a misconception⁴ that this method is more traumatic and it causes more post-operative morbidity. Although naso-tracheal is the choice of intubation for micro-laryngeal surgery^{5, 6} and dental surgery. The more intra-oral space provided by the naso-

tracheal intubation provides easy access to intra-oral structures, more over it helps in easy instrumentation in complex surgeries such as BSSO, isolated mandibular fractures, etc

Indications for nasotracheal intubation

Head and neck surgery

1. Intra-oral and oropharyngeal surgery
2. Complex intra-oral procedures involving segmental mandibulectomy or mandibular osteotomy and mandibular reconstructive procedures
3. Rigid laryngoscopy and microlaryngeal surgery
4. Dental surgery.

Contraindications for nasotracheal intubation

1. Nasoethmoidal fractures⁷.
2. Pan-facial fractures where the altered anatomy prevents the entry of the endotracheal tube.
3. Base of the skull fractures⁸.
4. Severe deviated nasal septum.
5. Nasal polyps.

Submental intubation

The method of intubation cannot be used in Pan-facial trauma because the de-arranged skeleton does not allow the passage of the tube into the trachea, similarly in base of the skull fracture the tube may get introduced into the meninges. Surgical reconstruction of nasoethmoidal fractures also forms a contraindication to the use of endotracheal intubation. Although tracheostomy is a gold standard procedure for such cases but it is associated with many post op morbidity. An alternative for tracheostomy was first described by Hernandez Altemir in 1986⁹. The submental route for endotracheal intubation consists of pulling the free end of an endotracheal tube (universal connector removed) through a submental incision, after a usual orotracheal intubation has been performed. The use of submental intubation with Altemir's technique and its modifications has been used in a large number of patients with maxillofacial injuries. The term

transmylohyoid intubation was given by Gadre and Kushte. Since the path of exit of the endotracheal tube is across the mylohyoid muscle and not restricted to the submental triangle.

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Contraindication of submental intubation

1. IMF to be done intra-operatively
2. Patients refusal for post-op scarring.

Complication of submental intubation

- 1) Infection
- 2) Endotracheal tube damage
- 3) Orocutaneous Fistula
- 4) Right mainstem intubation/obstruction
- 5) Hypertrophic scarring
- 6) Extubation (Paediatric)
- 7) Venous bleeding
- 8) Excessive bronchial flexion
- 9) Transient lingual nerve paresthesia
- 10) Mucocele formation

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