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Submental Intubation: A More Desired Approach Than Tracheostomy InPan-Facial

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I. Introduction

In 1986, Sir Hernandez Altemir first described submental intubation as a useful alternative to tracheostomy. The primary indication for submental intubation includes pan-facial injuries, craniofacial and maxillofacial fractures with adequate mouth opening.

Conventional orotracheal intubation is unsuitable as it interferes with surgical access and prevents the proper alignment of fracture fragments necessary for good dental occlusion. Additionally, nasal intubation is not feasible in cases of base of skull fractures or nasal bone fractures. Tracheostomy, though an option, is an invasive procedure that requires expertise and is associated with both immediate and long-term complications.

II. Case Report

A 30-year-old male presented with a base of skull fracture and pan-facial trauma following a road traffic accident (RTA). The patient was scheduled for base of skull repair and maxillary bone fixation. He had no known comorbidities.

On examination, the patient was conscious and oriented. He exhibited positive CSF rhinorrhea. His airway examination revealed adequate mouth opening, normal neck movements, a thyromental distance greater than three fingers, and a Mallampati Grade II classification. His dentition was normal. Systemic examination, including cardiovascular, respiratory, and central nervous system evaluations, was unremarkable. Blood investigations were within normal limits. Based on the ASA classification, the patient was assessed as ASA III and deemed fit for surgery with a planned submental intubation technique.

Anesthetic Management

The patient was premedicated with intravenous glycopyrrolate (0.2 mg) and midazolam (1 mg). Induction was achieved using intravenous fentanyl at a dose of 2 mcg/kg and titrated propofol (100 mg), followed by muscle relaxation with intravenous succinylcholine at 1 mg/kg. After 60 seconds, direct laryngoscopy was performed, and the patient was intubated using a size 7 orotracheal flexometallic tube.

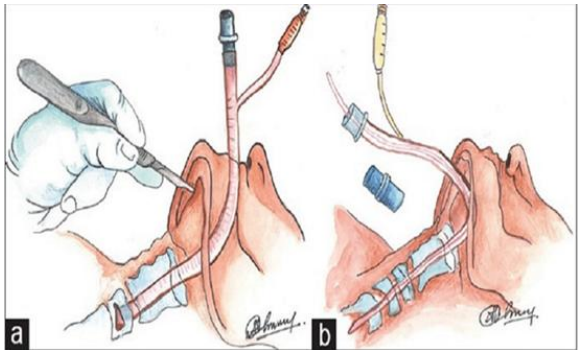

Fig 1: schematic representation of submental intubation

Procedure

Following intubation, the surgeon made an approximately 1.5 cm incision in the submental triangle. A blunt dissection was performed using Kelly's forceps, and the endotracheal tube was carefully guided through the anterior floor of the triangle and connected to the ventilator. The patient was maintained on oxygen, nitrous oxide, and isoflurane (0-2%), ensuring effective ventilation without desaturation. The intraoperative period proceeded uneventfully. At the end of the surgery, thorough suctioning was performed before extubation, and the patient was successfully weaned off ventilation.

Fig 2 & 3: clinical photograph of incision and tube placement

III. Discussion

Complex craniomaxillofacial injuries present a significant challenge in airway management, particularly when both the anesthesiologist and surgeon must share access to the airway. In such cases, ensuring an optimal surgical field while maintaining secure ventilation is crucial. The choice of airway management technique plays a vital role in patient outcomes.

Various airway techniques exist, including orotracheal intubation, nasotracheal intubation, submental intubation, and tracheostomy. Orotracheal intubation can interfere with surgical access, particularly in cases requiring dental occlusion assessment, while nasotracheal intubation is contraindicated in skull base fractures. Tracheostomy, though a definitive airway, is invasive and carries risks such as hematoma, pneumothorax, tracheal stenosis, and tracheoesophageal fistula.

For cases like the one presented, submental intubation offers a safer and more practical alternative. It minimizes complications while allowing the surgeon unobstructed access to the maxillofacial structures. Additionally, it reduces the risk of long-term morbidity associated with tracheostomy and shortens hospital stays. The benefits of submental intubation make it a valuable option in managing airway access in patients with pan-facial trauma.

Submental intubation also helps avoid complications associated with tracheostomy, such as infection, prolonged hospital stay, and significant postoperative morbidity. By maintaining an intact airway without surgical distortion, this technique ensures better postoperative recovery. Moreover, it allows for easier extubation and prevents complications like subglottic stenosis, which is a known risk with tracheostomy. Given its advantages, submental intubation should be considered as an alternative approach in cases where conventional intubation techniques are not feasible.

IV. Conclusion

Submental intubation is a useful and feasible technique for securing the airway while providing an undisturbed surgical field. It ensures optimal dental occlusion and avoids the complications associated with orotracheal, nasotracheal, or tracheostomy procedures, making it a preferred choice in pan-facial trauma cases.

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