

A Case series of two patients with unusual indications for Submental orotracheal intubation

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Abstract: Submental intubation serves as an effective and a less invasive alternative to tracheostomy in cases where the airway is shared with surgeons and when orotracheal and nasotracheal intubation are not feasible. It has minimal complications and better patient acceptability. It is the procedure of choice for panfacial fractures involving the nasal region or cranial base especially when prolonged intubation is not anticipated. Here, we report a series of two cases involving submental intubation for unusual indications at our institute and to emphasize the importance of expanding the scope of this technique beyond maxillofacial trauma and orthognathic surgeries.

Keywords: submental, intubation, transmylohyoid, tracheostomy.

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I. Introduction

The submental or transmylohyoid technique of endotracheal intubation consists of passing the proximal end of an endotracheal tube through a submental incision after orotracheal intubation, thereby providing better surgical access and avoiding tracheostomy related complications. It requires a flexible, kink-resistant, reinforced endotracheal tube with a detachable universal connector to facilitate its passage through the incision. It was first described in 1986 by Altemir¹ and many modifications of the technique has evolved since then^{2,3,4,5,6,7,8}. Though it demands a little surgical skill, it is relatively safe and quick to perform. Its complications include accidental extubation, endobronchial intubation, lingual nerve injury, injury to submandibular gland and orocutaneous fistula. Careful blunt dissection, vigilant monitoring and good knowledge of its anatomy reduces complications.

II. Case Series

Case 1:

A 24 year old male (Figure 1) with haemangioma of upper lip extending to right nasal cavity, oral cavity & right orbit with deviated nasal septum was scheduled for wide local excision. Preanaesthetic evaluation and investigations indicated he was otherwise healthy and airway examination showed a mouth opening with an interincisor distance of 3 fingerbreadth and mallampatti grade 2. After discussing with the surgical team and obtaining informed written consent from the patient, he was planned for an awake oral fibreoptic intubation followed by submental intubation. The procedure was successfully carried out and he was extubated through the submental route immediately after surgery. No postoperative complications were seen and healing of the submental wound was uneventful.



Figure 1

Case 2:

A 34 year old male (Figure 2) with oral submucous fibrosis and a fractured left maxilla scheduled for fibrotomy with fibrous band excision & open reduction and internal fixation. His preanaesthetic evaluation indicated he was otherwise healthy with the exception of CT scan revealing a bilateral concha bullosa, his mouth opening corresponded to an interincisor distance of 2 fingerbreadth. After discussing with the surgical team and obtaining informed written consent from the patient, he was planned for an awake oral fibreoptic intubation followed by submental intubation. The procedure was successfully carried out. Extubation was uneventful and had no postoperative complications.



Figure 2

Technique:

Both patients were monitored with pulse oximetry, electrocardiography and noninvasive blood pressure measurements. They were premedicated with midazolam 0.05mg/kg IV, glycopyrrolate 0.2mg IV and antibiotic prophylaxis with cefotaxime 1gm IV. Under topical anaesthesia and spray-as-you-go technique, awake oral fibreoptic intubation with 8.0mm ID reinforced endotracheal tube was done and they were induced and maintained with 100% oxygen and sevoflurane 2-3MAC. The site of incision was prepped with 10% povidone iodine solution and draped. A 2cm paramedian incision was made a fingerbreadth below the inferior border of mandible, blunt dissection was carried out with curved artery forceps as close as possible to the lingual aspect of the mandible, traversing the platysma and mylohyoid into the floor of the mouth, through the mucosa and into the oral cavity. An artery forcep was introduced through the tract and dilated, meanwhile the sealed universal connector of the endotracheal tube was removed and the tube was disconnected from the circuit. The tube was then grasped gently and pulled out through the tract by the artery forcep, followed by the pilot balloon. Throat was suctioned and packed. Tube position was confirmed with auscultation and capnography and stay sutured with 2-0 silk to prevent accidental extubation. The mean duration of the technique was 4 minutes as the surgical part was done by an experienced plastic surgeon in both the cases. At the end of the procedure, stay sutures and throat pack were removed and they were extubated through the submental route. The wound was closed with 3-0 ethilon and sterile dressing done.

III. Discussion

Thorough knowledge of the anatomy and careful blunt dissection reduces its complications. A 1.5-cm skin incision, 1 inch below and 0.5 inches anterior to the angle of the mandible is found to be more advantageous as posterior placement of the tube assures unobstructed surgical field⁹. Prior to intubation, the universal sealed connector of the endotracheal tube should be removed and reattached to facilitate its passage. Indications for submental intubation include panfacial fractures with skull base involvement, orthognathic surgeries, rhinoplasty and facial aesthetic procedures. Some contraindications include patient refusal, infection at the proposed site, bleeding diathesis, laryngotracheal disruption and in patients who need prolonged ventilation. In both the cases, we chose to secure the airway with awake oral fibreoptic approach as difficult airway was anticipated. Submental technique was preferred as postoperative ventilation was not planned for either of them. Nasotracheal intubation was contraindicated in both cases for different reasons. Peak airway pressures were monitored and were less than 25 cmH₂O throughout the procedure. Both the cases had no postoperative complications. The alternative approach would have been tracheostomy or retromolar intubation but it is more invasive, traumatic, time-consuming and technically difficult. Tracheostomy is associated with increased hospital stay, special postoperative care and life-threatening complications. The limitations of submental intubation are inability to maintain long term postoperative ventilation and unfamiliarity of the technique itself. Some authors have suggested that the terminology ‘transmylohyoid intubation’ seems more appropriate to use than submental intubation, as the passage of the tube is through the mylohyoid muscle^{10,11} and

it denotes that the incision can be made anywhere from the first mandibular molar on one side to the first mandibular molar on the other side^{10,11}.

IV. Conclusion

As discussed, tracheostomy is associated with immediate, early and late complications and is associated with increased hospital stay and expense. The submental route for endotracheal intubation represents a fast and low-morbidity alternative to tracheostomy. The procedure requires no more than five minutes to perform¹² and it offers better patient acceptance with the advantage of avoiding tracheostomy related complications. The utility of the technique in emergency situations and in cases requiring prolonged ventilation limits its usage.

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