

SUBMENTAL ENDOTRACHEAL INTUBATION IN THE MANAGEMENT OF PANFACIAL SURGERIES

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ABSTRACT

Airway management is a challenge to anaesthesiologist particularly in complex maxillofacial surgeries, where oral cavity is the main field of surgery and dental occlusion is a prerequisite. Comminuted panfacial fracture causes physical obstruction to the passage of Nasoendotracheal tube and its presence can interfere with surgical reconstruction of fracture of the Naso-orbital complex. Surgical reconstruction often involves Maxillo-mandibular fixation in the intraoperative period to restore patient dental occlusion. This precludes the use of oral endotracheal intubation in such cases and Nasoendotracheal is often contraindicated in the presence of fracture of base of skull. Tracheostomy is now sole answer to these problem, here submental approach for tracheal intubation can be an apt alternative to avoid the complication of tracheostomy. Submental technique should be considered by both the anaesthesiologist and Maxillo-facial surgeon.

KEYWORDS: Panfacial Fracture, Maxillofacial Surgery, Submental Intubation

INTRODUCTION

Airway management in patients with panfacial trauma requires special consideration as the surgery requires maxillomandibular fixation. Different methods of intubation including nasal intubation, tracheostomy, oral and different surgical airways have been described in the literature (Mayer et al; 2003)¹, with no consensus existing to date as to the best way of controlling the airway when orotracheal or nasotracheal intubation are contraindicated (Caron et al, 2000)². Tracheostomy is an excellent method to establish the airway in such patients. Altamir³ for the first time in 1986 described Submental route for tracheal intubation has been described as an alternative to tracheostomy with minimal complication in these conditions.

CASE REPORT

A 30 year old man weighing 70 kg who met with a road traffic accident was admitted in our hospital ICU with panfacial trauma and a GCS of 5/15. He had history of loss of consciousness for 5min with nasal bleed and panfacial trauma. No history of vomiting, convulsion or CSF rhinorrhoea. He required ventilatory support for three days and was posted on day 8 for surgery.

Preoperative- On examination GCS 15/15, there was facial swelling, epistaxis, B/L periorbital oedema with subconjunctival haemorrhage. He was haemodynamically stable. Airway examination showed mouth opening less than one fingerbreadth due to pain. CT Brain showed multiple craniofacial fracture involving nasal, orbital, zygomatic, maxillary and frontal bones with haemosinuses. The patient was scheduled for frontal and frontozygomatic fracture

reduction with internal fixation. Intermaxillary fixation during intraoperative period for stabilization of fracture. Nasal endotracheal intubation was contraindicated in this patient due to nasal bone fracture. As the surgery required to check intraoperatively dental occlusion, routine oral endotracheal intubation was not advisable. In order to avoid the drawback of ETT and tracheostomy and its complication (Submental endotracheal intubation was planned).

Patient was kept fasting for 8 hours. Pre-operatively antibiotics and aspiration prophylaxis were given. Nebulisation with steroids and bronchodilator was given inj. Hydrocortisone 100 mg i.v. was given half an hour before surgery. Patients was shifted to the operating theatre. Intravenous lines were secured and Ringer lactate was started. The flexometallic tube was prepared for Submental intubation. The ETT connector was separated from ETT and reconnected.

Tracheostomy kit with difficult intubation cart was kept ready. Inj. Glycopyrolate 0.2mg i.v., Inj. Ondansetron 4mg i.v., Inj. Midazolam 1mg i.v. was given. Pre-oxygenation with 100% oxygen for 5 minutes was done. Induction was done using Inj. Fentanyl (2µg/kg), titrated dose of Inj. Propofol and Sevoflurane. Patient was breathing spontaneously. Then we deepened the plane of anaesthesia and ability to ventilate was checked. Check laryngoscopy was done which revealed Cormack Lehane Grade I following which Inj. Atracurium (0.75mg/kg) administered. Orotracheal intubation was done using 8.5mm ID oral cuffed flexometallic ETT and was secured using adhesive tapes. Maintenance done with controlled ventilation using O₂ + air + Isoflurane in closed circuit. A throat pack was inserted. Submental area was painted and draped by the surgeons. Skin incision was taken 2cm parallel to mandible and lateral to midline in Submental area. Intraoral incision was taken at 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 detached. The deflated pilot balloon is grasped with forceps pulled out through the incision followed by tube. During this manoeuvre, the tube is stabilised in the mouth to prevent accidental extubation. The tube is then reconnected and secured to the skin with stay sutures after verifying intratracheal position of the tube. Then surgery started and intraoperative period remained uneventful.

Intermaxillary fixation was removed after the surgery. Mouth opening increased to three finger breadth. Pilot balloon was deflated after thorough oral suctioning. Tube was pulled intraorally with the deflated balloon in the reverse order. Skin wound was sutured while the intraoral incision is left to heal secondarily. Intravenous Inj. Dexamethasone 8mg was given. Direct laryngoscopy was performed again and showed no airway oedema. Patient started breathing regularly. So, neuromuscular blockade was reversed with Inj. Neostigmine (0.05mg/kg) with inj. Glycopyrolate (8µg/kg). After the extubation criteria was achieved, patient was extubated and observed for 45 minutes in room air. Tracheostomy kit and difficult airway kart kept standby. Post-operatively patient was nursed in head up position and was kept in ICU for observation for 24 hours.

The total duration of surgery was 7 hours. Intraoperative and postoperative period was uneventful. There was no episode of arterial desaturation while converting oral intubation to Submental intubation and vice-versa. The endotracheal tube connector could be easily detached and reattached firmly. Care was taken not to damage pilot balloon. Perioperatively the patient received routine antibiotic coverage. Regular mouthwash with 0.2% chlorhexidine gluconate solution was done.

DISCUSSIONS

Submental intubation was first described as an alternative route of oral or nasal intubation or tracheostomy in cases of panfacial trauma, other indications such as systemic pathology or cases of simultaneous Orthognatic and plastic surgery have been reported(Gordon and Tolstunav, 1995)⁴. Our case describes a patient who had nasal bone fracture, contraindicating nasotracheal intubation (Muzzi DA,1991; Seebacher J, 1975)^{9,10} in which Submental intubation was performed. Many authors (Chandu A, 2000)¹⁵ 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, such as dental occlusion and those of orotracheal intubation, which allows access to frontonasal fracture while avoiding the risk of tracheostomy induced complication like injury to cervical vessels or the thyroid gland (Macinns and Baig, 1999)⁵, tracheal stenosis ,requires skill, pneumothorax (Chew JY, 1972; Walker D G,1973; Stauffer J L 1981)^{11,12,13,14}

Complications are also noted with Submental such as infection, fistula at site of incision and also anomalous scars. Serious complication like accidental displacement and extubation while handling the tube , or difficulty in passing the ETT through the Submental tract causing distortion and also rupture / damage to pilot balloon. But all of the above complications can be easily avoided and managed if adequate precautions are taken while carrying out the procedure.

In conclusion a Submental ETT intubation technique demand a frame effort by both the anaesthesiologist and the surgeon. If well planned and carefully executed the procedure, this process to be very useful in panfacial trauma surgeries and thus should be considered more often by both the anaesthesiologists and the surgeons.

CONCLUSIONS

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