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Case Report

Avoiding the Tracheostomy Trap: A Case for Submental Intubation in Facial Fracture Repair

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ABSTRACT

Submental intubation presents a practical alternative to tracheostomy for airway management in maxillofacial trauma, especially when nasal and oral routes are not viable. We present a 24-year-old male who sustained bilateral parasymphysis fracture along with right zygomaticomaxillary complex (ZMC), and nasomaxillary complex fractures. He was posted for open reduction and internal fixation (ORIF) under general anesthesia. For clear surgical access while maintaining a secure airway, submental intubation was performed. This case highlights the safety and effectiveness of submental intubation in selected cases of facial trauma.

Introduction

Facial trauma involving multiple fracture sites often complicates airway management, particularly when both nasal and oral access are compromised. Although tracheostomy has traditionally been used in such cases, it is associated with notable risks and potential complications. Submental intubation, first introduced by Hernández Altemir in 1986, has since become a dependable and less invasive alternative [1]. This technique allows for secure airway management without interfering with the surgical field, making it particularly useful in procedures that require maxillomandibular fixation (MMF).

Case Report

Our patient was a 24-year-old male who presented to the emergency department following a road traffic accident. He was conscious, hemodynamically stable, and without any comorbidities. His main complaints included facial swelling and limited jaw movement. On examination facial asymmetry and trismus were noted. A CT scan confirmed bilateral parasymphysis fractures of the mandible, a right zygomaticomaxillary complex fracture, and a nasomaxillary complex fracture (Figure 1). No signs of cervical spine or intracranial injury were noted. Routine blood investigations were unremarkable. Airway evaluation revealed a Mallampati class IV with a mouth opening of approximately 1.5 finger breadths (Figure 2).

Given the contraindication to nasal intubation due to nasomaxillary fracture and the need for maxillomandibular fixation (MMF) during surgery, submental intubation was planned in consultation with the surgical team. The difficult airway cart was kept ready. After standard monitors were applied, anesthesia was induced with intravenous fentanyl 100 µg, propofol 120 mg, and succinylcholine 100 mg.

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After direct laryngoscopy, a 7.5 mm cuffed flexometallic endotracheal tube was inserted orally. A midline submental incision was made (Figure 3a); the pilot balloon was exteriorized first, and then the endotracheal tube was carefully exteriorized through the submental tunnel after detaching the connector (Figure 3b). The tube was reconnected to the circuit and secured externally. The surgery proceeded uneventfully with optimal surgical exposure. Maintenance of anaesthesia was with oxygen-air-sevoflurane mixture. Iintermittent doses of vecuronium was given. Intraoperative vitals remained stable. The estimated blood loss was around 200 mL. At the end of the surgery, the endotracheal tube was repositioned into the oral cavity and extubated was done after reversal of neuromuscular blockade with sugammadex 4 mg/kg. The submental incision was closed in layers. The patient had a smooth recovery with no airway or wound related complications. He was discharged on the fourth postoperative day with a good cosmetic outcome and no functional impairments.

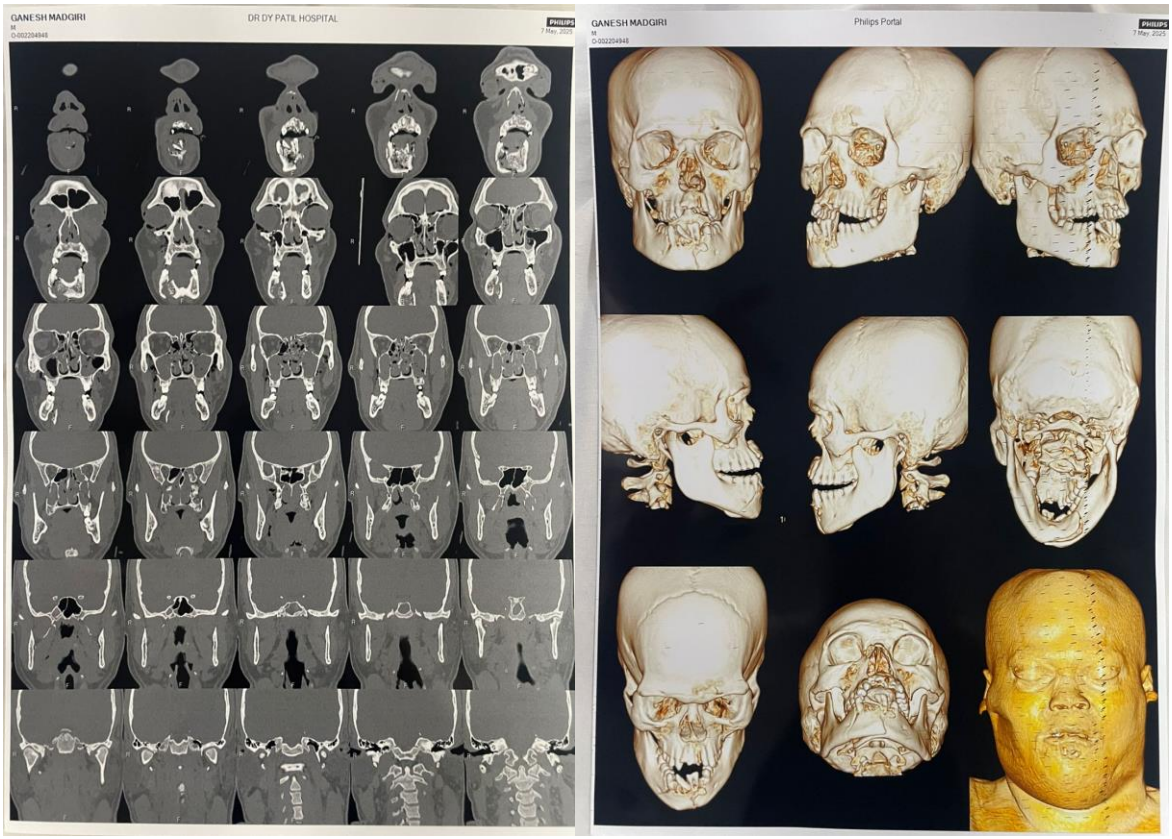
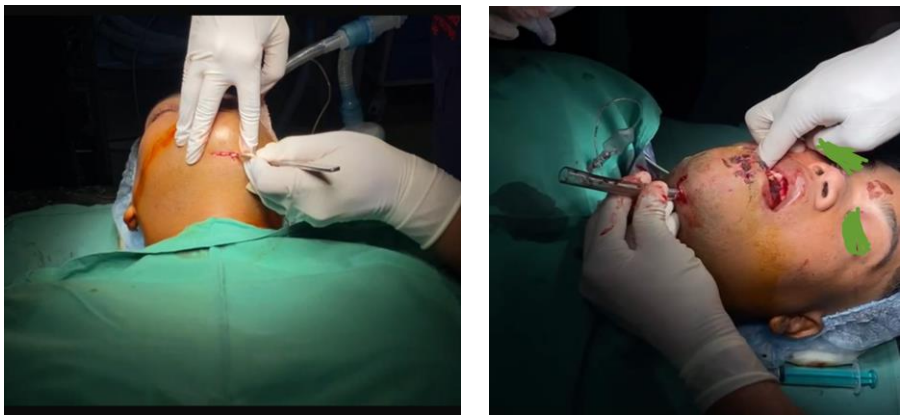


Figure 1- The CT image demonstrates bilateral parasymphysis fractures of the mandible, a right zygomaticomaxillary complex fracture, and a nasomaxillary complex fracture

Figure 2- reduced mouth opening and multiple facial injuries



(a) (b)

Figure 3- (a) Midline submental incision, (b): Passage of tube through the smaller tunnel without the connector

Discussion

Submental intubation helps avoid the potential complications associated with nasal intubation, such as epistaxis or inadvertent intracranial placement, and also eliminates the risks linked to tracheostomy, including infection, tracheal stenosis, and fistula formation. It is especially useful in cases of panfacial trauma that require intraoperative maxillomandibular fixation (MMF), where neither nasal nor oral intubation is suitable.

In this patient, the choice to perform submental intubation was guided by both surgical and airway considerations. Nasal intubation was not an option due to nasomaxillary complex fractures, which increased the risk of skull base injury, intracranial tube passage, or infection. Although oral intubation is generally straightforward, it would have interfered with the surgical requirement for MMF. Submental intubation therefore provided a safe and practical alternative, ensuring secure airway control while maintaining an unobstructed surgical field. This technique is especially suitable for panfacial trauma cases requiring both intraoral and extraoral access. In this patient, a midline submental incision was chosen, which minimizes risk to neurovascular structures such as the lingual nerve, Wharton's duct, and submandibular glands. The incision was made approximately 2 cm posterior to the mandibular symphysis. To minimize the incision size, we removed the endotracheal tube connector temporarily allowing easy passage of the tube through a smaller tunnel. This not only simplified intraoperative manipulation but also improved postoperative healing, reduced pain, and resulted in a more cosmetically acceptable scar. Amin et al. demonstrated the clinical usefulness of submental intubation in facial fracture patients, highlighting its effectiveness in avoiding tracheostomy and its associated complications like bleeding, tracheal stenosis, infection, and visible scarring [2]. From a technical standpoint, the procedure is relatively straightforward, with a short learning curve. Taglialatela Scafati and Iannetti described a refined approach, emphasizing meticulous dissection and tube handling to reduce soft tissue trauma and infection risks [3]. Similarly, MacInnis et al. reviewed the literature and presented a case series that confirmed the safety, reproducibility, and low complication rate of the technique in appropriately selected patients [4].

In a comprehensive review involving 103 cases, Meyer et al. reported a very low incidence of complications, such as superficial infection or orocutaneous fistula formation, and emphasized that when performed properly, submental intubation is associated with excellent patient outcomes [5].

We counseled the patient preoperatively about various airway options, including nasal intubation, tracheostomy, and submental intubation. Given the risk profile and cosmetic implications, the patient expressed a strong preference for submental intubation over tracheostomy, primarily due to the lower invasiveness, faster recovery, and minimal visible scarring. Postoperatively, the patient reported satisfaction with both the aesthetic outcome and the overall comfort, highlighting reduced discomfort in the submental region compared to expected tracheostomy-related issues.

Conclusion

Submental intubation serves as a safe, effective, and cosmetically favorable alternative to tracheostomy in maxillofacial trauma cases requiring intraoperative maxillomandibular fixation. This case demonstrates its practical utility and reaffirms its role in modern airway management for complex facial fractures.

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