Archives of Anesthesiology and Critical Care (In Press); x(x): xx-xx.

Available online at http://aacc.tums.ac.ir

Case Report

Anesthetic Management of 50-Year-Old Male Patient with Pan-Facial Trauma: Challenges and Considerations

Bhavini Shah, Reshma Salim*, Sachin Wagh

Department of Anaesthesiology, DR D Y Patil Medical College Hospital and Research Center, Dr D Y Patil Vidyapeeth, Pimpri, Pune, Maharashtra, India.

ARTICLE INFO

Article history:
Received 15 May 2025
Revised 04 June 2025
Accepted 18 June 2025

Keywords:
Pan facial trauma;
Submental intubation;
Clinical Medical Assistant Certification (CMAC);
Challenges;
Anaesthesiologist

Pan facial trauma, involving multiple fractures of the facial bones, presents significant challenges in anaesthetic management. These injuries often result from high-impact accidents and can lead to airway compromise, making intubation and ventilation difficult. The anaesthesiologist must navigate potential obstacles such as facial distortion, bleeding, and limited mouth opening, all while maintaining cervical spine precautions. The management of these cases requires a thorough preoperative assessment, careful planning, and often necessitates advanced airway techniques. This case report describes the anaesthetic management of a 50-year-old male patient with pan facial trauma scheduled for reconstructive surgery. It highlights the use of CMAC video laryngoscopy intubation as a safe and effective technique in securing the airway in a patient with anticipated difficult intubation. The report also discusses the rationale behind the anaesthetic choices made and the perioperative challenges encountered. By sharing this experience, we aim to contribute to the existing body of knowledge on managing complex airway scenarios in trauma patients and emphasize the importance of individualized anaesthetic planning in such cases.

Pan-facial trauma, involving multiple fractures of the facial bones, presents significant challenges in anesthetic management. These injuries often result from high-impact accidents and can lead to airway compromise, making intubation and ventilation difficult [1]. The anesthesiologist must navigate potential obstacles such as facial distortion, bleeding, and limited mouth opening while maintaining cervical spine precautions. Managing these cases requires a thorough preoperative assessment and careful planning, often necessitating advanced airway techniques [2].

This case report describes the anesthetic management of a 50-year-old male patient with panfacial trauma scheduled for reconstructive surgery. It highlights the use of CMAC video laryngoscopy intubation as a safe and effective technique in securing the airway in a patient with anticipated difficult intubation [3-4]. The report also discusses the rationale behind the anesthetic choices and the perioperative challenges encountered.

By sharing this experience, we aim to contribute to the existing body of knowledge on managing complex airway scenarios in trauma patients and emphasize the importance of individualized anesthetic planning in such cases.

Case Presentation

A 50-year-old male weighing 100 kg was brought to the emergency department following a road traffic accident under the influence of alcohol. The patient had a known history of diabetes mellitus, hypertension, and a previous episode of paralysis four years ago. On examination, the patient presented with pan-facial trauma, multiple rib fractures, liver laceration, pneumocephalus, mild bilateral hemothorax, and vital stability with bilateral air entry reduced. Given the patient's history and current condition, he was classified as ASA III. The airway assessment indicated potential difficulties due to facial trauma. Monitors were attached, premedication was

The authors declare no conflicts of interest.
*Corresponding author.
E-mail address: reshmasalim63@gmail.com
DOI:

given, and induction was done with the help of a CMAC video laryngoscope. Intubation was done orally with an 8.5 mm flexometallic endotracheal tube.

During the attempt for submental intubation (Figure 1), the patient experienced desaturation (SpO2 dropped from 100% to 75%), bronchospasm was noted (shark fin appearance on capnography), and BP increased to 150/100 mmHg. It was managed by increasing the depth of anesthesia: Inj. Propofol 100 mg bolus, Inj. Vecuronium 2 mg, and Inj. Hydrocortisone 100 mg. Saturation was maintained, and submental intubation was completed. The rest of the procedure was uneventful. The patient was shifted to the SICU on bag and mask ventilation. Another episode of desaturation was noted (SpO2 dropped to 80%) during the shifting of the patient to SICU, and it was managed with bag and mask ventilation using 100% O2. Vitals stabilized over 24 hours; he was extubated on postoperative day 1 and was kept under observation for a week.

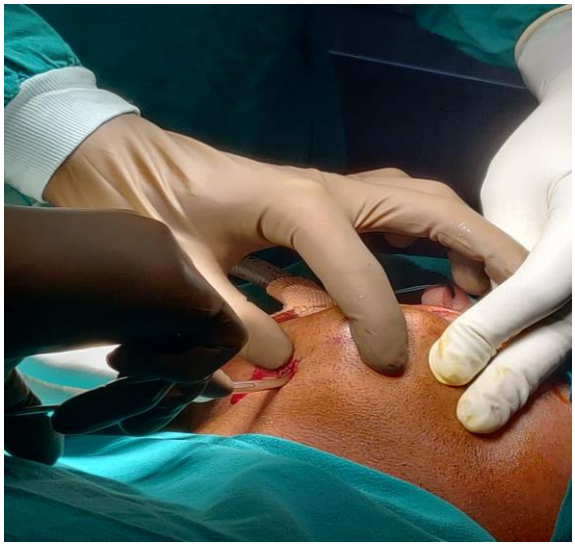

Figure 1- Submental intubation

Discussion

This case presents several complex challenges in the anesthetic management of a patient with pan-facial trauma, multiple comorbidities, and associated injuries.

The primary concern in maxillofacial trauma is airway management [1]. In this case, the use of video laryngoscopy (CMAC) for initial oral intubation proved beneficial. Video laryngoscopy has been shown to improve first-attempt success rates in trauma patients with suspected difficult airways [5]. Submental intubation, first described by Altemir in 1986, is an alternative to tracheostomy in patients requiring maxillofacial surgery where nasal intubation is contraindicated and long-term ventilation is unnecessary [6]. While generally considered safe, complications such as desaturation and bronchospasm, as experienced in this case, have been reported [7]. The prompt recognition and management of these complications were crucial to the patient's outcome. The occurrence of bronchospasm during submental intubation, evidenced by the characteristic 'shark fin' capnography pattern, required immediate attention. The management approach, including deepening the plane of anesthesia, administering additional muscle relaxants, and using corticosteroids, aligns with current guidelines for intraoperative bronchospasm management [8]. The use of a propofol bolus is particularly noteworthy, as propofol has been shown to have bronchodilatory effects [9]. The patient's history of diabetes, hypertension, and previous paralysis added complexity to the anesthetic management. These comorbidities increase the risk of perioperative complications and require careful consideration in drug selection and hemodynamic management [10]. The decision to transfer the patient to the SICU on bag and mask ventilation, rather than extubating immediately post-surgery, was prudent given the complex nature of the surgery and the intraoperative events. This approach allows for close monitoring and gradual weaning from ventilatory support, reducing the risk of postoperative respiratory complications [11]. The timing of extubation in maxillofacial trauma patients is crucial. In this case, extubation on postoperative day 1 suggests that the team ensured adequate resolution of airway edema and return of airway reflexes before attempting extubation [12]. This strategy likely contributed to the successful extubation and avoidance of reintubation, which is associated with increased morbidity and mortality [13]. It also highlights the need for a multidisciplinary approach involving anesthesiologists, surgeons, and critical care specialists to ensure optimal patient outcomes.

Conclusion

Submental intubation provides superior airway protection to anaesthesiologist in complex maxillofacial trauma with a clear surgical field. Submental intubation can be a useful and safe alternative to tracheostomy for selected faciomaxillary trauma surgeries with early recovery. Suspected broncospasm should be immediately identified by the anaesthesist and prompt action should be taken. This case underscores the importance of thorough preoperative assessment, careful planning, and the ability to adapt to changing clinical scenarios in the management of patients with complex maxillofacial trauma and multiple comorbidities. It highlights the need for a multidisciplinary approach involving anaesthesiologists, surgeons, and critical care specialists to ensure optimal patient outcomes.

References

[1] Perry M, Morris C. Advanced trauma life support (ATLS) and facial trauma: can one size fit all? Part 2: ATLS, maxillofacial injuries and airway management dilemmas. Int J Oral Maxillofac Surg. 2008;37(4):309-20.

[2] Kellman RM, Losquadro WD. Comprehensive airway management of patients with maxillofacial trauma. Craniomaxillofac Trauma Reconstr. 2008;1(1):39-47.

[3] Krausz AA, El-Naaj IA, Barak M. Maxillofacial trauma patient: coping with the difficult airway. World J Emerg Surg. 2009;4:21.

[4] Law JA, Broemling N, Cooper RM, Drolet P, Duggan LV, Griesdale DE, et al. The difficult airway with recommendations for management--part 1--difficult tracheal intubation encountered in an unconscious/induced patient. Can J Anaesth. 2013;60(11):1089-118.

[5] Mosier JM, Joshi R, Hypes C, Pacheco G, Valenzuela T, Sakles JC. The Physiologically Difficult Airway. West J Emerg Med. 2015; 16(7):1109-17.

[6] Hernández Altemir F. The submental route for endotracheal intubation. A new technique. J Maxillofac Surg. 1986;14(1):64-5.

[7] Oshima N, Shiraishi T, Kawauchi T, Oba J, Sato D, Fujiki M, et al. A Simple and Reliable Submental Intubation Technique for Maxillofacial Fractures. J Craniofac Surg. 2018; 29(7):1952-1955.

[8] Woods BD, Sladen RN. Perioperative considerations for the patient with asthma and bronchospasm. Br J Anaesth. 2009;103 Suppl 1:i57-65.

[9] Hirota K, Sato T, Hashimoto Y, Hashiba E, Kudo T, Ishihara H, et al. Relaxant effect of propofol on the airway in dogs. Br J Anaesth. 1999; 83(2):292-5.

[10] Kristensen SD, Knuuti J, Saraste A, Anker S, Bøtker HE, Hert SD, et al. 2014 ESC/ESA Guidelines on non-cardiac surgery: cardiovascular assessment and management: The Joint Task Force on non-cardiac surgery: cardiovascular assessment and management of the European Society of Cardiology (ESC) and the European Society of Anaesthesiology (ESA). Eur Heart J. 2014; 35(35):2383-431.

[11] Pedersen CM, Rosendahl-Nielsen M, Hjermind J, Egerod I. Endotracheal suctioning of the adult intubated patient--what is the evidence? Intensive Crit Care Nurs. 2009; 25(1):21-30.

[12] Cavallone LF, Vannucci A. Review article: Extubation of the difficult airway and extubation failure. Anesth Analg. 2013; 116(2):368-83.

[13] Epstein SK, Ciubotaru RL, Wong JB. Effect of failed extubation on the outcome of mechanical ventilation. Chest. 1997;112(1):186-92.