

Airway Management in a Patient with Brass Metal Facial Injury: A Case Report.

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ABSTRACT

Facio-maxillary trauma is challenging in terms of airway management. Securing airway in such patients is complex because it can dictate survival of patient. We managed a case with huge brass metal impacted foreign body over face, in which difficult mask ventilation (DMV) and difficult intubation (DI) was anticipated. So the we used dexmedetomidine for conscious sedation and airway was secured with awake fiberoptic intubation (AFOI).

Keywords: Conscious Sedation, Awake Fiberoptic Intubation, Difficult Mask Ventilation.

INTRODUCTION

According to Advanced Trauma Life Support (ATLS) guidelines for patients with life threatening injuries, securing the airway is the primary task to be performed by a primary care giver. Securing the airway in patients with maxillofacial trauma is usually difficult because these patients have distorted facial anatomy. Thus, these patients have anticipated difficult mask ventilation (DMV) as well as difficult intubation (DI). Also, some of these patients may have cervical spine injury, and are often regarded as having a full stomach and thus have an elevated risk of regurgitation and pulmonary aspiration.^[1] Various alternative options including oropharyngeal airway, nasopharyngeal airway, laryngeal mask airway LMA/PLMA, transtracheal jet ventilation (TTJV), cricothyrotomy, and awake fiberoptic intubation (AFOI) must be considered while predicting difficult mask ventilation.^[2] Mask ventilation is the first and the foremost step in the airway management.

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Every anaesthesiologist should concentrate on prediction/anticipation of DI. Prediction of DMV and concomitant DI can sometimes be the most difficult situation for any anaesthesiologists. Cooperation and team work among maxillofacial surgeons, anesthesiologists and trauma specialists is required to improve clinical outcome in patients with maxillofacial trauma.

CASE REPORT

A young 24 year old male patient was rushed to the emergency department with a brass metal decorative piece impacted in his left orbit and maxilla. The object had accidentally penetrated his cheek bone and orbit while he was polishing a decorative brass object. It was covering his left side of the face and mouth and was bleeding profusely. Thorough suctioning of the oro-nasal cavity was done and two wide bore Intravenous (I.V) cannula were secured and fluids started. Oxygen was supplemented with oxygen tubing secured over right cheek. Vital signs were recorded and were stable. Patient was conscious, oriented and responding. Brief history and general physical examination was done. Routine laboratory investigations were sent and as the patient looked pale, PRBC were also arranged. Emergency surgery for removal of that object was planned under GA. Patient was wheeled in the O.T. and airway assessment was done. Airway examination revealed adequate mouth opening, deviated nasal cavity because of impacted object. Difficult airway was anticipated in view of difficult airway access –no space for putting mask (DMV), difficult laryngoscopy and difficult intubation (DI) because of interference by that object and that slight movement during laryngoscopy could have lead to further injury and excessive bleeding as surgeon feared that it might has injured the cerebral sinuses and also difficult nasal intubation because of possibility of blood clots in nasal cavity. Procedure was explained to the patient .Written informed consent was taken preoperatively from patient and relatives. Patient was full stomach and had breakfast one hour prior, so a nasogastric tube was inserted to

decompress the stomach and a prokinetic (Inj. metoclopramide 10 mg) was given intravenously. Taking into consideration all the above problems awake fiberoptic intubation (AFOI) was planned for this patient. The brief procedure of AFOI was also explained to patient. Difficult airway cart was kept ready. A rescue ventilation device was prepared and stand-by arrangements were made for emergency tracheostomy. Patient was premedicated with Inj. Glycopyrrrolate 0.2 mg, Inj. Ranitidine 50 mg, and for conscious sedation, inj. Dexmedetomidine 6µg/kg/hr was started. Sedation was assessed with the Richmond agitation-sedation scale (RASS).^[3] Then, After 10 minutes of dexmedetomidine infusion, the RASS score was 0 to -1, thus the dose of dexmedetomidine was then decreased to 0.4µg/kg/hr. There was no bradycardia or hypotension during dexmedetomidine infusion.

Airway was topicalized with 4 ml of nebulized 4% lignocaine (nebulizer was held manually near nose) for 20 minutes followed by 2 puffs of 10% lignocaine spray into the oral cavity. Combined regional nerve blocks including bilateral superior laryngeal block (2ml of 2% lignocaine) and recurrent laryngeal nerve block (3ml of 2% lignocaine) was given to the patient. Supplemental oxygen was delivered by nasal cannula to avoid de-saturation during sedation and intubation. Spray as you go technique preparation was done; in case patient coughed during the procedure, as a supplement to the nerve blocks. Reinforced Tube with internal diameter of 7.5 mm was mounted over well lubricated flexible bronchoscope and was inserted into oral cavity. There was no cough or grimace on introduction. The epiglottis and vocal cords were visualized and attempt was made to insert the ET tube. When ET reached the vocal cords, the patient coughed. After waiting for opening of vocal cords, 4% lignocaine was sprayed on the vocal cords through the port of bronchoscope with the help of 20 gauge cannula and oxygen insufflation was done along with it, forming a mist. When vocal cords were opened, intubation was done without difficulty. After intubation: confirmation was done using capnography. Auscultation was done to assess equality on both sides. HR, ECG, SPO₂, NIBP, ETCO₂ were monitored continuously throughout the procedure. No significant change in hemodynamics was noticed.

Anaesthesia was induced with Inj. Propofol 1-2 mg/kg and Inj. Atracurium 0.5 mg/kg. Anaesthesia was maintained using Sevoflurane (2%) with 50% N₂O and 50% O₂ using closed circuit and IPPV. Dexmedetomidine infusion was stopped. At the end of the procedure, residual neuromuscular blockade was antagonized using Inj. Neostigmine 0.05 mg/kg along with Glycopyrrrolate 0.01mg/kg. Patient was extubated at the end of surgery. I.V. Paracetamol 1 gm was given for post-operative analgesia. Post-operative period was uneventful.



Figure 1: Brass Metal Injury Over face.

DISCUSSION

Options such as retrograde intubation, flexible fiberoptic intubation with the assistance of a laryngeal mask and awake intubation with local anaesthesia are available. Mask ventilation is the foremost and most essential step during airway management. The DMV incidence as reported by Langeron et al is around 5% however DMV is underestimated by most anaesthesiologists.^[4] Benumof et al estimated that up to 30% of deaths are due to inability to secure airway during airway management in patients with anticipated difficult airway.^[5]

AFOI along with conscious sedation is quite safe and the only option sometimes, to avoid complications in such cases. According to Benumof et al,^[5] AFOI is the safest approach during the airway management of patients with predicted Difficult Mask Ventilation. Caplan et al also estimated that inadequate ventilation occurs in up to 38% of patients with facial injuries.^[6] Benumof et al⁵ also reported that up to 30% of deaths are because of inability to successfully manage airway. Main challenges during AFOI are to provide adequate sedation, maintain a patent airway and ensure adequate spontaneous ventilation. Dexmedetomidine is highly selective and potent alpha 2 adrenergic receptor agonist. It produces profound sedation without any respiratory depression thereby reducing the stress response. In addition, Dexmedetomidine reduces salivary secretions through sympatholytic and vagomimetic effects. These effects are advantageous during awake fiberoptic intubation.^[7,8] Also, the addition of Dexmedetomidine along with local anesthetics provides optimal intubating conditions, better hemodynamic stability and good patient cooperation while maintaining spontaneous ventilation of the patient nullifying damage as in paralysed patient with DMV. Dexmedetomidine,^[9,10] therefore has several properties which make it very suitable for AFOI, and it has been highly recommended during AFOI.

Awake intubation is thus recommended in patients with high risk for DMV, and particularly those patients, who have an increased risk for aspiration during the airway management process as reflexes remain intact and spontaneous ventilation of the patient is retained decreasing the chances of hypoxic complications. Awake intubation is a reliable technique, but it is also more difficult, thus requiring adequate experience. Anaesthetist must maintain cooperation not only with the surgeon but also with the patient, during intubation. We sedated our patient with Dexmedetomidine and used lignocaine for anesthesia and were easily able to establish cooperation with him for handling such a tricky life threatening situation. One size can't fit all. A unique tailor made approach should be planned for each patient in spite of various algorithms designed for difficult airway.

Dexmedetomidine for Conscious Sedation in Difficult Awake Fiberoptic Intubation Cases. *Journal of Clinical Anesthesia*, 19, 141- 144.

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CONCLUSION

To conclude, Facio-maxillary injuries pose a major challenge in airway management. Conscious sedation utilizing Dexmedetomidine and AFOI is a safe alternative option in patients with difficult airway access.

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