



Exacerbation of pre-existing TMJ dysfunction causing post – extubation lock jaw posing risk for airway management

Angela Banoub DO, Aariya Srinivasan MD, Sabry Ayad MD, MBA,

Department of OUTCOMES RESEARCH, Anesthesiology Institute, Cleveland Clinic - Fairview Hospital, Cleveland, Ohio.



Introduction

- Trismus, otherwise known as lock jaw, is the involuntary tightening of the muscles of mastication which can profoundly limit mouth opening and cause serious implications during airway management to the anesthesiologist.
- Perioperative etiologies of trismus include impending malignant hyperthermia reaction, opioid induced rigidity (masseter involvement), exacerbation of pre-existing TMJ dysfunction, iatrogenic TMJ strain from airway manipulation or laryngoscopy, prolonged airway placement, residual neuromuscular blockade, electrolyte disturbances (ex. hypocalcemia), tetanus, dental infection, and paraneoplastic syndromes.

Case Report

- We present a case of a 71-year-old female patient with past medication history of a lung mass, nicotine use disorder, chronic bronchitis, COPD, SVT, pulmonary emphysema, and depression who presented for bronchoscopy under general anesthesia for a suspected lung malignancy.
- The patient was induced with propofol, lidocaine, rocuronium and was maintained on a propofol infusion with an LMA iGEL size 4 in place.
- She did not receive fentanyl or other opiates.
- Patient remained hemodynamically stable with no intraoperative complications.
- Her paralytic was fully reversed with appropriate Sugammadex dosing.
- Following emergence and removal of the LMA, the patient was unable to close her jaw.
- Patient did admit that this has happened to her before needing manual reduction by ENT, raising concern for pre-existing TMJ dysfunction.
- Manipulation was performed in the OR without success and patients referred to ER to reduce jaw and to follow up with dentistry.

Discussion

- Trismus, or involuntary tightening of the jaw muscles can pose significant implications to the anesthesiologists whether it suggest impending malignant hyperthermia or indicate possible difficulties with airway management
- Appropriate TMJ structure and function is crucial in airway management and prediction of difficulties in airway management
- Adequate TMJ assessment in the pre-operative setting is crucial.
- The Upper Lip Bite Test (ULBT), inter-incisor distance (II Distance), mouth opening, and Mallampati (MP) tests are all strong predictors of difficulty in airway management especially when used in conjunction with each other and findings can be significantly altered when TMJ dysfunction is present.

Differential diagnosis for intraoperative trismus includes:

- Impending malignant hyperthermic reaction
- Opioid-induced rigidity
- **Mechanical causes**
 - Exacerbation of pre-existing TMJ dysfunction / Iatrogenic TMJ strain
 - Prolonged airway placement
 - Upper Endoscopic procedures
- Residual neuromuscular blockade / inadequate reversal
- Electrolyte disturbance such as hypocalcemia
- Paraneoplastic syndromes (ex. small-cell lung cancer Lambert- Eaton syndrome)
- Infectious causes such as tetanus, severe dental infection/abscess

Airway implications of trismus

- Difficulty with mask ventilation or oral airway placement
- Conventional direct laryngoscopy and reintubation may be difficult or impossible
- If risk for TMJ dysfunction is present in the pre-operative assessment, alternate airway strategies must be considered early (ex. Fiberoptic intubation through nares/oral route)
- Predict TMJ / jaw mobility and function through ULBT, MP score, and II Distance in effort to predict difficult laryngoscopy
- Appropriate vigilance to TMJ structure and function must be taken by the anesthesiologists as it can rapidly progress to an airway emergency if respiratory compromise or inability to ventilate occurs

Discussion

How to manage intraoperative trismus

- Supportive oxygenation, ventilation, and hemodynamic support
- Treat MH if suspected
- Ensure appropriate paralytic reversal
- Send CMP to check for electrolyte disturbances
- Early anticipation of advanced airway management, ENT/ surgical backup
- If mechanical causes, manual reduction / ENT vs Dental consult

Conclusion

- Trismus, or involuntary tightening of the jaw muscles can pose significant implications to the anesthesiologists whether it suggest impending malignant hyperthermia or indicate possible difficulties with airway management
- TMJ injury is a known complication of airway manipulation and upper endoscopic procedures
- Appropriate assessment TMJ structure and function must be taken by the anesthesiologists as it contributes significantly to the ability to intubate and ventilate, crucial due to the rapid progression of possible airway emergencies

References

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