



Difficult airway management in a patient with head and neck pathology

Difficult airway management in patient with head and neck pathology: a case report

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Summary

A difficult airway (DAW) represents a significant challenge in anesthetic practice, especially in patients with anatomical alterations resulting from head and neck pathologies. This study reports the case of a 40-year-old patient with cardiac comorbidities and facial malformations (cleft palate and macrognathia) who underwent transfemoral amputation of the left lower limb. During anesthetic induction, two attempts at orotracheal intubation failed, necessitating nasotracheal intubation with a videolaryngoscope, which was successfully performed.

The report highlights the importance of a detailed pre-anesthetic evaluation, individualized planning, and the availability of advanced resources such as a videolaryngoscope, bougie, and fiberscope for the safe management of VAD. It concludes that early recognition of risk factors and the adoption of alternative intubation strategies are essential to reduce complications and ensure patient safety.

Keywords: Difficult airway; intubation; anesthesiology; videolaryngoscope; case report

Abstract

Difficult airway (DA) remains a challenge in anesthetic practice, particularly in patients with head and neck pathologies leading to anatomical alterations. We report the case of a 40-year-old male with severe cardiac comorbidities and craniofacial malformations (cleft palate and macrognathia), undergoing transfemoral amputation. Two attempts at orotracheal intubation failed, requiring successful nasotracheal intubation with videolaryngoscope. This case highlights the importance of detailed pre-anesthetic assessment, individualized planning, and the use of advanced devices such as videolaryngoscope, bougie and fiberscope for safe management of AD. We conclude that early recognition of risk factors and the adoption of alternative strategies are essential to reduce complications and ensure patient safety.

Keywords: Difficult airway; intubation; anesthesiology; videolaryngoscope; case report

1. INTRODUCTION

VAD is defined as a situation in which an experienced anesthetist has difficulty ventilating with face mask (FVMD), difficult endotracheal intubation, or both. Difficult intubation is defined by the need for three attempts at orotracheal intubation (OTI) or more than ten minutes to be performed by conventional laryngoscopy. Airway assessment (AV) is a procedure



essential in the practice of Anesthesiology, it is considered a mandatory priority, as it allows predicting difficulties in approaching a difficult airway (DAW). Thus, according to studies (Pedrosa, 2012), patients with head and neck pathologies are predisposed to VAD when compared to the rest of the population. The identifiable anatomical elements in this population predict difficulties techniques to ensure a good approach to the airway. In the vast majority of cases, the pathologies that involving the face, oropharynx, larynx and neck should be investigated, as the existence of facial deformities contribute to DVMF. This report aims to demonstrate the importance of pre-anesthetic evaluation to predict difficulties during airway management, associated with a advance planning of possible challenges during IOT in patients with anatomical distortion of head and neck.

2. CASE REPORT

Man, 40 years old, height 1.58 m, weight 70 kg, overweight (BMI 28), hypertensive, heart disease (cardiomegaly, mitral heart failure, sinus tachycardia, left bundle branch block, ventricular overload, ventricular extrasystoles and dilatation of the ascending aorta), with limitation cognitive and intellectual impairment and deafness. Medications in use: Digoxin 0.25 mg/day, Furosemide 40 mg/day, Spironolactone 25mg/day, Carvedilol 6.2mg/day, Enalapril 10mg/day. No allergies, classified as ASA III. In the pre-anesthetic consultation, predictors of VAD were detected, such as malformation congenital facial (cleft palate) not closed and macrognathia and prognathism or also called bad oral occlusion, is characterized by an anteroposterior dental discrepancy. Patient makes monitoring at the Foundation for the study and treatment of craniofacial deformities (FUNCRAF-MS), however, the patient's surgical history was not shared by the institution even with family authorization, due to the absence of a judicial power of attorney.

Predictors of difficulty for a good laryngoscopy are: previous difficult intubation; distance thyromental distance <6 cm; interincisor distance <4 cm; sternomental distance <12 cm; extension head/neck reduced <30 degrees; Mallampati classification 3 or 4; Cormack classification Lehane 3 or 4; mandibular protrusion; large neck circumference. The difficulty of laryngoscopy direct correlates with the best view of the glottis, as defined by the Cormack-Lehane scale.



With this scale, a grade I view denotes a complete view of the entire glottic opening, grade II represents a partial glottic view, grade III represents only the visualization of the epiglottis and grade IV represents an inability to visualize even the epiglottis.

The proposed procedure was transfemoral amputation of the left lower limb, height of the thigh, due to ischemia with acute arterial occlusion. Monitoring was performed with capnography, cardioscopy, pulse oximetry, transcutaneous temperature, non-invasive venous pressure. It was decided to balanced general anesthesia with intravenous (IV) induction with opioid (fentanyl 180mg), hypnotic (etomidate 50mg), neuromuscular blocker (NMB) (rocuronium 50mg), pre-oxygenation with oxygen 100%, performing direct laryngoscopy with a Macintosh curved blade laryngoscope size 3 and endotracheal tube number 7.5 with cuff, during laryngoscopy a internalization of the anatomy of the AVs, a Cormack-Lehane classification 3 (three), being necessary reposition and ventilate before the new laryngoscopy. We started a new laryngoscopy with video laryngoscope and endotracheal guide device for intubation (boogie), again not being possible an IOT. For the third time, after a new rescue with ventilation and confirmation of positioning appropriate, a nasotracheal intubation (NTI) was chosen to complete the intubation of the patient. After INT, anesthetic maintenance was performed with sevoflurane (gaseous). The medications used as adjuvants were: dexamethasone 10mg, ondansetron 8mg, dipyrone 2g, ketoprofen 100mg and morphine 4mg, to enhance intra- and post-operative analgesia. No complications during surgical procedure that lasted approximately one hour, using a rocuronium reverser, Sugammadex 200mg. Extubation was performed uneventfully and without a phonation verification test. due to communication difficulties due to both deafness and intellectual disability of the patient. He was taken to the recovery room awake, where there were no complications. Afterwards, the patient was taken to the room.

3. DISCUSSION

The main events that can occur in a VAD approach are edema supraglottic, hypoxia and bleeding, it is worth noting that blood is a gastric irritant that can cause emesis, which due to pressure or irritant factor can cause adverse events in the post-surgical procedure. In patients with head and neck pathologies, extra attention to the airway is required. It is essential that, whenever possible, imaging tests and even

same dental evaluation, in addition to a detailed physical examination, and thorough evaluation of the anatomy to predict possible complications and risks. The purpose of anesthesia, in addition to analgesia, is minimize the risk of hypoxemia and hemodynamic changes, to avoid risks to the patient. This form, macrognathia, prognathism, acromegaly, some type of cognitive intellectual deficit, whether united or not hearing impairment makes communication and even the recommended assessment difficult, which can lead to possible complications and greater risks for the individual undergoing anesthesia. The knowledge anatomical and their variations (deviated septum, turbinate hyperplasia, cleft palate, etc.) are essential, if necessary, intubation of the upper airways (mouth, nose, nasal cavities, pharynx and larynx), as well as mastering the technique of positioning and aligning the oral axes, pharyngeal and laryngeal related to the organs that must be visualized and aligned during IOT (vocal cords), are essential for intubation of a VAD. Thus, it is already consolidated in the literature predictors of a difficult laryngoscopy such as history of previous difficult intubation, distance thyromental distance <6 cm, interincisor distance <4 cm, sternomental distance <12 cm, extension head/neck reduced <30 degrees, Mallampati classification 3 or 4, Cormack classification-lehane 3 or 4, mandibular protrusion, large neck circumference.

It becomes important, during anesthetic induction, as a way to optimize obtaining a pathway advanced airway, in patients who previously present indicators of VAD, a previously planned sequence for the incidents.

We can observe that adversities related to respiratory events in Anesthesiology, correspond to about 17% of VAD according to Caplan (1990). In addition to scores and mnemonics There are also maneuvers to optimize laryngoscopy, such as the BURP maneuver (backward, upward, right pressure on the thyroid cartilage), which is the pressure back up and to the right on the cricoid cartilage according to (Cicarelli, 2020). Use of devices such as video laryngoscope, bogge and fiberscope.

All this with the aim of achieving better intubation and reducing consequences. negative to the patient such as several IOT attempts.

3. CONCLUSION

VAD is therefore a challenging factor for anesthesiologists, even the most experienced ones, due to the increased risk of mortality and morbidity to the patient. In this case described, after the attempted, twice, IOT with failure. In our daily clinical practice we must make use of all available resources to bring our patient the greatest safety and quality in their anesthetic-surgical procedure. In the case described, the successful attempt at nasal intubation, bringing to light the importance of practice and studies to conduct intubation and individualize the approach according to the patient's needs. In this way, we encourage the patient not to have any negative consequences and guarantee anesthetic quality

References

- ALBANEZ DA CUNHA ANDRADE, RGA et al. Difficulty in laryngoscopy and intubation orotracheal: observational study. **Brazilian Journal of Anesthesiology**, v. 68, n. 2, p. 168-173, 2018.
- CANGIANI, LHA et al. Use of video laryngoscope for tracheal intubation in patient with oral cavity mass: case report. **Brazilian Journal of Anesthesiology**, v. 70, no. 4, p. 434-439, 2020.
- CAPLAN, RA et al. Adverse respiratory events in anesthesia: a closed claims analysis. **Anesthesiology (The Journal of the American Society of Anesthesiologists)**, vol. 72, no. 5, p. 828-833, 1990.
- CICARELLI, DD et al. Tracheal intubation: evaluation of the effectiveness of the BURP maneuver. **Brazilian Journal of Anesthesiology**, vol. 49, no. 1, p. 24-26, 2020.
- COOK, T. et al. Major Complications of Airway Management in the United Kingdom – Report and Finding of the 4th National Audit Project... In: **Airway Assessment and Planning**. London: The Royal College of Anaesthetists, 2011. p. 135-142.
- FINUCANE, B. et al. Principles of Airway Management. 4th ed. In: **Evaluation of the Airway**. New York: Springer, 2011. p. 27-50. In: **The Difficult Airway**. New York: Springer, 2011. p. 361-371.

HEWS, J.; EL-BOGHADLY, K.; AHMAD, I. Difficult airway management for the anesthetist.

British Journal of Hospital Medicine, vol. 80, no. 8, p. 432-440, 2019.

AZAMBUJA ISLAND, MA et al. Endotracheal intubation and surgical airway. **Vittale – Journal of**

Health Sciences, v. 33, n. 1, p. 159-172, 2021.

KUHLKAMP, LF **Angle Class III malocclusion: characteristics and treatments. A review of**

literature. 2011. Monograph (Dentistry Course) – Federal University of Santa Catarina,

Florianopolis, 2011.

ORTENZI, AV; MARTINS, MP; MATTOS, SLL; NUNES, RR **Airway management**. 2nd ed.

Rio de Janeiro: Brazilian Society of Anesthesiology, 2012.

PEARCE, A. Evaluation of the airway and preparation for difficulty. **Best Practice & Research**

Clinical Anaesthesiology, vol. 19, no. 4, p. 559-579, 2005.

RODRIGUES, AJ et al. Difficult airway intubation with flexible bronchoscope. **Brazilian Journal of**

Anesthesiology, v. 63, n. 4, p. 359-362, 2013.

SELVI, OA et al. Efficacy of the simplified predictive score for intubation difficulty and thyromental height in head and neck surgeries: an observational study. **Brazilian Journal of Anesthesiology**, v. 70, p. 595-604, 2020.