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RESEARCH ARTICLE OPEN ACCESS

GIANT DIVING GOITER CHALLENGE FOR THE ANESTHESIOLOGIST IN MANAGING A DIFFICULT AIRWAY CASE REPORT

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ABSTRACT

Introduction: The management of a difficult airway is variable and depends on many factors including airway examination, patient characteristics, and medical history. For patients with goiter, in addition to the standard risck factors, there are factors related to the disease. **Methods**: A case report of a patient with difficult airway caused by a giant goiter treated at the Amazonas State Oncology Control Center Foundation. **Results**: The patient was intubated awake with multimodal sedation under direct laryngoscopy. **Conclusion**: Management of a difficult airway must be individualized according to each patient.

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INTRODUCTION

While the American Society of Anesthesiologists defines difficult airway (VAD) when "a conventionally trained anesthesiologist has difficulty with upper airway face mask ventilation, difficulty with tracheal intubation, or both" (APFELBAUM *et al*., 2013) the guidelines Canadians are more comprehensive, defining VAD when "an experienced professional anticipates or encounters difficulty with any or all face mask ventilation, direct or indirect laryngoscopy (eg, video), tracheal intubation, use of a supraglottic device or surgical airway" (LAW *et al*., 2021). In this context, as difficult intubation can often be anticipated and prepared for, interventions that stand out for this purpose are video laryngoscopy, laryngeal masks, fiberscope-guided intubation, and intubation with the patient awake where there is no loss of consciousness and the autonomy of the individual maintains the protection of the airways being considered an alternative for great gold (JOSEPH *et al*., 2016). In this context, the thyroid gland, when enlarged, when exerting pressure on the trachea and adjacent tissues, causing deviation and compression with airway deformity, presents itself as an aggravating factor in difficult intubation (AMATHIEU *et al*., 2006) and, the appearance of new intubation techniques and equipment, associated with methods of assessment and prediction of airway difficulty, lead to a decrease in the number of unsuccessful intubations. The aim of this report is to present the clinical analysis and management of a difficult airway caused by a giant goiter. Case report: Male, 37 years old, from the interior of the State of Pará, with a diving goiter diagnosed in April 2021 associated with paraparesis of the lower limbs LLLL and loss of bladder sphincter, diarrhea, and weight loss (8kg in 5 months), neck pain, back pain, low back pain and neuropathic radicular pain with positive (burning, burning, pinching) and negative (numbness) predictors in lower limbs that worsened with movement, leading to decreased functionality and dependence on a wheelchair for locomotion. In the pre-anesthetic evaluation of Total Thyroidectomy and resection of the cervical mass, we registered the following: the previous history of smoking and alcohol consumption; body mass index (BMI) 19 kg/m2, compensatory spine deviation, the neck circumference of 69 cm, thyromental distance > 6 cm and interincisors > 3 cm, limitation of neck movements but with normal mouth opening and mallampati III (Figure 1). The patient presented a

chest X-ray showing superior mediastinal enlargement due to a mass with soft tissue density (Figure 2); thyroid ultrasound with enlarged right lobe at the expense of a massive solid, isoechoic nodule, with microcalcifications disseminated throughout the parenchyma measuring 12.6 x 8.1 cm in its longest axis, left lobe 3.5 x 2.1 x 1.3 cm, with a volume of 5.0 CM3, isthymus of heterogeneous aspect, containing a solid hypoechoic nodule, measuring 7.1 x 6.4 mm, TIRADS 4; Neck angioresonance with right common carotid artery and corresponding jugular vein pushed back laterally to the right, determined by extrinsic compression, massive, solid, heterogeneous, hypervascularized expansive lesion, with central areas of liquefaction/necrosis located in the right anterolateral cervical region, encompassing the vascular structures described above; the lesion causes compression and deviation of the trachea to the left and presents an extension inferior to the superior antero mediastinum, involving the brachiocephalic trunk on this side; Magnetic resonance imaging of the thoracic spine showed multiple sparse nodular images in the lung parenchyma, suggestive of secondary implants, heterogeneous expansive lesion in the anterosuperior mediastinum, compression on the anterior surface of the spinal cord, which presents changes at the level of D4 to D6, compatible with compressive myelopathy and partial obliteration of the D5 neural foramina (Figure 3).

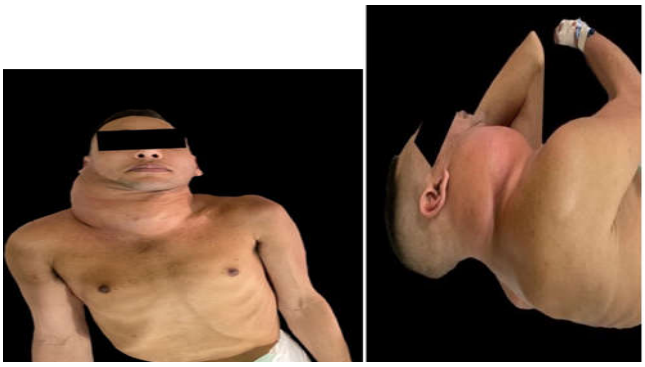

Figure 1. Preoperative patient in antalgic position

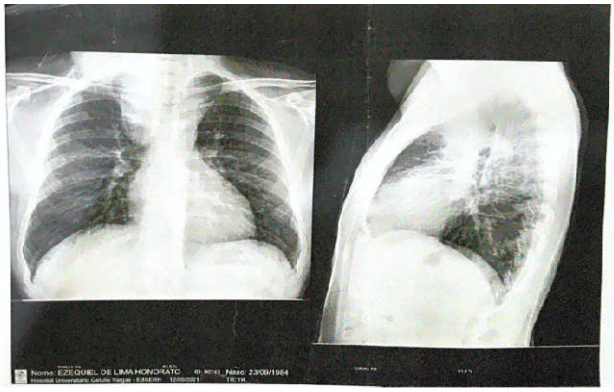

Figure 2. Mediastinal enlargement

After an interdisciplinary discussion of the case, a signature of the Informed Consent Term (FICF), and the patient's consent for image registration, we defined an airway approach through intubation with the patient awake. In the operating room, with a comprehensive plan for the management of difficult airways defined, which included patient care, two experienced anesthesiologists in the room together with a resident physician, and the availability of a fiberscope, we started the approach with standardized monitoring with ECG, SPO2, puncture left radial artery, O2 under nasal catheter. Initially, 150µg.kg-1 of dexamethasone and 100µg.kg-1 ondansetron were administered to start the pre-induction with intravenous (IV) infusion for 20 minutes, 0.1 µg.kg-1 dexmedetomidine hydrochloride, dextroketamine hydrochloride - 0.12 mg µg.kg-1; magnesium sulfate 30 mg µg.kg-1, lidocaine hydrochloride 2% 2mg µg.kg-1, gargle with lidocaine hydrochloride 2% (5ml) associated with lidocaine hydrochloride gel (5ml) followed by direct laryngoscopy with score classification of Cormack and Lehane in 2b.

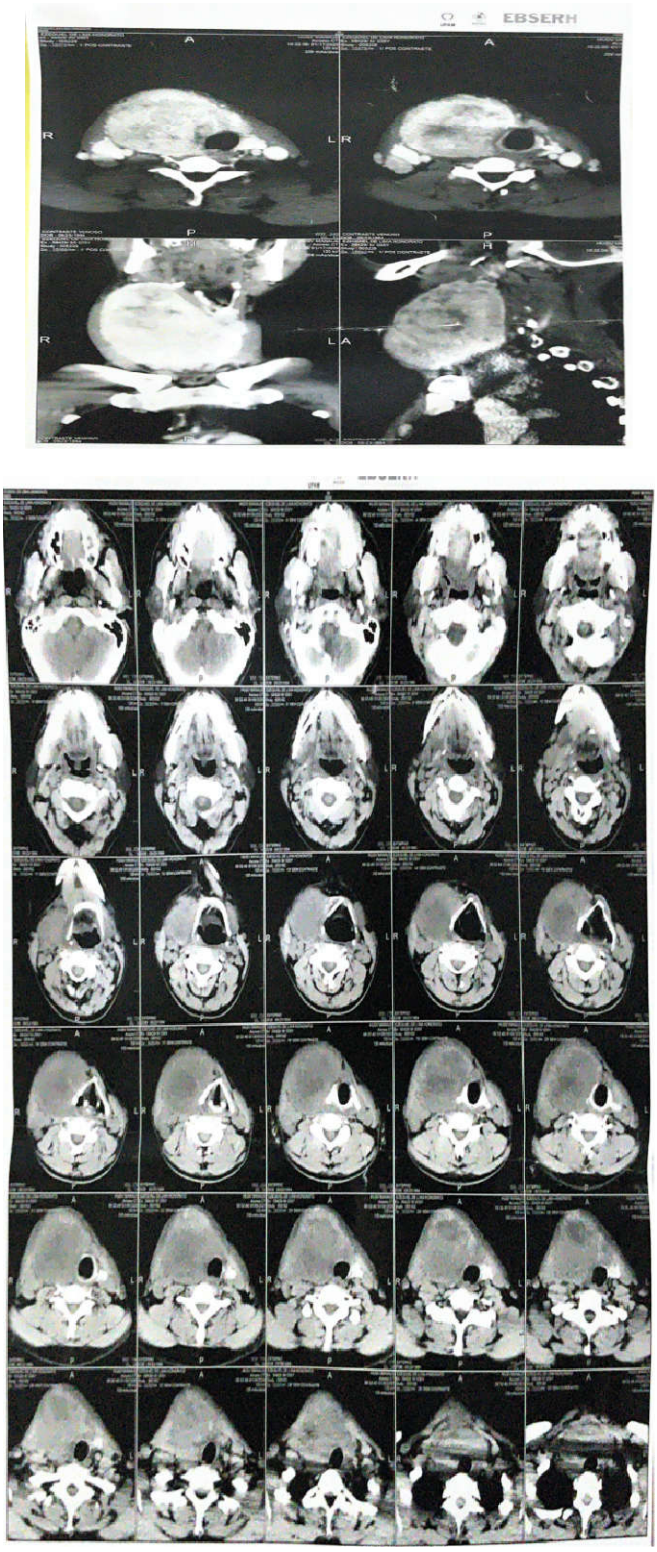

Figure 3. Magnetic resonance imaging showing anatomical distortion

After better positioning of the patient's head, in a second direct laryngoscopy with McCoy's laryngoscope, orotracheal intubation (OTI) was performed with an 8.0 cuffed wire tube (Figure 4). After OTI was confirmed via ETCO2, propofol 2mg.Kg-1, fentanyl hydrochloride 2µg.Kg-1, rocuronium bromide 0.5 mg.kg-1 were administered IV, and anesthesia was maintained with 1-2% sevoflurane with 2-liter additional gas flow (O2 and compressed air). Before the surgical stimulus, 40mg parecoxib sodium, 30mg.Kg-1 dipyrone and 1mg.Kg-1 morphine was administered. At the end of the surgery (6 hours), there was a reversal of muscle relaxation guided by TOF, and the patient was referred with a tracheostomy to the ICU,

where he evolved with no pain complaints and no memories of the OTI (Figure 5), (Figure 6).

Figure 4. Laryngoscopy under direct view. Post-OTI patient

Figure 5. Part of the resected tumor. Tracheostomy patient

Figure 6. Postoperative patient in the ICU

DISCUSSION

The case reported here demonstrates the difficulties related to the approach of a difficult airway in a young patient with a giant goiter and large cervical tumor associated with aggravating clinical factors, such as axial and radicular neuropathic pain syndrome, which contributed to low functional capacity and compromised quality of life. In the patient in question, an approach plan was proposed that involved updating the topic and records of the patient's biographical data, both the clinical evolution, the detailed image inventory of the case, and the identification of airway predictors, which allowed us to conclude that we were facing a great challenge. Some studies have shown the presence of goiter and difficulty in intubating, some with a rate of 11.1% (AMATHIEU *et al*.; 2006) and others with 5.3% (BOUAGGAD *et al*., 2004). Factors that also increase the difficulty are tracheal stenosis or deviation (DE CASSAI *et al*., 2019; TUTUNCU *et al*., 2018) that are additional to difficult intubation (DI) predictors such as Cormack-Lehane 3 or 4, neck circumference increased and age > 55 years intensifies the risk of DI among patients who undergo thyroid surgery (LIU *et al*., 2018). According to Cassai *et al* (DE CASSAI *et al*., 2020), in a 2020 meta-analysis on predictive parameters of difficult intubation in thyroid surgery, the rate of difficult laryngoscopy in patients undergoing thyroid surgery varies from 6.8% to 9.6%, and the presence of a high Malampatti score, shorter thyromental and interincisor distance, tracheal deviation, obesity, male gender, are factors that increase the risk for difficult intubation. The case presented describes a male patient with increased neck circumference, a strong predictor of ID (DE CASSAI., 2019), with giant goiter covering the anterior region of the neck, tracheal deviation, and mediastinal enlargement, findings that predict DI, which led to the careful choice of the intubation plan and anesthetic techniques. Since general anesthesia in this patient could precipitate the complete closure of the airways and make mask ventilation and IT impossible, the choice of anesthetic technique consisted of intubation with the patient awake under sedation with multimodal therapy and gargling with lidocaine paste to desensitize the airways, with the patient breathing spontaneously, calm and collaborative throughout the procedure of handling the airways, a technique that has become an expert in our service. Fiberoptic intubation is used as the gold standard (YADAV *et al*., 2020) for elective IT management and despite being available in the operating room as part of this patient's comprehensive airway management plan, IT has occurred. under direct laryngoscopy on the second attempt.

CONCLUSION

IT management in a patient with giant diving goiter encompasses from the experience of the involved anesthesiologists, the available means to access the airway in the surgical environment, to the anesthetic technique and proves to be challenging, requiring individualized decisions, as in the present case, where the loco-sedative anesthetic technique proved to be a viable and safe option for anesthesiologists in managing the airway, and a favorable outcome in this case.

REFERENCES

Amathieu R, Smail N, Catineau J, Poloujadoff MP, Samii K, Adnet F. Difficult intubation in thyroid surgery: myth or reality? Anesth Analg. 2006 Oct; 103(4):965-8.

Apfelbaum JL, Hagberg CA, Caplan RA, Blitt CD, Connis RT, Nickinovich DG: Practice guidelines for management of the difficult airway: An updated report by the American Society of Anesthesiologists task force on management of the difficult airway. Anesthesiology 2013; 118:251-70.

Bouaggad A, Nejmi SE, Bouderka MA, Abbassi O. Prediction of difficult tracheal intubation in thyroid surgery. Anesth Analg. 2004 Aug; 99(2):603-6.

De Cassai A, Boscolo A, Rose K, Carron M, Navalesi P. Predictive parameters of difficult intubation in thytoid surgery: a meta-analysis. Minerva Anestesiol. 2020; 86(3):317-326.

De Cassai A, Papaccio F, Betteto G, Schiavolin C, Iacobone M, Carron M. Prediction of difficult tracheal intubations in thyroid surgery. Predictive value of neck circumference to thyromental distance ratio. PLoS ONE, 2019; 14(2):1-12.

Joseph TT, Gal JS, Demaria S, Lin HM, Levine AI, Hyman JB. A Retrospective Study of Sucess, Failure, and Time Needed to Perform Awake Intubation. Anesthesiology, 2016;125(1):105-14.

Law JA, Broemling N, Cooper RM, Drolet P, Duggan LV, Griesdale DE, Hung OR, Jones PM, Kovacs G, Massey S, Morris IR, Mullen T, Murphy MF, Preston R, Naik VN, Scott J, Stacey S, Turkstra TP, Wong DT., Canadian Airway Focus Group. Canadian Airway Focus Group updated consensus-based recommendations for management of the difficult airway: part 1. Difficult airway management encountered in an unconscious patient. Can J Anaesth. 2021 Sep; 68(9):1373-1404.

Liu Y, Xue FS, Yang GZ. Assessing Risk Factors for Intubation Difficulty in Thyroid Surgical Patients. World J Surg. 2018;42(10):3454-3455.

Tutuncu AC, Erbabacan E, Teksoz S, Ekici B, Koksal G, Altintas F, Kaya G, Ozcan M. A. The Assessment of Risk Factors for Difficult Intubation in Thyroid Patients. World J Surg, 2018;42(6):1748-1753.

Yadav U, Yadav JBS, Srivastava D, Srivastava S. A Randomized Controlled Study Comparing Dexmedetomidine-Midazolam with Fentanyl-Midazolam for Sedation during awake Fiberoptic Intubation in Anticipated Difficult Airway. Anesth Essays Res. 2020; 14(2):271-276.

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