

AIRWAY CARE DURING INTUBATION OF A SUPER-OBESE PATIENT: CASE REPORT

DANIEL FERREIRA GUNDIM¹; GUSTAVO SIQUEIRA ELMIRO^{1,3}; ANDRÉ LUIZ BRAGA DAS DORES¹; GIULLIANO GARDENGHI^{1,2,3,4}

ABSTRACT

The definition of difficult airway is based on the difficulty of orotracheal intubation (OTI) and/or mask ventilation by a trained professional. Planning for airway management is of paramount importance in the daily lives of anesthesiologists and is sometimes underestimated. Obesity is a worldwide public health problem, with multifactorial causes, and this is a condition that can hinder both mask ventilation and OTI. It is essential to know how to identify predictors and prepare for unexpected and expected scenarios. This report deals with the management of the airway of a 21-year-old male patient with morbid obesity (weight 254 kg, height 1.76 cm, body mass index (BMI) 81 kg/m²), who would be maintained at passage of a gastric balloon for weight loss and subsequent bariatric surgery. Although the procedure is often performed with sedation, it was decided to obtain a definitive airway and balanced general anesthesia, avoiding possible unhealthy complications in the intraoperative period. In assessing the airway, the patient had a beard, BMI > 26, good inter-incisor distance (>5cm), large tongue, Mallampati two, with good mandibular protrusion (upper lip bite test - ULBT class 1), sternum- mentalis > 12cm, with good extension and cervical mobility, but with cervical inclusion >40cm. OTIs were considered with a flexible bronchoscope or videolaryngoscope, with the second option being preferred after assessing the patient's airway. OTI uneventful surgery was also performed without setbacks, the patient being decurarized and extubated in the room, sent to the post-anesthesia recovery room. Thinking about a safe anesthesia, it is not recommended to perform an airway procedure without careful planning. In this sense, a pre-anesthetic evaluation is of paramount importance and should not be overlooked due to care time.

KEYWORDS: MANAGEMENT, AIRWAY; INTUBATION, INTRATRACHEAL; OBESITY; OBESITY, MORBID; BARIATRIC MEDICINE.

INTRODUCTION

Planning for airway management in anesthesiology is very important in the daily practice of anesthesiologists, although it is sometimes overlooked. The definition of difficult airway (DA) according to the American Society of Anesthesiologists (ASA) would be the difficulty of orotracheal intubation (OTI) and/or mask ventilation by a trained professional⁴. Simple physical examination can help to assess possible predictors, which increases the importance of pre-anesthetic evaluation even before the patient arrives at the operating room. Planning is something that helps prepare for the possibility of difficult mask ventilation, difficult intubation, and/or obtaining an advanced airway¹. Knowing this, several algorithms were created to standardize the management of DA in order to avoid behaviors that put the patient's life at risk⁴.

Obesity is a worldwide public health problem, with multifactorial causes³. The alterations resulting from obesity can cause difficulties in mask ventilation, OTI and me-

chanical ventilation, with important peculiarities that must be taken into account already in the pre-anesthetic evaluation³.

The main purpose of this report is to show the evaluation of the airway in the pre-anesthetic consultation and the plans for OTI of this patient.

CASE REPORT

Male patient, 21 years old, morbidly obese (weight 254 kg, height 1.76 cm, body mass index (BMI) 81 kg/m²) denied other cardiovascular, respiratory, endocrine comorbidities, among others. He denied addictions, known drug allergies, prior surgical history. Accompanied by family members at the appointment, he would undergo an intra-gastric balloon for weight loss and future gastroplasty in a second stage.

Regarding the assessment of the airway, the patient had a beard, BMI > 26, good inter-incisor distance (>5cm), large tongue, Mallampati two, with good mandibular pro-

1. Clínica de Anestesia (CET - CLIANEST), Goiânia
2. Hospital ENCORE, Aparecida de Goiânia
3. Hospital de Urgências de Goiás
4. Faculdade CEAFI, Goiânia



ADDRESS

GIULLIANO GARDENGHI, CET
CLIANEST, R. T-32, 279 - St. Bueno, Goiânia - GO, Brasil,
CEP: 74210-210
E-mail: coordenacao.cientifica@ceafi.edu.br

trusion (upper lip bite test - ULBT class 1), sternum-mentalis >12cm, with good cervical extension and mobility, but with cervical circumference >40cm. During the pre-anesthetic consultation, he was instructed to remove the beard, which would be a possible modifiable difficulty agent for mask attachment (Figure 01).



Figure 1. Images from the primary assessment of the airway in a pre-anesthetic consultation. We observed the presence of a beard, cervical circumference, Mallampati (A), upper lip bite test - ULBT (B), sternomental distance, cervical mobility (C).

Generally, the procedure of passing an intragastric balloon is performed with sedation. Knowing the predictors, general anesthesia balanced with OTI was previously chosen to obtain a definitive airway, thus avoiding some possible complications that could endanger the patient's airway during the procedure. Two possibilities for OTI were suggested, the first being via flexible fiberoptic bronchoscopy, and the second under direct visualization with videolaryngoscopy. After discussion among the anesthesiologists and considering the predictors, they chose the second option, but keeping the flexible fiberoptic bronchoscope in the room. So, when the day of the procedure arrived, the patient was fasting properly, he was positioned in dorsal decubitus under a trapeze, joint care was observed, monitored with oximetry, cardioscopy, non-invasive blood pressure (NIBP) in the right forearm, CONOX monitor, punctured 20G Jelco in left upper limb. Dexmedetomidine 50mcg was administered, followed by pre-oxygenation with an appropriately sized mask for the patient, FiO₂ 100% for 5 minutes. Venous induction was performed with fentanyl 50mcg, propofol 200mg, lidocaine 100mg and rocuronium 50mg. Ventilation was performed under a mask for 03 minutes and laryngoscopy was performed with direct videolaryngoscopy, observing Comarck-Lehane 1, periglottic anesthesia with 1% ropivacaine 5ml, Bougie passage and subsequent passage of an orotracheal tube (OTT) No. 8.0, with cuff, which was inflated with direct videolaryngoscopy and capnography was detected. There was no hemodynamic instability or other setbacks during induction. Surgical procedure was performed uneventfully

(Figure 02). For extubation, he was decuritized with sodium sugammadex 200mg. Woke up peacefully, without agitation and extubation while still in the operating room. Kept in anesthetic recovery room (PACU) for another hour and released to the ward with an Aldrette-Kroulik (AK) scale of 10.



Figure 2. Images of positioning on ramp for induction, mask-assisted ventilation, orotracheal intubation during surgical procedure.

DISCUSSION

At first, in the pre-anesthetic evaluation, we see some worrying factors in relation to this patient's airway. Factors such as male gender, neck circumference, tongue size, BMI and beard are some important predictors of difficulty with mask ventilation and difficult OTI. On the other hand, the interincisor distance, ULBT, young age and Mallampati are factors of probable non-difficulty in OTI. Knowing this, we have two scenarios, the expected and unexpected factors¹. The main idea is to adapt the conduct so that the expected factors could be controlled and be better prepared for the unexpected. One of them, modifiable, was the removal of the beard. All safe surgery checklists previously checked. Ramp positioning with the use of the trapeze also influences, being important in improving denitrogenization, reducing possible formations of atelectasis and aligning the airway axes (oral, pharyngeal and laryngeal)¹². Regarding pre-oxygenation, a criticism could be the use of a high-flow nasal catheter during the apnea phase, where there is evidence of improvement in the safe apnea time.

From the point of view of the surgical procedure, usually performed under sedation, ensuring a definitive airway was imperative for anesthesiologists in order to avoid complications and unexpected intraoperative airway scenarios, which is why general anesthesia with OTI was chosen.

Regarding mechanical ventilation, obesity can cause restrictive disorders mainly due to the weight of the rib cage, reducing functional residual capacity (FRC) and increasing airway pressure due to the reduction in airway caliber³. Knowing this, all the necessary precautions were taken to maintain protective ventilatory parameters, with positioning being important both for OTI and for mechanical ventilation.

During extubation, a peaceful awakening and topical airway anesthesia were designed to avoid significant

bronchospasm and/or laryngospasm, which are also unexpected factors, but which can be avoided with the measures taken, as well as serial evaluation in the PACU in order to quickly identify complications ¹.

CONCLUSION

In the case presented here, considering morbid obesity and several DA criteria, the pre-anesthetic evaluation was extremely important for the surgical procedure to be carried out safely, and should not be overlooked by the anesthesiologist and the care team.

REFERENCES

1. Holland J, Donaldson W. ATOTW 321 – Dificuldade de ventilação sob máscara (8 de outubro de 2015). [periódicos na Internet]. 2015. [acesso em 22 abr 2023]. Disponível em: <https://www.sbahq.org/wp-content/uploads/2016/06/3a656e0f-d03e2f2a4e6d6a0b2f3af082-321-Dificuldade-de-ventilacao-sob-mascara-facial.pdf>
2. Apfelbaum JL, Hagberg CA, Connis RT, Abdelmalak BB, Agarkar M, Dutton RP, et al. 2022 American Society of Anesthesiologists Practice Guidelines for Management of the Difficult Airway. *Anesthesiology*. 2022;136(1):31-81. doi:10.1097/ALN.0000000000004002
3. Sant'Anna Jr M, Carvalhal RF, Oliveira FFB, Zin WA, Lopes AJ, Lugon JR, et al. Respiratory mechanics of patients with morbid obesity. *J Bras Pneumol*. 2019;45(5): e20180311. doi: 10.1590/1806-3713/e20180311. eCollection 2019.
4. Kollmeier BR, Boyette LC, Beecham GB, Desai NM, Khetarpal S. Difficult Airway. In: StatPearls. Treasure Island (FL): StatPearls Publishing; February 4, 2023.