International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 05 Issue 04 April 2025

Page No: 506-510

DOI: https://doi.org/10.47191/ijmscrs/v5-i04-01, Impact Factor: 8.188

Tonsillar and Soft Palate Trauma Secondary to Difficult Intubation by Videolaryngoscopy: Case Report

Casasnovas Blanco Salma Guadalupe[1], Pech Pool Karla Nallely[2], Avilés Sánchez Perla Alejandra[3], Montero Puga Jesús Andrés[4].

[1,2]Anesthesiology Resident, Clínica Hospital Mérida, ISSSTE. Facultad de Medicina de la Universidad Autónoma de Yucatán (UADY)

[3]Anesthesiologist. Clínica Hospital Mérida, ISSSTE.

[4]Surgical Resident. Clínica Hospital Mérida, ISSSTE. Facultad de Medicina de la Universidad Autónoma de Yucatán (UADY)

ABSTRACT

Airway management is one of the activities that the anesthesiologist routinely performs in the operating room, and one of the greatest challenges they face is managing a difficult airway whether predicted or not.

The reported incidence rates are for difficult ventilation 1.4–5.0% and impossible 0.07–0.16%. For difficult intubation 5-8% and failed intubation 0.05-0.35%.

Videolaryngoscope has demonstrated a higher success rate for intubation compared to conventional laryngoscopy, but without proper training the risk of trauma and injury to the oropharynx increases.

In our case report, we present the injury to the right tonsil and soft palate caused by difficult intubation with videolaringoscope which required surgical intervention by otolaryngology for resolution.

Due to an increase in reported cases of injuries secondary to videolaryngoscopy, it is important to review the factors associated with complications in the institutions where it is used, whit the aim of reduce complications that can have serious or even fatal consequences.

ARTICLE DETAILS

Published On:
03 April 2025

KEYWORDS: videolaryngoscopy, difficult airway, tonsillar trauma, difficult intubation, soft palate, case report.

Available on:
https://ijmscrs.com/

INTRODUCTION

Airway management is one of the activities routinely performed by the anesthesiologist in the operating room, but one of the greatest challenges is managing the difficult airway (DA), whether predicted or not.

According to the American Society of Anesthesiologists (ASA), a difficult airway is defined as a clinical situation in which a trained anesthesiologist experiences difficulty or anticipated or predicted failure during any of the following: face mask ventilation (FMV), laryngoscopy, supraglottic device ventilation, tracheal intubation, extubation, or invasive airway. [1]

With a reported incidence of difficult FMV in combination with laryngoscopy/difficult intubation of 0.3-0-4% in the operating room and 3-8% for difficult intubation. [2]

In our case report, the injury to the right tonsil and pharyngeal musculature were secondary to laryngoscopy and difficult intubation, and as previously reported in the literature, there are complications from injuries ranging from minor oropharyngeal and laryngeal injuries to severe airway complications that could leave longterm sequelae or be lifethreatening. [3]

The choice of laryngoscope influences the possibility of success of endotracheal intubation. Since its introduction, the video laryngoscope (VL) has been considered an indispensable tool and sometimes the first choice for airway management both in and out of the operating room. because it has been shown to offer advantages over conventional laryngoscopy, reducing intubation failure in patients with difficult airways,

facilitating glottic visualization, and reducing laryngeal trauma.[4]

However, despite being an easy to use tool, several complications due to trauma secondary to VL have also been reported with an incidence of 0.015%. These reports are increasing and often describe lesions of the teeth, lips or tongue, perforation of the tonsillar pillars and soft palate, and the most serious but very rare, such as pseudoaneurysm or thrombosis of the internal carotid artery, thrombosis of the internal jugular vein, and mediastinitis. [5, 6,7]

Although intubation by video laryngoscopy has shown better laryngeal visualization than direct laryngoscopy (DL) and an intubation success rate of 97.1-99.6%, [4, 5] it has been shown that without proper training, the risk of trauma is increased. Because with this technique a blind spot is generated when the endotracheal tube (ETT) advances beyond the base of the tongue and through the oropharynx where the operator cannot visualize the ETT on the screen and trauma may occur, therefore it is recommended to follow the 4-step technique in videolaryngoscopy and have adequate training to reduce the risk of injury.[8]

This case report was performed in a public hospital with anesthesiology residents, in which we document the injury caused by difficult intubation with videolaryngoscopy, which caused tonsil and soft palate trauma and merited surgical intervention by otorhinolaryngology (ENT) for resolution. Because we found an increase in case reports that suggest the need to implement a deeper analysis in institutions where videolaryngoscopy is used and due to the discrepancy of which risk factors are associated with airway lesions, we decided to present this case. [9]

CASE REPORT

This is a 55-year-old female, electively scheduled for infraumbilical postincisional hernia repair surgery. In her medical history controlled chronic arterial hypertension, denied allergies, denied drug addictions, previous blood transfusion without complications. 5 previous abdominal surgeries, one of them under neuroaxial anesthesia and the others under general anesthesia due to the patient's refusal to neuroaxial blockade.

Physical examination patient weight: 132 kg, height: 1.65 m, body mass index (BMI) 48.48 kg/m². Airway assessment: interincisor distance class I, modified Mallampati test class I, horizontal length of the mandible clase I, without restriction of cervical neck movement, Predictive Index of Difficult Intubation (PIDI) 8 points. Antecedent of Cormack Lehane (CL) class III in previous intubation.

Blood test, Chest X-ray and electrocardiogram without alterations.

Assessment by internal medicine: ASA III, Goldman class I, Lee class II and high thromboembolic risk. Anesthesiology evaluation: Anesthesia Surgical Risk E III B.

Under non-invasive monitoring: blood pressure (BP) 132/62 mmHg, heart rate (HR) 72 bpm, respiratory rate (RR) 17 bpm, oxygen saturation (SPO2) 98%. Preoxygenation with face mask at 6 L/min, intravenous induction with Midazolam 0.02 mg/kg, Sufentanil 0.5 mcg/kg, Lidocaine 1.5 mg/kg, Propofol 2 mg/kg, Cisatracurium 0.12 mg/kg, FMV HAN class I. DL was performed with Mac blade #3, CL class III with 2 failed intubations, FMV continues and VL is performed with Glidescope. Difficulty for endotracheal intubation due to trachea in anterior position, tonsillar hypertrophy and active bleeding that prevented adequate visualization of the larynx. Intubation is performed with difficulty and the passage of the ETT #7.5 through the vocal cords is observed on the VL monitor. The Glidescope is removed and there is a lot of active bleeding from the oral cavity. Hemostasis is performed with gauze and pressure on the bleeding area. Maintains SPO2 98% with mechanical ventilation in volume control mode, without ventilatory or hemodynamic complications.

Assessed by an ENT, who observed an ETT lodged between the right tonsil and the palatoglossus and superior constrictor muscles (Figure 1) with active bleeding in the area. He performed a right tonsillectomy and pharyngeal muscle reconstruction due to the high risk of extubation complications. After right tonsillectomy, hernioplasty is performed and at the end she is extubated without complications. The patient was admitted to the intensive care unit (ICU) due to high risk of extubation failure and rebleeding. After 12 hours, she was transferred from the ICU to the surgical service due to improvement, and 24 hours later she was discharged home without complications.

One month later, the patient was re-evaluated by the ENT service, which reported an adequate evolution and no sequelae.

DISCUSSION

Airway (AW) management is part of the activities routinely performed by the anesthesiologist and is a fundamental practice to ensure patient safety. However, this practice involves facing the challenges that can occur at any time during the airway approach, including the most trained personal.

A potentially catastrophic scenario that any anesthesiologist may face is the occurrence of an unanticipated difficult airway, the ASA defines a difficult airway as a clinical situation in which a trained anesthesiologist experiences difficulty or anticipated or predicted failure during any of the following: face mask ventilation (FMV), laryngoscopy, supraglottic device ventilation, tracheal intubation, extubation, or invasive airway. [1]

Unpredicted DA is a rare situation, the presence of which can lead to irreversible injury or death in 30% of cases. [10, 11] This requires a trained team that can recognize such a situation and act according to established algorithms and guidelines and make strategic plans to ensure a patent

AW and provide ventilation and oxygenation in the event of failed intubation. [12]

The management of a DA is an interaction of several factors that determine the morbidity and mortality of the patient, including non-modifiable factors such as the patient's demographics, medical history, and current diagnosis, and modifiable factors such as the choice of airway management strategy, the availability of equipment, and the skills, abilities, and preferences of the anesthesiologist in charge. [13,14]

It is important that the professionals involved in the management of DA can evaluate and identify the predictive factors that determine a difficult airway such as age, sex, weight, height and BMI, medical history and findings during the physical and airway examination. Whit the purpose is to be able to anticipate and implement strategies for its management, as well as an adequate preparation of the materials, techniques and devices to be used in accordance with the algorithms. [1,15]

The reported incidence rates for the different scenarios that can be faced with DA are for difficult and impossible FMV of 1.4-5.0% and 0.07-0.16 respectively, 5-8% for difficult intubation with conventional laryngoscopy and 0.05-0.35% for failed intubation. The reported incidence for impossibility of placing a supraglottic device is 0.2-8% and finally the incidence of "not ventilated, not intubated" is reported from 0.00-19% to 0.04%.[15]

In Mexico, the frequency of complications derived from the management of AW by anesthesiology personnel is unknown, as well as the secondary morbidity due to inadequate management of AW, either due to lack of experience or lack of supplies in hospitals for its management. According to reports in our country, 26% of patients presented complications such as esophageal intubation, soft tissue injury, laryngeal edema, mouth bleeding, bronchoaspiration, tooth avulsion and laryngoscope failure.[16]

It is important to analyze the devices used for airway management, especially in the context of a DA. In recent years, with the update of guidelines and algorithms for the management of difficult airway and the introduction of different equipment, including the VL, these have become part of the routine use for the management of any type of airway, as it is considered an easy to use instrument and the literature has shown that being superior to DL by offering a better glottic visualization, decreasing the risk of failed intubation, with a success rate in intubation of 97. 1-99.6% compared to 92-94% with DL, as well as a lower rate of complications and airway injury. [4, 17]

Although the benefits of using VL have been demonstrated, there are several publications that document many airway injuries with the use of various types of VL. [7, 9] Tracheal intubation trauma can occur anywhere in the aerodigestive tract with an incidence of 0.015% and at any step of airway management, which can occur from the laryngoscope blade, stylet, or tracheal tube. The tonsillar pillars and soft palate are reported to be the most common sites of injury. [9,18]

In our case we report right tonsillar, palatoglossus and superior constrictor muscle injury secondary to difficult intubation with videolaryngoscope, studies show an increase in the incidence of airway trauma with the use of VL. Several factors associated with these lesions are described, one of the main ones is the technique, either due to lack of training or the appearance of secretions or bleeding that reduce visualization, and other factors such as the patient's particular characteristics. [19]

In the case reported, the patient had predictors such as BMI> 48 kg/m^2, modified Mallampati class II and intubation by videolaryngoscopy, which have been described in several studies as predictors of difficult intubation and as risk factors for laryngeal lesions, BMI $\geq$ 35 kg/m^2 is reported as a statistically significant predictor of difficult tracheal intubation, as well as the association between obesity and modified Mallampati class II with increased risk of inadequate laryngeal visualization and increased risk of laryngeal injury with LV. [5]

It has been described that there is a blind spot during videolaryngoscopy because the visualization of the glottis is indirect through the monitor, so if the 4-step technique is not performed, the operator may lose sight of the structures and place the VL or ETT blindly, causing injury. Therefore, it is recommended that the VL and ETT always be introduced under direct vision before looking at the monitor to avoid these blind spots. [2, 5]

Use of rigid stylets is another factor associated with a significant increase in airway trauma; therefore, use of malleable stylets is recommended as they are equally effective in facilitating intubation and may reduce airway trauma. [20]

Our case report coincides with another series of case reports in which oropharyngeal injuries (perforation or laceration) were discovered after intubation, as these injuries often occur during advancement of the ETT from the oral cavity to the pharynx. Therefore, although it is an excellent device for the management of DA, it is important to consider that intubation by VL presents a higher risk of palatal injury compared to direct laryngoscopy, with a rate of 0.234% for VL and 0.015% using DL.[5, 7]

Injuries to the soft palate and oropharynx have been reported to be generally self-limiting in severity and often require minimal surgical intervention, as in the present case where a right tonsillectomy plus reconstruction of the palatoglossus and superior constrictor muscles was performed by the ENT service.[7]

Some of the most important recommendations to avoid trauma to the oropharynx are to use the 4-step technique, to prefer the use of flexible guides, and not to advance the ETT if resistance is encountered. As well as continuous education of residents and anesthesiologists. [21]

CONCLUSION

Since its introduction, the video laryngoscope has become one of the devices of first choice for airway management because of its advantages over the conventional laryngoscope in the presence of a difficult airway, anticipated or not, guaranteeing the rate of successful intubation and reducing the complications of failed intubation.

There are an increasing number of complications associated with the use of video laryngoscopy, mainly lesions of the oropharynx and pharynx, which can be treated surgically, but others can be life-threatening.

To ensure proper use of these devices and to identify and resolve potential complications in a timely manner, we emphasize the importance of adequate training and continuing education.

CONFLICTS OF INTEREST

None.

REFERENCES

I. Apfelbaum JL, Hagberg CA, Connis RT, et al. 2022 American Society of Anesthesiologists Practice Guidelines for Management of the Difficult Airway. Anesthesiology [Internet]. 2021; 136(1):31-81. Available at:https://doi.org/10.1097/aln.0000000000004002 Law JA, Duggan LV, Asselin M, Baker P, Crosby E, Downey A, et al. 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 [Internet]. 2021; 68(9):1373–404. Available at: http://dx.doi.org/10.1007/s12630-021-02007-0

II. Pacheco-Lopez PC, Berkow LC, Hillel AT, Akst LM. Complications of airway management. Respir Care [Internet]. 2014; 59(6):1006–19; discussion 1019-21. Available at: http://dx.doi.org/10.4187/respcare.02884

III. Lewis SR, Butler AR, Parker J, Cook TM, Schofield-Robinson OJ, Smith AF. Videolaryngoscopy versus direct laryngoscopy for adult patients requiring tracheal intubation: a Cochrane Systematic Review. Br J Anaesth [Internet]. 2017; 119(3):369–83. Available at: http://dx.doi.org/10.1093/bja/aex228

IV. Pham Q, Lentner M, Hu A. Soft palate injuries during orotracheal intubation with the videolaryngoscope. Ann Otol Rhino l Laryngol [Internet]. 2017;126(2):132–7. Available at: http://dx.doi.org/10.1177/0003489416678008

V. Tufail B, Shabbir M, Majeed A, Akhtar AB, Al Malyan M. Tonsillar trauma during video laryngoscopy: A case report. Cureus [Internet]. 2023;15(7):e41617. Available at: http://dx.doi.org/10.7759/cureus.41617

VI. Vincent RD Jr, Wimberly MP, Brockwell RC, Magnuson JS. Soft palate perforation during orotracheal intubation facilitated by the GlideScope videolaryngoscope. J Clin Anesth [Internet]. 2007;19(8):619–21. Available at:http://dx.doi.org/10.1016/j.jclinane.2007.03.010

VII. Amundson AW, Weingarten TN. Traumatic GlideScope(®) video laryngoscopy resulting in perforation of the soft palate. Can J Anaesth [Internet]. 2013;60(2):210–1. Available at: http://dx.doi.org/10.1007/s12630-012-9824-3

VIII. Greer D, Marshall KE, Bevans S, Standlee A, McAdams P, Harsha W. Review of videolaryngoscopy pharyngeal wall injuries. Laryngoscope [Internet]. 2017; 127(2):349–53. Available at: http://dx.doi.org/10.1002/lary.26134

IX. Rugnath N, Rexrode LE, Kurnutala LN. Unanticipated difficult airway during elective surgery: A case report and review of literature. Cureus [Internet]. 2022; 14(12):e32996. Available at: http://dx.doi.org/10.7759/cureus.32996

X. Echevarría M, González A, Rodrigo M, et al. Vía aérea difícil, detección preoperatoria y manejo en quirófano. Rev Mex Anest [Internet]. 2015;38(2):85–90. Available at: https://www.medigraphic.com/pdfs/rma/cma-2015/cma152c.pdf

XI. Anchondo A, Acosta R, Acevedo M, Ruiz C, Méndez A. Vía Aérea Difícil no Anticipada en Cirugía Electiva, Paciente Ventilable no Intubable: Planeación de Estrategias y Revisión de la Literatura. Anestesia en México [Internet]. 2024; 36(2):115–22. Available at: https://anestesiaenmexico.com.mx/web/anestesia-en-mexico-2024-volumen-36-numero-2/

XII. Rojas J, Zapíen J. Panorama actual de la vía aérea difícil. Rev Mex Anest [Internet]. 2018;41(1):200–2002. Available at: https://www.medigraphic.com/pdfs/rma/cma-2018/cmas181bl.pdf

XIII. Steadman J, Catalani B, Sharp C, Cooper L. Life-threatening perioperative anesthetic complications: major issues surrounding perioperative morbidity and mortality. Trauma Surg Acute Care Open [Internet]. 2017;2(1):e000113. Available at: http://dx.doi.org/10.1136/tsaco-2017-000113

XIV. Jung H. A comprehensive review of difficult airway management strategies for patient safety. Anesth Pain Med [Internet]. 2023;18(4):331–9. Available at: http://dx.doi.org/10.17085/apm.23123

XV. Diagnóstico situacional en dispositivos para el abordaje de la vía aérea difícil en México. Anest. Méx. [revista en la Internet]. 2019; 31(2):2-14. Available at:http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2448-87712019000200002&lng=es

XVI. Heidegger T. Management of the difficult airway. N Engl J Med [Internet]. 2021;384(19):1836–47. Available at: http://dx.doi.org/10.1056/NEJMra1916801

XVII. Leader P, Curry S, Pate S. Paratracheal abscess after traumatic tracheal intubation. Anaesth Rep [Internet]. 2020;8(1):48–51. Available at: http://dx.doi.org/10.1002/anr3.12045

XVIII. Jeyakumar MB, Abraham MA, Singh G, Chandy TT. The incidence of trauma with the use of glidescope in anticipated difficult airway cases – A prospective observational study. Curr Med Issu [Internet]. 2022;20(3):138–42. Available at: http://dx.doi.org/10.4103/cmi.cmi_94_21

XIX. Turkstra TP, Harle CC, Armstrong KP, Armstrong PM, Cherry RA, Hoogstra J, et al. The GlideScope®-specific rigid stylet and standard malleable stylet are equally effective for GlideScope® use. Can J Anaesth [Internet]. 2007;54(11):891–6. Available at: http://dx.doi.org/10.1007/bf03026792

XX. Oh MW, Yarmosh A, Francis D, Moon TS. Soft palate perforation from Glidescope® intubation: A case report. Clin Case Rep [Internet]. 2021;9(9):e04864. Available at: http://dx.doi.org/10.1002/ccr3.4864

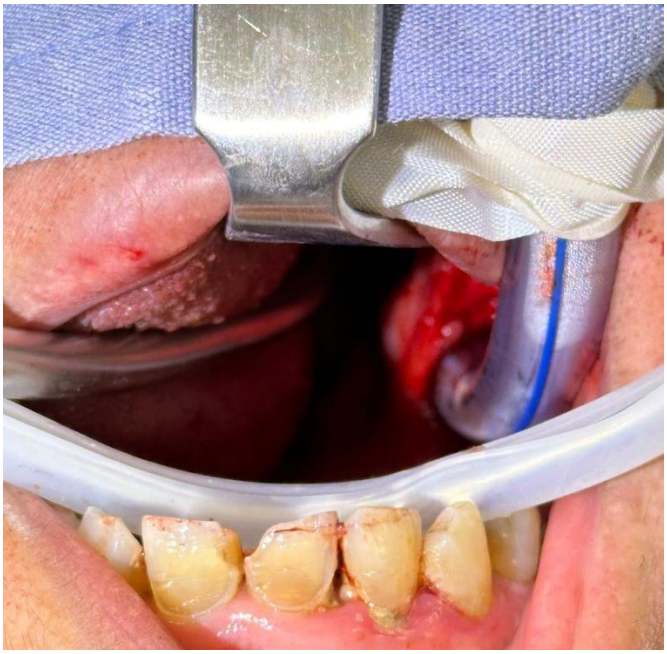

Figure 1. ETT lodged between the right tonsil and the palatoglossus and superior constrictor muscles. Source: Own

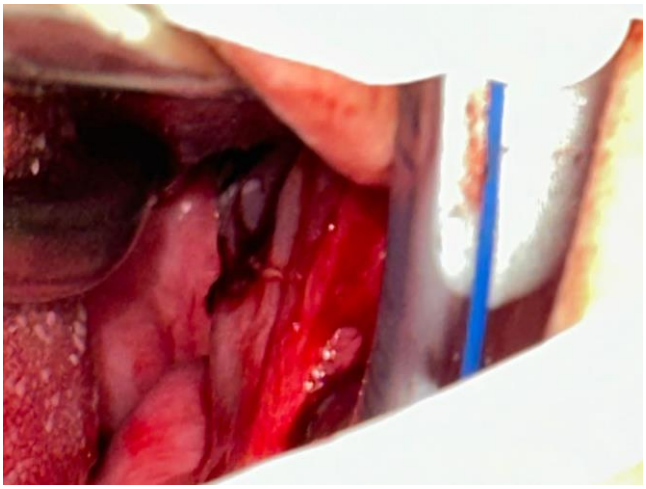

Figure 2. Perforated soft palate is observed. Sorce Own.