

Unexpected laryngeal lesion in an expected difficult airway

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ABSTRACT

According to clinical guidelines, a difficult airway is a clinical situation in which an expected or unexpected difficulty in management is encountered or this difficulty and failure is experienced by an anesthesiologist. These situations are difficulties and failures encountered in face mask ventilation, laryngoscopy, ventilation with supraglottic airway equipment, tracheal intubation, extubation or invasive airway. We presented a 47-year-old male case, who was admitted to our center with the diagnosis of Type 1 aortic dissection and who eventually underwent emergency tracheostomy due to difficult airway, in the light of the literature. According to clinical guidelines, a difficult airway is a clinical situation in which an expected or unexpected difficulty in management is encountered or this difficulty and failure is experienced by an anesthesiologist. These situations are difficulties and failures encountered in face mask ventilation, laryngoscopy, ventilation with supraglottic airway equipment, tracheal intubation, extubation or invasive airway. We presented a 47-year-old male case, who was admitted to our center with the diagnosis of Type 1 aortic dissection and who eventually underwent emergency tracheostomy due to difficult airway, in the light of the literature.

Keywords: Aortic dissection, difficult airway, laryngeal lesion, tracheostomy

INTRODUCTION

Difficult airway is a significant cause of morbidity and mortality in anesthesia management.¹ An unexpected difficult airway can be quite challenging for the anesthesiologist and can expose the patient to significant risks if not managed appropriately. Apart from the demographic characteristics of the person, various anatomical and pathological defects in the upper airway are the most common causes of difficult airway.^{1,2} Its incidence varies between 1-13%, and it is estimated that half of these are unexpectedly difficult intubations.³ The patient's previous anesthesia experience allows us to obtain information about the airway and can guide a detailed evaluation of unexpected difficult airway and difficult intubation.

Although it is a foresight, we may encounter situations that we would not have noticed before anesthesia induction. Here, we aimed to present the airway management that was reshaped for unexpected reasons in our case where a difficult airway was expected due to aortic dissection.

CASE

Our case, a male patient aged 47 years, 172 cm, 70 kg, in the American Society of Anesthesiologists (ASA) 5 E risk group, was admitted to our emergency clinic with severe chest

pain. Emergency surgery was planned with the diagnosis of Type I aortic dissection. The patient had a history of chronic obstructive pulmonary disease (COPD) and previously had obstructive sleep apnea syndrome (OSAS) surgery. GCS was 15, blood pressure was 150/80 mmHg, heart rate was 108/min, and SpO₂ was 92%. The patient, who had a Mallampati score of II, normal thyromental distance (normal value ≥ 6.5 cm), normal sternomental distance (normal value ≥ 12.5 cm), normal neck mobility and adequate mouth opening in the airway evaluation, was prepared for difficult intubation due to tracheal deviation in the chest radiography and thorax computed tomography (Figure 1). The patient was monitored in accordance with ASA standards. Additionally, invasive arterial blood pressure, central venous pressure, temperature, NIRS, BIS and urine output were also monitored. After adequate preoxygenation, midazolam 0.01mg/kg, propofol 2mg/kg, fentanyl 1mcg/kg were administered for anesthesia induction. After effective mask ventilation was confirmed, 0.6mg/kg rocuronium was administered. During video laryngoscopy epiglottis couldn't be visualised. Infected, fragile and edematous tissues were observed in the larynx, and the vocal cord could not be seen (Figure 2). The endotracheal tube could not be advanced through the areas

considered as airway passage by the anesthesia and ear-nose-throat team on video laryngoscopy. Multiple attempts were avoided due to fragility. The patient's Cormack-Lehane score was 4 and airway was secured with an LMA Fastrach. Since the vocal cords could not be visualized with fiberoptic bronchoscopy performed through the LMA Fastrach due to edematous and infective tissues, an emergency tracheostomy was performed by the ENT team. Ascending aorta graft surgery was performed with cross clamp time of 115 minutes, cardiopulmonary bypass time of 162 minutes and a total operation time of 450 minutes. The patient was monitored in the postoperative intensive care unit under mechanical ventilation support for 9 hours (Figure 3). The patient was started on antibiotics. Upon subsequent evaluation by the ENT team, improvement was observed in the infected and fragile structures and the patient was decannulated after 5 days of surgery and discharged after 8 days of surgery day without any problems.

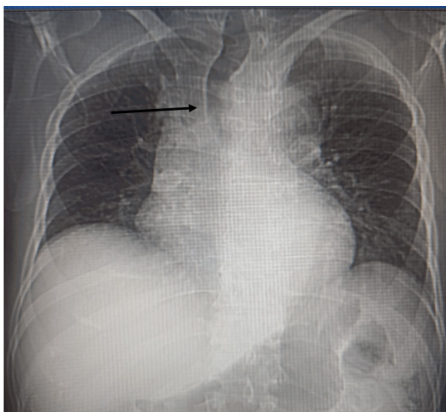


Figure 1. Tracheal deviation in the chest radiography marked with an arrow.

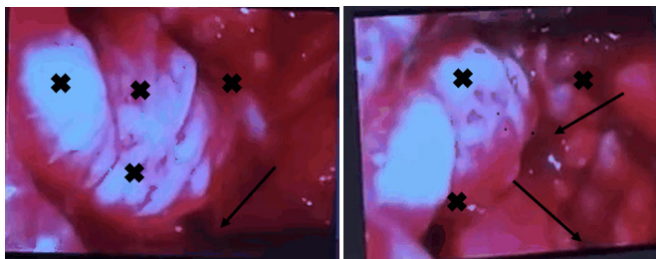


Figure 2. Infected and fragile structures are marked with an X, areas thought to be airway openings are marked with an arrow



Figure 3. Postoperative period. The patient with tracheostomy cannula and has normal thyromental distance and normal sternomental distance values.

DISCUSSION

Airway management is the most fundamental part of anesthesia practice and a vital skill for the anesthesiologist. Major complications of airway management are very rare but can be

life-threatening. According to the ASA guideline, a difficult airway includes the clinical situation in which anticipated or unanticipated difficulty or failure is experienced by a physician trained in anesthesia care, including but not limited to one or more of the following: facemask ventilation, laryngoscopy, ventilation using a supraglottic airway, tracheal intubation, extubation, or invasive airway.⁴

Before anesthesia induction, airway evaluation is very important to determine the presence of upper respiratory tract pathologies or anatomical anomalies. The most important risk factors for difficult airway include advanced age, obesity, Mallampati classification III-IV, chin protrusion, short thyromental distance, and limited head and neck movement.⁴ Some of the most important causes of unexpected difficult airway are oropharyngeal infection, laryngeal mass or deformities such as lingual tonsillar hypertrophy, lingual thyroid, thyroglossal cysts and tumors. Patients with these abnormalities may have symptoms such as sore throat, Globus sensation, dysphagia, snoring, and obstructive sleep apnea. However, the patient may be asymptomatic and it may be difficult to identify abnormalities with routine external physical evaluation of the airway.^{1,5,6}

Tracheal compression or deviation due to aortic dissection is a situation that requires difficult airway preparation.^{4,7} However, the expected difficult airway in our patient made intubation completely impossible due not only to the inability to advance the endotracheal tube in the trachea because of the tracheal pressure caused by aortic dissection, but also due to unpredicted abnormal tissues in the larynx.

According to the ASA difficult airway algorithm, in patients who can be ventilated with a mask but cannot be intubated, it is recommended to limit the number of attempts and consider waking the patient, to consider alternative intubation options (video laryngoscopy, trying different laryngoscope blades, combined techniques, flexible bronchoscopy, introducer, lighted stylet), to evaluate invasive airway intervention or other options (ventilation with a face mask, supraglottic airway devices).⁴ In our case, alternative airway equipment was used since it was not possible to wake the patient and postpone the case due to the emergent nature of the medical condition. In our case, video laryngoscopy was used first instead of direct laryngoscopy, as it was anticipated that a difficult airway would be encountered due to tracheal deviation. Since the Cormack-Lehane score was 4 during video laryngoscopy, LMA Fastrach, one of the supraglottic airway devices, was used. Repeated attempts for intubation were avoided because the vocal cords could not be visualized with fiberoptic bronchoscopy through the LMA Fastrach and the airway was extremely fragile. In addition, since it was anticipated that the duration of the case would be long, the invasive airway method was preferred for airway safety.

Difficult airway preparation and the presence of the ENT team allowed us to ensure the patient's airway safety with tracheostomy without any problems.

CONCLUSION

While the expected difficult airway preparation reduces mortality and morbidity in such complex, multidisciplinary cases, we think that we can safely manage the process by following the steps in the guides for unexpected difficult airway.

ETHICAL DECLARATIONS

Informed Consent Form

The patient signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Song SE, Kim HJ. Difficult airway management in a patient with unexpected laryngeal deformities. *Saudi J Anaesth.* 2022;16(4):469-471. doi:10.4103/sja.sja_75_22
2. Koh W, Kim H, Kim K, Ro YJ, Yang HS. Encountering unexpected difficult airway: relationship with the intubation difficulty scale. *Korean J Anesthesiol.* 2016;69(3):244-249. doi:10.4097/kjae.2016.69.3.244
3. Arıcan D, Zengin M, Kabal O, Baldemir R, Alagöz A. A different airway management in double lumen tube intubation due to unexpected difficult airway. *Eurasian J Anesthesiol Intens Care.* 2024;1(1):20-23.
4. Apfelbaum JL, Hagberg CA, Connis RT, 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
5. Ovassapian A, Glassenberg R, Randel GI, Klock A, Mesnick PS, Klapka JM. The unexpected difficult airway and lingual tonsil hyperplasia: a case series and a review of the literature. *Anesthesiology.* 2002;97(1):124-132. doi:10.1097/0000542-200207000-00018
6. Baldemir R, Ülger G, Demiröz ŞM, Türk İ, Zengin M, Alagöz A. Difficult airway due to acute necrotizing mediastinitis: a case report. *Eurasian J Anesthesiol Intens Care.* 2024;1:45-47.
7. Montane-Muntane M, Ascaso M, Rivera-Vallejo L, Navarro-Ripoll R. Difficult ventilation in a patient with a giant aortic aneurysm: a challenge for the anesthesiologist. *Ann Card Anaesth.* 2023;26(1):86-89. doi:10.4103/aca.aca_309_20