



CASE REPORT

Unanticipated Laryngeal Neoplasm: A Case of Intraoperative Airway Obstruction Requiring Emergency Tracheostomy

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Abstract

Background: Effective airway management is crucial in anesthesiology, especially when dealing with unexpected complications such as undiagnosed laryngeal tumors. These tumors often present with subtle symptoms that can be easily misattributed to more common conditions, posing significant challenges during intubation.

Case presentation: A 19-year-old male with neck lumps, hoarseness, and dysphagia faced severe airway obstruction during anesthesia induction, leading to failed intubation attempts and necessitating an emergency tracheostomy. Postoperative care included ICU admission and multidisciplinary management.

Conclusion: This case underscores the importance of comprehensive preoperative evaluations and the use of advanced imaging techniques to identify hidden airway pathologies. Preparedness for emergency airway procedures like tracheostomy is essential for patient safety. Vigilance and thorough preoperative assessments are crucial in anesthesiology to prevent and manage unexpected airway complications effectively.

Keywords

Airway obstruction, Laryngeal neoplasm, Tracheostomy

Abbreviations

ICU: Intensive Care Unit; CT-Scan: Computed Tomography Scan; GCS: Glasgow Coma Scale; NRS: Numerical Rating Scale; DAS: Difficult Airway Society; ASA: American Society of Anesthesiologists; ENT Specialists: Ear, Nose, Throat Specialist

Introduction

Airway management is essential in Anesthesia, requiring preparation and skill to address unexpected challenges. Inadequate endotracheal intubation can result in hypoxia, brain damage, or death. Undiagnosed laryngeal masses are particularly problematic, as they can significantly worsen patient outcomes. Patients may have laryngeal tumors without specific symptoms like hoarseness, shortness of breath, and coughing. These non-specific symptoms complicate preoperative assessments. Standard assessments often fail to identify airway disorders, especially when symptoms are mild and overlap with other conditions. Advanced imaging techniques such as CT-Scans and ultrasounds are crucial for detecting hidden airway pathologies. Anesthesia personnel must be adept at transitioning from conventional intubation to emergency procedures like tracheostomy to save lives.

Case Report

A 19-year-old male patient presented with fever in the last 1 week. Complaints of multiple lumps in the neck since 1 month ago, the lumps were painful, hoarse voice, weight loss continued, pain when swallowing. The patient had no history of chronic diseases such as hypertension or diabetes mellitus. The patient had smoked since the age of 15 years. Physical examination revealed that the Glasgow Coma Scale (GCS) E4V5M6 was obtained with free airways, no missing teeth, and adequate spontaneous breathing with SpO₂ of 99%

on room air. Respiratory Rate was 22 breaths/min, Pulse Rate was 110 breaths/min, regular pulse, and blood pressure was 108/73 mmHg. No abnormalities were observed on the physical examination. Patient Mallampati Class 1. On examination of the pain scale, the Numerical Rating Scale (NRS) for pain was 3. The patient consulted the Surgery Department and decided to perform biopsy of the mass in the patient's neck. The patient's laboratory results were within normal limits. The patient had previously undergone ultrasound examination, and multiple lymph nodes in the left and right cervix were suspected to have lymphoma.

The patient was asked to fast 6 hours before surgery and, during fasting, rehydrate with 500 cc of Ringer's Lactate infusion fluid within 6 hours before surgery. Ondansetron (4 mg), ketorolac (30 mg), and dexamethasone (10 mg) were administered as premedication. In the pre-induction period before surgery, GCS E4V5M6 was obtained with a blood pressure of 120/80 mmHg, pulse of 80 beats/min, and SpO₂ of 99% on room air. The patient then gets sedation with Midazolam 0.05 mg/kg body weight, Fentanyl 1

µg/kg body weight, Propofol 1 mg/kg body weight, and Atracurium 0.3 mg/kg body weight. Once the Hemodynamics were confirmed to be stable, the patient was positioned supine and intubation was initiated.

Intubation was performed using a direct laryngoscope, and the patient's airway was not clear due to saliva and blood. Suction was performed to clear the airway, and no airway structures were visualized after suction. Further attempts were made using a video laryngoscope, which can help obtain a view of the larynx by providing indirect visualization of the glottic opening without alignment of the oral, pharyngeal, and tracheal axes and enables endotracheal intubation [1]; however, it was not visible and bleeding occurred, as shown in Figure 1.

A mass can be seen in the patient's vallecula and epiglottis (Figure 2). The vocal cord had an irregular shape, and the tracheal opening had a narrow gap.

At this time, the patient's oxygen saturation decreased. Finally, a tracheostomy was performed because of obstruction of the patient's airway, and we decided to postpone the biopsy. Tracheostomy was performed under general Anesthesia using a mask with sevoflurane. Surgery was performed with stable Hemodynamics. Blood pressure was 110/80 mmHg, pulse was 70-80 times/min, and SpO₂ was 100% on a ventilator. The operation lasted for 1 h and 30 min, and the patient was administered ketorolac 30 mg. After the surgery, the patient was admitted to the Intensive Care Unit.

Discussion

Laryngeal obstruction can occur due to many causes, including neuroendocrine tumors, squamous cell carcinoma, and other laryngeal masses. However, when this obstruction is not detected before the start of surgery, effective airway management is required [2]. Several cases of airway obstruction caused by laryngeal neoplasms have been reported previously. Zhang, et



Figure 1: Bleeding in oropharyngeal cavity.

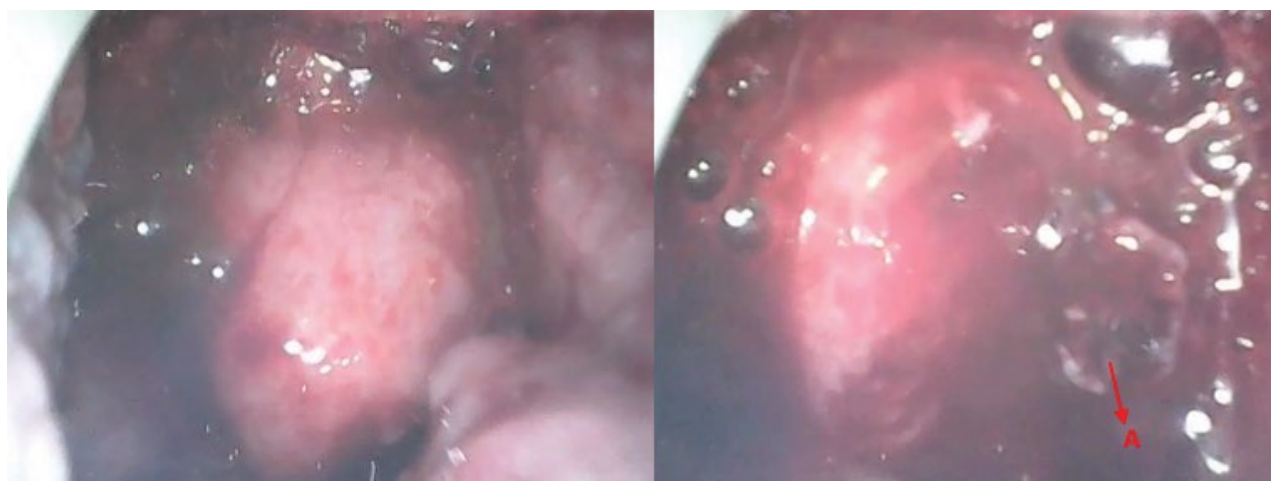


Figure 2: Mass in the Vallecula and Epiglottis. (A) Irregular shape of Vocal Cord with narrow gap tracheal opening.

al. and Chen, et al. described acute airway obstruction due to laryngeal neoplasms, emphasizing the need for comprehensive preoperative planning [3,4].

Failed direct and video laryngoscopy due to significant bleeding and obstruction makes visualization during intubation impaired which creates a "cannot ventilate, cannot intubate" situation. Emergency and immediate tracheostomies must be performed to patent the airway and stabilize the patient. Incorporating a comprehensive preoperative evaluation by evaluating the presence or absence of airway obstruction using imaging modalities can significantly reduce the risk of airway complications [5]. The importance of increasing awareness and readiness among Anesthesiologists for the potential for airway obstruction refers to established guidelines such as those of the Difficult Airway Society (DAS) and the American Society of Anesthesiologists (ASA), ensuring that Anesthesia personnel have the skills and knowledge to effectively manage difficult airway conditions [6].

Several case studies have highlighted the management of airway obstructions caused by laryngeal neoplasms. Fatima, et al. illustrated the need for physicians to be highly alert in patients with laryngeal carcinoma, in the instance that they may have worsened respiratory failure [7]. Three case reports by Zhang, et al. showed that several airway management options can be used in these cases. Larynx Cancer. This report concludes that during Anesthetic induction for this special type of surgery, a detailed and comprehensive evaluation of the airway and routine fibroscopic examination are especially important [8]. Airway management plays an important role, particularly in the case of malignancy.

Postoperative management of patients includes intensive and multidisciplinary care from Anesthesiologists, ENT specialists, and internists. The literature supports the significance of multidisciplinary postoperative care in improving the outcomes of patients with complex airway complications. Batuwitige, et al. highlighted the role of postoperative intensive care in the management of airway complications [9].

Conclusion

Detailed preoperative assessment and readiness for effective airway management are crucial for managing unforeseen airway obstruction, as demonstrated in this case. Utilizing advanced imaging techniques and being alert to nonspecific airway symptoms significantly improves patient safety and outcomes, ensuring prompt and effective responses to unforeseen complications during Anesthesia.

Declarations

Ethics approval and consent to participate

Written informed consent was obtained from the patient to publish this case report and accompanying images.

Consent for publication

Each author acknowledges that he has substantively participated in the work, approve the final version of the manuscript, and take public responsibility for the paper's content.

Conflict of interests

All authors declare that they do not have any conflict of interest.

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Authors contribution

Dewa Gede Agung Sasmara Putera was the major contributor to writing the manuscript. Budi Yulianto Sarim contributed in manuscript preparation, literature search, conceptualization, patient management and manuscript review.

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