

Case Report

Difficult Endotracheal Intubation Due to an Epiglottic Mass: A Case Report

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Abstract

Epiglottic masses may present as cystic, infectious, neoplastic, or systemic disease manifestations. Their size and location can lead to airway obstruction, increasing the difficulty of general anesthesia induction. Perioperative management for such patients requires meticulous planning to prevent sudden airway challenges post-anesthesia. Multidisciplinary collaboration (anesthesiology and otolaryngology) and the use of visualization devices (e.g., video laryngoscopy) are critical for ensuring airway safety. We described the anesthesia management for a 69-year-old male with a glottic mass. Laryngoscopy and CT revealed a 2.7×2.0 cm cauliflower-like mass on the lingual surface of the epiglottis (squamous high-grade intraepithelial neoplasia/carcinoma in situ). After comprehensive evaluation of the airway and perioperative drug interactions, appropriate sedatives, analgesics, and muscle relaxants were selected. The patient successfully completed the surgery and was discharged. The selection of the anesthesia intubation approach for epiglottic masses should be predicated on the size and location of the masses, along with the patient's specific circumstances. This case underscores the significance that conducting a thorough preoperative assessment of the patient prior to surgery and implementing multidisciplinary cooperation in light of the patient's condition can substantially mitigate anesthesia - related risks. Video laryngoscopy-assisted endotracheal intubation is the preferred method for protecting lingual epiglottic masses, minimizing tumor injury risks. However, its successful and safe implementation requires collaboration between experienced anesthesiology and otolaryngology teams.

Keywords

Epiglottic Mass, Difficult Endotracheal Intubation, Airway Management

1. Introduction

Epiglottic masses can be manifestations of cystic, granulomatous, infectious, neoplastic, or systemic conditions. They vary in size and may be solitary or multiple [1]. Symptomatic epiglottic masses or those causing airway obstruction may require surgical resection [2]. The presence of epiglottic masses may occasionally interfere with laryngoscope insertion into the airway, potentially impeding the induction of general anesthesia [3, 4]. In such patients, even with mild

clinical symptoms, perioperative planning should be meticulously conducted to prevent significant airway obstruction—which may present rapidly following administration of sedatives and induction agents—from precipitating difficult airway scenarios [5]. Therefore, anesthesiologists may encounter unforeseen ventilation challenges.

In this case, we report a case of a male patient with an epiglottic mass who underwent difficult tracheal intubation due

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to the lesion's location and dimensions. Our findings indicate that before handling patients undergoing throat surgery, it is crucial to carefully assess the location and size of the lesion, check for concurrent airway difficulties, and select the appropriate visual equipment for anesthesia induction accordingly.

2. Case Presentation

A 69-year-old male patient presented to our institution with pharyngeal pain. Laryngoscopic examination revealed an exophytic lesion on the lingual surface of the epiglottis (Figure 1), with pathological analysis establishing high-grade squamous intraepithelial neoplasia /carcinoma in situ. Pre-operative computed tomography (CT) of the patient demonstrated markedly irregular soft tissue thickening involving the epiglottis, predominantly affecting its left portion where a mass-like lesion measuring approximately 2.7×2.0 cm in cross-section was observed. The lesion exhibited heterogeneous intense enhancement on contrast-enhanced imaging, extending to involve the epiglottic vallecula and left aryepiglottic fold (Figure 2). Thus, the patient was scheduled for surgical resection under general anesthesia.

The day prior to surgery, following the pre-anesthetic evaluation, the responsible anesthesiologist conducted an initial airway assessment. The patient exhibited a Mallampati class II view with visualization of the soft palate, fauces, and partial uvula. Cervical spine mobility was unrestricted. Bed-side questioning confirmed absence of snoring or awakening from breathlessness, with no positional dyspnea during sleep.

After formulating an airway management strategy based on CT and laryngoscopic imaging, the anesthesiologist engaged in multidisciplinary deliberation with ENT surgeons regarding airway protection. Given the optimal glottic exposure demonstrated by video laryngoscopy (Figure 3), the decision was made to proceed with rapid sequence induction followed by orotracheal intubation after confirming adequate spontaneous ventilation. Contingency protocols were established as follows:

Primary backup: Fiberoptic bronchoscope-assisted orotracheal intubation, Secondary backup: Two ENT surgeons present from induction onset, prepared for emergent intervention, Tertiary measure: Surgical airway readiness with tracheostomy tray immediately available.

Upon the patient's arrival in the operating room, standard perioperative monitoring was established, including electrocardiography, pulse oximetry, non-invasive blood pressure, end-tidal carbon dioxide monitoring, and peripheral intravenous access. Following adequate preoxygenation via facemask, we induced anesthesia while preserving spontaneous respiration using Sufentanil $0.1 \mu\text{g/kg}$ and Propofol 1 mg/kg . After loss of consciousness, uneventful facemask ventilation was initiated using the anesthesia machine ventilator, followed by administration of Rocuronium 1 mg/kg based on ideal body weight.

Two minutes later, the anesthesiologist performed orotracheal intubation using video laryngoscopy. Under direct visualization, a cauliflower-like tumor mass was observed on the lingual surface of the epiglottis (Figure 4). The anesthesiologist meticulously administered topical anesthesia to the glottis and periglottal mucosa via a spray catheter with 2% lidocaine, deliberately avoiding the tumor to prevent post-extubation complications including hemorrhage or laryngospasm triggered by coughing. A 7.0-mm reinforced endotracheal tube was then advanced through the glottis (Figure 5). Following intubation, anesthesia maintenance was achieved with 2.5% end-tidal sevoflurane and remifentanyl infusion at $0.15 \mu\text{g/kg/min}$. The anesthetic and surgical course proceeded without incident.

The operation lasted for 131 minutes. After the tumor was completely removed, the surgeon performed a tracheotomy on the patient. The patient was transferred to the post-anesthesia care unit (PACU) for recovery. After 30 minutes of continuous monitoring, the Aldrete score reached 9/10, prompting transfer to the general ward. The patient was discharged uneventfully on the 11th day postoperatively.

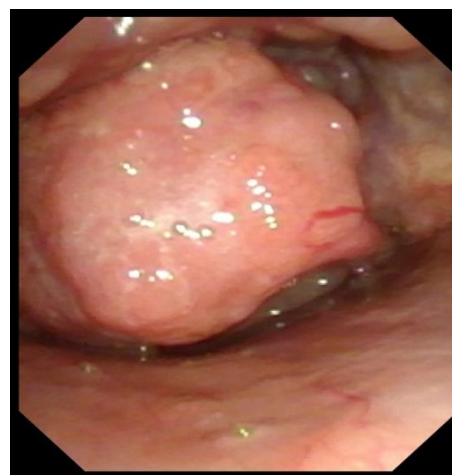


Figure 1. Laryngoscopic examination revealed an exophytic lesion on the lingual surface of the epiglottis.

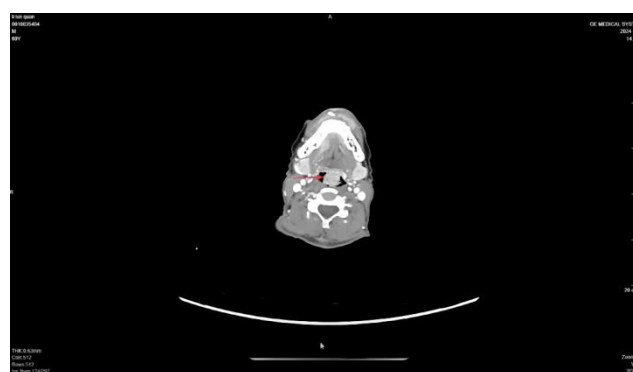


Figure 2. The lesion exhibited heterogeneous intense enhancement on contrast-enhanced imaging, extending to involve the epiglottic vallecula and left aryepiglottic fold.

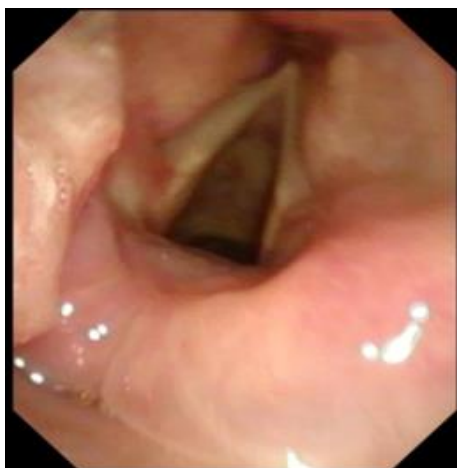


Figure 3. The optimal glottic exposure presented by preoperative video laryngoscopy.



Figure 4. The anesthesiologist performed orotracheal intubation using video laryngoscopy. Under direct visualization, a cauliflower-like tumor mass was observed on the lingual surface of the epiglottis.



Figure 5. A 7.0-mm reinforced endotracheal tube was then advanced through the glottis.

3. Discussion

This case report details the airway management of a 69-year-old male patient with a mass on the lingual surface of the epiglottis. In light of preoperative imaging studies, electronic nasopharyngolaryngoscopic findings, and clinical presentations, the objective of airway management was to avert airway obstruction by the mass following anesthesia and to prevent ventilation and intubation difficulties stemming from bleeding of the mass.

The selection of the anesthesia intubation approach for epiglottic masses should be predicated on the size and loca-

tion of the masses, along with the patient's specific circumstances. Typically, there are the following options:

Firstly, when the anesthesiologist makes a choice, awake intubation guided by a nasotracheal fiberoptic bronchoscope can be considered [6]. If the tumor is not very large and the location permits, nasal awake intubation can be chosen [7]. This method can be carried out while the patient remains conscious, which is helpful for the doctor to observe the patient's reaction and breathing condition. However, there are risks such as nasal discomfort, nosebleeds, sinusitis, and nasal septum perforation during the intubation process. If the patient does not cooperate well, it will increase the risk of tumor bleeding. In addition, since awake intubation requires the patient to remain conscious, it may cause the patient to feel anxious or uncomfortable [8].

Secondly, when the anesthesiologist decides to perform a tracheotomy [9]. If the mass significantly compromises the airway, or in the presence of other complex factors or during emergencies, when the risk of tracheal intubation is prohibitively high or intubation has failed, tracheotomy may be warranted. In the case of this patient, although tracheotomy was the final step of the surgical procedure, performing tracheotomy prior to the commencement of the operation could potentially impact the key surgical steps and elevate the risk of infection [10, 11]. Additionally, conducting tracheotomy under local anesthesia may induce anxiety or discomfort in the patient, and in severe cases, give rise to psychological problems, thereby significantly influencing the patient's overall treatment experience. Nevertheless, tracheotomy can rapidly expose the airway for ventilation, thus rendering it a viable backup option.

Thirdly, when the anesthesiologist selects tracheal intubation using an oral electronic video laryngoscope [12]. This typically necessitates general anesthesia to mitigate the patient's discomfort and reactions [13]. To avert airway collapse and blockage by the mass after the patient is anesthetized, it is essential to first assess the adequacy of the patient's ventilation while preserving spontaneous respiration before proceeding with tracheal intubation [14, 15]. In the present case, the mass was situated on the lingual surface of the epiglottis. By using an electronic video laryngoscope to lift the epiglottis, the glottis could be exposed. With clear visualization, every effort should be exerted to avoid contact with the mass, thereby preventing mass bleeding. After the administration of analgesic and sedative medications, and upon confirmation of normal ventilation, a muscle relaxant was administered to the patient. Subsequently, the glottis was promptly exposed using an electronic video laryngoscope, and tracheal intubation was carried out with meticulous care.

In our case, there was no contact with the tumor throughout the intubation process and the tumor did not obstruct the airway. We ensured the safety of anesthesia throughout the entire operation while maximizing the patient's satisfaction with the medical experience.

4. Conclusion

Video laryngoscopy-assisted orotracheal intubation represents an optimal approach for securing the airway while preserving integrity of lingual epiglottic lesions, with minimal associated tissue trauma. However, successful and safe ventilation requires coordinated expertise from both experienced anesthesiologists and otolaryngology surgeons.

Author Contributions

Ying Su is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

There have no conflict of interest.

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