



Airway Management Using Spoon Forceps for Stabilization of a Large Vocal Cord Mass During Endotracheal Intubation: A Case Report

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Abstract

Tracheal intubation in patients with large, mobile, or friable glottic lesions may be complicated by lesion contact, displacement, bleeding, dynamic airway obstruction, or difficulty advancing the endotracheal tube. Here, we present a case of airway management using 4-mm cupped-jaw spoon forceps under video laryngoscopy in a 70-year-old man with a large vocal cord mass that was subsequently confirmed as granulation tissue. To facilitate intubation while limiting manipulation of the lesion, a coordinated two-person technique was performed. The primary operator introduced spoon forceps to gently support, stabilize, and displace the mass away from the endotracheal tube trajectory. Simultaneously, the second operator advanced a 6.5-mm internal-diameter plain endotracheal tube into the trachea on the first attempt without visible contact between the endotracheal tube and the lesion. Intubation was completed without mucosal bleeding, airway trauma, or lesion fragmentation. Postoperative histopathological examination confirmed ulcerated granulation tissue. Temporary mechanical stabilization of a mobile or friable laryngeal lesion using spoon forceps via a two-person approach under video laryngoscopy may represent a useful adjunct for facilitating endotracheal intubation while limiting inadvertent lesion manipulation.

Keywords: Airway Management; Difficult Airway; Endotracheal Intubation; General Anesthesia; Spoon Forceps; Video Laryngoscopy; Vocal Cord Mass

Introduction

Securing the airway in patients with large intralaryngeal masses requires careful planning because airway instrumentation may result in lesion contact, bleeding, displacement, or airway obstruction [1-4]. Even a laryngeal mass that produces few obstructive symptoms while the patient is awake may cause clinically important airway compromise after anesthetic induction [4]. A systematic preoperative assessment incorporating symptoms, imaging, endoscopic findings, and a predefined rescue strategy is therefore important [3, 5, 8].

Video laryngoscopy can provide continuous visualization of the glottis, the lesion, and endotracheal tube advancement, and has been successfully used in patients with mobile laryngeal masses [1, 2]. However, visualization alone does not stabilize a mobile lesion. Here, we present a case in which spoon forceps were used under video laryngoscopy via a coordinated two-person technique to stabilize a large, mobile glottic lesion during successful tracheal intubation.

Case Presentation

A 70-year-old man (height: 159 cm, weight: 63 kg) presented for elective surgical excision of a recurrent vocal cord mass. The patient had previously undergone laryngomicro-surgery (LMS) in December 2022. Following the index procedure, he was monitored via serial monthly outpatient follow-up examinations at the Otorhinolaryngology clinic. Sequential flexible laryngoscopies over a 3-month period demonstrated rapid progressive enlargement of the recurrent lesion. Preoperative outpatient flexible laryngoscopy revealed a large, pedunculated mass originating from the right vocal cord and anterior commissure, nearly completely occluding the glottic aperture. (Figure 1A) Preoperative contrast-enhanced neck computed tomography (CT) confirmed a well-defined, strongly enhancing laryngeal nodule resulting in prominent luminal narrowing. (Figure 1B)

Preoperative clinical assessment revealed no resting dyspnea or acute respiratory distress. His oxygen saturation on room air was 93%, and physical airway evaluation demonstrated a Mallampati

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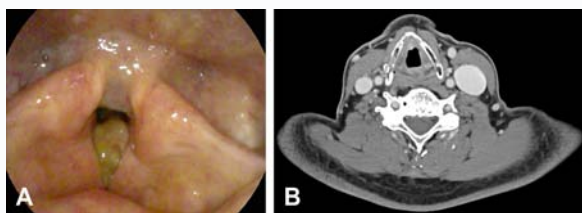


Figure 1: Preoperative diagnostic evaluation.

(A) Preoperative outpatient endoscopic view showing a large vocal cord mass originating from the right vocal cord and anterior commissure, significantly obstructing the glottic aperture.

(B) Preoperative contrast-enhanced axial neck CT scan showing a well-defined, strongly enhancing laryngeal nodule resulting in significant glottic airway narrowing.

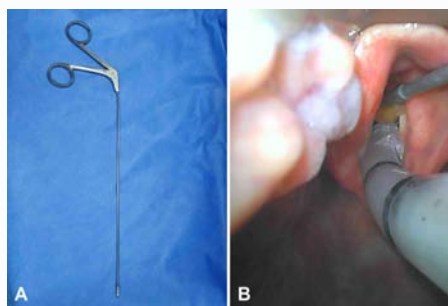


Figure 2: Spoon forceps instrument and intraoperative airway management.

(A) Spoon forceps featuring a long, slender shaft and 4-mm cupped jaws.

(B) Intraoperative video laryngoscopic view demonstrating stabilization of the vocal cord mass with spoon forceps while a 6.5-mm internal-diameter endotracheal tube is advanced into the trachea.

class II airway. Based on the lesion's size, mobile pedunculated attachment, and prominent contrast enhancement, mechanical contact with the lesion, displacement, and mucosal bleeding during intubation were considered potential risks.

Upon arrival in the operating suite, standard monitoring was established. Preoxygenation was performed with 100% oxygen via a tight-fitting face mask for 3 minutes. General anesthesia was induced with intravenous lidocaine 0.5 mg/kg (30 mg), propofol 2.0 mg/kg (120 mg), and rocuronium 0.8 mg/kg (50 mg). After induction, gentle manual ventilation was performed while avoiding unnecessary airway manipulation; oxygen saturation was maintained at 100% before airway instrumentation. A KoMAC video laryngoscope (KoMAC Co., Ltd., Seoul, Republic of Korea) was inserted to visualize the glottis.

To minimize direct mechanical contact between the endotracheal tube and the mass, a coordinated two-person strategy was meticulously implemented. Under continuous video laryngoscopic visualization, the primary operator positioned the spoon forceps so that the cupped jaws could gently support and anteriorly displace the mobile lesion, effectively clearing it from the anticipated trajectory of the endotracheal tube. This active atraumatic retraction created an unobstructed path toward the vocal cords while mitigating the risk of inadvertent tumor disruption, fragmentation, or associated bleeding. Concurrently, a 6.5-mm internal-diameter endotracheal tube was selected to maximize the safety margin and provide additional working space within the significantly narrowed glottic aperture. While the mass was stably held away from the tube pathway, the

second operator smoothly advanced the endotracheal tube through the clearly visualized posterior glottic space into the trachea (Figure 2B). This synergistic dual-operator approach ensured uninterrupted visualization and precise spatial control throughout the intubation procedure, thereby preventing mechanical collision with the fragile tumor.

Tracheal intubation was achieved on the first attempt without visible tissue fragmentation, mucosal trauma, or hemorrhage. Oxygen saturation remained at 100% throughout airway management. Laryngomicro-surgery proceeded uneventfully. The patient was extubated in the operating room at the end of surgery. Gross examination and histopathological evaluation of the resected mass confirmed ulcerated granulation tissue measuring $1.0 \times 0.8 \times 0.3$ cm.

Discussion

Airway management in the presence of a bulky, mobile glottic lesion requires a strategy that accounts for airway narrowing, dynamic obstruction, and the possibility of mechanical contact between the endotracheal tube and the lesion [1-4]. Moorthy et al. emphasized systematic preoperative evaluation of laryngeal tumors, including imaging and endoscopic assessment, with the airway plan selected according to the degree and location of obstruction [3]. In the present case, the combination of substantial lesion size, pedunculated mobility, and strong contrast enhancement raised concern that routine tube advancement could result in lesion contact, bleeding, or displacement.

Conventional airway instruments present distinct mechanical limitations when applied to friable laryngeal masses: For instance, Magill forceps are primarily designed for grasping and manipulating foreign bodies rather than providing broad, atraumatic stabilization of friable tissue. In this setting, their use requires extreme caution, as the concentrated mechanical pressure from direct grasping of a fragile lesion could easily cause tissue disruption and significant bleeding. Similarly, standard intubation stylets and bougies, while effective in facilitating tube placement through a narrowed glottic aperture, do not offer active retraction or stabilization of a mobile lesion during advancement. This limitation leaves the lesion vulnerable to shearing forces as the tube passes.

Flexible bronchoscopy is another widely recognized technique, with awake flexible bronchoscopic intubation standing as an established option for anticipated difficult airway management [5, 6]. Nevertheless, laryngeal tumors can present lesion-specific challenges during bronchoscope or tube advancement. In a series of head and neck cancer patients, Huitink et al. reported one episode of severe tumor bleeding and acute airway obstruction associated with tube advancement over the bronchoscope [7]. These findings underline that blind or guided tube advancement through a restricted airway carries an inherent risk of mass disruption. Therefore, the choice of airway technique must be meticulously individualized, taking into account lesion mobility, friability, precise anatomical location, residual glottic cross-sectional area, and the immediate feasibility of rescue surgical airway access [3, 5-8].

In contrast, spoon forceps with 4-mm cupped jaws (Figure 2A) provided practical mechanical advantages in this case. The long, slender shaft permitted manipulation under video laryngoscopic guidance, and the concave cupped jaws provided a relatively broad contact surface for temporary lesion support. In this patient, the lesion could be displaced away from the planned tube trajectory

without visible tissue disruption or bleeding. These observations are specific to this case and should not be interpreted as evidence of superiority over established airway techniques.

The coordinated two-person approach allowed lesion stabilization and tube advancement to be performed as separate tasks under continuous video visualization. One operator maintained video laryngoscopic visualization and controlled the spoon forceps while the second operator advanced the endotracheal tube through the visible posterior glottic space. Because loss of the airway in patients with obstructing laryngeal lesions may require rapid escalation to an invasive airway, a rescue plan was prepared before induction, including rigid bronchoscopy, emergency cricothyrotomy equipment, and an otolaryngologist immediately available for emergency tracheostomy [3, 5, 8].

Despite its success in this patient, the technique has important limitations. It requires a coordinated two-person team familiar with video laryngoscopy and precise airway instrumentation. The maneuver should not be interpreted as a substitute for established difficult-airway strategies, including awake tracheal intubation or invasive airway management when these are indicated [5, 6, 8]. Furthermore, because this technique was applied in a single patient, its safety and effectiveness cannot be generalized to other laryngeal lesions or airway anatomies. Precise instrument control relies heavily on operator experience and careful preoperative evaluation. Accordingly, spoon forceps may be considered only as an adjunctive option in selected cases when a mobile or friable glottic lesion interferes with the anticipated path of the endotracheal tube.

Conclusion

In this case, spoon forceps provided temporary stabilization and anterior displacement of a large, mobile vocal cord granulation tissue during endotracheal intubation. Combined with video laryngoscopy and a coordinated two-person approach, this maneuver was associated with successful first-attempt intubation without visible

lesion disruption or significant bleeding. Its safety and effectiveness cannot be generalized from a single case; however, spoon forceps may be considered as an adjunctive option in selected cases when a mobile or friable glottic lesion interferes with the anticipated path of the endotracheal tube.

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