

Stepping Back to Move Forward: Retrograde Intubation in Carcinoma Epiglottis

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ABSTRACT

A 63 year-old male with an epiglottic carcinoma was posted for surgical excision. Although preanesthetic assessment suggested that intubation using videolaryngoscopy was possible, during intubation lifting the epiglottis to see the vocal cords was not possible as the carcinoma had spread locally. Retrograde intubation was performed as a rescue procedure and surgery was conducted successfully.

Keywords: Cancer, Difficult airway, Epiglottis, Laryngeal Mass.

INTRODUCTION

Laryngeal masses undergoing surgery can present unique anesthetic challenges. Difficult airway can be expected on the basis of preoperative evaluation but in some circumstances unanticipated difficult airway can be encountered.¹ It is therefore necessary to be prepared for such circumstances even though initial evaluation may not suggest major difficulties. Although videolaryngoscopy is the preferred modality to manage such cases, some circumstances may render videolaryngoscopy ineffective. Retrograde intubation is a rescue technique which can be employed when other modalities have failed.² We report a case in which unexpected difficulties were tackled using retrograde intubation.

CASE DESCRIPTION

A sixty-three-year-old male presented with difficulty in swallowing of one-month-duration. The patient had a history of hypertension of five-year duration and diabetes mellitus of nine-year duration which were controlled with oral medications, viz, amlodipine, telmisartan, metformin and glimepiride. Initial clinical and endoscopic assessment revealed a mass on the epiglottis, the biopsy of which was reported as squamous cell carcinoma. Radiological imaging showed a heterogeneous contrast enhancing mass lesion involving the body and fold of epiglottis measuring 1.6 cm×2.2 cm×2.1 cm with few bilateral cervical lymph nodes. Airway assessment showed adequate

mouth opening (>3 finger breadths; Modified Mallampatti Grade 1), and normal neck movements and thyromental distance. Flexible fiberoptic laryngoscopy was done which showed unremarkable nasopharynx, base of tongue, bilateral valleculae and lateral pharyngeal wall (*Fig. 1*). The epiglottis showed a proliferative lesion involving the tip and the left side on both the lingual and laryngeal surfaces. The left sided aryepiglottic fold was also involved while the right aryepiglottic fold was free (*Fig. 2*).



FIG.1 Preoperative flexible fiberoptic laryngoscopy image showing normal glottic opening.

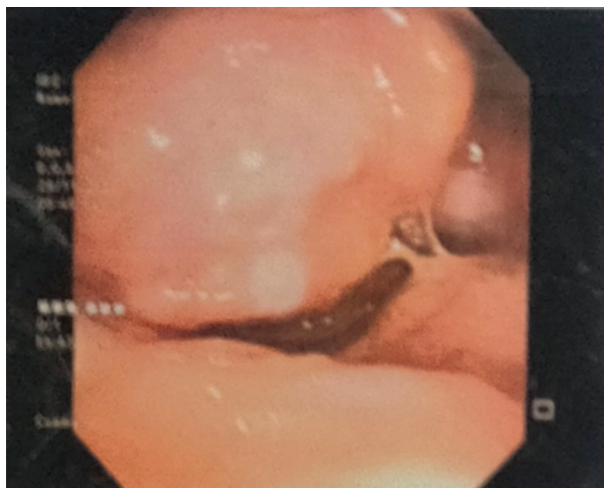


FIG. 2 Preoperative flexible fiberoptic laryngoscopy image showing epiglottic mass.

The patient was posted for trans-oral robotic excision with bilateral modified neck dissection after a week. Based on the initial airway assessment, a plan for nasal intubation with micro-laryngeal tube (size 6.0 mm internal diameter) using videolaryngoscopy was made. After explaining the plan of anesthesia and obtaining a written informed consent, patient was wheeled into the operation theatre. Patient was premedicated with 0.2 mg glycopyrrolate and 1 mg midazolam by intravenous (IV) route; induction was carried out using 100 µg fentanyl and 100 mg propofol given by IV route, followed by 40 mg rocuronium given by IV route for muscle relaxation. Videolaryngoscopy revealed Cormack-Lehane grade III view. We were unable to lift the epiglottis for visualizing the vocal cords and the mass had already started to bleed by then. Flexible fiberoptic bronchoscopy was attempted but the scope could not be negotiated beyond the epiglottic mass due to poor visualization caused by the bleeding (**Fig. 3**). After the failure of intubation by both videolaryngoscopy and flexible bronchoscopy, retrograde intubation was attempted; during this period the patient's oxygenation was maintained using bag and mask ventilation. The cricothyroid membrane was identified by direct palpation and was punctured using 16G hypodermic needle. The placement of needle was confirmed by free air aspiration and an 18G epidural catheter was advanced cephalad through the needle. However, instead of coming out through the nostril, the catheter came out from the mouth. For facilitating nasal intubation, a Ryle's tube (14 Fr) was inserted from the left nostril and pulled out through the mouth. The epidural catheter was then tied to the Ryle's tube and the Ryle's tube was pulled back thus bringing the epidural catheter out from the left nostril. A bougie was railroaded over the epidural catheter followed by a microlaryngeal tube (size 6.0 mm). The endotracheal tube

position was confirmed by auscultation of breath sounds and capnography. Subsequently, an arterial line was inserted and transduced for beat-to-beat monitoring. The anesthesia was maintained with sevoflurane (in a mixture of oxygen with air) with IV infusion of rocuronium in a dose of 0.4 mg/kg/hr. The surgery was conducted uneventfully, and the patient was extubated after an overnight stay in the intensive care unit.

DISCUSSION

Retrograde endotracheal intubation is one of the oldest techniques for the management of difficult airways. Typically, it involves puncturing of the cricothyroid membrane with a needle following which a guidewire is passed upwards through the airway. Then an endotracheal tube is passed over this guidewire.¹ This technique is used in settings of airway obstruction, sub or supraglottic stenosis, non-visualization of vocal cords or failure to intubate by other methods. As this procedure can be life-saving when encountering an unanticipated difficult airway, the knowledge and training on this procedure is essential.² Some complications can occur as a result of this procedure; the guidewire may damage the airway, get coiled or broken or enter the mediastinum.³

The anesthetic management of laryngeal carcinoma is challenging. The initial evaluation should answer whether it is possible to perform ventilation with face mask; is there any anticipated difficulty in laryngoscopy and intubation; and if it will be possible to create a surgical airway if needed. In rapidly progressing tumors, the airway status can change between the initial evaluation and the day of surgery. Hence, the above-mentioned precautions are essential.⁴ Videolaryngoscopy is preferable to direct laryngoscopy in cases with laryngeal carcinoma with an anticipated difficult airway. Awake fiberoptic intubation is

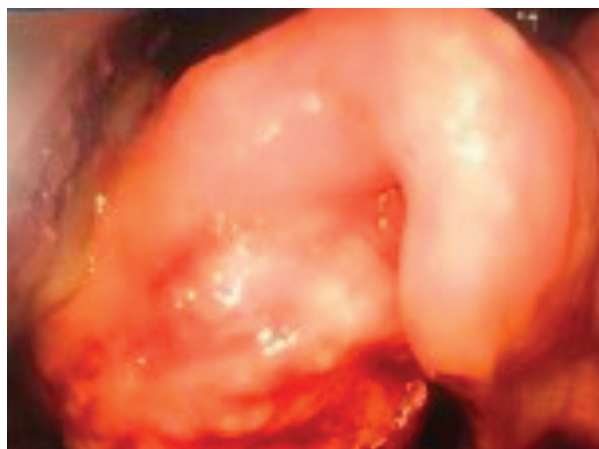


FIG. 3 Videolaryngoscopic view during surgery showing further spread of epiglottic mass with bleeding.

perhaps the safest technique in difficult airway but is not suitable when laryngeal obstruction is present.⁵

In our case, the initial evaluation suggested that intubation using videolaryngoscopy would be possible. However, the carcinoma epiglottis had spread since the last direct laryngoscopy. Further local bleeding obscured vision. The difficulty in lifting the epiglottis rendered other methods futile; in this circumstance retrograde intubation was a savior. In spite of all precautions, the management of airway in laryngeal carcinoma can be tricky and old techniques such as retrograde intubation still have their place in management of such cases.

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