

Case Report

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An Approach to an Anticipated Difficult Airway in a Patient with a Periglottic Mass: A Case Report

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ABSTRACT

Rationale: Dealing with patients with periglottic masses is very challenging to anaesthesiologist and there is an overall lack of knowledge and guidelines.

Patient concerns: A 79-year-old man with the complaint of hoarseness of voice who presented for micro laryngoscopy and excision of a laryngeal mass under general anaesthesia. He had a preoperative fiberoptic laryngoscopy which revealed a 3-4 cm sized right vocal cord mass.

Diagnosis: preoperative fiberoptic laryngoscopy revealed a large vocal cord mass obstructing the laryngeal inlet.

Interventions: Intubation was facilitated by glide scope video laryngoscope and micro laryngeal endotracheal tube (MLT).

Outcomes: the mass was excised, and the patient was successfully extubated.

Lessons: the importance of this case report lies in the unique challenges we faced and the significance of the multidisciplinary team care.

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Introduction

Due to the nature of laryngeal masses being along the airway and consequently having to share a limited space between anaesthetists and surgeons, a meticulous approach needs to be followed to ensure an adequate airway.

The physicians shall be alert to the varying difficulties they might face while dealing with such patients, from induction of anaesthesia, mask ventilation or laryngoscopic maneuvers to manipulate the vocal cords.

We wanted to support and add to upcoming and previous clinical experiences respectively, to be able to closely tackle the varying degrees of difficulties we can come across while dealing with laryngeal masses, especially that there is a generalized lack of such studies.

Case presentation

A 79-year-old male (160 cm, 60 kgs) was admitted to our hospital with a complaint of hoarseness of voice, infrequent coughing and choking for 4 months. His preoperative history included diabetes, hypertension, ischemic heart disease with a history of coronary artery bypass grafting and carotid artery stenosis. He was scheduled for micro laryngoscopy, biopsy and excision of a vocal cord mass under general anesthesia. Preoperative fiberoptic laryngoscopy revealed a large mobile pedunculated mass attached to the right vocal fold with congested aryepiglottic folds and pooling of secretions in the Pyriform fossa. He had no apparent external enlargement or obvious masses. Inter Laryngeal inlet visibly was too narrow for an endotracheal tube to be inserted.

Difficult airway was anticipated. Thus, we prepared a 5 and 5.5 mm microlaryngeal endotracheal tube, video laryngoscope, supraglottic airway devices, awake fiberoptic intubation and tracheostomy were discussed with the patient and his relatives.

The patient showed no signs of respiratory distress throughout the operation. After 3 minutes of preoxygenation, Fentanyl and propofol were injected and Glidescope video laryngoscope was used to allow us to make feedback regarding the mass (Figure A), which helped us establish its mobility with respiration, as well as possible manipulation with an appropriate tube size to be used. The Modified Cormack-Lehane classification grade was 1 under the videoscope. At this stage, we decided to proceed with conventional intubation rather than going for surgical interventions by which a temporary tracheostomy was planned to be performed to secure the airway if the airway did not remain patent.



Figure A: First laryngoscopic view of the glottis using Glidescope video laryngoscopy. The mass had been established to be mobile with respiration

Further dosing of Propofol was given along with Rocuronium and bag and mask ventilation was assisted with an oral airway-controlled ventilation.

The Glidescope video laryngoscope was introduced to help introduce the tube. A 5.5 mm MLT was inserted into a slit-like aperture posterior to the mass (Figure B). The first attempt was successful.



Figure B: Introduction of MLT into the posterior slit-like aperture during the second laryngoscopic introduction

The operation was initiated after inserting a laryngoscope and the surgeon excised the mass in total and a biopsy was sent for histopathology. Sugammadex has been used to reverse the effect of Rocuronium and the patient resumed spontaneous breathing smoothly and was successfully extubated then shifted to the High Dependency Unit (HDU) for further observation. Throughout his HDU stay, he maintained saturation on room air and no invasive or non-invasive ventilation was required. He was scheduled for a repeat flexible laryngoscopy and collection of histopathology report in the OPD.

Discussion

Difficult airway is defined as the clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with facemask ventilation, difficulty with tracheal intubation, or both [1].

Due to the unpredictable nature of the condition, few studies predicted and reported the occurrence of a difficult airway in patients with laryngeal masses [2-4]. The anatomical abnormality preoperatively seen in the patient alerted a scheme to be formulated to assure the safety of the patient to prevent anoxic brain injury, cardiac arrest and death ultimately. Luckily enough, securing the airway was not an issue in the case of our patient, whether with mask ventilation or intubation unlike with other case reports where failure to either one of them or both was predicted [5-9].

Various studies have explored the use of Cisatracurium in the case of micro laryngeal surgeries. A few studies have reported the risk of residual neuromuscular blockade effect in the recovery unit, especially in this type of short surgery, even when Neostigmine has been used to reverse its effect. [10-12]. The Rocuronium-Sugammadex combination has been found to be superior for better intubation and surgical conditions, especially in short procedures such as micro laryngeal surgeries. Fortunately, Sugammadex is feasibly present at our facility, which contributed to the positive outcome of our patient.

Moreover, we were lucky to be aided by the Glide scope video laryngoscope to appropriately select the size of the ETT. Video laryngoscope has been a helpful tool that has been reported to replace awake fiberoptic bronchoscopy guided intubation and surgical airways [13-18].

Use of MLT tube is considered the standard of care for patients undergoing non-laser micro laryngeal surgeries, as in our case, to maximize the surgical view to the fullest which is available as well [19].

As per the guidelines set by the American Society of Anesthesiologists with regards to managing anticipated difficult airway patients, studies have observed high success rates when a strategy was preformulated that included awake fiberoptic intubation (AFI) as appropriate [20]. It has been established that it is the mainstay approach for risky “cannot intubate- cannot ventilate” situations, as in our patient. However, it has its pitfalls and drawbacks. Failure to proceed with AFI can be due to a bloody field pertaining to possible trauma to the tumour, which its size is another factor, resulting from shearing forces during railroading of the ETT over the fiberscope. Another drawback is having a critical airway that would make it impossible to insert the cord in the first place.

Difficult airway algorithms exist but don’t deal with the specifics and nuances of laryngeal tumors and merely offer a general framework of proper conduct in case a difficult airway is expected hence it is essential to be able to conduct a plan with the preparedness to perform cricothyrotomy or tracheostomy as approximately ninety percent of difficult airways tend to be unanticipated [13].

Conclusion

As anaesthetic challenges grow especially with the limitation of knowledge base for predicting difficult airways in patients with laryngeal tumors, so will the requirements for skills and expertise from the anesthesiologist to ensure patient safety, adequate airway protection and hemodynamic stability perioperatively.

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