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Research Article

AN INNOVATIVE USE OF MALFUNCTIONING FLEXIBLE FIBEROPTIC BRONCHOSCOPE FOR SECURING AIRWAY IN A CASE OF LARGE PARAPHARYNGEAL MASS

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ABSTRACT

This case report involves successful nasotracheal intubation using malfunctioning fiberoptic bronchoscope (FOB) in combination with direct laryngoscopy in a patient with difficult airway, classified as Cormack-Lehane grade IV as a result of large parapharyngeal mass. Tip of the insertion cord of our FOB could not be ante- or retro-flexed due to damage to its bending apparatus but its visualization on the display screen was alright. As videolaryngoscope was not available, we used this malfunctioning FOB in conjunction with laryngoscope to create our own indigenous videolaryngoscope and intubated the patient successfully.

INTRODUCTION

Whenever we come across a case of anticipated difficult airway, we first assess the likelihood and clinical impact of basic management problems and accordingly develop primary and alternative strategies for airway management [1]. Fiberoptic bronchoscope is an important component of difficult airway cart. However, its use requires proper handling and maintenance and is prone to wear and tear [2]. We describe successful management of an anticipated difficult airway caused by a large parapharyngeal mass (neurofibroma) using a malfunctioning fiberoptic bronchoscope (FOB) in conjunction with direct laryngoscopy.

CASE REPORT

A 20-year-old, 65 Kg, 160 cm male presented with complaint of swelling inside mouth and on left cheek in front of left ear for last 7 months. It was associated with deviation of mouth towards left side on clinching of teeth, incomplete closure of left eye even on applying force, drooling of saliva from left angle of mouth and difficulty in swallowing. The swelling was initially of pea size and had gradually increased in size (Fig. 1).

MRI revealed a large soft tissue lesion (approx. 7x6x6 cm) in infratemporal fossa involving left masticator space extending in nasopharynx and causing compression and deviation of oropharyngeal lumen towards right side. The lesion had eroded left mandibular condyle and ramus with destruction of left temporomandibular joint and suspicious perineural invasion of left mandibular nerve.

Fig 1 Front view of the patient's face showing a large swelling on left cheek in front of left ear and jaw deviated towards left side.

MRI suggested a malignant etiology (?? Masticator space sarcoma) (Fig. 2). CT showed a large mass (96x87 mm) in left side of neck epicentered in ipsilateral masticator space suggestive of Neoplastic etiology. After cytopathological and histopathological examination including Immunohistochemistry, a diagnosis of Benign Neurogenic Tumor (Neurofibroma) was made.

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The patient's medical and surgical history was unremarkable, with an American Society of Anesthesiologists physical status of I. All lab parameters and other investigations were WNL. On examination, patient was fully conscious and oriented. Chest was bilaterally clear. Airway evaluation showed mouth opening of two fingers breadth, mallampatti grade III, adequate neck movement, jaw deviated to left side and inadequate jaw protrusion.

Fig 2 MRI Neck with sagittal plan (A) and transverse plan (B) showing relatively well defined heterogeneously enhancing large soft tissue lesion (approx. 7x6x6 cm) in infratemporal fossa involving left masticator space extending in nasopharynx and causing compression and deviation of oropharyngeal lumen towards right side. The lesion is eroding left mandibular condyle and ramus with destruction of left temporomandibular joint and suspicious perineural invasion of left mandibular nerve.

Patient was posted for transmandibular excision of mass with segmental mandibulectomy and a nasal intubation was required. The difficult airway algorithm in the American Society of Anesthesiologists guidelines provides the strategies to be employed in anticipated difficult airway [1]. We had planned awake fiberoptic intubation (FOI). Patient was explained about awake nasal fiberoptic intubation (FOI) and about the possibility of tracheostomy and an informed written consent was obtained. The patient was administered injection glycopyrrolate 0.2 mg and injection midazolam 2 mg intravenously as premedication. In the OT, standard monitors were connected and IV cannulation done. The patient's airway was anesthetized using topical 2% lignocaine, bilateral superior laryngeal nerve block and transtracheal injection. Xylometazoline nasal drops were instilled in both nostrils to achieve vasoconstriction and improve nasal patency. While preparing for FOI, during pre-use check, we found that the tip of our FOB (STORZ Karl StorzEndoskope®) could not be anteflexed or retroflexed (malfunction of the bending apparatus). However its light source was functional and we could easily visualize through it on the display screen. We gave a trial of FOI through right nostril but couldn't direct our scope towards the vocal cords. Videolaryngoscope was not available and laryngeal mask airway (LMA) was not an option in this case due to the intraoral swelling. Keeping retrograde intubation and tracheostomy as our backup plans, we thought of attempting nasal intubation using direct laryngoscopy as the mouth opening was sufficient to allow laryngoscopy and the neck movement was adequate. After preoxygenation for three minutes, inhalational induction was done with sevoflurane maintaining spontaneous breathing. We inserted a 7.0 mm ID flexometallic tube through the right nostril after proper lubrication. Then we performed laryngoscopy but were not able to visualize the vocal cords (CormakLehane grade IV glottis visualization). Then we put the FOB through the mouth and after a little bit of maneuvering, we were able to visualize the vocal cords. One anesthesiologist stabilized the FOB in that position so as to keep the cords under vision. Then we gently inserted a magill'sforcep through the mouth taking care to avoid injuring the intraoral swelling and under visualization from the scope, we were successful in negotiating the ETT through the cords into the trachea. After confirming correct tube placement using capnography and chest auscultation, anesthesia was given. The surgery was of four hours duration and uneventful. Midline transmandibular excision of the tumor with left segmental mandibulectomy was done. At the end of surgery, patient was extubated when he was fully awake. Postoperative period was uneventful and patient was discharged from hospital after seven days.

DISCUSSION

Appropriate planning is crucial to avoid morbidity and mortality when difficulty is anticipated with airway management [3]. If the primary intubation technique is unsuccessful, we should move to an alternative technique early in order to avoid any complications. After a single failed attempt of awake FOI due to equipment malfunction, we promptly switched to our "plan B" which was nasal intubation using direct laryngoscopy. As oxygenation was adequate and we didn't anticipate any difficulty in mask ventilation, we did an inhalational induction using sevoflurane before performing laryngoscopy. Damage to bronchoscopes is common and malfunction of the bending apparatus is one of the causes [2,4]. Reports of combined use of FOB with videolarynoscope for securing airway in scenarios where either of them alone has failed are available [5]. However, we haven't come across any report of concomitant use of damaged FOB with laryngoscope in the event of equipment failure in difficult airway situation. We utilized the malfunctioning FOB for visualization on the display screen during laryngoscopy essentially creating our indigenous Video laryngoscope.

CONCLUSION

In conclusion, we experienced difficult airway due to severe airway distortion caused by a parapharyngeal mass and successfully intubated the patient using direct laryngoscopy assisted by FOB which helped in visualization. Proper airway assessment and the practice of various airway management methods are very important in order to prevent unexpected failure of airway management. We also propose that if the bending apparatus of FOB is damaged irrepairably, it can still be used by attaching its flexible insertion cord to the blade of the laryngoscope in or near its lamp socket converting it to a video laryngoscope. This can be very helpful in difficult airway scenario when video laryngoscope is not immediately available.

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