

Unanticipated Difficult Mask Ventilation: Cystic Swelling- The Culprit

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ABSTRACT

Introduction: Difficulty in mask ventilation is quite challenging to an anaesthesiologist because mask ventilation is the primary technique of ventilation and the rescue technique if the tracheal intubation fails. Unanticipated difficulty in mask ventilation is even more challenging to the anaesthesiologist.

Case report: Here we report a case of unanticipated difficult mask ventilation due to cystic swelling on left side of epiglottis.

Conclusion: Prudent and cautious corrective measures taken at the right time, ensures patient safety.

Keywords: Unanticipated, Difficult Mask Ventilation, Cystic Swelling.

INTRODUCTION

American Society of Anaesthesiologists define difficult mask ventilation as a situation in which it is not possible for the anaesthesiologist to provide adequate ventilation because of one or more of the following problems such as inadequate mask seal, excessive gas leak, or excessive resistance to ventilation¹. Difficulty in mask ventilation is quite challenging to an anaesthesiologist because mask ventilation is the primary technique of ventilation and the rescue technique if the tracheal intubation fails. Unanticipated difficulty in mask ventilation is even more challenging to the anaesthesiologist. We are presenting here successful management of unanticipated difficult mask ventilation.

CASE REPORT

A 30-year-old, female was posted for Giant cell tumor excision over left palm under general anaesthesia. Patient was cleared from pre-anaesthesia clinic under American society of anaesthesia (ASA) grade I. Airway examination was normal with mouth opening of three fingers, Mallampati grade II.

On the day of surgery, Patient was taken up into the operating room and all standard monitors including electrocardiography, non-invasive blood pressure and peripheral saturation were attached and a wide bore cannula was secured. Patient was pre-medicated with 1mg Midazolam intravenous, 100 microgram fentanyl intravenous and induction was done with Propofol 2 mg/kg intravenous. After induction, mask ventilation was found to be inadequate. Patient position was optimised, airway manoeuvres were applied and oropharyngeal airway inserted, despite this we were unable to achieve mask ventilation. In view of suspecting laryngospasm 50mg propofol intravenous and 50mg Succinylcholine intravenous was given. Despite this we were unable to achieve mask ventilation. So, we proceeded

with direct laryngoscopy. The direct laryngoscopy showed a Cormack Lehane grade 2 with swelling on the left side of epiglottis. The Swelling deviate the epiglottis towards the right side and made difficult to lift it, which possibly could have obstructed the airway making mask ventilation inadequate. Airway was secured with endotracheal tube of 7.0 mm internal diameter. The cuff was inflated with 6 ml of air and the tube was fixed after confirming the placement by capnography and auscultatory method. Anaesthesia was maintained with oxygen, N₂O 50:50, Sevoflurane and vecuronium. Since the patient had no airway obstruction or respiratory distress preoperatively it was decided to reverse and extubated the patient after completion of surgery. Patient was reversed with Neostigmine 2.5 mg intravenous and Glycopyrolate 0.6mg intravenous and extubated after ensuring she was conscious, taking adequate breaths and able to obey commands. In post op period we had ENT review

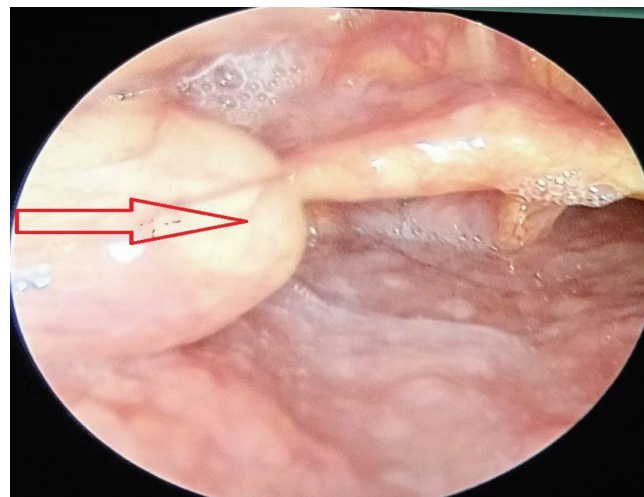


Figure-1: Cystic swelling obstruct the airway

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and laryngeal endoscopy which show the cystic swelling on the left side of epiglottis (Figure No.1).

DISCUSSION

The incidence of difficult mask ventilation ranges from 0.08% to 15%.² Mask ventilation can be difficult due to error in the technique or airway pathology. Common are improper mask size, suboptimal head and neck position, inadequate depth of anaesthesia leading to laryngospasm, equipment malfunction. Difficulty in mask ventilation is graded according to Han's scale³ as:

Grade 0: Ventilation by mask not attempted

Grade 1: Ventilated by mask

Grade 2: Ventilated by mask with oral airway or other adjuvant

Grade 3: Difficult mask ventilation (inadequate, unstable, or requiring two Practitioners)

Grade 4: Unable to mask ventilate

Ability to assess and predict difficulty in mask ventilation is of vital importance in ensuring patient safety. A detailed history and careful clinical examination can help the anaesthesiologist in recognising the indicators of difficult mask ventilation in their patients. Reviewing the previous anaesthesia records for incidence of any difficulty faced in airway management can also be helpful. This emphasises the importance of proper recording of the peri-operative events as in this case, where difficult mask ventilation was unanticipated. Some predictors of difficult mask ventilation are increased body mass index, history of snoring lack of teeth,⁴ male gender,⁵ presence of beard, Mallampati III or IV, limited mandibular protrusion test,⁶ airway masses or tumors.⁷

There are some intraoral masses which may obstruct the airway severely. They can be cystic or pseudo cystic, and may arise from oral bone tissue and periodontal. Some soft tissue non –odontogenic cyst can also be present such cystic hygroma, lymphoepithelial cyst, salivary cyst and pseudocyst⁸. It has been found in studies that persons with difficult mask ventilation have a four-fold increased chance of difficult intubation. Hence, pre-operative evaluation for these signs and preparedness for difficult mask ventilation and intubation is crucial in reducing the mortality and morbidity of the patient.

When unexpected mask ventilation arises, call for help and optimize the position, adequate size of face mask, continuous positive airway pressure, use of nasopharyngeal or oropharyngeal airway and two hand technique⁹. If an anaesthesiologist is anticipating normal intubation, as in this case, you can consider rapid sequence intubation. There is risk of failure to intubate and desaturation before adequate relaxation in this method. Hence the decision for rapid sequence induction should be taken according to the clinical judgement of the anaesthesiologist. Another option to secure the airway is use of supraglottic airway device. The decision to use supraglottic airway device or endotracheal intubation should be based on the clinical scenario, etiology of difficult mask ventilation, skill of the anaesthesiologist. And if there

are some intraoral mass as described above blind supraglottic airway device placement should be avoided.

Main complication associated with difficult mask ventilation is inability to properly oxygenate the patient leading to hypoxic injury and even death. Use of airway adjuncts and pressure applied on the mask can lead to minor injuries of eye, nose and oral cavity. High inflation pressure may cause abdominal distension which lead to more difficulty in ventilation¹⁰.

CONCLUSION

Lesions in the pharynx and larynx can lead to unanticipated difficult mask ventilation. Prudent and cautious corrective measures taken at the right time will ensure patient safety.

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