Restricted Cervical Spine: An Anaesthetic Challenge

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Abstract: Failure to successfully intubate the trachea and secure the airway in a timely and effective manner remains a leading cause of mortality and morbidity. When airway management is difficult, various measures can be taken to facilitate tracheal intubation. Simple maneuvers like Bougie-assisted blind tracheal intubation are reasonable strategy for controlling the airway in patients who have restricted cervical spine movements.

Keywords: Bougie, intubation, restricted neck

INTRODUCTION

Conventional laryngoscopy and tracheal intubation is still considered to be the gold standard of airway management [1]. This technique requires an optimal sniffing position and alignment of the oral, pharyngeal and tracheal axes. Inability to achieve this in patients with restricted neck movements may cause difficulty in visualising the larynx. Persistent and repeated use of direct laryngoscopy during failed intubation may result in airway trauma with resultant morbidity and mortality [2]. Certain newer airway devices are presently available and have been used to facilitate airway management in patients with restricted neck movements. Bougie-assisted blind tracheal intubation may be a viable rescue intubation technique in “can mask-ventilate” patients with difficult laryngoscopy secondary to blood, vomitus, abnormal anatomy, or equipment problems. This technique offers a potential solution for difficult intubation situations occurring in or out of the operating room by any practitioner trained in advanced airway management.

CASE REPORT

23 year old female presented for emergency breast abscess drainage. Patient was planned to undergo the surgery under general anaesthesia as she was full stomach and had taken meal 2 hours back. Quick preoperative assessment revealed restricted cervical spine movements and airway indices to be abnormal. Sternomental distance was 11.2 cms and neck length was 6.5 cm. According to 3-3-2 rule, Interincisor distance was 21/2 fingers, Mentohyoid was 2 1/2 fingers and Thyromental distance was 1 finger breadth only. Neck extension was only about 30-35 degrees (Fig. 1). High risk consent was obtained. Patient was premedicated and induced with Injection Propofol 2 mg/kg. Cricoid pressure was applied and check ventilation was performed. Ventilation was quite smooth after insertion of appropriate oral airway. We planned to insert 7.5 mm Endotracheal tube with stylet after administration of Injection succinylcholine (2 mg/kg). As anticipated, on entering the oral cavity laryngoscopic view was Cormack Lehane grade IV. We could only visualize palate and immediately we entered oral cavity through a bougie. Blind bougie insertion into laryngeal cavity was done and quickly 7.0 mm endotracheal tube was threaded over it. To our relief, we were able to perform endotracheal intubation accurately. Cricoid pressure was relieved on confirming tube placement.

DISCUSSION

Immobilized cervical spine because of certain diseases (ankylosing spondylitis, rheumatoid arthritis) poses considerable difficulties with endotracheal intubation due to poor laryngoscopic view. Cervical column and atlantooccipital articulation mobility are reduced and in severe cases the cervical vertebrae become fixed in a flexed position. This portion of the spine is also the most susceptible to fracture,
particularly in hyperextension, an event that could lead to damage to the cervical spinal cord during maneuvers to manage the airway.

The left molar (LM) approach has been shown to be useful in difficult sporadic intubation cases [3]. LMA has been utilized in restricted cervical spine airway scenarios as an aid to endotracheal tube [4].

Airway research in anaesthesia shows that the thyromental distance (TMD) as a predictor of difficult intubation is subjected to variable sensitivity and specificity. The TMD has a sensitivity of 19% and a specificity of 97% as a predictor of limited laryngoscopic view. Short thyromental distance has been used as a surrogate for inadequate head extension [9].

Sternomental distance (SMD) is an indicator of head and neck mobility. No study has addressed the correlation between SMD and difficult laryngoscopy in the Indian population. The cut-off point of SMD suggested for predicting difficult laryngoscopy is 12.5 cm and 13.5 cm. Our aim was to evaluate anatomical measurements commonly used to predict a difficult airway in the Indian population, thereby revealing differences with measurement values obtained in non-Indian patients. We did not attempt to define cut-off values for TMD or SMD in this study as the sample size was not large enough to determine the cut-off threshold values. It is important to note that no single anatomical factor determines the ease of difficult laryngoscopy and therefore no single anatomic factor can be used to predict a difficult intubation.

Bougie-assisted blind tracheal intubation still remains a reasonable strategy for controlling the airway in patients who have restricted cervical spine movements.

REFERENCES