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Successful Intubation with McCoy Laryngoscope in a Patient with Ankylosing Spondylitis

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ABSTRACT

Involvement of cervical spine in ankylosing spondylitis limits neck movement resulting in difficult intubation. We report a case of 45-yr-old lady of ankylosing spondylitis with restricted neck movement planned for emergency laparotomy. Grade 3 Cormack and Lehane laryngoscopic view was observed with Macintosh laryngoscope and gum elastic bougie could not be negotiated. At second attempt with McCoy blade, the posterior commissure of the vocal cord could be visualized and intubation was successful. Thus, in absence of flexible laryngoscopes and when awake intubation is not feasible, McCoy blade should be considered an alternative than Macintosh blade to attempt intubation in patients of ankylosing spondylitis with restricted neck movement.

Keywords: ankylosing spondylitis; McCoy laryngoscope; restricted neck movement

INTRODUCTION

Adequate cervical mobility is essential for visualization of the glottis during rigid laryngoscopy. Involvement of the cervical spine in ankylosing spondylitis limits neck movements making intubation difficult with conventional laryngoscope blade. In such situation, video laryngoscope, which requires less cervical movement, have shown to improve the glottic exposure and thus facilitating successful tracheal intubation.[1,2] However, such device may not be available in all the centers. McCoy blade has been reported to provide a better glottic visualization over the standard Macintosh blade in patients with limited neck extension.[3-5] We present a case in which the McCoy blade was used for tracheal intubation when standard Macintosh blade with gum-elastic bougie failed in a patient with ankylosing spondylitis undergoing emergency laparotomy.

CASE REPORT

A 45-year-old lady weighing 50 kg presented with abdominal pain and distension with several episodes of vomiting for two days. Past history revealed progressive stiffness of neck for two years. Based on clinical and radiological evaluation a diagnosis of hollow viscus perforation peritonitis was made and emergency laparotomy was planned under general anesthesia. On preoperative evaluation, vitals and investigations were unremarkable. Airway examination revealed mouth opening 37 mm, Mallampati class II, thyromental distance 5.5 cm and severe neck movement restriction both on flexion and extension (Figure 1a). Lateral view of X-ray cervical spine showed features suggestive of early signs associated with ankylosing spondylitis (Figure 1b). With anticipated difficult airway, our initial plan was awake tracheal intubation. However, patient refusal to the procedure changed our plan to rapid sequence induction keeping the difficult airway cart ready that included intubating laryngeal mask airway (ILMA).

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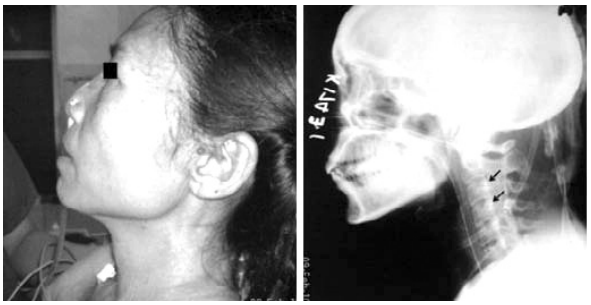

Figure 1a. Restricted neck extension.

Figure 1b. Lateral X-ray cervical spine shows enthesiopathy of posterior spinous ligament and loss of cervical lordosis.

In the operation room the standard monitoring like electrocardiogram, noninvasive blood pressure, and pulse oximetry were applied. With the head adequately supported on pillow, nasogastric (NG) suctioning was done and NG tube kept in situ. After preoxygenation with 100% oxygen for 5 minutes, anaesthesia was induced with propofol 2 mg/kg intravenous (i.v.) and suxamethonium 1.5 mg/kg i.v. to facilitate tracheal intubation. Following 60 s of induction, laryngoscopy was done with with number 3 Macintosh blade. Cormack and Lehane grade 3 view was observed despite the application of optimal external laryngeal manipulation. Then the gum elastic bougie was inserted and tried to slip the tip under the epiglottis. However, tracheal clicks were not felt and with further advancement of the bougie to maximum distance of 45 cm, no hold-up were perceived. Both the gum elastic bougie and the Macintosh blade were removed gently. By this time the oxygen saturation had dropped down to 95%. Mask ventilation was resumed with gentle positive pressure, while the assistant constantly maintained the cricoid pressure. Once the oxygen saturation reached 100%, direct laryngoscopy was attempted with number 3 McCoy blade. With the change of the blade, Cormack and Lehane grade improved and posterior commissure of vocal cord was visualized. A 6 mm PVC endotracheal tube (ETT) with a curved stylet was inserted into the trachea under vision (Figure 2). The metallic stylet was removed once the distal tip of ETT passed the vocal cord and the correct placement of ETT was further confirmed with auscultation and capnography. The ETT was connected to the anaesthesia circuit and anaesthesia was maintained using a mixture of Air/O_2 [FiO_2-40%] and isoflurane (end-tidal conc 1.2%). Injection fentanyl 2µg/kg and vecuronium 0.1mg/kg were given intravenous for analgesia and muscle relaxant respectively. The subsequent anaesthesia and surgery went on uneventful followed by successfully extubation of trachea at the end of surgery.

Figure 2. McCoy laryngoscope aided tracheal intubation in presence of limited neck extension.

DISCUSSION

Ankylosing spondylitis (AS) is a chronic inflammatory disorder that primarily affects the vertebral column. The classic radiographic appearance of the bamboo spine due to formation of bony bridges (syndesmophytes) occurs at later stage of this disease. Although typical radiological finding was not present in our case, the loss of cervical lordosis and fibrocartilaginous enthesis which are characteristic of AS were observed. The involvement of cervical spine in AS restricts head and neck movement. Extension of the neck is not only required for visualization of glottis during direct laryngoscopy but also essential for ease of mask ventilation. Any forceful extension of the neck during intubation may cause cervical spine injury and neurological damage. Thus, patients with AS involving cervical spine possess a considerable challenge to the anesthesiologist.

Various approaches are available for securing the airway in patients with AS, including blind nasal intubation, lighted stylet intubation, Bullard laryngoscopy, retrograde intubation, intubating laryngeal mask airway (ILMA), fiberoptic broncoscope and tracheostomy. Video laryngoscope is one such device which can be used with less cervical spine extension and have shown to improve the glottic exposure in patients of restricted neck movement.[1,2] However, unavailability of such expensive equipment limited our options.

Studies have shown higher success rate of intubation with a gum elastic bougie and direct laryngoscopy in patients with a simulated Cormack-Lehane 3 laryngeal view,[6,7] Also the fact that success rate of intubation with gum with elastic bougie with Macintosh laryngoscope in simulated restricted neck mobility did not differ significantly as compared to airway scope.[8] Therefore, we opted for Macintosh laryngoscope with gum elastic boogie as our initial attempt to intubation. However, failure to slide the bougie into the trachea in our

case could be because of limited space between the epiglottis and the posterior wall of the pharynx because of restricted neck extension.

The McCoy laryngoscope is a modification of the standard Macintosh blade with a hinged distal tip (Figure 3). The flexion of the tip of the McCoy blade allows anterior displacement of the epiglottis, thus improves the laryngeal view. In our case, after using McCoy laryngoscope, the Cormack-Lehane laryngeal view improved to grade 2. Several other studies have also supported the utility of McCoy blade over Macintosh blade in improving the laryngeal view in patients with restricted neck extension.[3-5] Apart from lifting of the epiglottis, the McCoy laryngoscope expands the laryngeal aperture in patients with difficult intubation.[9] In emergency situation, multiple unsuccessful intubation attempts may increase the risk of aspiration and hypoxemia. Although in our case McCoy blade was used at second intubation attempt, we feel that in patients with restricted neck extension, McCoy blade should be considered as an alternative to Macintosh blade at initial intubation attempt in the absence of flexible laryngoscopes and when awake intubation is refused.

Figure 3. McCoy laryngoscope.

REFERENCES

1. Enomoto Y, Asai T, Arai T, Kamishima K, Okuda Y. Pentax-AWS, a new videolaryngoscope, is more effective than the Macintosh laryngoscope for tracheal intubation in patients with restricted neck movements: a randomized comparative study. Br J Anaesth. 2008 Apr;100(4):544–8.
2. Lai HY, Chen IH, Chen A, Hwang FY, Lee Y. The use of the Glidescope for tracheal intubation in patients with ankylosing spondylitis. Br J Anaesth. 2006 Sep;97(3):419–22.
3. Uchida T, Hikawa Y, Saito Y, Yasuda K. The McCoy levering laryngoscope in patients with limited neck extension. Can J Anaesth.1997 June;44(6):674–6.
4. Gabbott DA. Laryngoscopy using the McCoy laryngoscope after application of a cervical collar. Anaesthesia.1996 Sep;51(9):812–4.
5. Laurent SC, de Melo AE, Alexander-Williams JM. The use of the McCoy laryngoscope in patients with simulated cervical spine injuries. Anaesthesia.1996 Jan;51(1): 74–5.
6. Gataure PS, Vaughan RS, Latto IP. Simulated difficult intubation. Comparison of the gum elastic bougie and the stylet. Anaesthesia.1996 Oct;51(10):935–8.
7. Harvey K, Davies R, Evans A, Latto IP, Hall JE, Hall JE. A comparison of the use of Trachlight and Eschmann multiple-use introducer in simulated difficult intubation. Eur J Anaesthesiol. 2007 Jan;24(1):76–81.
8. Komatsu R, Kamata K, Hoshi I, Sessler DI, Ozaki M. Air-way scope and gum elastic bougie with Macintosh laryngoscope for tracheal intubation in patients with simulated restricted neck mobility. Br J Anaesth. 2008 Dec;101(6):863-9.
9. Aoyama K, Nagaoka E, Takenaka I, Kadoya T. The McCoy Laryngoscope expands the laryngeal aperture in patients with difficult intubation. Anesthesiology. 2000 June; 92(6):1855-6.