LMA BlockBuster® guided awake flexible bronchoscope intubation in ankylosing spondylitis

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Abstract:
Awake flexible bronchoscopic intubation is the commonly preferred technique of airway management in patients with known or predicted difficult airway. This is performed either by oral or nasal route and the technique involves complex psychomotor skill, requiring a trained or experienced operator. In contrast, supraglottic airway guided bronchoscopic intubation is a low-skill fiberoptic intubation technique with high success even among novices. The successful use of LMA BlockBuster® has been described for awake flexible bronchosopic intubation in a patient with fixed cervical spine and history of failed intubation.

Key words: Awake intubation; supraglottic airway guided intubation; flexible bronchoscope intubation; difficult airway; laryngeal mask airway; ankylosing spondylitis

INTRODUCTION

Awake intubation in patients with anticipated difficult airway has the advantage of maintaining airway tone, protective reflexes and spontaneous ventilation. Awake flexible bronchoscopic intubation is the gold standard technique for airway management in patients with anticipated difficult airway. However, this requires complex psychomotor skill, regular practice and an experienced operator for a successful outcome. The role of supraglottic airway in difficult airway is well established either as a primary airway or as a rescue device for ventilation. Supraglottic airway can also serve as a conduit for endotracheal intubation. The technique of flexible bronchoscopic intubation via a supraglottic airway has been termed as 'low-skill fibreoptic intubation' and is recommended by the Difficult Airway Society guidelines on the management of unexpected difficult tracheal intubation.[1] The 4th National Audit Project of the Royal College of Anaesthetists recommends all anaesthetists to be trained in this low-skill intubation through a supraglottic airway.[2] Here we describe the use of this technique as a primary airway management technique in a patient with ankylosing spondylitis with previous history of failed intubation.

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CASE REPORT

A 44-year-old male, weighing 50 kg, a known case of ankylosing spondylitis for the last 25 years with a history of bilateral total hip replacement 10 years back, presented with complaints of left hip pain and pus discharge of one month. He was scheduled for drainage of abscess and left hip debridement for surgical site infection. He had history of previous failed spinal anaesthesia and failed intubation when he had been scheduled for hip replacement in another hospital 10 years back and was referred to our centre, wherein his previous hip replacement surgery was done under general anaesthesia with airway being managed by awake retrograde intubation. On examination his neck was fixed with no flexion, extension, lateral flexion or rotation (Figure1).

Figure 1: Fixed cervical spine

However, the mouth opening was adequate and modified Mallampatti grade 3. His systemic examination was unremarkable and laboratory work-up were normal. Magnetic resonance imaging of spine showed fusion of cervical, thoracic and lumbar vertebrae. In view of the anticipated difficult airway, previous history of failed intubation, and the need for an unconventional airway management (retrograde intubation) during his previous surgery, an awake supraglottic airway guided flexible bronchoscopic intubation was planned and the same was explained to the patient, to which he consented. On the day of surgery, the difficult airway cart was kept ready. Under minimum mandatory monitoring, and mild sedation (midazolam 1mg and fentanyl 30mcg intravenously), patient was prepared for awake intubation. Airway anaesthesia was established with 2% lignocaine viscous solution, 10% lignocaine spray and airway blocks (ensuring the total dose of lignocaine within the permissible limit). An LMA BlockBuster® size 3 was inserted easily with the patient awake, the cuff inflated and connected to the breathing circuit to confirm position by capnography and reservoir bag movement. A flexible bronchoscope (Ambu®ascope™) pre-loaded with size 7.5 BlockBuster® endotracheal tube was inserted into the airway tube of LMA BlockBuster®.

Figure 2: BlockBuster® LMA and BlockBuster® endotracheal tube

When the bronchoscope exited the bowl of the device and approached the glottis, 2% lignocaine 2-3 mL was sprayed onto the vocal cords via the suction channel. The endotracheal tube was railroaded over the bronchoscope into the trachea with

bronchoscope tip just above the carina. The bronchoscope was then removed, leaving the tracheal tube in-situ.

The LMA BlockBuster® was then removed by holding down the proximal end of the tracheal tube with the stabilizing rod provided. Once the position of the endotracheal tube was reconfirmed by capnography and the movement of reservoir bag, general anaesthesia was induced with propofol 2mg/kg and fentanyl 2mcg/kg. After an uneventful intraoperative course the patient was extubated over a bougie after adequate reversal of neuromuscular blockade and fully awake.

DISCUSSION

In patients with previous difficult or failed intubation due to significant head and neck abnormalities including a fixed cervical spine, an awake intubation may be considered for airway management. Awake intubation techniques include use of flexible bronchoscope, video laryngoscope, and rigid optical stylets. Among these, flexible bronchoscopic intubation remains the gold standard technique and is performed either by nasal or oral route. Awake flexible bronchoscopic intubation by oral route requires the upper airway to be open for passing the bronchoscope and visualisation of the airway structures. This is achieved by patient opening his mouth and protruding the tongue, gentle traction of the tongue or by means of Berman or Ovassapian intubating airway. Awake oral flexible bronchoscopic intubation via supraglottic airway is less commonly employed technique, wherein a supraglottic airway is used to keep the upper airway open.

Regional anaesthesia is preferred to general anaesthesia in patients with anticipated difficult airway, but it may be difficult owing to fused vertebrae in ankylosing spondylitis. [3] In the present case, we employed an awake intubation technique as this patient had a previous history of failed intubation and his airway was previously secured by an unconventional method (awake retrograde intubation due to non-availability of flexible bronchoscope) in our centre. During his present surgical procedure, we decided to employ an awake flexible bronchoscopic technique via BlockBuster® LMA.

BlockBuster® LMA (Tuoren Medical Instrument Co Ltd, Changyuan city, China) (Figure2) was invented by Professor Ming Tian and has been gaining popularity. When used with BlockBuster® endotracheal tube (a wire reinforced tube with a flexible tip) is shown to have a high success rate for blind intubation through the LMA. This technique requires minimal knowledge of endoscopic airway anatomy and can be performed by those with less experience in flexible bronchoscopic intubation (referred as ‘low-skill fibreoptic intubation’). Novices have been successful with this technique and no significant difference in time taken as well as the number of attempts has been seen between trainees and experts. [4]

Lim WY et al, in a case series of 10 patients have described the use of awake supraglottic airway guided flexible bronchoscopic intubation wherein they have employed Ambu Auragain for facilitating intubation. One among these 10 patients had ankylosing spondylitis with severely limited neck movement.[5] Palmer JH et al, have employed intubating

laryngeal mask airway for awake blind intubation in patient with diffuse idiopathic skeletal hyperostosis with no neck mobility and previous history of multiple failed intubations.[6]

Awake supraglottic airway guided bronchoscopic intubation is a useful technique in patients with difficult airway and previous history of failed intubation especially in situations where the requisite skill for a conventional awake flexible bronchoscopic intubation is not available or limited.

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