Awake Airtraq intubation in an immobile neck - A case report

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Abstract: A 78 year old patient, whose neck was fixed with polyaxial lateral mass screws and rod was planned for an incisional hernia repair under general anaesthesia. Securing the airway in such an immobile neck is a challenge to the anesthesiologist. Although awake fibreoptic intubation is considered as the gold standard for such challenging patients, we successfully used the Airtraq optical laryngoscope for performing an awake intubation in this case. This example paves the way for the management of similar cases in the future.

Key words: Airtraq; Awake; cervical rod; endotracheal intubation; general anesthesia.

INTRODUCTION

Failure to successfully intubate the trachea and secure the airway in a timely and effective manner remains a leading cause of mortality and morbidity. Conventional laryngoscopy and tracheal intubation is considered to be the gold standard of airway management (1). The 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. Certain newer airway devices are presently available and have been used to facilitate airway management in patients with restricted neck movements. The Airtraq® laryngoscope (Prodol Meditec S.A., Vizcaya, Spain) is a recently introduced airway device aimed at facilitating tracheal intubation in patients with normal and difficult airways. The device provides a high quality view of the glottis, without the need to align the oral, pharyngeal and tracheal axes. The blade of the Airtraq® consists of two channels. One channel acts as a conduit for passing the tracheal tube (ETT), while the other channel consists of an optical system that transfers the image from the illuminated tip to a proximal viewfinder (2). The Airtraq® is anatomically shaped and standard ETTs of all sizes can be used (Fig. 1). We describe a case with severe restriction of neck movements by polyaxial lateral mass screws and rod, which successfully underwent awake tracheal intubation using the Airtraq® laryngoscope.

Case

A 78 year old ASA Class II male patient (weight: 45 kg, height: 165 cm) was scheduled for a mesh repair of an incisional hernia under general anesthesia. The past history of the patient revealed a cervical canal stenosis with cervical spondylolysis and cord compression. One year ago, the patient had undergone a decompressing laminectomy, with fixation by polyaxial lateral mass screws and rod. Routine pre-anesthetic investigations were normal. The X-Ray of the cervical spine showed lateral mass screws and rod in situ at the C2-T1 level (Fig. 2).

On the preoperative airway assessment, the patient had a normal mouth opening, with Mallampatti Class II and an inter-incisor gap of more than 3 cm. Head extension and neck flexion were severely restricted. Hence, difficult laryngoscopy and intubation were anticipated. He was therefore planned for an Airtraq®-aided awake orotracheal intubation, followed by general anesthesia. The procedure was explained to the patient, and a written informed consent was obtained. Glycopyrrolate 0.2 mg was administered intravenously before preparation for the awake intubation. The patient was nebulized with 4% lignocaine. The mucous membrane of the mouth and tongue was anesthetized using a 10% lignocaine spray and a 4% lignocaine gargle. The superior laryngeal nerves were blocked using 3 mL of 1% lignocaine, bilaterally injected into the thyro-hyoid membrane, to achieve anesthesia of the epiglottis, arytenoids and vocal cords. The trachea below the vocal cords was anesthetized using 2-3 mL of 2% lignocaine through the crico-thyroid membrane. The patient...
was then sedated using 1 mg of midazolam and 50 micrograms of fentanyl intravenously. The Airtraq® (size 3) laryngoscope was introduced into the oral cavity in the midline over the base of the tongue, and the tip positioned in the vallecula. The trachea was intubated while centralizing the vocal cords in view, using a pre-mounted size 8.0 mm endotracheal tube. This was performed at first attempt, while asking the patient to take a deep breath. The device was removed and the tube was firmly secured after confirmation of proper placement. The patient was cooperative and obeyed to commands throughout the procedure. Anesthesia was then induced using an injection of propofol. Neuromuscular relaxation was achieved using vecuronium bromide. Surgery and anesthesia procedures were uneventful. At the end of surgery, the trachea was extubated only when the patient was fully awake.

**DISCUSSION**

The ease of tracheal intubation greatly relies on glottis view quality during laryngoscopy. Glottis views obtained in patients with restricted head and neck movements and cervical spine immobility are poor (3, 4). This may be due to the inability to achieve an optimal sniffing position, which requires an extension at the atlanto-occipital joint (80-85°) and a flexion at the lower cervical joint (5). Several airway management techniques have been proposed to approach a difficult airway situation securely (6). Indeed, various options are available for awake intubation, such as blind nasal intubation, awake fibreoptic intubation, lighted stylet intubation, Bullard laryngoscopy, retrograde intubation, laryngeal mask airway, intubating laryngeal mask airway, and tracheostomy (7). However, the options are limited in patients with restricted neck movements and increased Mallampatti grading. Awake fibreoptic intubation is considered the gold standard for airway management in anticipated difficult airway (8). However, the technique is difficult and time consuming. The difficulty can be due to the inability to visualize the larynx, the inability to advance the tube over the fibrescope or, sometimes, the inability to direct the tube towards the larynx. Moreover, it requires more expertise and a long learning curve (9). The Airtraq® laryngoscope (Prodol Ltd, Vizcaya, Spain) is a newly introduced intubation aid. The extreme curvature of its blade and the optical components help visualizing the glottis, without the need for aligning the three airway axes, namely the oral, pharyngeal, and
laryngeal axes. During laryngoscopy, it does not obstruct the endoscopic view because of its inbuilt conduit for the endotracheal tube (10). In addition, the device is user friendly, with a short learning curve, and causes minimal complications (11). Our patient had an adequate mouth opening. The limiting factor for intubation was mainly the restriction in neck movements. Although fiberscopes are available on our technical ward, as well as the required expertise to use them, we planned for an awake Airtraq®-aided oro-tracheal intubation. We were of the view that the Airtraq® can be used as an alternative to the traditional fibrescope in places and institutions where its availability and expertise to use it are limited. There are various reports in the literature describing the successful use of the Airtraq® laryngoscope for the management of normal and difficult airways (12, 13). Moreover, studies have described the use of Airtraq® as a promising alternative to several approaches of difficult airway management (14, 15).

CONCLUSION

We therefore conclude that an awake oro-tracheal intubation with the Airtraq® laryngoscope under adequate sedation and topical anesthesia is a good option for elective intubation in patients with a difficult airway and presenting with restricted neck movements. We are of the view that establishing Airtraq® laryngoscope as a replacement device to other alternative approaches in these situations requires further well powered comparative studies.

References


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