

Awake fiberoptic intubation after several failed intubation attempts: A case report

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Citation

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Abstract

Airway management demands much more than mere technical proficiency with traditional methods of intubation. The anesthesiologists must be highly skilled in assessing the adequacy of the airway and must be familiar with the implications of various forms of airway pathology. Difficulties in intubation have been associated with serious complications, particularly when failed intubation has occurred (1). We describe a successful fiberoptic-guided tracheal intubation following several attempts of failed intubation in a post burn patient with tissue expander.

INTRODUCTION

Tissue expanders are used by plastic surgeons for scar revision, Tissue expander devices are usually made of 100% medical grade silicone(2). It includes a silicone expansion bag of varying volumes, a self-sealing injection port and a connecting tube. The expander is filled with as much saline as will comfortably allow wound closure(3). The tissue expanders in the neck usually interfere with the airway and many reported failed intubation in such patients. We report a case with neck tissue expander obscuring the airway.

CASE REPORT

A 43 year old Saudi male patient of 70 kilogram and 165 cm height, with post burn scars on face, neck and upper chest wall since age of 4ys presented for reconstruction of facial lesions. He had a short thyromental distance (less than 7 cm), short sternomental distance, limited neck movement, interincisor distance less than 3 cm, large tongue, burned narrow nostrils and a big tissue expander (filled with 400ml of silicone) at the left side of neck (Fig.1). His previous anesthesia report documented: grade IV laryngoscopic view as described by Cormack and Lehane(4), difficult to maintain face mask and several failed attempts to intubate while the successful attempt was hardly done over bougie. The patient was scheduled for facial reconstruction, the anesthetist planed to intubate him using fiberoptic laryngoscopy through the nasal route under general inhalational anesthesia while patient is spontaneously breathing but he reported difficult to visualize the vocal cords and failed to intubate after several attempts which were complicated with nasal

bleeding and the procedure was aborted and the surgery was postponed.

Figure 1



Figure 1: A Tissue expander at the left side of neck

One week later, we were assigned to anaesthetize this patient for the same surgical procedure, we planned to intubate him orally awake using fiberoptic laryngoscopy and to discuss with surgeons about deflating the tissue expander before intubation. Preanesthetic assessment and psychological preparation of the patient for the awake intubation along with explanation of all steps of that procedure were performed. After getting the patient's written consent for the surgery and anesthesia, neck x-ray (anterior, lateral views) was done which revealed right shift of the trachea (by left neck tissue expander).

Intravenous injection (IV) of 4 mg ondansetron, 0.2 mg glycopyrolate and 50 mg ranitidine were given as well as 30 ml of sodium citrate orally and the tissue expander was deflated by plastic surgeon 30 minutes preoperative. The

patient was monitored with periodic blood pressure checks, continuous ECG monitoring of the heart and oxygen saturation measurement. The patient was placed in the sitting position, tilted his head back and breathes deeply through his mouth. Lidocaine 4% nebulization (4ml) supplemented by aerosolized lidocaine 10% (4puffs) on the base of tongue, hypopharynx and vocal cords and 25 mcg fentanyl was given IV.

After fiberoptic laryngoscopy (Karl Storz) was lubricated and loaded with an flexometallic endotracheal tube (ETT) size 6 mm, insufflations of oxygen 4L/min as well as suction connector were connected to the fiberoptic channels, the fiberoptic laryngoscopy was inserted orally while patient was lying down with head elevated 30o and another anesthetist holding the patient's tongue with a gauze pad with one hand and with the other gently extend the head. Visualization of the upper airway became more evident and additional topical lidocaine was applied (2 ml of 2%). Once the main carina is visualized, ETT was introduced by rotating movement over the fiberscope and after confirmation of its position, the surgeon fixed the ETT with silk suture into the upper incisors and gum to secure the ETT and to facilitate his operative manipulation (Fig.2). The patient was connected to the anesthesia machine and IV induction agents with muscle relaxant were given. The patient was maintained on total intravenous anesthesia. A femoral central venous, a radial artery cannulae and urinary Foleys catheter were inserted to monitor patient's hemodynamics and adjust the fluid intake. The patient was stable all over the procedure for about 5 hours surgical manipulation of face and neck. At the end of surgery, we noticed edema of face and eye lids, so we decided to do check fiberoptic laryngoscopy for the upper airway around the ETT before extubation. We found edema of the upper airway including vocal cords, epiglottis and larynx, so we planned to send him intubated sedated to the surgical ICU for postoperative care till resolve of upper airway edema. Next day patient was extubated safely after fiberoptic assessment of upper airway and discharged to surgical ward.

Figure 2

Figure 2: the patient was intubated and ETT was sutured to upper incisors and gum



DISCUSSION

When a difficult airway is suspected, it is recommended to secure the airway with the patient awake, unless it is contraindicated⁽⁵⁾. Our plan was to do awake fiberoptic intubation with tongue traction which provides optimal visualization of the vocal cords and to deflate the tissue expander to release the pressure on neck and trachea. This patient experienced previous several unsuccessful intubation attempts under GA, and we believe that the causes were the presence of big tissue expander on the side of neck exerting external pressure on the soft tissue of neck and trachea, selection of nasal route for intubation which was complicated with nasal bleeding that obscured the vocal cords' view, in addition to loss of muscle tone with anesthesia which allows the epiglottis and tongue to fall back against the posterior pharyngeal wall⁽⁶⁾.

The possibility of the tissue expanders interfering with the airway was highlighted by Chadha et al⁽⁷⁾. They reported facing a failed intubation in a patient in whom the final tissue expander inflation was done on the day of surgery for

expander removal. They deflated the expander and succeeded in intubating the patient.

Trevisan discussed anesthetic management of a parturient with predicted difficult airway presenting for caesarean section and reported that the safest course of action is an awake fibroscopic intubation⁽⁸⁾. Furthermore, Sutherland and Sale presented three cases of trismus caused by oropharyngeal sepsis where fiberoptic-assisted awake intubation was safely and successfully achieved and they reported that fibroscope is a useful method to overcome many of intubation difficulties. The nasal route may be chosen when trismus is complete but again suffers from problems of bleeding, greater discomfort and occasional inability to pass either the fibroscope and/or the ensleeved endotracheal tube through the nasopharynx⁽⁹⁾. While, Gavin and Brian reported that awake intubation is more time-consuming, needs experienced personnel, is less pleasant (than intubation under anesthesia), and may have to be abandoned as a result of the patient's inability or unwillingness to cooperate. However, because spontaneous breathing and pharyngeal/laryngeal muscle tone is maintained, it is significantly safer⁽¹⁰⁾.

It was important to examine the upper airway after long surgical procedure of face and neck to prevent unexpected complications following extubation and difficult or impossible reintubation. We consider this procedure as a life saving action.

In conclusion, awake oral fiberoptic intubation might be safer in cases of difficult airway. Tongue traction and jaw thrust could improve visualization and facilitate the

fiberoptic. Whenever, you suspect upper airway edema in difficult intubated patient, it is advised to examine it with fibroscope to avoid unwanted eventful extubation.

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