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Case Report

FIBEROPTIC INTUBATION: AN ALTERNATIVE TO TRACHEOSTOMY? A CASE REPORT

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ABSTRACT

Awake FOB is the gold standard for difficult airway. We have guidelines for intubating a patient with various airway difficulties, but very little literature is available for extubation and reintubation of a difficult airway. Thus, we are reporting this case with difficult airway,when even surgical airway access failed.

A 30 year old male patient known case of congenital bilateral temporomandibular joint ankylosis was posted for complete ankylotic block excision and subsequent arthroplasty. He has been operated for the same twice. A wake fiberoptic intubation was done and surgery continued for four hours, uneventful. Post extubation patient developed laryngospasm and not reversed with medical therapy, meanwhile we lost the airway & were unable to reintubate him. ENT surgeon was called meanwhile for tracheostomy and he happened to cut the anterior juglar vein and patient started bleeding profusely. Oxygen was insufflated through left nostril via nasophryngeal airway @15lt/min. As we lost the surgical access to airway we tried to reintubate the trachea with the help of fiberoptic bronchoscope through right nostril. We visualized clearly through FOB and intubated with cuffed ETT.

Difficult airway management remains one of the most important sources of anesthesia related accidents; recent reviews and dedicated guidelines suggest that not only intubation, but extubation too is a critical phase in terms of potential accidents and serious complications.

INTRODUCTION

Management of the difficult airway is an important, but as yet poorly-studied, component of intensive care management. Although there has been a strong emphasis on prediction and intubation of the difficult airway, safe extubation of the patient with a potentially difficult airway has not received the same attention. Extubation is a particularly vulnerable time for the critically ill patient and, because of the risks involved and the consequences of failure, it warrants specific consideration. The Royal College of Anaesthetists 4th National Audit Project highlighted differences in the incidence and consequences of major complications during airway management between the operating room and the critical care environment.1

Awake FOB is the gold standard for difficult airway. We have guidelines for intubating a patient with various airway difficulties, but very little literature is available for extubation and reintubation of a difficult airway. Thus, we are reporting this case with difficult airway, when even surgical airway access failed.

Case Report

A 30 year old male patient known case of congenital bilateral temporomandibular joint ankylosis was posted for complete ankylotic block excision and subsequent arthroplasty. He has been operated for the same twice. On examination he had no mouth opening with retrognathic, malformed mandible. Neck movements were adequate in all the planes. We planned for awake fiberoptic intubation for this patient. Injection glycopyrrolate 0.2mg was given intramuscular half an hour prior to anaesthesia for antisialologue effect. Patient was nebulised with 5ml of 4%lignocaine for 15min prior to anaesthesia. Oxymetazoline nasal drops were instilled in both the nostrils for its vasoconstrictive effect. Lignocaine jelly 2% was put in both the nostrils and patient did gargles with 10%viscous lignocaine. Patient was sedated with inj. Midazolam 1mg and fentanyl 50µg IV. Awake fiberoptic intubation was done and endotracheal tube with 7mm internal diameter was put through right nostril and bilateral air entry checked. Intubation was uneventful and patient remained hemodynamically stable. Surgery continued for four hours. After completion of surgery larnygoscopic suction of oral cavity done and oropharyngeal pack removed. Neuromuscular blockade was reversed with injection neostigmine and glycopyrrolate. Good respiratory efforts were present, neuromuscular monitoring was showing DBS 2twitch and TOF ration 4/4, cough reflex present. After thorough oral suctioning patient was extubated. Post extubation patient was comfortably breathing with face mask, but respiration was not well conducted to our bag through bains circuit as face mask was not well fitted to face (because of retrognathic, malformed mandilble). Haemodynamically patient was stable with SpO2 100%. After 5min we observed mild obstruction in upper airway and patient started desaturating. He had labored breathing and there was wheeze on auscultation. Inj. Hydrocortisone (4-5mg/Kg) and inj. Deriphylline (dose) was given IV stat. Bag and mask ventilation continued and intubation attempted with laryngoscope, but failed. Meanwhile Inj. Propofol 50mgIV and Inj. Succinylcholine 20mgIV was given. Bag and mask ventilation continued and second time

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intubation attempted by second anesthesiologist with macoy blade and endotracheal tube with stylet, failed again. ENT surgeon was called meanwhile for tracheostomy and bag n mask ventilation continued, though not very effective. While attempting tracheostomy surgeon happened to cut anterior juglar vein and patient started bleeding profusely. Oxygen was insufflated through left nostril via nasophryngeal airway @15lt/min. As we lost the surgical access to airway we tried to reintubate the trachea with the help of fiberoptic bronchoscope through right nostril (as we did initially, to intubate this patient). We visualized clearly through FOB and intubated with cuffed ETT #7mm internal diameter. After that surgeon took half an hour to catch the bleeder and incision site was closed. Patient was shifted to ICU for elective ventilation.

DISCUSSION

Tracheal reintubation after planned extubation is a relatively rare event in the postoperative period of elective surgeries, with reported rates of reintubation in the operating room and postanesthesia care unit between 0.1% and 0.45%, but is a fairly common event in critically ill patients (0.4%-25%). Conditions such as obesity, obstructive sleep apnea, major head/neck and upper airway surgery, and obstetric and cervical spine procedures carry significantly increased risks of extubation failure and are frequently associated with difficult airway management. Extubation failure follows loss of upper airway patency. Edema, soft tissue collapse, and laryngospasm are among the most frequent mechanisms of upper airway obstruction. Planning for tracheal extubation is a critical component of a successful airway management strategy, particularly when dealing with situations at increased risk for extubation failure and in patients with difficult airways. Adequate planning requires identification of patients who have or may develop a difficult airway, recognition of situations at increased risk of postextubation airway compromise, and understanding the causes and underlying mechanisms of extubation failure. An effective strategy to minimize postextubation airway complications should include preemptive optimization of patients' conditions, careful timing of extubation, the presence of experienced personnel trained in advanced airway management, and the availability of the necessary equipment and appropriate postextubation monitoring.[2]

Successful extubation is dependent on two factors: the ability to tolerate spontaneous breathing without mechanical ventilatory support and the ability to maintain a patent airway once the ETT is removed.[7,8] Extubation failure is often defined as the need for re-intubation within 24–72 h of a planned extubation[8]; however, this definition does not differentiate between the two primary types of failure. Increasingly, Therefore, the term extubation failure has been used to refer to the inability to tolerate removal of the translaryngeal tube,[3,4] whereas weaning or liberation failure is used to refer to the inability to tolerate spontaneous ventilation without mechanical support.[3,5]

In general, re-intubation is relatively uncommon after general anesthesia for elective surgery, with reported rates of 0.1–0.45%.[3] The common causes for re-intubation include respiratory insufficiency, airway obstruction, bronchospasm, residual neuromuscular blockade, residual effects of sedatives/opioids, and aggressive fluid administration.[3] The DAS extubation guidelines consider the presence of pre-existing airway difficulties (eg, difficult initial airway management, obesity/OSA, and elevated risk for aspiration of gastric contents), perioperative airway deterioration (anatomical distortion, edema, or hemorrhage due to surgical or nonsurgical factors), and/or restricted airway access as risk factors for extubation failure.[6]

Laryngospasm is a common cause of upper airway obstruction after extubation that can lead to extubation failure. It is an exaggerated, maladaptive manifestation of the protective glottic closure reflex. It is usually provoked by glossopharyngeal or vagal stimulation due to airway instrumentation or vocal cord irritation (eg, from blood or vomitus), but can be precipitated by other noxious stimuli and can persist well after removal of the stimulus. Treatment of laryngospasm includes removal of airway irritants and, if needed, administration of a small dose (20 mg for an adult) of succinylcholine followed by re-intubation.[7] CPAP with 100% oxygen is commonly cited as a therapeutic maneuver, although this may push the aryepiglottic folds closer together and may actually promote laryngospasm by acting as a mechanical stimulus.[8] Bilateral pressure at the laryngospasm notch between the condyle of the mandible and the mastoid process can be effective in treating laryngospasm by causing an intense painful stimulus; this may function to terminate laryngospasm by arousing a semiconscious patient or by activating autonomic pathways.[7]

Laryngeal edema is an important cause of postextubation obstruction. This condition has various causes and can be classified as being supraglottic, retro-arytenoid, or subglottic.[9] Supraglottic edema most often occurs as a result of surgical manipulation, positioning, hematoma formation, aggressive fluid management, decreased venous drainage, prolonged intubation, or coexisting conditions (eg, pre-eclampsia or angioedema). Subglottic edema is more often seen in children, particularly infants and neonates. Factors associated with the development of subglottic edema in children include tracheal intubation, intubation for > 1 h, bucking on the ETT, change in head position, and a tight-fitting ETT. The etiology of retro-arytenoid edema is less well described, but may be due to local trauma or irritation. Usually, laryngeal edema presents as inspiratory stridor within 30–60 min of extubation, although it may occur as late as 6 h following extubation. Whatever the cause, management depends on the severity of the condition and includes humidified oxygen, nebulized racemic epinephrine, and placing the patient in a head-up position. When severe, laryngeal edema can lead to extubation failure and require re-intubation.[9] Prophylactic steroids have been shown to be effective in preventing laryngeal edema in patients at high risk for developing the complication when administered at least 4 h before extubation.[10]

CONCLUSION

Difficult airway management remains one of the most important sources of anesthesia related accidents; recent reviews and dedicated guidelines suggest that not only intubation, but extubation too is a critical phase in terms of potential accidents and serious complications.[11]

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