*Case Report*

Title: Conscious sedation for awake fiberoptic intubation to manage difficult airway: a case report.

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Abstract:

The management of difficult airway is one of the most challenging tasks for the anesthesiologist. Life threatening “cannot intubate and cannot ventilate” situation can be avoided by performing awake fiberoptic intubation. Although there are many techniques described for fiberoptic intubation but relative merits and demerits of them should be considered. The key to successful awake fiberoptic intubation depends upon the meticulous preparation of the patient and the equipments. Many methods of sedation have been described but theirs side effects are the limitations. Dexmedetomidine, a selective α2 adrenergic agonist, has unique property of conscious sedation. Besides, dexmedetomidine has additional property of analgesia, reflex blunting and anti-sialogue, which can further improve the success rate of awake fiberoptic intubation in cases with difficult airway. We described a case of bear maul of face with anticipated difficult airway successfully conducted awake fiberoptic intubation with the use of dexmedetomidine.

Key words: Awake Intubation, bear maul, difficult airway, dexmedetomidine.

Introduction:

The management of difficult airway is one of the most challenging tasks for the anesthesiologist. Life threatening “cannot intubate andcannot ventilate” situation can be avoided by performing awake fiberoptic intubation.1Although there are many techniques described for fiberoptic intubation but relative merits and demerits of them should be considered. The key to successful fiberoptic intubation depends upon adequacy of preparation which include: 1. Preoperative assessment of the patient 2. Careful explanation of the procedure 3. Setting the stage 4. Preparation of the equipments to be used. 5. Preparing the patient (antisialagogue, sedation, application of the topical anaesthetic, etc). If these preparations are meticulously carried out, the likelihood of successful and comfortable fiberoptic intubation is greatly increased.2

Many methods of sedation for fiberoptic intubation, such as benzodiazepines, propofol or opioids, have been defined but they have their own limitations. These challenging patients may be benefited from dexmedetomidine, a selective α2 adrenergic agonist,which have been used clinically for its sympatholytic, analgesic and sedative effects.3 A sedation regimen using low-dose dexmedetomidine combined with titrated doses of benzodiazepines and ultra-short acting narcotics with local airway anaesthesia has been used for airway manipulation.

We report a case of anticipated difficult airway (ventilation, laryngoscopy and intubation) due to bear maul of face, successfully managed with dexmedetomidine for awakefiberoptic intubation.

Case:

A 35 years old male, with no previous co-morbidities, presented with avulsion of face due to bear maul for 1 day. On local examination of face (Figure. 1), there was loss of bilateral cheeks, nose and lips exposing both jaws and almost all teeth. There was inferior orbital and nasal bone fracture and exposed maxillary sinuses. Besides, there was fracture of body and ramus of mandible. The interincisor distance was less than 3 cm but neck movement and thyromental distance was normal (Fig. 1.).Vital parameters, systemic examination findings and preoperative investigation reports were normal.

Debridement and primary repair of face was planned. Patient was explained about steps of awake intubation and also risk-benefit of the procedure. 18 G IV cannula was secured and he was premedicated with Glycopyrrolate 0.2 mg and Dexamethasone 4 mg IV. Then, patient was nebulized with Inj 4% Lignocaine 2ml for20 minutes before the procedure. It was followed by bilateral superior laryngeal nerve block with Inj 2% Lignocaine 2 ml on each side. Transtracheal nerve block was also performed with Inj 2% Lignocaine 3 ml.

Patient was then shifted to the operating room. 100% oxygen was insufflated for 5 minutes and oxygen at 6 L/min was supplemented via nasal catheter. Dexmedetomidine at dose of 1 mcg/kg over 10 minutes followed by 0.2 to 0.4 mcg/kg/hrwas administered. William's airway was placed in the oral cavity during which mild cough was present, so 2 puffs of 10% lidocaine locally in the oropharynx and 25 mcg Fentanyl IV was administered. Fibrescope preloaded with a size 7.5 mm flexometallicendotracheal tube was negotiated through the airway towards the vocal cord. On first attempt, vocal cord could not bevisualized. On second attempt, fiberscope could be successfully negotiated through the vocal cords andendotracheal tube was rail-roadedthroughthe vocal cords. Tracheal intubation was confirmed by capnography and bilateral auscultation. During this procedure, his Richmond Agitation Sedation Score was +1 to +2. After the confirmation of tube,Propofol 80 mg, Fentanyl 100 mcgand Vecuronium 6 mg IV was administered andintermittent positive pressure ventilation was initiated.The tube was fixed to the edge of the right cheek with silk 2.0 sutures and the throat pack was placed. Maintenance of anaesthesia was done with isoflurane, dexmedetomidine, oxygen and vecuronium.After debridement and primary repair, dexmedetomidine and inhalation agent were stopped and residual neuromuscular blockade was reversed with neostigmine and glycopyrrolate.After removing throat pack, awake extubation was performed. Patient was then shifted to the post operative ward. His postoperative period was uneventful.

Discussion:

We demonstrate the successful use of IV dexmedetomidine in combination with topical anaesthesia and low dose fentanyl bolus forawake fiberoptic intubation in a case with anticipated difficult airway due to bear maul. The likely airway complicationsand associated morbidity could be avoided.

During fiberoptic intubation,spontaneous ventilation with patient cooperation should be maintained throughout the procedure for which adequate topical and regional anesthesia is essential.1 Sedation cannot be a substitute for inadequate regional anaesthetic preparation of airway.2 Although some anaesthesiologist may choose to use no sedation, appropriate use of sedatives can render this experience less distressing for patients. Narcotic analgesics could provide mild sedation, analgesia and reduction of airway reactivity, but there is a risk of aspiration and apneic spell. The disadvantage of using benzodiazepines was their effect on consciousness, respiration and cardiovascular status.2

Dexmedetomidine provides conscious sedation avoiding side effects of narcotic andbenzodoazepams.2,4,5Besides, it provides hemodynamic and sympathoadrenal stability by reducing the circulating catecholamines.6Chu KS et al. reported that a loading dose (1 μg/kg) of intravenous dexmedetomidine over no less than 10 minutes provided conscious sedation without respiratory depression or upper airway obstruction.7It can be used either as the sole agent or an adjuvant to facilitate awake intubation in patients with anticipated difficult airways.2 In our case, we used a loading dose of 1 μg/kg of dexmedetomidine over 10 minutes followed by regional block and later topped up with Fentanyl to meet the target sedation and perform awake intubation comfortably.

Glycopyrrolate premedication improves visualization during bronchoscopy. It reduces the secretions, improving the visualization. The dry mucosa are better anaesthesized by the local anaesthetic agents.8Its vagolytic property counteracts bradycardia that could be caused by dexmedetomidine. Dexmedetomidine also has antisialogue propertyby its sympatholytic and vagomimetic effects.8In our case, we used glycopyrollate 0.2 mg IV 30 minutes prior to the procedure.

Dexmedetomidine appeared to provide preservation of patent airway, better intubating conditions and hemodynamic stability with less adverse effects,thusserving as a useful adjunct for awake fiberoptic intubation in the management of difficult airway cases as supported by many studies.9-10Comparative studies with other techniques, involving a larger population are needed to generalize the findings of this case.

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Figure 1. Avulsion of face due to bear maul.