Management Of Difficult Airway In An Epileptic Patient With Severe Post Burn Contracture

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Abstract

Difficult airways don’t cease to challenge the skills of the most experienced anaesthesiologists. In numerous equipments and protocols have been designed to help in prevention of dreaded can’t ventilate and can’t intubate situation, but still many patients continue to amaze us with the unique set of their airway related problems.

We are presenting here the successful anaesthesia management of a case of severe burn contracture of neck and chest region, in which not only mask and bag ventilation was difficult but direct laryngoscopy and even surgical airway access was also almost impossible. The patient was also a known case of epilepsy. We did an awake fibre-optic bronchoscopic intubation under topicalization of the patient’s trachea and successfully conducted the surgery.

Introduction

Anticipated and unanticipated difficult airways have always been a challenge to the anaesthesiologists. Difficulty in ventilating and/or intubating the patients undergoing anaesthesia are still a major cause of anaesthesia related morbidity and mortality across the globe.

We are presenting here a rare case report of successful management of a very difficult airway in a known epileptic patient with severe post burn neck contracture which was difficult to mask ventilate, almost impossible to intubate with conventional direct laryngoscopy and more over extremely difficult even for surgical airway access as crico-thyrodotomy and tracheostomy. In this patient we combined nebulization with local anaesthetics and intramuscular sedation to overcome the short fall of nebulization alone in comparison of regional nerve blocks to achieve topical anaesthesia of airway and perfect synchronization of induction and intubation to achieve the precarious balance of too deep a sedation and excessive stimulation.

case History

A 35yrs old female weighing 58 kg, who suffered full thickness burn due to fire accident one year back, presented with the presenting complaints of inability to move her neck in any direction, difficulty in eating and swallowing.

On examination she was found to have a neck contracture of severest form (Figure 1,2,3 &4) due to which her neck was almost fixed in about 150 flexion with the rest of her body. This contracture was very dense and thick with absolutely no neck movement. Her mouth opening was less than one finger and Mallam Patti Grading was four.

She also gave the history of convulsive disorder since her childhood, for which no treatment records were available. It was during a convulsive attack, she was injured in the fire.

She also gave history of swelling of neck contracture/scar during ingestion of food and dysphagia. We suspected presence of some channels between her oral cavity and the contracture, so we requested for an indirect laryngoscopic (I/L) examination which was found to be within normal limits. Her other routine investigations and examination were in the normal limit.

We planned an awake nasal fibre-optic intubation. On the day of operation, patient was given Inj. glycopyrollate 0.2 mg, Inj.promethazine 15mg and Inj. Morphine 6mg IM, 45 minutes before the operation as a premedication. At the same time, patient was made to gargle with xylocaine viscous 10% for 4 times. Nasal vasoconstriction and anaesthesia was obtained with the help of xylometazoline 1% and xylocaine dipped cotton swab applicators.

After this pre-op preparation patient was shifted to the operation room and after application of all the routine monitors an intravenous line of Lactated Ringer was instituted with the help of 18 G I.V. Cannula. Now the patient was nebulised with 4 ml. of Xylocaine 4% with the help of air-driven nebuliser for 5 mins, for the topicalization of the airway.

As soon as the nebulization was over, we introduced the fibre optic bronchoscope (FOB) in to the patient’s right nare. After identifying the structures, we
advanced it till we could recognize the epiglottis, glottic opening, vocal cords and tracheal rings till we reached the carina. All the while patient was breathing spontaneously and her saturation was 99% on room air. As we reached the carina, a 7.0 mm ID portex endo tracheal tube (ETT), already mounted over the FOB, was railroaded in the patient’s trachea under direct vision. At the same moment, patient was given intravenous Inj. thiopentone Sodium 2.5% as an induction agent. Only after seeing the tip of ETT via FOB, we took out the FOB. ETT was connected with anaesthesia circuit and bilateral air entry was checked by auscultation and end tidal capnography. Only then other IV analgesics and sedatives were given and surgery started.

The maintenance of anesthesia and surgery were uneventful. Total surgical time was about two and half hours. In the end, patient was reversed from the anaesthesia and extubated only after she was fully awake and responding to verbal commands. Post-op period was unremarkable and patient healed well and discharged after one week.

Discussion

The patients as ours are really a dilemma even to the most skilled anesthetist !. This patient had her unique set of problems as-

1. Due to her fixed flexion deformity, direct laryngoscopy and intubation were not possible.
2. Less than one finger mouth opening prohibited the use of any supraglottic device such as LMA, ILMA, i-gel LMA or Cobra PLA etc.
3. Patient was apparently difficult to mask ventilate, so no anaesthetic technique could be used which may result in loss of spontaneous respiration.
4. Because of the thickness of her neck contracture and resultant disfigurement, elective tracheostomy and/or emergency cricothyroidotomy were also not possible.
5. As the patient was a known case of epilepsy, there was an inherent risk of precipitation of seizure activity on excessive stimulation of patient’s airway.

So finally we were left with only few options of safely anesthetizing the patient-

1. Awake fibre-optic bronchoscopy and intubation.1
2. Blind nasal intubation or
3. Contracture release under tumescent local anaesthesia with or without ketamine2,3

We decided for the awake fibre optic intubation but again we were in a fix because neither we could give superior laryngeal nerve blocks or intra tracheal local anaesthetic spray, nor could we block external laryngeal nerves due to limited mouth opening. At the same time, we could not take the risk of excessive stimulation of the airway because of risk of seizures.

So we used a careful balance of sedation by intramuscular route with nebulized lignocaine 4% to achieve a calm, sedated but arousable and spontaneously breathing patient with satisfactorily non-reactive airway.

Though the bilateral superior laryngeal nerve blocks and intra tracheal administration of local anesthetics are the better way than the lignocaine nebulization for topical anesthesia of the airway4,5, Ban C.H.Tsui et al6 successfully used nebulized lignocaine 4% with Sevoflurane to achieve topical anesthesia of airway for FOB in an uncooperative child with burn chest and neck scar and difficult intubation. Here we used nebulization with 4% Lignocaine and IM premedication for the topical anaesthesia of airway and this combination overcame the shortfalls of nebulization alone.

In our quest of minimum stimulation of our patient we conceptualized the perfect synchronization of the timing of railroading the ETT over FOB with the induction by IV Inj. thiopental sodium to prevent any possibility of precipitating seizure.

People have used different technique of securing the airway in such type of cases, as intubation through ILMA7, but in some cases this technique did not work because handle of ILMA stuck with the chest and neck could not be extended. So some anesthetists manage these cases with upside turn of ILMA and then rotating it by 180degrees once it was inside the oral cavity.8,9

Jeevan singh et al10 has done randomized comparison between LMA and Igel LMA ,they concluded that Igel LMA is easier to insert and has better clinical performance in managing difficult airway in post burn neck contracture patients.

This is the rare case report of very difficult airway management in a known epileptic patient in which we combined nebulization with local anaesthetics and IM sedation to overcome the short fall of nebulization alone in comparison of regional nerve blocks to achieve topical anaesthesia of airway and perfect synchronization of induction and intubation to achieve
the precarious balance of too deep a sedation and excessive stimulation.

References

Illustrations

Illustration 1

Illustration 1 showing severe post burn contracture over anterior neck and upper chest

Illustration 2

Illustration 2 showing post burn contracture over left side of face and neck
Illustration 3

illustration 3 showing postburn contracture over right side of neck
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