

## Successful Airway Management of Post Burns Mentosternal Contracture – A Case Report

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### ABSTRACT :

Fixed Flexion deformity due to mentosternal contracture following burns leads to difficult airway which can be life threatening. It causes distortion of airway and non alignment of oral pharyngeal and laryngeal axes. A proper anaesthesia plan should be made after discussion with the surgeon.

We present a case of mentosternal contracture which was managed with inhalational induction of anaesthesia and LMA.

### KEY WORDS :

Mentosternal Contracture, sevoflurane, LMA, McCoy's Laryngoscope

A nine year old girl weighing 20 kg came with history of accidental spilling of kerosene and burns 4 months back. Primary treatment and SSG was done at district hospital. She was referred to our hospital for severe neck contracture.

On examination, her vitals were stable. Airway assessment revealed MPC IV. Mouth opening was 2cm. TMJ was mobile. Angles of mouth were severely cicatrized. Nares were pulled up and lower eyelids were pulled down due to contractures. There was a fixed flexion deformity of the neck. The chin was approximated with the sternum. The anterior aspect of the neck was not visible. TMD could not be assessed due to presence of mentosternal contracture.

Biochemical investigations revealed Hb 12gm%. Informed consent for GA was taken. Preoperatively patient was kept NPO six hours for solids and three hours for water. Blood was arranged.

After proper communication and discussion with the surgeon, anaesthesia technique was planned.

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On the day of surgery, anaesthesia equipment check was done in operation theatre. Difficult airway cart was set with bougie, stellate, McCoy's laryngoscope, LMA. Resuscitation drugs atropine, adrenaline, hydrocortisone, sodabcarb were loaded. Ent surgeons were ready in case tracheostomy became necessary.

Routine monitors like ECG, pulse oximeter and noninvasive blood pressure were attached. Anaesthesia was induced with incremental concentrations of sevoflurane and 100% oxygen. Venous access was obtained with 20 G cannula. Injection glycopyrrolate 0.1 mg and fentanyl 40 microg were given. The patient was placed on a pillow with head on a folded towel. The OT table was given head low tilt. Depth of anaesthesia was adjusted with bolus doses of propofol. LMA 2.5 was introduced. Adequacy of ventilation was assessed with capnograph.

Anaesthesia was maintained with oxygen, nitrous oxide and sevoflurane. Ventilation was assisted.

The surgeon made an incision few mm below the lower lip on mentosternal scar tissue with adequate haemostasis till neck extension was possible. Laryngoscopy was done with McCoy's laryngoscope. It was Cormack and Lehane grade III laryngoscopy. Endotracheal size 5 cuffed tube was introduced with the stellate. ETT placement was confirmed with auscultation and capnograph. Thereafter relaxant atracurium was given. Hydrocortisone was given. Injection tramadol, paracetamol suppository 340 mg and diclofenac suppository 25 mg were put for analgesia. RL was given as intra operative IV fluid. Intraoperatively, the patient was haemodynamically stable and maintained oxygen saturation of 98-100%. Neck extension was maintained with a pillow under the shoulders and sand bags on sides of the head. N-m blockade was reversed with neostigmine and glycopyrrolate. Pharyngeal suction was done and the patient was extubated wide awake.

## DISCUSSION:

Contracture with hypertrophic scar is a known late sequelae of burns.

Severe post burns neck contracture leads to difficult airway by causing distortion which can be life threatening. Difficult airway management is the challenging aspect of anaesthesia practice. The fixed flexion deformity results in limitation of head extension and non alignment of oral pharyngeal and laryngeal axis. Distortion causes limited access to the glottis. Difficult airway increases the possibility of hypoxia and increased morbidity and mortality. The main challenge for the anaesthetist is to maintain patent airway.

Anaesthesia should be planned in advance after discussing with plastic surgeons. The surgeon plays a complementary role in airway management.<sup>7, 8</sup> The various options available are LMA, FOB, tumescent local anaesthesia, ketamine, retrograde intubation and tracheostomy.

The problem with tumescent anaesthesia is that the doses of local anesthetic agent required to achieve clinical effect can exceed the maximum safe dose. It also causes a wet surgical field. It provides good anaesthesia, analgesia and less bleeding.

Ketamine maintains spontaneous ventilation along with good analgesia, but can cause excessive secretions, emergence, tongue fall and regurgitation.

FOB is of great value but depends on skill and experience of the operator. The equipment is complex and expensive. Due to narrowing of nares as a result of contractures over face and inavailability of pediatric FOB, fiberoptic intubation was ruled out.

There was limited role for tracheostomy and retrograde intubation in our case due to fixed flexion deformity and distortion of anatomy in the anterior aspect of neck.

The basic principle involved in management of difficult airway is preservation of spontaneous ventilation. Inhalational induction was used to minimize the risk of loss of airway. Sevoflurane is a useful agent for difficult pediatric airways. It causes gradual onset of anesthesia and spontaneous ventilation is well maintained. It is least irritating to the airways. The blood gas solubility coefficient being 0.69 , if hypoventilation and airway obstruction occurs we can switch off and wake up the patient .<sup>2,5</sup>

Propofol is helpful to increase the anaesthetic depth while introducing LMA or ETT without relaxant.

McCoy's laryngoscope holds an important and unique position in difficult airway management especially in patients with limited neck extension. Its blade has a flexible tip controlled by a lever. It elevates the epiglottis and helps in visualization of glottis by improving Cormack and Lehane grade of laryngoscopy. As less force is applied, it is less

traumatic to soft tissues. <sup>4</sup>

After it was introduced by Brain, the role of LMA in difficult airway is well established.

LMA offers advantage over the face mask as it gives room for surgical manipulation in head and neck surgeries. LMA is safe in fasting patients.

The LMA is a part of the ASA difficult airway algorithm; the AHA advanced cardiac life support course and various international guidelines. It is useful and lifesaving to maintain difficult airway. It is recommended that LMA should be immediately available when difficult airway is possible. In a patient whose trachea can not be intubated due to unfavourable anatomy, LMA should be considered as the first treatment option. <sup>1,3,6</sup>

We conclude that in absence of FOB, a case of mentosternal contracture with a fixed flexion deformity can be managed safely with inhaled induction of anesthesia and LMA. The surgeon plays a complementary role in management of airway.

#### SPECIMEN PHOTOS :



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