



Post Burn Contracture Neck - Alternative Way of Airway Management

Authors

Dr Dinesh Sharma¹, Dr Neeraj Sharma²

¹Medical Officer (Anaesthesia), Civil Hospital Arki, Distt.- Solan, H.P. Pin- 173208, India

²Senior Resident, Deptt. of Anaesthesia , YSPGMC Nahan, H.P. Pin 173001, India

Abstract

This case report encourages anaesthetists, to use alternative modes of securing endotracheal airway in patients of post burn contracture neck patients. Eighteen years old female patient of post burn contractures of neck was scheduled for contracture release and skin grafting. Airway assessment revealed severe restriction of mouth opening with limited restriction of neck movements. After preoxygenation, patient was induced with i/v propofol and oral intubation was attempted with intubating LMA. Successful ventilation achieved but endotracheal tube couldn't be inserted. Endotracheal intubation done with 7 mm CoETT with stylet using Video laryngoscope. Though fiberoptic bronchoscope guided intubation is gold standard and is the preferred technique and followed by most of anaesthetists, alternative methods of endotracheal intubation in case of difficult airways should also be considered helpful.

Introduction

Airway management during reconstructive surgery in Post Burn Contracture Neck patients is a great challenge for anaesthetist. Cervical motion may be limited in all directions and the sniffing position may be unobtainable due to severe mentosternal contracture.⁴ Along with restricted neck movements, patients may have limited mouth opening, distorted nasal anatomy, microstomia. Larynx and mandible may be distorted by underlying dense fibrous hypertrophic scar.

Case Report

A 18-year-old female patient weighing 40 kg was admitted with post burn contractures of neck and anterior chest wall, scheduled for contracture release and skin grafting. She had suffered burns 3

years earlier, while her clothes caught fire during cooking. She gave history of progressive thickening and scarring over burn area, after which she developed restricted neck movements up-down and sideways. She had SSG 3 times previously one year ago under sedation and LA.

Airway Examination

- Mouth opening:- 2FB/3cm
- Protrusion of lower jaw:- can't be protruded
- Facial deformity present - Rt. angle of mouth displaced downwards
- Palate not arched
- SMS Consistency - firm,
- TMD - can't be assessed
- Neck – short, contracture present on anterior aspect of neck

- Neck Movements – All restricted and Flexion at neck
- Delilkan test - positive

Her vital signs were as follows:

Blood pressure 112/86 mmHg pulse rate 82/min respiratory rate 16/min. Systemic examination was normal.

Hemoglobin was 10.9 g/dl

Difficult airway was predicted hence preoperative preparation with necessary masks, airways, endotracheal tubes, laryngeal mask airway (LMA's), stylets, bougie were kept ready. Airway plan was discussed thoroughly with plastic surgeon and ENT surgeon who were available for emergency tracheostomy, if necessary. Surgeons were told to be ready for release of contracture under ketamine and LA in case we could not secure airway

Patient was kept fasting for 8 hours. Pt. shifted to the OT at 9:30 am, identity was confirmed and monitors were attached for ECG, NIBP, Pulse oxymetry, temperature monitoring. Baseline vitals noted. IV Line secured with 18 gauge peripheral intravenous catheter in the left hand. In awake patient preoxygenation was successfully done ensuring a good face mask seal. In premedication: Inj. Fentanyl 50 mcg I/V slow, Inj. Glycopyrrolate 0.2 mg I/V. , Inj. Ondansetron 4mg I/V, Inj. Ceftriaxone 1 gm I/V given.

Induction & Intubation

Surgeons were kept ready for release of neck contracture. Preoxygenation was done with 100% Oxygen for 3 minutes. Induction was done with Inj. Propofol 50mg I/V slow, then titrated till end point. Intubating LMA Size no. 4 was inserted and B/L air entry confirmed.

After ensuring ventilation Inj. Atracurium 20mg I/V given and ventilated for 3 minutes. Then tried to insert CoETT 7.0mm ID through ILMA – couldn't negotiate the tube. After proper suctioning Intubating LMA was taken out and Inj. Propofol 30 mg i/v slow given. Endotracheal intubation done with 7 mm CoETT with stylet

using Video laryngoscope. B/L air entry was checked and confirmed and ETT fixed at 21cm mark. Inj. Dexamethasone 8 mg I/V were given. Maintenance of Anaesthesia was done with inhalational agents and intermittent atracurium, Injdiclofenac 75mg, inj. Fentanyl 50mcg I/V, Inj PCM 1 gm, I/V Fluids. Patient maintained SpO₂ 98 - 100 % and total length of surgery was 2hrs 30 minutes. Vitals were stable throughout the surgery

Extubation

Muscle relaxation was reversed with neostigmine and glycopyrrolate. Awake extubation was done. Patient maintained SpO₂ above 96% with oxygen with ventimask in propped up position. Kept patient in recovery for 30 minutes then shifted to ward.

Post-op assessment

Patient was fully conscious and had no complaint fresh complaints 2 hours after extubation.

Discussion

A pre-planned strategy should be there for intubation of the difficult airway. Such difficult airway preferably be secured while the patient is awake. FOB guided endotracheal intubation is Gold standard in PBC Neck patients^[1]. Various case reports tell successful anaesthetic management of PBC neck in different way specially in airway management. The options advocated for airway management of such patients include:-

- 1) Awake fibreoptic - guided intubation.^[1]
- 2) Video-laryngoscope guided intubation^[2]
- 3) Use of LMA without intubation^[3]
- 4) Use of intubating LMA^[4]
- 5) Intubation without neuromuscular blocking agents.
- 6) Intubation with neuromuscular blocking agents after testing the ability to ventilate by mask/ supraglottic airway device, our preferred plan for this case.
- 7) Pre-induction neck scar release under local anesthesia and ketamine or sedation followed by direct laryngoscopy and intubation.^[5]

- 8) Induction with ketamine and inhalational agents followed by DL examination - if unsuccessful give transverse incision over entire scar into skin and platysma to facilitate orotracheal intubation/LMA insertion, awake extubation at the end of surgery.
- 9) In nasal burns and microstomia, contracture of nose and oral cavity are to be released under nerve blocks first then assessing airway for method to be used for endotracheal intubation^[2]
- 10) Cervical (neurological damage) and lumbar (graft) epidural anaesthesia can be given, post-op analgesia can be maintained.^[5,6]

We should inform the surgeons about the need of emergency scar release and/or emergency tracheostomy in case of CICO or failed intubation. We should have preformulated various intubation and extubation plans with adequate preparedness.

Conclusion

We should have a planned approach for securing airway. Plans A,B,C etc. should be clear to anaesthesia team members. Every plan must be discussed with surgeons and their role must be clear to them in maintaining airway if primary plans don't work. Rigid protocols should not be the best choice in view of variations in extent and severity of contractures as in our case.

References

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