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PAEDIATRIC DIFFICULT AIRWAY MANAGEMENT IN TEMPORORMANDIBULAR JOINT ANKYLOSIS

Dr. V. Divya	Postgraduate
Dr. R. Ramsesh Manohar	Assistant Professor
Dr. Yaram Reddy Susmitha	Postgraduate
Dr. Lakshmi. R*	Head of the Deapartment , Saveetha Medical College and Hospital, Chennai*Corresponding Author

ABSTRACT Pediatric patients with temporomandibular joint ankylosis have difficult airway due to limited mouth opening making intubation challenging. However fiberoptic bronchoscopy becomes the gold standard during these situations. We describe here an alternate way of securing airway during difficult cannot intubate situation through fiberoptic bronchoscope . A bougie was passed through mouth into the glottis under vision through the fiberoptic bronchoscope inserted through the nostrils. Through which an ETT of 4.5cm was rail roaded under vision. Thus airway was secured without any complications.

KEYWORDS : Temporomandibular ankylosis, paediatrics, fiberoptic bronchoscopy, bougie

INTRODUCTION :

Securing difficult airway in paediatric population can be challenging. As paediatric population tend to desaturate easily due to decreased functional residual capacity. Congenital syndromes seen in pediatric population make the airway even more difficult making it challenging. Temporomandibular joint ankylosis is bony or fibrous adhesions at the anatomical joint leading to limited mouth opening , poor oral intake affecting the nutritional status for which surgical intervention is mandatory.[1] The temporomandibular joints (TMJ) are highly specialized bilateral joint comprising an articulation between the cranium and mandible. TMJ ankylosis especially with mandible hypoplasia presents a serious problem for airway management. We describe here a case of TMJ ankylosis with limited mouth opening posted for surgery managed with cannot intubate situation with fiberoptic bronchoscope.

CASE REPORT

A 6 year old male child weighing 15kgs , a case of bilateral TMJ ankylosis posted for release of ankylosis. The child had no other systemic illness or comorbidities. Airway examination revealed interincisor gap of 5mm with mandibular hypoplasia. Direct laryngoscopy with tracheal intubation and use of supraglottic airway devices was ruled out owing to difficult airway. So nasotracheal intubation under fiberoptic guidance was planned. Emergency cricothyrotomy and tracheostomy set kept standby and ENT surgeons were informed prior. Informed consent obtained and procedure of general anaesthesia was explained to the parents. Nebulisation given with 2%lignocaine 2ml with xylometazoline nasal drops in both the nostrils 30-45 mins before shifting the patient to preoperative room . Premedication was given in the preoperative room with inj. Glycopyrrolate 0.01mg/kg, inj. Midazolam 1mg after connecting to the monitors. Patient was then shifted to the operating room. Standard ASA monitors connected. Mask ventilation done with end tidal carbon dioxide trace on the capnograph. Graded inhalational induction done with sevoflurane in oxygen. After achieving adequate depth of anaesthesia, a pediatric fibreoptic bronchoscope was inserted into right nostril. Visualisation of epiglottis, vocal cords was done. But insertion of bronchoscope into the vocal cord was difficult . After trying multiple attempts, a bougie was inserted through the mouth and under bronchoscope visualisation, it was inserted into vocal cord. An ETT of 4.5mm was railroaded into the bougie and inserted under vision with FOB. The ETT was connected to circuit and ventilation confirmed by capnography. Bilateral air entry checked and the ETT was fixed. Continuous supplementation of oxygen via the other nostril and intermittent suctioning to remove the secretions was done during the attempts. Anaesthesia maintained with O2, N20, sevoflurane and atracurium with controlled ventilation. Surgery lasted for 4 hours. At the end of surgery, the child was reversed and extubated uneventfully with no complications.

Figure 1 : Mouth opening of the patient pre and post surgery

DISCUSSION :

Ankylosis is defined as an abnormal stiffening of a joint caused by bone disease, injury or surgery. Because of stiffening, joint mobility is reduced leading to compromised function. Ankylosis of temporomandibular joint is due to either fibrous or bony union between head of condyle and glenoid cavity.2 Bilateral temporomandibular joint ankylosis severely compromise jaw function but such cases are rare. It can be congenital or idiopathic. Forceps delivery, trauma and infection are causative factors.3Inability to chew solid foods leads to nutritional compromise and this usually becomes an indication for surgical intervention.The TMJ ankylosis leads to difficult intubation due to an inability in opening the mouth, associated retrognathia with a relatively large tongue, and a pseudomacroglossia in a confined space that narrows the pharyngeal passage.4 All of these factors make a laryngoscopic intubation much more difficult or impossible.

The options available with limited mouth opening are the nasal intubation either blind or fiberoptic assisted, retrograde intubation, and tracheostomy. It depends on the patient's age, his clinical status, cooperation, expertise, and availability of the equipment.5 However fibreoptic is a gold standard for securing airway in these conditions.

Kulkarni et al. had successfully performed blind nasal intubation under deep plane of anesthesia using breath sounds as a guide with gentle neck manipulations.6 Shah et al. had managed TMJ ankylosis with obstructive sleep apnea by blind awake nasal tracheal intubation after the administration of superior laryngeal nerve (SLN) block and intratracheal instillation of local anesthetic solution.7 Kawasaki et al. used SLN block as a rescue in cannot mask ventilate scenario following failed attempt of fiberoptic nasal intubation resulting in laryngospasm.8 Mohan et al. used total I.V. anesthesia with propofol infusion 50 µg/kg/min and kept the patient spontaneous with nasal prongs.

In our case we had difficulty in intubation with fibreoptic bronchoscope because of inability to pass the bronchoscope into the

glottic opening. So after multiple attempts, bougie guided intubation via oral route was done under FOB guidance .

The presence of TMJ ankylosis with poor mouth opening further increases the airway obstruction primarily because of opposition by the structures of oropharynx due to the presence of the subatmospheric intrapharyngeal pressure with reduced muscle tone of the oropharyngeal structures.[9]

CONCLUSION

Difficult airway management in pediatrics is very challenging. It requires expertise and good planning for dealing with any complication arising due to the attempted intubation such as bleeding, hypoxemia, trauma, laryngospasm. The situation can deteriorate and can convert into "cannot intubate and cannot ventilate" scenario. Proper communication and cooperation should be warranted between surgeon and anaesthetists.

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