

Anaesthetic Management in A Case of Temporomandibular Joint Ankylosis Using A Newer Bronchoscope-Ambu Ascope

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We are presenting a case report of anaesthetic management in a case of temporomandibular joint (TMJ) ankylosis with an intraoperative finding of choanal atresia in a 17yr old male posted for elective lateral gap arthroplasty. Anticipated difficult airway in TMJ ankylosis patients has always made the surgeon to be cautious during airway management, adding on problem like choanal atresia made the intubation even more difficult. Hence, reporting the management of such difficulties with different approach, in which serial dilatation of nostrils using nasogastric tubes and nasal airway, then endotracheal tube was passed through one nostril and bronchoscope through other nostril.

Keywords: TMJ ankylosis, choanal atresia, intubation, bronchoscope

Introduction

Any trauma leading to haemarthrosis in temporomandibular joint may proceed to fibrosis and develop bony ankylosis. Causes of TMJ ankylosis may be congenital, trauma, infection, idiopathic and less frequently, rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, fibrodysplasia ossificans, etc.¹ Anaesthetic management in surgery of TMJ ankylosis presents dreadful challenge to the Anaesthesiologist in maintenance of airway patency.

Fibreoptic intubation is the gold standard in managing these patients.² Awake intubation and spontaneous ventilation are the safest techniques for securing airway. Awake intubation needs patient's co-operation. Coughing, bucking and

struggling of the patient makes it even more difficult to manage the airway. A newer generation bronchoscope- Ambu a Scope has a light weight handle with camera at its tip (deflection of $120^{\circ} \pm 10^{\circ}$ Antero-posteriorly) and image transmitted via cable to a screen with low maintenance cost compared to fibreoptic scope.³ Use of which made us to recognize the choanal atresia and manage accordingly.

Case report

A 17year old male presented with restricted and progressive decreasing mouth opening one-year duration and presented for elective lateral gap arthroplasty. History revealed a traumatic mandibular fracture treated with closed reduction one year back. On examination, mouth opening was one finger, Malampati score of 4 with normal neck movements. Systemic examination had no abnormality.

Patient and Parents were counselled regarding the technique of intubation and in the case of failure, consent for tracheostomy obtained.

Plan

Awake nasal intubation using Ambu aScope with 7mm cuffed ETT with a backup plan of tracheostomy

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Image 1: *choanal atresia*



Materials and methods

In preparation for the case, difficult airway trolley kept ready with tracheostomy kit as backup. Intravenous line established; All standard monitors were attached. Pulse rate - 92/min; BP - 103/68mmHg; SPO₂ - 98% with room air.

Airway above the vocal cords anesthetized by nebulisation with 2% lignocaine 10ml for 10 minutes. Below the vocal cords by Transtracheal block with 2% lignocaine 2ml. Nasal packing was done using 2% lignocaine with adrenaline. Preanesthetic medication inj midazolam 1mg + glycopyrrolate 0.2mg + fentanyl 50mcg was given with preoxygenation using 100% O₂ and for continued sedation inj. Dexmedetomidine @30mcg/hr was infused till definitive airway was secured.

Nasal Intubation using Ambu aScope was tried with 7mm cuffed endotracheal tube preloaded on it with patient in supine position and head in neutral position. During the procedure difficulty encountered while passing the aScope bilaterally (probably partial membranous choanal atresia) to overcome this, lubricated nasogastric tube of 10FG, 12FG,14FG and nasal airway of 7mm passed through both nostrils to gradually dilate

the nostrils. After dilatation of nostrils Ambu aScope was inserted, the pharynx was suctioned

using suction port provided in the ascope. We were able to pass only cord of the ascope via left nostril, not the ETT over it. So, under vision of Ambu ascope a warmed 7mm cuffed ETT passed via right nostril and cuff positioned beyond the glottis. Once the position of the tube was confirmed with capnography, tube was secured and ascope withdrawn. As the airway was anaesthetized completely, we did not opt for spray an as you go technique. Anaesthesia was induced with Inj. propofol 2mg/kg and maintained with O₂+ sevoflurane + inj. Atracurium for muscle relaxation.

The patient was cooperative throughout the procedure.

The surgical procedure went up to 2 hours uneventfully. After the surgeon confirming inter incisor gap of >45mm, patient was smoothly reversed, vocal cord movements confirmed by ascope. The tube was removed when the patient was fully awake, and adequate Tv was achieved with thorough suctioning.

Image 2: *post surgery interincisor gap*



Discussion

TMJ ankylosis renders the airway difficult with no option of vocal cord visualization in wake of limited mouth opening. Problems get compounded in the presence of trismus, associated affected skeletal growth of face, and obstructive sleep apnea. Our case had restricted mouth opening with no history of obstructive breathing but had membranous type choanal atresia.

The approach of intubation was discussed internally prior to the case and a systematic outline was developed. Alternate modalities for securing airway were kept ready.

Options to manage the airway in such cases include- blind nasal intubation, fiberoptic laryngoscopy (FOL), retrograde intubation and tracheostomy. The latter two being invasive techniques are less preferred.^{4,5} Fiberoptic bronchoscope is known to be the gold standard and has been used for awake intubation in anticipated difficult airway scenarios.⁶

Blind nasal intubation, even in experienced hands, has a high possibility of failure, trauma and bleeding.⁷ In cases of uncooperative patients, it would be difficult to do awake intubation, invasive approach would be preferable one for such patients. The preparation and patient cooperation enabled us to have a smooth intubation despite having seemingly difficult airway.

Conclusion

Difficult airway management in case of TMJ ankylosis is challenging, intubation through one nostril, with fiberoptic bronchoscope in the other is better a alternative approach when both cannot be inserted in same nostril. And serial dilatation of the nasal cavity with nasogastric tubes, nasal airway made the cavity roomy for intubation.

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