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Paediatric Difficult Airway and Anaesthetic Management in a Case of TMJ Ankylosis: A Case Report

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Abstract: ***Use of advanced fibre optic bronchoscopy to facilitate intubation to secure difficult airways is well known. But this technique can be very challenging in paediatric patients due to their lack of co operation and anxiety. In this case report we present a successful atraumaticnasotracheal intubation under FOB guidance in a case of paediatric left sided Temporomandibular joint ankylosis under deep sedation using a Nasophayrngeal airway.***

Keywords: TMJ ankylosis, Nasopharngeal airway, paediatric FOB

1. Introduction

Appropriate airway management is an integral part of an anaesthetist's role. Anaesthetic management of paediatric patients is in itself a challenge, and even more so in a difficult airway such as in TMJ Ankylosis. In such cases awake fibreoptic intubation is usually preferred. But achieving this is difficult in paediatric patients. So fiberoptic intubation under deep sedation or GA with the child on spontaneous ventilation is considered to be the gold standard.[3]In this article we deal with the management of an elective difficult airway.

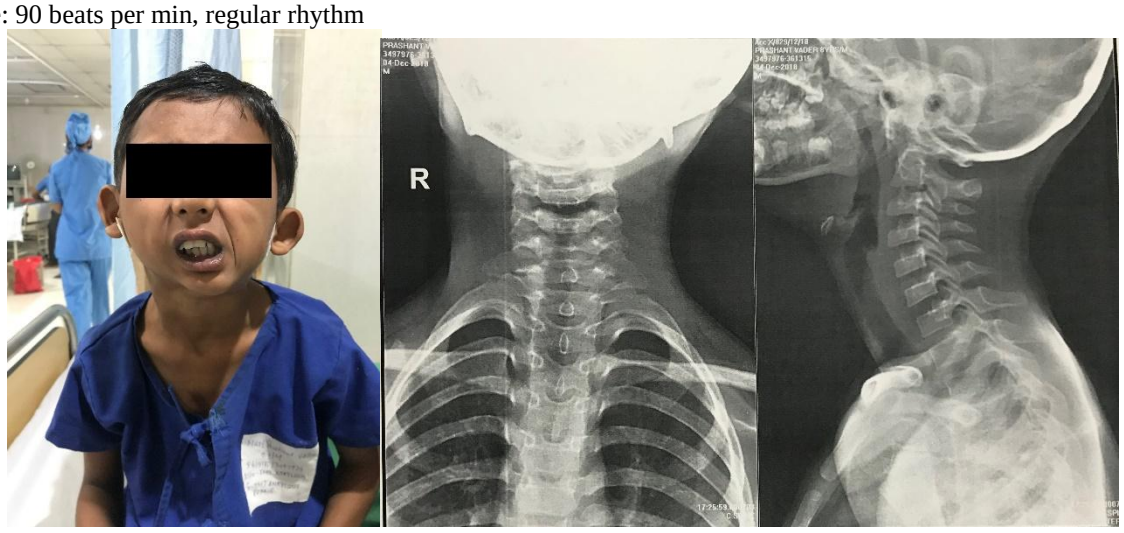
2. Case Report

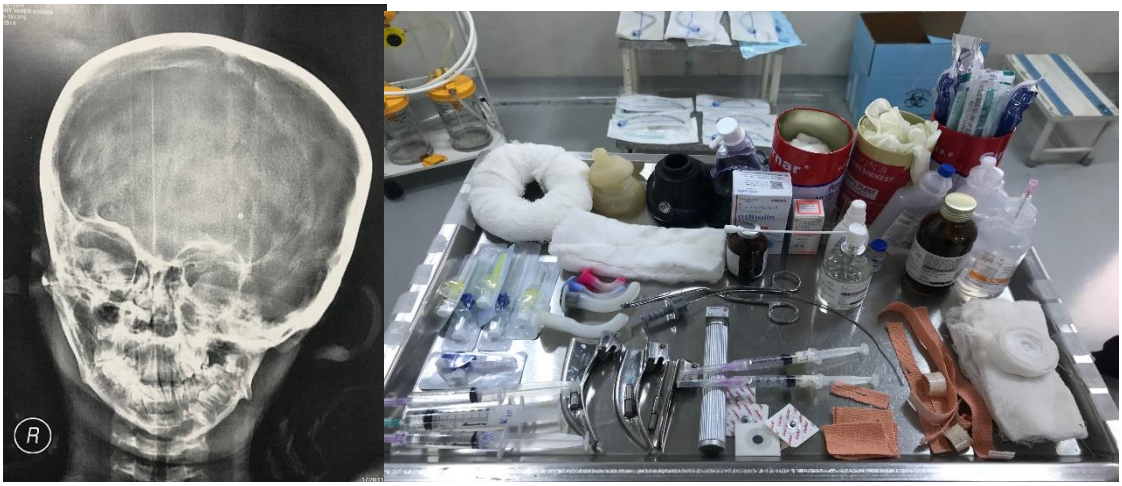
A 8 year old male child weighing 18kgs presented to us in the OPD with left sided TMJ ankylosis and was posted for mandibular distraction surgery and subsequent ankylosis release operation as stage 2. He had history of trauma while playing 6 years ago after which his parents noticed progressive difficulty in mouth opening and chewing. No other significant history noted.

On Examination
Heart Rate: 90 beats per min, regular rhythm
Blood Pressure: 100/70mmHg
Cardiovascular System: S1+, S2+,
Respiratory System: Air entry bilaterally equal, clear chest.
Investigations: Haemoglobin: 11gm%,
TLC: 8690/cumm3,
Platelet count: 3.56lakhs/cumm3
Serum creatinine: 0.5mg/dl, Total Bilirubin: 0.61mg/dl

Airway assessment:
Mouth opening was restricted. The inter incisor gap was less than 0.5cm. Mandibular hypoplasia was noted. Neck flexion and extension were within normal range of motion. AP and Lateral Xrays of the neck were normal. Thus a difficult airway was anticipated.

Tracheal intubation by direct laryngoscopy or use of any supraglottic airway devices was ruled out. We planned to proceed with FOB guided nasotracheal intubation under deep sedation. But incase of any untoward complication an emergency tracheostomy set was ready with the ENT team informed in advance. Emergency cricothyrotomy set was also kept ready. The procedure was explained to the child's parents and a written informed consent including consent for emergency tracheostomy was taken pre operatively.





3. Preparation

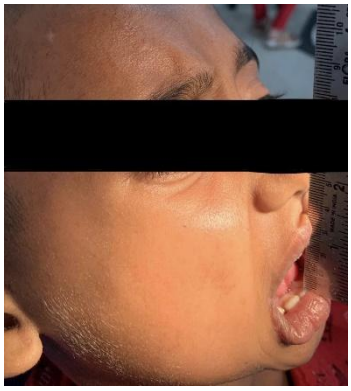
NBM status was confirmed. Patient was then taken into the pre operative room. A 22G IV cannula was secured. Inj.Glycopyrrolate 0.004mg/kg was givenIV to reduce secretions. Nebulisation with Lignocaine 4% was started followed by gargles with 2% Lignocaine viscous solution. Xylometazoline drops were put in both nostrils 30mins before shifting the patient into the OR.

Inside the OR all resuscitation equipment and difficult airway cart were kept ready. All necessary monitors including ECG, Pulse Oximeter, Non invasive blood pressure and capnography were attached.

Patient was premedicated with Inj.Midazolam 0.05mg/kg and Inj.Fentanyl 1mcg/kg. Patient was started on gaseous induction via a black rubber mask no.2 which was connected to the Jackson Rees circuit with Sevoflurane (1-8%) and Oxygen. Adequacy of ventilation was confirmed by waveform capnography, chest rise and auscultation. Patient was then given Inj.Propofol 2mg/kg and maintained on spontaneous ventilation.To deepen the plane of anaesthesia a Nasopharyngeal Airway no.5 with a universal connector was inserted into the right nostril after thorough lubrication and gaseous induction with sevoflurane and Oxygen was continued using the Jackson Rees circuit. Plane of anaesthesia was kept deep to facilitate the passage of the paediatric flexible FOB. An uncuffed endotracheal tube no.5 was loaded over the FOB (outer diameter 3.8mm) and lubricated. The FOB was then gradually passed through the left nostril and 1ml of 2% lignocaine was injected through the suction port as soon as the vocal cords were visualised. The endotracheal tube was successfully passed through the cords without causing any trauma. Correct placement of the tube was again confirmed by waveform capnography, chest rise and ausculatation. Muscle relaxant was then administered in a dose of 1mg/kg of Inj.Atracurium. Patient was maintained on sevoflurane (MAC 1), Oxygen and Nitrous oxide via the JR circuit providing IPPV.

Patient was vitally stable intra operatively. A distractor was inserted and adequate mouth opening was demonstrated by the surgeon. Patient was sent to the PICU on T-piece and was extubated the next day.

After 6 months the child was posted for the second stage surgery – Ankylosis release. Same airway and anaesthesia management were followed in the second surgery.Post surgery his mouth opening was 21mm (unassisted).



4. Discussion

Ankylosis of TMJ is characterised by intra capsular union of the mandibular condyles, discs and glenoid cavity, with the end result being reduced mouth opening. Most likely causes being congenital (forceps delivery), trauma, secondary infections, systemic diseases like Rheumatoid arthritis, Ankylosingspondylosis, Psoriasis etc.The most common causes of bilateral TMJ ankylosis in paediatric patients are congenital or post traumatic.[4]This deformity requires prompt recognition and surgical correction. Neglecting this condition can lead to poor feeding leading to poor nutrition, facial deformity, speech defects and poor oral hygiene. Hypoplasia of the mandible is also known to cause obstructed sleep apnea as it alters the position of the larynx.[6]

Securing the airway in a patient with this condition becomes challenging due to the significantly reduced mouth opening and limited protrusion of the lower jaw. Options available to anaesthetists for securing the airway are limited. FOB guided nasotracheal intubation is the gold standard. Blind naso tracheal intubations have a high failure rate and are also frequently associated with trauma and oedema. It can also cause trauma in case of undetected septal or nasal wall deformities. Retrograde intubation though possible can be challenging in children. A modified technique has been described for use of retrograde intubation in paediatric age group.[10] Tracheostomy is always the last and emergency resort.

Our main aim should be to maintain the patient on spontaneous ventilation till a definitive airway has been secured. Emphasis should be on this since the oxygen consumption is higher and the FRC is decreased in the paediatric population.Maintenance of good oxygenation and adequate depth of anaesthesia allowing the anaesthetist time to use FOB and good topical anaesthesia to prevent laryngospasm are the essentials for successful paediatric fibreopticintubation.[11]This depth can be achieved by using a paediatric endoscopy mask or a NPA which facilitates administration of sevoflurane.[8]

5. Conclusion

In conclusion, the NPA plays an integral part in maintaining the depth of anaesthesia which facilitates FOB guided nasotracheal intubation in a paediatric patient with TMJ ankylosis.

References

[1] Roy Choudhary A, Parkash H, Trikha A. functional restoration b gap arthroplasty. In temporomandibularointanylosis: a report of 50 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod.1999;87:166-169.
[2] Sahoo NK, Tomar K A, Roy ID. Selecting reconstruction option for TMJ ankylosis: a surgeon's dilemma. J Craniofac Surg. 201;23:1796-1801.
[3] Fiadjoe J, Stricker P. Paediatric difficult airway mamagement devices and techniques. AnesthesiolClin. 2009;27:185-195.
[4] Yuill E, Howitt SD. Temdporomandibular joint: conservative care of TMJ dysfunction in a competitive swimmer. J can chiroprAssoc 2009;53:165-72.
[5] Devgan A, Siwach RC, Sangwan SS. Functional restoration by excision arthroplasty in temporomandibular joint ankylosis--a report of 35 cases. Indian J Med Sci. 2002; 56:61–64
[6] Shah FR, Sharma KR, Hilloowalla RN, Karandikar AD. Anaesthetic considerations of temporomandibular joint ankylosis with obstructive sleep apnoea: A case report. J Indian SocPedodPrev Dent. 2002;20:16–20. [PubMed] [Google Scholar]
[7] Kulkarni J, Shah K, Khan AA, Khaire S. Anaesthetc management of temporomandibular joint ankylosis without fibreoptic bronchoscope – A review of 31 cases. IOSR J Dent Med Sci. 2013;8:50–4.
[8] Brooks P, Ree R, Rosen D, Ansermino M. Canadian pediatricanesthesiologists prefer inhalational anesthesia to manage difficult airways. Can J Anaesth. 2005;52:285–90.
[9] Mohan K, Mohana Rupa L, Gopala Krishna Murthy S, Greeshma PG, Bhavana U. Anaesthesia for TMJ ankylosis with the use of TIVA, followed by endotracheal intubation. J ClinDiagn Res. 2012;6:1765–7.
[10] Shaila Kamat, Mithun Raju, Ruchita Gupta, SatishKamat, Modified technique of retrograde intubation in TMJ ankylosis, Indian J of Anaesthesia 52:196-198
[11] Robert W.M. Walker, James Ellwood. The management of difficult intubation in children. Paediatric Anesthethesia. 2009;19:77-8
[12] Anaesthetic Management of A Paediatric Patient with Bilateral Temporomandibular Joint Ankylosis: A Case Report Shweta Rohan Jaju1 , Swati Chhatrapati2 , Pravin Ubale3 , Sulekha Ingle4
[13] Temporomandibular Joint Ankylosis: "A Pediatric Difficult Airway Management" Anoop Sharma, Deepak Dwivedi,[1] and Ram Murti Sharma