Unilateral Tmj Ankylosis in A Child-An Enduring Case For Surgeon And Anesthetist.

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Abstract: Temporomandibular joint ankylosis is an anticipated difficult surgery especially when it is performed in children and same is in the intubation scenario too. TMJ ankylosis creates a difficult situation on the operating table for a surgeon. When it comes to anesthetist the awake fibre optic intubation is the safest approach to secure an airway in such a case. This is a case of unilateral temporomandibular joint ankylosis scheduled for interpositional arthroplasty. But due to non-availability of adequate size fiber optic scope, a flexible ureteroscope to facilitate nasotracheal intubation was used. For the interpositional arthroplasty a costochondral graft was used for this case.

Keywords: TMJ ankylosis, Gap Arthroplasty. Difficult airway, Fiber optic intubation.

I. Introduction

Temporomandibular joint is the cornerstone of craniofacial integrity. Temporomandibular joint (TMJ) is a synovial articulation between the mandible and mandibular fossa of the temporal bone. It plays a crucial role in mouth opening. Ankylosis of TMJ involves fusion of the mandibular condyle to the base of the skull and is associated with trauma (13-100%), infection (0-53%), systemic disorders like ankylosing spondylitis, rheumatoid arthritis or psoriasis and can even be idiopathic [1].

II. Case Report

A 4-year-old male child of 10Kgs weight with retrognathia and ankylosis of the left temporomandibular joint was scheduled for interpositional arthroplasty and coronoidectomy with costochondral graft. He was apparently normal till 10 months of age, after which he developed progressive restriction of mouth opening which resulted in poor intake of solid food. There was no history of birth trauma, otitis media or any other infections. History and examination did not reveal any congenital anomalies.

Clinically the mean maximal incisal opening was 0.5cm and there was mandibular hypoplasia with deviation of mandible to the left with fullness of cheek and temporomandibular joint region. Decrease in growth of mandible can be clearly noticed. 3D CT showed mandibular hypoplasia, flattening of left mandibular condyle with erosion, reduced TMJ space and shallow left glenoid fossa.

Airway difficulty in this case was due to restricted mouth opening, mandibular hypoplasia, retrognathia and reduced mandibular space with overcrowding of soft tissues. Facial asymmetry could also alter the position of the larynx [2, 3]. It is unlikely to visualize any part of the larynx by direct laryngoscope and perform conventional tracheal intubation, if the mouth opening is less than 25mm [4]. The idea of using an ureteroscope to assist fibreoptic intubation was born out of the history of introduction of fiberoptic assisted tracheal intubation. Dr Peter Murphy, then a Senior Registrar at the National Hospital for Nerve Diseases in Queen square, London first conceived the idea of using fiberoptic technology for securing the airway [5]. And he was indeed the first person to secure the airway using this technology and the first to describe the technique which was published in “Anesthesia” [5]. He used a choledochoscope to achieve success with this technique. As the instrument had a fitting that allowed still photography, he was able to obtain the first photograph of the trachea using this technique and included it in his paper [5].

Written informed consent was taken after explaining the potential complications and the possibility of a tracheostomy. Standard monitoring was established which included ECG, NIBP and SpO2. Xylometazoline drops were instilled into both nostrils to facilitate nasal mucosal vasoconstriction. An inhalational induction was planned and the child was anaesthetized with 8% sevoflurane in 100% oxygen and adequacy of mask ventilation was confirmed. A 22gauge IV access was secured and 5 µg.Kg⁻¹ glycopyrrolate and 0.02 mg.Kg⁻¹ of midazolam were administered. A 9 F 60cms long flexible ureteroscope was used to facilitate nasotracheal intubation and a
4.5 mm inner diameter uncuffed portex tube was railroaded in to the trachea over the scope. 2 mg.Kg⁻¹ propofol and 2µg.Kg⁻¹ fentanyl and 0.1mg.Kg⁻¹ vecuronium were administered after confirmation of satisfactory ETCO₂ waveform and bilateral equal air entry. 1% sevoflurane in 50: 50 nitrous oxide and oxygen were used for anesthetic maintenance. We were prepared to perform an emergency tracheostomy.

Standard scrubbing and draping of the patient is done. A preauricular incision i.e. Alkayat Bramley incision was given. Skin, superficial fascia, superficial muscular aponeurotic system were dissected. Ligation of transverse facial artery was done. The joint space was identified and about 1 cm. of anklyotic mass was removed to differentiate between the temporal bone and zygomatic arch using a no. 702 straight fissure bur. Now the region of the 5th rib on the right side of chest was identified and incised. Skin, superficial fascia and pectoralis muscle was dissected. Costocondral graft was taken from the site and is fixed with condyle using 8mm screws. Meanwhile the graft site was closed by performing layer by layer suturing via 5-0 vicryl for muscle, fascia and 3-0 silk for skin. The mean maximal inter incisal opening increased to 3 cm after the surgical procedure. The surgical site is also closed respectively. The child was extubated following reversal of residual neuromuscular blockade. Further postoperative course was uneventful. The child was advised jaw stretching exercises, aggressive physiotherapy from third postoperative day till 3 weeks and was discharged on the 6th postoperative day. (Figure No- 1 – 27.)

III. Conclusion

In this era of rapid technological advances the history of surgery has given us clues to try novel techniques in difficult scenarios, TMJ ankylosis leads to painless chronic progressive limitation of mouth opening. Ankylosis in a growing child adversely affects the growth and development of jaws, impairs mastication and oral hygiene, predisposes to dental caries, produces micrognathism, facial asymmetry, bird face deformity and adds burden on the child’s tender psyche.[6,7] Performing a corrective surgery for mandibularasymmetry is a challenging and enduring for both surgeons and the anesthetic as the costochondral graft has the potential to grow and correct the mandibular asymmetry and the very limited mouth opening and tracheal size respectively.[6]

References


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Fig. 4-7. Pre operative 3DCT Scan

Fig. 8-11. Surgical procedure of harvesting costocondral graft

Fig. 12-15. Removal of ankylotic mass

Fig. 16-19. Fixation of the interpositional graft.

Fig. 20-23. Post-operative photographs
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Fig.24-25. Post-operative occlusion and mouth opening

Fig.26. Post-operative OPG

Fig.27. Post-operative TMJ Tomography