

Awake blind nasal intubation in 12 years old TMJ ankylosis patient with nil mouth opening – A live demonstration

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Abstract

Tmj ankylosis is a condition where fusion of condyle with overlying mandibular fossa takes place due to which patients mouth opening gradually decreases and causes nil mouth opening or Tmj ankylosis can be develop due to various reasons like forceps injury during delivery, early childhood trauma, ear infection, systematic infectious diseases and many more. Such patients need surgical release of ankylotic mass in general anesthesia. Due to reduced mouth opening normal intra-oral intubation is not possible hence either blind awake nasal intubation or

fiber-optic intubation is required in such patients. Even though fiber-optic intubation is an advanced technique but it's expensive with disadvantages like operator may not be familiar with the equipment's, patients' distress, intubation is made difficult and it can lead to depressed respiratory function with reduced functional capacity and oxygen reserve. Hence awake nasal intubation even though requires skill but its quick and safe method in such patients.

Keywords: Awake Nasal Intubation, TMJ Ankylosis, Difficulty airway.

Introduction

TMJ Ankylosis is defined as the loss of joint movement due to fusion of the condyle with glenoidal fossa which forms the joint or from the calcification of the ligaments around it or due to calcification of condylar disk itself. ⁽¹⁾ As the name suggest it's an ankylosis means fusion either bony fusion or fibrous union causing reduced mouth opening or complete closure of the mouth. Tmj ankylosis occurs due to many reasons like, forceps delivery trauma to the Tmj region, early childhood trauma, systemic infections like scarlet fever, rheumatic arthritis, sickle cell anaemia, degenerative joint diseases, ear infection, early gap arthroplasty, fibro dysplasia ossificans progresiva and many more. ⁽²⁻⁶⁾ Due to nil or decrease mouth opening such patients develops obstructive sleep apnoea, difficulty in mastication, digestion, speech, appearance is affected, and hygiene too. Facial asymmetry with fullness on involved site where muscles become atrophic as they undergo disuse atrophy due to which coronoid process of involved side becomes elongated and further reduction in mouth opening is enhanced. ⁽⁷⁾ Such patients are treated surgically with gap or inter-positional arthroplasty under general anaesthesia. In such patients due to zero mouth opening endo-tracheal intubation is not possible hence nasal intubation becomes mandatory. An anaesthetic management becomes challenging on table due to difficult airway hence becomes difficult to intubate. This intubation is done via fibre-optic latest technology either in awake or in sedation but it has many disadvantages like airway collapse secondary to loss airway and supine position also it can lead to depressed respiratory function with reduced functional capacity and oxygen reserve. ⁽⁸⁾ Hence awake blind intubation is still use and can be a good alternative for the same. Here we are presenting the case report of a 12 years old male patient with unilateral

TMJ ankylosis in which awake blind nasal intubation was done.

Case Report

A 12 years old male patient reported to the Department of Oral and Maxillofacial Surgery with a chief complaint of reduced mouth opening and inability to chew the food since last 2 years. Patient had severe retrognathia, and micrognathia .(Fig-1) The neck mobility was normal and the nares were patent. On general examination, patient was well oriented to time, place and person, with ectomorphic built, Normal gait, under nourished, with weight of 34 kg. No signs of anaemia, icterus, cyanosis, clubbing and pedal oedema were present. No significant past medical and dental history was contributory. Patient gave history of fall while playing 2 years back after which he started experiencing gradual decrease in mouth opening and at present patient is having 3.12 mm mouth opening measured via wernier calliper. (Fig-2) Clinical evaluation and radiological examination revealed this case as an unilateral Tmj ankylosis of right side.(Fig-3) The airway assessment by Mallampatti classification was not possible, suggestive of a difficult intubation. patient's parents' consent was obtained according to World Medical Association Declaration of Helsinki guidelines for surgical management and regarding intubation risk. As a small size fiberoptic bronchoscope was not available in our hospital, hence anaesthetist planned for blind awake nasal intubation and patient was simultaneously planned for tracheostomy in an emergency if any occurs. Patient was posted for ipsilateral condylectomy and inter-positional arthroplasty with temporalis myo-fascia flap. We followed standard caban's protocol. After unilateral condylectomy mouth opening was evaluated which was 32mm achieved on table with ipsilateral coronoidectomy. Followed by coronoidotomy of contra-lateral side with final mouth opening of about 40mm.(fig-4)Informed written consent

was obtained from the patient's parents for intubation associated risk and for surgical procedure. For monitoring purpose five lead ECG were applied over chest, SpO₂, capnography and non-invasive blood pressure monitoring was done, the patient was pre-oxygenated with 100% O₂ using face mask ventilation.



Fig 1: Extra-oral examination



Fig 2: Intra-oral examination & Mouth opening measurement via warnier caliper

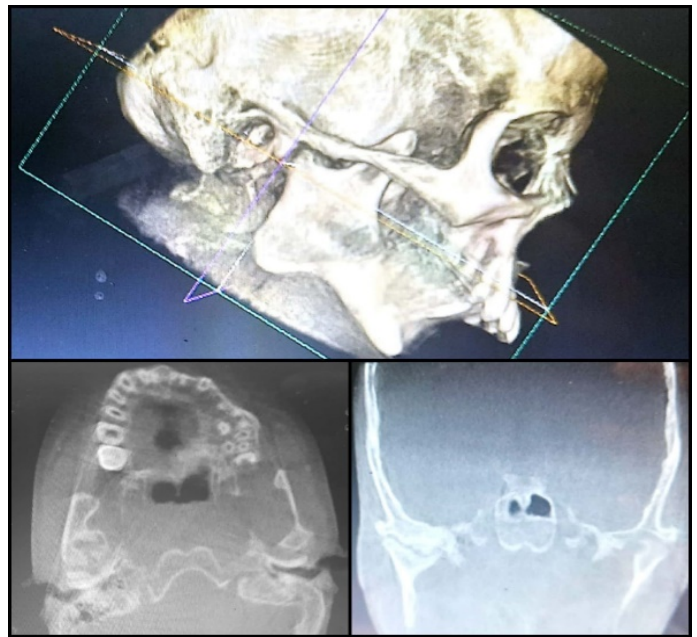


Fig 3: Radiological examination



Fig 4: Intra-operative mouth opening achieved on table

Blind Awake Nasal Intubation Technique

Patient was kept in chin lift-jaw thrust position which moves the soft tissue and lifts the epiglottis from the posterior pharyngeal wall which makes the passage of tube easy. Plain Local anaesthesia (2 cc of 2% lignocaine) was injected superficially at the neck region after palpating the depression between thyroid and cricoid cartilages needle was inserted through the skin and cricothyroid membrane and into the lumen of the larynx for trans laryngeal anaesthesia. After negative aspiration

2% lignocaine was injected successfully. Patient was preloaded with ringer lactate at 65 ml/hr. Injection glycopyrrolate 0.2mg was given 30 minutes before the intubation. Preoperatively, nasal decongestant 0.05% xylometazoline was introduced in the nostrils. 4% lignocaine was used for nebulization. Then anaesthetist gently inserted lignocaine jelly in to right patent nostril of the patient and same jelly was also applied over endotracheal tube up to around 4 cm the length on its distal end which was supposed to undergo in to the nasal cavity. The patient was instructed to inspire jelly deeply and the mist was sucked into the glottis. Intubation was performed with blind nasal intubation technique with portex endo-tracheal tube no.5.5. Well experienced anaesthetist develops a sense of threshold pressure to be applied on endotracheal tube while inserting it in nostril. Hence gentle pressure was applied by our anaesthetist. The tube was directed towards the occipital protuberances on the back of the skull with the bevel turned towards the nasal septum. The breath sounds were observed, and when the tube was in the pharynx, the patient was instructed to breathe deeply. Our anaesthetist felt resistance at the posterior nasopharynx hence he turned the tube by 1/4th with gentle manipulation the tube was inserted successfully. Once it was inserted at the level of oropharynx sellick manoeuvre was performed. In this manoeuvre cricoid cartilage was palpated to assist the tube passage with gentle pressure. Correct placement of the tube was confirmed by bilateral symmetric air entry to both the lungs with the help of auscultation and capnography readings. The patient was successfully intubated and surgery was successfully performed. (Vedio 1)

Discussion

About 5.8% of the population has difficult airways.⁽⁹⁾ and Tmj ankylosis is one of the difficult intubation techniques

because direct vocal cord visualization is not possible as patients' mouth is completely closed. Tmj ankylosis has a classical feature of facial deformity with retrognathia with pseudo macroglossia^(10,11) this narrows the pharyngeal space and hence normal intubation is not at all possible and other intubation techniques also becomes very difficult. Hence in such patients options for securing the airway include a fibre optic intubation¹², blind nasal intubation⁽¹³⁾ binasopharyngeal airway,^(14,15) a fluoroscope-aided retrograde placement of the guide wire for the tracheal intubation,⁽¹⁶⁾ retrograde endotracheal intubation with the use of a pharyngeal loop⁽¹⁷⁾ and a tracheostomy.⁽¹⁸⁾ Fibre-optic intubation is considered as a gold standard but when fiberoptic intubation armamentarium or basic equipment's are not available in those conditions blind awake intubation is given the first priority rather than directly jumping on life threatening or risky tracheostomy technique. Blind Nasal intubation technique was first given by Kuhn in 1902. Macewen, Rosenberg, Meltzer & Auer, and Elsberg are considered as a pioneer of this technique. Rowbotham and Magill developed the technique and coined the term "blind" nasal intubation in World war I.⁽¹⁹⁻²⁵⁾ Normally nasal intubation is used in the field of otolaryngology and maxillofacial surgery in cases like limited mouth opening due to diseases like oral submucous fibrosis, Intra-oral pathologies, reconstructive surgery for maxilla and mandible, oropharyngeal surgeries and TMJ ankylosis.⁽²⁶⁾ In our case although we prepared our patient for tracheostomy but due to its high mortality and morbidity rate, we kept it as a last option and awake blind nasal intubation was adequately done in our patient. The blind nasal intubation has an advantage over direct laryngoscope intubation is that it can be rapidly achieved and is devoid of the stimulation of rigid instrumentation.⁽²⁷⁾ A very less literature is available on nasal intubation in

the field of maxillofacial surgery journals where anaesthesia is commonly performed. Hence presenting this article to make the residents of oral and maxillofacial surgery familiar with this technique specially for residents studying in those institutions where such cases are rare and where students can't manage to attend such cases. This review article will surely help all in understanding the importance of the given technique.

Conclusion

Blind Awake Nasal intubation is an effective and safe technique for patients with nil mouth opening. Fibre-optic nasal intubation is an expensive in terms of time and equipment required. In such conditions, careful intubation with blind nasotracheal intubation with proper and economic instruments provides a quick and relatively safe alternative while providing improved operating conditions for the surgeon. Hence Blind nasal intubation should always consider to be the priority if fiberoptic intubation equipment's are not available and when to avoid tracheostomy.

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