



## Blind Nasotracheal Intubation in a child with Temporomandibular joint Ankylosis under Airway block and Sedation with Dexmedetomidine

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### Abstract

Blind nasotracheal intubation has been the favoured method of intubating the trachea in patients with restricted mouth opening. Here, we describe airway management of 8 year old male patient who presented with traumatic ankylosis of bilateral temporomandibular joint ankylosis with no mouth opening, posted for elective release and gap arthroplasty. Patient was planned for blind nasotracheal intubation under airway block as pediatric fiberoptic laryngoscope was not available. Blind nasotracheal intubation was done successfully in a single attempt under airway block and intravenous sedation with inj. dexmedetomidine. Awake extubation was done, postoperative period and recovery was eventful.

**Keywords:** Child, Blind Nasotracheal Intubation, Airway Block, Dexmedetomidine

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### Introduction:

Intubating a patient with temporomandibular joint ankylosis has always been a challenge to the anesthesiologist particularly when fiberoptic laryngoscope is not available. A number of techniques are available which include blind nasal intubation, retrograde intubation using guidewire, intubation with the help of fiberoptic laryngoscope and tracheostomy<sup>[1]</sup>. In our case report, we discuss successful blind nasotracheal intubation in a single attempt in a patient with TM joint ankylosis under airway block and sedation with inj dexmedetomidine.

### Case report:

8 year old male patient weighing 20 kg was posted for release of temporomandibular joint ankylosis and gap arthroplasty. On preanesthetic checkup, patient had history of fall from height 5 years back following which he developed progressive limitation in mouth opening. No other history was significant. On examination of airway,

mouth opening was nil. Neck movement was normal. Examination of cardiovascular and respiratory system revealed no abnormality. All his biochemical investigations including bleeding time and clotting time were within normal limits. Patient was accepted for general anesthesia. Possibility of difficult intubation and the need for tracheostomy was explained to the parents. Consent for tracheostomy was taken. Patient was instructed to be nil oral after 4.00am on the day of surgery. No premedication was given. Patient was shifted to the preoperative room at 9.00am on the day of surgery. Intravenous access was achieved with 20 G iv canula. Injection glycopyrolate 4µg /kg and injection ondansetron 0.08 mg/kg and inj midazolam 1mg was given as premedication. Nasal mucosa of both the nostril was prepared with vasoconstrictor (xylometazoline). Anesthesia of nasal mucosa and nasopharynx was achieved by application of cotton pledgets soaked in 4% lignocaine in both the nares. Anesthesia of oropharynx was done by gargle with viscous lignocaine 2%. Patient was very cooperative and was following all the instruction. Patient was shifted to operation theatre. Trolley for blind nasal intubation and for tracheostomy was ready. Monitoring devices were attached to the patient and baseline heart rate, noninvasive blood pressure, oxygen saturation were recorded. Inj. dexmedetomidine 1µg/kg was given as infusion over 10 min and infusion with 0.5 µg/kg/hr was started. Sedation level was assessed according to Ramsay's sedation score. Patient had sedation score of 2. Once the patient was sedated, superior laryngeal block was given with 1 ml of 1% lignocaine bilaterally. Intratracheal block was given with 4 % xylocaine. Nasopharyngeal airway was gently introduced to test the patency of nasal passage and to provide additional topical anesthesia to nasopharynx. Nasopharyngeal airway was then replaced by no.4 mmID uncuffed nasotracheal tube and was inserted till nasopharynx, it was connected to oxygen at a flow of 3 litres /min. From another nostril, no. 5mmID cuffed endotracheal tube was inserted, the neck was extended and position of tube assessed in relation to trachea by listening to breath sounds. To improve the anterior – posterior relationship of the tube to the trachea, the head was flexed. During the entire period of tube manipulation, breath

sounds were observed, the nasotracheal tube was advanced until it reached trachea. Successful intubation was followed by coughing, tube was further advanced. Tube was connected to breathing circuit, its placement was further confirmed by capnography. During the procedure, patient's heart rate, blood pressure and oxygen saturation was monitored. All the parameters were normal throughout the procedure. General anesthesia was induced with inj. Propofol 2 mg/kg and inj fentanyl 1µg/kg. Further confirmation of nasotracheal tube was done with auscultation of chest, and tube was fixed after confirmation of bilateral air entry. Tube which was placed in other nostril was removed. Inj vecuronium bromide 0.08mg/kg was given to provide muscle relaxation. Injection dexmedetomidine infusion was stopped and anesthesia was maintained with O<sub>2</sub> in nitrous oxide and isoflurane. Surgery proceeded uneventfully. Duration of surgery lasted for one hour. There was no bleeding in the oral cavity because of intubation. At the end of surgery, residual neuromuscular blockade was reversed with in neostigmine 0.5 mg/kg and inj. glycopyrolate 10µg/kg. Trachea was extubated once patient was fully awake. Postoperatively patient was shifted to recovery room. Postoperative period was uneventful and patient was discharged from hospital on the 4th day.

### Discussion:

Ankylosis of temporomandibular joint is one of the causes of restricted mouth opening and difficult airway<sup>[2]</sup>. Limited options are available to manage airway in these patients. Options which are available include blind nasotracheal intubation<sup>[3]</sup>, retrograde intubation<sup>[4,5,6]</sup>, fibreoptic laryngoscopic intubation and surgical airway, i.e. tracheostomy. In our patient, we planned blind nasotracheal intubation as pediatric fibreoptic laryngoscope was not available with us. Option for tracheostomy was ready in case of failed intubation. Retrograde intubation was not considered as we were not comfortable with the procedure in pediatric patient. Blind nasotracheal intubation is especially valuable for intubation in spontaneously breathing patient with or without sedation or under general anesthesia<sup>[7]</sup>. Our patient was a challenge, as cooperation was a great concern. We decided to proceed with airway block and sedation with inj. dexmedetomidine<sup>[8]</sup>. Numerous combination if analgesics and amnesics have been used for awake blind nasal intubation. Midazolam provides good anxiolysis, amnesia, hypnosis and sedation without any cardiorespiratory depression. Small doses of opioid receptor agonist like fentanyl has been used to avoid discomfort of the procedure and also have sedative and antitussive effect. Dexmedetomidine is an α<sub>2</sub> adrenoceptor agonist with several unique properties that make it ideally suited for management of difficult airway<sup>[9]</sup>. Dexmedetomidine provides sedation, analgesia, reversible anterograde amnesia and anxiolysis without impairment of protective reflexes<sup>[10]</sup>. It does not cause respiratory depression and causes minimal hemodynamic compromise. Dexmedetomidine infusion provides a unique form of sedation in which patient appear to be sleepy, but if stimulated they are easily roused, cooperative and communicative. Also, dexmedetomidine has moderate analgesia and antisialagogue effect. The fact that patients are sedated but maintain spontaneous respiration make it an ideal agent for use in critical airways<sup>[11]</sup>. Patients are comfortable enough to tolerate the endotracheal tube.

Avitsian R et al studied the use of dexmedetomidine and awake fibreoptic intubation for possible cervicospine myelopathy. Dexmedetomidine provided adequate sedation. They did not

encounter any loss of airway or airway obstruction during intubation. The patient had excellent cooperation for postintubation neurologic examination<sup>[12]</sup>.

Boyd et al have advocated the use of dexmedetomidine sedation for awake fibreoptic intubation of patient with difficult airway due to severe odontogenic cervicofacial infection<sup>[13]</sup>.

In our patient, dexmedetomidine was used and patient was very cooperative during the intubation. His vitals and oxygen saturation was maintained throughout the procedure. So we recommend use of dexmedetomidine in pediatric patients for awake fibreoptic and blind nasotracheal intubation.

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