Alternative Intubation Technique In A Case Of Treacher Collins Syndrome

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Abstract

The Macintosh curved blade laryngoscopy is gold standard for intubation. However this technique may not be successful in certain conditions like mandibular dystosias and hemifacial microsmia. Here we describe and discuss an alternative technique of paraglossal straight blade intubation in a case of Treacher Collins syndrome (TCS) posted for adenotonsillectomy.

IMPLICATION

The intubation difficulty by Macintosh blades in madibulofacial dystosias is due to relative macroglossia with respect to structural abnormality, compression of tongue to pear drop shape by blade, displacement of the epiglottis against posterior pharyngeal wall, forcing epiglottis to obstruct the glottic view. Technique of paraglossal straight blade intubation is an effective alternative in such cases.

INTRODUCTION

Treacher Collins syndrome is a form of mandibulofacial dystosias characterized by deafness, hypoplasia of facial bones (mandible, maxilla, and cheek), antimongoloid slant of palpeberal fissure, coloboma of lower lid and bilateral anomalies of auricle. It usually presents as a case of difficult intubation during anesthesia. The cause for difficult intubation in such cases is due to relative macroglossia as a consequence of skeletal abnormalities.

CASE REPORT

A nine years old male child of Treacher Collins syndrome weighing 20 kg was posted for adenotonsillectomy in our department at Himalayan Institute of Medical Sciences. Examination during preoperative visit showed that the child had antimongoloid slant, coloboma of lower lid, micrognathia and retrognathia, high ached palate, bilateral lop ear and history of snoring (photograph1).

Figure 1

Figure 1: Clinical photograph of the patient.

On oral examination the child had Mallampati Grade IV with malocclusion of teeth. All routine investigations were with in normal limits. Difficult intubation in this case was anticipated.

On the day of surgery after securing an intravenous (iv)

access injection (inj) glycopyrrolate 0.01mg/kg was given. ECG, NIBP, SPO2 were attached to the patient. Surgeons were asked to be on stand by for emergency tracheotomy in event of failed intubation. The patient was preoxygenated for three minutes with 100% oxygen. Anesthesia was induced via spontaneous respiration through Bains circuit by incremental concentration of Halothane in O2. A small bolus of inj propofol(20mg) was given to hasten induction. Bag mask ventilation was tried and found to be adequate. Inj suxamethonium(1mg/kg) iv was given, IPPV given and 60 seconds later intubation tried by a standard technique using a curved Macintosh blade size 2. The glottic opening was not visualized(Cormack and Lehane Grade III). There after paraglossal straight blade technique by a right molar approach was tried and the glottic opening was visualized (Cormack and Lehane Grade II). Intubation was done with a cuffed endotracheal tube of size 5.5. Position of the tube was confirmed by bilateral chest auscultation and capnograph. The tube was fixed, pharyngeal packing done and patient handed over to surgeon. Intraoperative course of anesthesia and surgery was uneventful. After achieving proper haemostasis anesthesia was reversed with inj neostigmine(0.05mg/kg) and inj glycopyrrolate 0.01mg/kg. The child was extuabated and shifted to recovery in tonsillar position.

DISCUSSION

TCS (Franceschetti-Zwahlen-Klein) is a congenital malformation of first and second branchial arch, inherited as autosomal dominant trait. These patients have down-sloping palpebral fissures, colobomata of the lower eyelid, scanty lower eyelashes, malar hypoplasia, and micro- or retrognathia. Cleft palate is present in up to 35% of patients and an additional 30-40% have congenital palatopharyngeal incompetence. Abnormalities of the ear are very common and vary from minor malformations to severe microtia and hearing loss. Hearing loss may be due to atresia of the auditory canals or ossicular malformation of the middle ear. Despite these many development abnormalities, TCS patients are usually of normal intelligence.

Children with TCS posted for various surgeries, pose a problem to an anesthetist with regards to airway management. The cause for difficult intubation in such cases is due to relative macroglossia as a consequence of skeletal abnormalities[1,2,3,4]. This reduces the space available for manipulation and insertion of endotracheal tube. The abnormalities associated may be limited mouth opening, reduced extension of head on neck, hypoplastic mandible, limited forward movement of hyoid. Often multiple mechanisms may be present in an individual case.

Various techniques have been tried for intubation in TCS viz blind nasal, fiber optics, Bullard's Laryngoscope[5], Augistine stylet[6], Shikani optical stylet[7], laryngeal mask airway[8] , laryngeal mask airway with fibreoptic intubation[9]. Paraglossal straight blade technique as an aid for intubation was tried in this case and found to be successful.

The causes of failure to intubate by using Macintosh blades in cases such as TCS is due to relative macroglossia with respect to structural abnormality. The role of tongue in such patients has been proved scientifically by soft tissue radiological studies[10]. The cause of failure of visualization of glottic opening by using Macintosh blade is compression of tongue to pear drop shape by blade, displacing the epiglottis against posterior pharyngeal wall and forcing epiglottis to obstruct the glottic view. Thus when a grade 3 laryngoscopic view is achieved by a Macintosh blade, the technique may itself be responsible for difficulty in visualization of glottis. Hence this technique may be fundamentally flawed in presence of absolute or relative macroglossia.

The cause of improved view by paraglossal straight blade technique[11,12] is due to contribution from both the paraglossal approach and the straight blade laryngoscope. The actual mechanism for improved visualization is due to reduction of soft tissue compression (central component of line of sight) and lowering of proximal end of line of sight. Moreover the straight blade overcomes the problem of intrusion of curvature of Macintosh blade into the line of sight. Improved view by extension of head is possible with use of straight blade but not with curved blade.

CONCLUSION

Paraglossal straight blade intubation technique is superior to conventional intubation using Macintosh blade in mandibulofacial dystosias as it overcomes all the problems associated with curved blade. Also since tracheal intubation under vision is preferable to attempted blind intubation, this technique should be learned and taught as an alternative in difficult cases like mandibulofacial dystosias.

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