Anaesthetic Management Of A Child With Temporomandibular Joint Ankylosis With Extrahepatic Portal Vein Obstruction For Ankylosis Release

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Citation

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Abstract

The temporo-mandibular joints (TMJ) are highly specialized bilateral joints comprising an articulation betweenn the cranium and the mandible. Among various causes of TMJ ankylosis, the commonest are inflammation and trauma. The relatively difficult problem becomes even more grave in the pediatric age group because of their small mouth opening, near total trismus and uncooperativeness while securing the airway in the awake state. TMJ ankylosis, especially with mandibular hypoplasia presents a serious problem for airway management. Hematemesis resulting from bleeding esophageal varices and epistaxis from extrahepatic portal vein obstruction (EHPVO) with portal hypertension (PH) if associated, add in the problem of airway management during TMJ ankylosis release. Therefore, it becomes a real challenge for the anesthesiologist to manage such type of case in a child with TMJ ankylosis with extrahepatic portal venous obstruction with portal hypertension with esophageal varices.

CASE REPORT

A 8 year old boy with TMJ ankylosis admitted in plastic surgery for TMJ ankylosis release. History dated back to birth of the boy when patient had difficulty in opening his mouth which gradually reduced to near total trismus after one episode of convulsion at the age of 12 days. Now patient complained of haematemesis and malaena 2-3 episodes for last 3 months. Patient was a known case of EHPVO with PH and esophageal varices and splenomegaly for last 7 years. Patient had esophageal variceal banding done 6years back. Haematemesis and malaena recurred again for which patient admitted 2 years back. Patient was posted for banding but couldn't be done as mouth opening was hardly 0.5cm at this time and endoscope insertion couldn't be possible. Then patient was refered from tertiary care hospital to our hospital plastic surgery operation theater for TMJ ankylosis release prior to GI endoscopy for esophageal banding . History of epistaxis was present 15days prior to surgery. ENT reference taken which was nil active management till adequate platelet count. In the mean time, patient had undergone blood transfusion twice in view of severe anaemia. There was no h/o of ascites/pedal edema/encephalopathy. There was also no similar history in his family.

Examination showed mouth opening minimal with signs of retrognathism with deviation more towards right side (figure 1 and 2). His thyromental distance was 5cm and Pulse-78/min,BP-100/70mm Hg with all other systemic examinations were within normal limit.

Investigations were Hb-10.5gm% after two blood transfusions,TLC-7,600/cmm.Platelets were 86,000/cmm due to hypersplenism with PT-24/15seconds and INR-1.6.All other haematological and biochemical tests were within normal limit. CT face showed skeletal dysplasia of mandibular ramus with ipsilateral TMJ ankylosis with likelihood being fibrous dysplasia. USG abdomen showing portal cavernoma with a huge spleen of size 17.5cm.

Figure 1

Figure 1: with full mouth opening

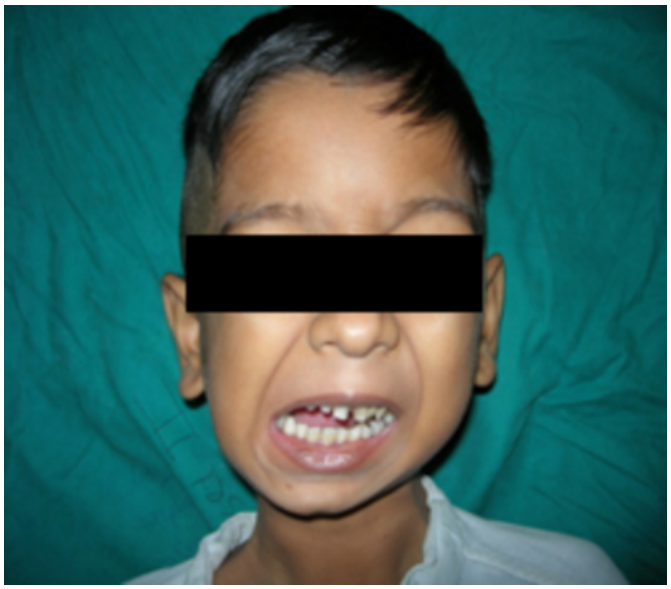
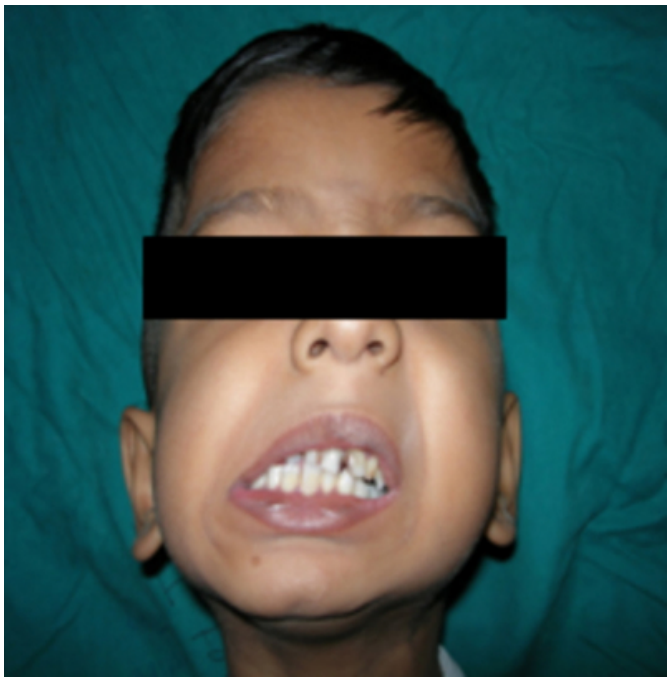


Figure 2

Figure 2: with mouth fully clenched



ANAESTHETIC MANAGEMENT

Fiberoptic intubation was planned when there was no epistaxis and platelet count >80000/cmm. Informed consent was taken from child's parents and post operative ventillatory support. Tracheostomy standby and jet ventilation were kept ready. Patient was taken inside OT and monitors like ECG, pulse oximetry attached. 2 drops of xylometazoline nasal drops were put into the nares after checking patency of nares. Lignocaine 2% gargle was given before ½ hr before the procedure and lignocaine 1:400000 nebulization was given. Then 20G vein was secured and superior laryngeal nerve block and transtracheal block was given with inj.lignocaine. We had planned for blind nasal FOB with child fully conscious but as the child was small and uncooperative on the table for the procedure, inj. ketamine 2-5 mg in incremental doses was given to keep the patient quiet without interfering airway reflexes. Then fiberoptic intubation was attempted by paediatric size (3.3mm) storz probe without suction port through the left nostril. There was bleeding in between the procedure due to associated trauma due to endotracheal tube(ETT) which could be aggravated due to associated portal hypertension. So we lost the vision during fiberoptic bronchoscopy (FOB).For that reason, we used FOB like a lightwand stylet to direct it into trachea.Then after confirming that carina was visible, No. 5.0 uncuffed endotracheal tube was threaded over FOB. Intubation was confirmed with $ETCO_2$ and bilateral chest auscultation. Then inj.vecuronium 2mg i.v was given followed by inj. midazolam 0.8mg and inj. pentazocine 12 mg i.v. Additionally inj. ranitidine 25mg and inj. ondansetran 2 mg were given.

Release of right TMJ ankylosis with interpositional arthroplasty using temporalis muscle flap was done. Total mouth opening of 3cm was achieved. Total operating time was 5 hours and blood loss was not significant as intraoperatively platelet transfusion was given. At the end of surgery, residual neuromuscular blockade was reversed with 1.25 mg inj. neostigmine and 0.2mg inj. glycopyrolate. Then after thorough nasotracheal and oropharyngeal suctioning and complete reversal of neuromuscular junction blockade with good blast of air at ETT, child was extubated on table. Patient was oxygenated with 100% 02 for 15 mins on table. His post operative vitals were within normal limit with SpO2 value 98% on air. Patient was shifted to post operative recovery room and observed.

DISCUSSION

Ankylosis is a Greek terminology meaning 'stiff joint' [1].It can be defined as “inability to open mouth due to either a fibrous or bony union between the head of the condyle and the glenoid fossa”. Because of immobility of the joint, the jaw function gets affected. The causes of TMJA may be congenital (forceps delivery), trauma, infection and idiopathic. Unusual causes include rheumatoid arthritis,

psoriatic arthritis, ankylosing spondylitis, fibrodysplasia ossificans progressiva, infectious diseases such as measles, pseudoankylosis after supratentorial craniotomy [2,3,4,5] etc. Younger patients have greater tendency towards reankylosis.

The difficult intubation in TMJA in children results from severe trismus, associated mandibular hypoplasia with unequal growth of two halves of mandible, reduced mandibular space with overcrowding of soft tissues, a maxillary overbite and/or hypoplasia. Since the child grows with the facial asymmetry, the position of the larynx may be altered. In TMJA the limitation of movements is such that even the hinge movement is affected, so direct laryngoscopy is impossible. Since the attachment of the lateral pterygoid muscle to the condyle and meniscus may also be altered, the patient presents with limited protrusion and diminished excursion, as well as trismus[6].

Endotracheal intubation in patients with altered airway anatomy always remains a challenge for the anesthesiologist. In developing countries patients often present late for treatment. Due to late presentation in patients having TMJA , airway anatomy become so much altered that it becomes quite difficult or sometimes impossible to intubate with conventional methods.

The problems to TMJA are superimposed on the usual difficulties of pediatric airway[7,8]. Blind nasal intubation, achieving intubations over a wire passed retrograde from trachea, fiberoptic laryngoscopy or tracheostomy are described alternatives for securing the airway[6,9,10]. Fiberoptic laryngoscopy and intubation, the ideal alternative, is not without difficulties. Fiberoptic scopes from 2.2mm outer diameter onwards would be necessary for passing through the 3-6 mm inner diameter tubes. Larger sizes with a suction channel would be preferred wherever possible with alternative of blind nasal intubation, which, even in expert hands, has a high possibility of failure, trauma and bleeding because of the distorted soft tissue anatomy. Use of inhalational anesthetic with propofol along with lignocaine 2% in incremental doses up to 50 mg helps to suppress the reflex response and reflex laryngospasm and to achieve adequate depth of anesthesia. Sevoflurane is an attractive choice for deep inhalational induction while halothane remains a cheap alternative where sevoflurane is not available. Arrangements for securing surgical airway should be at hand.

In our case, association of EHPVO with PH and esophageal varices and huge splenomegaly posed challenge for us to do fiberoptic bronchoscopy. Variable low platelet count due to hypersplenism caused epistaxis due to ETT trauma during fiberoptic bronchoscopy without suction port which blurred our vision. We have heard about intubating fibreoptic stylets which are now new options for difficult airway management[11].For that reason, we used FOB as lightwand stylet visualizing tip as FOB entered into vocal cords and trachea and successfully intubated such high risk patient with difficult airway. In a patient with TMJA with EHPVO with PH and esophageal varices for ankylosis release, fiberoptic bronchoscopy with side-by continuous suction port remains the best possible option which we hadn't used in our case.

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