CASE REPORT

Anaesthetic Management Of Bilateral TMJ Replacement In Case Of Ankylosis Of TMJ And Micrognathia

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BACKGROUND

Temporomandibular joint (TMJ) ankylosis is defined as bony or fibrous adhesion of the anatomic joint components accompanied by limitation of mouth opening, causing difficulty in mastication, speech, and oral hygiene[1] . This may also influence symmetry of the facial skeleton. This interferes with mastication, speech, oral hygiene, and normal life activities, sleep related breathing disorder characterized by repeated episodes of apnoea and hyperpnea during sleep and can be potentially life threatening when struggling to acquire an airway in an emergency. Severe OSA with repeated nocturnal hypoxia associated with pulmonary hypertension may result in right heart failure, biventricular dysfunction and congestive cardiac failure, significantly increase the risk of haemodynamic instability in perioperative period[2,3]

Case Report:

A 44 Year old male with no known comorbidities, complaints of excessive snoring, day time somnolence, inability to perform daily activities due to the same and difficulty to open mouth for consumption of solid food and to chew.



On General examination, patient found to be tachypnoeic with diaphragmatic breathing with room air saturation 94%. Examination of airway revealed facial asymmetry, micrognathia with mouth opening less than 1 finger breadth, Mallampati scoring could not be assessed because of restricted mouth opening with minimal Neck extension. His STOP BANG Score was 5.

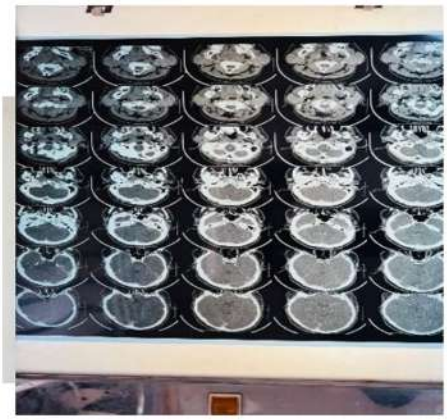
Investigations:

His ABG revealed Hypercapnia. PFT showed FVC : 43%, FEV1 45%, FEV1/FVC 101% with restrictive pattern. 2D ECHO shows EF 60%, mild TR/PAH, RWMA-anterior septum hypokinetic with fair LV systolic function Computed tomography facial bone showed right TMJ bony ankylosis & left mandibular condyle hypoplasia. Computed tomography neck-type IV bony ankylosis right, type II ankylosis left TMJ, no obvious lower airway narrowing-AP diameter of trachea 15 mm @D4 vertebra. Preoperative planning included polysomnography to assess OSA severity.

Sleep study revealed Apnoea Hypopnoea Index (AHI) of 64.1 categorising the patient as Severe OSA with the longest event of apnoea as 109 sec with corresponding drop of sao2 to 53% associated with minimum of 17sec Hypopnoea.







The patient was adviced Bilateral TMJ reconstruction. Plan for securing airway was under Awake Fibreoptic intubation. Patient rapport was built and consent for awake fibreoptic intubation and tracheostomy was taken preoperatively . Preoperatively he was put on BIPAP ventilation for ease of breathing. On the preoperative day he was given anti-aspiration prophylaxis with BIPAP ventilation with No sedation protocol overnight.

On the day of surgery Inj. Glycopyrrolate 0.2 mg intramuscular given as an antisialogogue 1 hour prior to intubation with nebulization with 2% Lignocaine in the premedication room. Difficult airway cart with all standard precautions for FONA was arranged. All Standard Preinduction monitors were attached and also invasive arterial BP monitoring. Inj Dexmedetomidine infusion was started for conscious sedation, bolus of 0.5mcg/kg followed by an infusion of 0.2mcg/kg . Awake FOB guided nasal intubation done using FOB size of 3. 5mm using SAYGO (Spray As You Go) technique with flexometallic 7mm ID endotracheal tube. After confirming successful securing of airway with capnograph, anesthesia was induced with Inj fentanyl 100mcg, Inj propofol 100mg and rocuronium 70mg given intravenously.

Maintenance of anaesthesia was continued intraoperatively with oxygen & air 1:1, Sevoflurane 2 %. Arterial blood pressure, temperature & urine output monitoring done. Intraoperative period was uneventful. Post operatively elective ventilation was planned and hence Tracheostomy done after the surgery. Patient shifted to surgical ICU and ventilated overnight. Postoperatively he was on supportive medications & analgesics, chest & mouth physiotherapy, tracheostomy care and speech therapy







Discussion:

Managing bilateral temporomandibular joint (TMJ) ankylosis with micrognathia presents significant anesthetic challenges due to restricted mouth opening, airway obstruction risks, and potential difficult intubation. This case highlights the critical role of awake fiberoptic intubation (AFOI)4,5 and postoperative tracheostomy6,7 in ensuring patient safety.

Airway Challenges and Intubation Strategy:

Patients with TMJ ankylosis and micrognathia often exhibit severe obstructive sleep apnea (OSA) and retrognathia, complicating mask ventilation and direct laryngoscopy2,3

.

In this case, AFOI was prioritized due to:

- Minimal interincisor distance (often <10 mm), preventing conventional laryngoscopy.
- High risk of a "cannot intubate, cannot oxygenate" scenario under general anesthesia
with muscle relaxant.
- The need to maintain spontaneous respiration during airway securement.

The technique involved:

- Topical airway anesthesia with lidocaine (nebulized and sprayed) to suppress gag
reflexes.
- Judicious sedation using dexmedetomidine infusion8
to balance patient comfort with
respiratory drive maintenance was followed.
- Fiberoptic-guided tube placement via the nasal route, leveraging the bronchoscope's
flexibility to navigate anatomical distortions.

Rationale for Postoperative Tracheostomy [6,7]

Tracheostomy was performed post-TMJ replacement due to:

- Anticipated airway edema from prolonged surgery and mandibular and soft tissue
manipulation.
- Micrognathic anatomy, increasing OSA severity and extubation failure risk.
- Prophylactic measure to ensure airway patency during early recovery, particularly in
bilateral cases. Postoperative care involved continuous respiratory monitoring, stepwise decannulation protocols, mouth physiotherapy.

Outcomes and Recommendations

This approach aligns with studies showing:

- AFOI success rates >90% in difficult airways when performed by experienced providers.
- Tracheostomy reduces reintubation rates in high-risk TMJ ankylosis cases.

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