

# Chronic Protracted Dislocation of Temporomandibular Joint in a Trauma Patient - A Case Report

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## Abstract

**Rationale:** Chronic protracted temporomandibular joint (TMJ) dislocation refers to a condition that persists for more than one month without reduction. **Patient Concerns:** A 47-year-old male patient first presented to the Department of Maxillofacial Surgery complaining of the inability to close his mouth for nine months. **Diagnosis:** Chronic protracted dislocation of the temporomandibular joint. **Treatment:** An initial conservative approach was attempted to reduce the condyle, which was unsuccessful. As literature suggests, open-joint surgery with eminectomy and condylectomy of bilateral joints was performed. **Outcomes and Take-away Lessons:** A stagewise treatment is essential for such cases of long-standing TMJ dislocations. A conservative approach is first attempted followed by surgery if the conservative approach is unsuccessful. Postsurgery physiotherapy is essential for a better prognosis.

**Keywords:** TMJ dislocation, post trauma dislocation, chronic jaw disease

## INTRODUCTION

Dislocation is a condition in which a joint is displaced from its articulations, such as by an excessive movement of the condyle beyond the articular eminence, with separation of articular surfaces and fixation in that position, i.e. open locked. Reposition of the condyle back to its position required external manipulation.<sup>[1]</sup> True dislocation of the temporomandibular joint (TMJ) is a condition in which condylar processes are displaced from the glenoid fossa anterior to the articular eminence. It is an uncommon condition that occurs for a variety of reasons, including extreme mouth opening during yawning (46%), trauma to the mandible, Ehlers–Danlos and Marfan syndromes, tracheal intubation and neurologic disorders.<sup>[2]</sup> TMJ dislocation can be categorised into three groups: acute, habitual or recurrent and long-standing. The last category refers to a condition that persists for more than one month without reduction and is the most challenging and difficult of all. The pathogenesis can be due to imbalance in neuromuscular function or due to a structural deficit. Neuromuscular alterations include laxity of the disc and capsular ligament, long-standing internal derangement and spasm of lateral pterygoid muscle. Structural deficits involve – arthritic changes of the condyle, decrease in the height of articular eminence, morphologic changes of the fossa, zygomatic arch, etc.<sup>[1]</sup>

## CASE REPORT

A 47-year-old male patient presented with a chief complaint of inability to close the mouth for nine months with a history of trauma nine months ago wherein he was diagnosed with traumatic brain injury with extradural haemorrhage. His Glasgow Coma Scale (GCS) rating was E1V1M2 immediately after the accident. The patient was operated for the same and was in a comatose state with tracheostomy support thereafter. The patient's attendant gives a history of noticing inability to close his mouth since the time of accident, which leads to protracted dislocation of the TMJ.

On examination – GCS of E4VTM5 is noticed. The patient was malnourished and was on percutaneous endoscopic gastrostomy (PEG) to enable nutritional support. The patient

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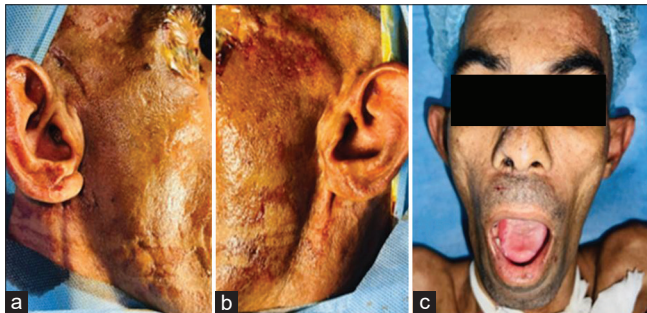
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was unable to close his mouth with an anterior open bite of 28 mm, bilateral pre-auricular hollowing and deranged occlusion [Figure 1]. A provisional diagnosis of long-standing bilateral TMJ dislocation was given and a computed tomography scan [Figure 2] confirmed the diagnosis. Conservative methods such as manual closed reduction of the TMJ were attempted under local anaesthesia and muscle relaxants but were unsuccessful. Other modalities, such as guiding bite blocks, elastic traction, extraoral caps and splints, were not thought to be advisable as it is a case of traumatic brain injury and he is not compliant to commands and fear of aspiration. Although minimally invasive technique such as arthroscopy is available, it was not preferred due to patient-related factors and economic constraints. The line of treatment chosen by us was aimed at facilitating mandibular movements and further removal of PEG.

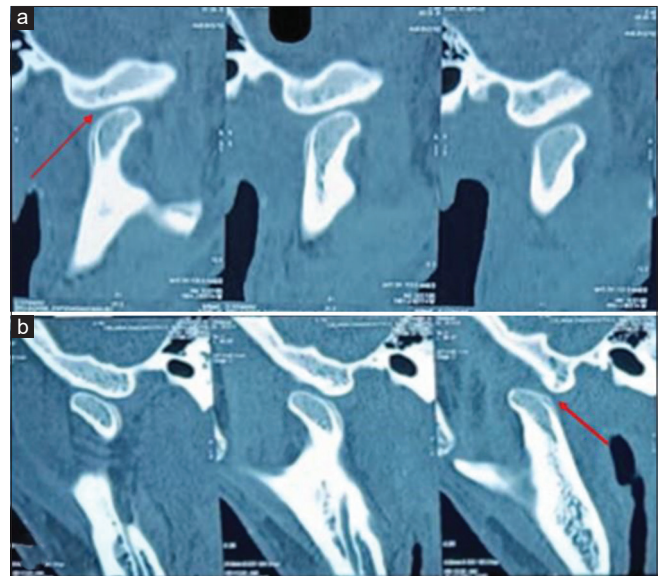
Under general anaesthesia (GA), arch bars were placed on both arches to enable post-operative manipulation of the mandible. A further attempt to reduce the dislocation under GA was unsuccessful. Using a pre-auricular incision, bilateral eminectomy was planned and performed, but mouth closure was not satisfactory due to the chronic nature of dislocation. Hence, bilateral condylectomy was performed at the level of the condylar neck to prevent recurrent dislocation and to allow free movement of the lower jaw [Figure 3]. Apertognathia

resolved, and occlusion was achieved with good occlusal interdigitation [Figure 4]. Mandibular movements and occlusion were assessed at this point and were found to be stable bilaterally. A tight layered closure was achieved using Vicryl 3-0 and Vicryl rapide 4-0. Intermaxillary fixation (IMF) was done intraoperatively. Postoperatively, the final position of the condylar neck was seen to be in line with the glenoid fossa [Figure 5], and complete movements of the mandible were observed.

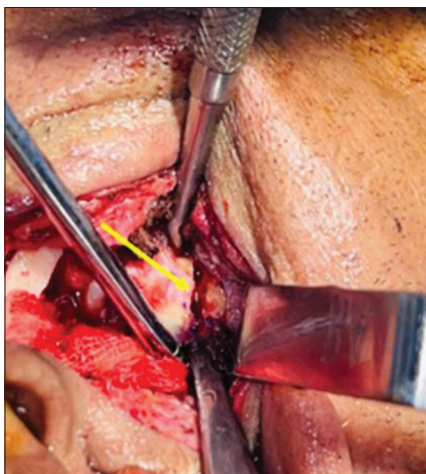
The patient presented with palsy of the zygomatic branch of the facial nerve on the left side that resolved within a month with full function. A follow-up for eight weeks was done actively and is still on trimonthly follow-up. The IMF was released on the third post-operative day, and the patient was placed on intermaxillary elastics for two weeks. Mouth opening and closing exercises were explained to the patient's attendant, as patient compliance was poor. Decannulation of the tracheostomy was performed on the 10<sup>th</sup> day postoperatively. PEG was removed one month postoperatively. Mouth opening of 35 mm was achieved with angle class 1 occlusion. After two months, arch bars and elastics were removed with good results in the function of the mandible.



**Figure 1:** (a and b) Pre-auricular hollowing seen on the right and left sides (c) anterior open bite seen preoperatively



**Figure 2:** Red arrows indicates dislocated temporomandibular joint (TMJ) (a) right TMJ (b) left TMJ in pre-operative computed tomography scan

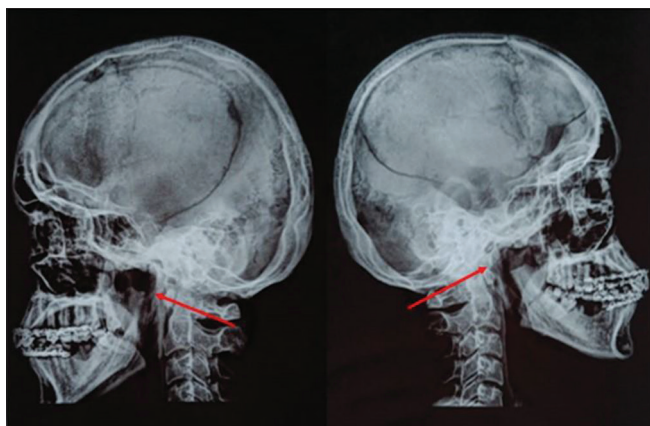


**Figure 3:** Yellow Arrow indicating eminectomy and condylectomy intraoperatively



**Figure 4:** Apertognathia resolved postoperatively





**Figure 5:** Red Arrows indicate bilateral eminectomy and condylectomy in post-operative radiographs

Some of the complications related to the procedure performed involve – facial nerve weakness, shortening of ramal height, occlusal discrepancies, increased risk of infection, wound dehiscence and external scarring. Any facial nerve weakness noted immediately postoperatively was seen to resolve in the following month. As the volume of bone removed was minimal, the foreshortening of ramal height did not cause any physiological changes in the function. Occlusion settling due to intermaxillary elastics placement was done for two months.

## DISCUSSION

Anatomically, dislocations of TMJ are categorised into three types based on the position of the condyle with respect to the articular eminence. They are: Type I – condylar head is below the tip of eminence, Type II – condylar head is in front of the tip of eminence and Type III – the condylar head is high up in front of the base of the eminence.<sup>[3]</sup> Long-standing TMJ dislocation is an infrequent condition and usually results from acute or recurrent dislocations left untreated for more than one month. As the condyle is displaced out of the glenoid fossa, fibrous adhesions develop between the articular disc, condyle and the articular eminence. The delayed treatment leads to fibrosis and scarring of the retrodiscal tissues, which occupy the empty glenoid fossa, as well as masticatory muscle spasms, articular ankylosis and TMJ degeneration, further impeding the reduction.<sup>[4]</sup>

Literature suggests that open-joint surgery was necessary for about 16%<sup>[5]</sup>–54%.<sup>[6]</sup> Despite having limited experience in treating long-standing dislocation of more than three months, they suggested that when it persisted for 4–12 weeks, it is best treated by open reduction. Their findings suggest that surgical procedures are probably necessary to correct dislocations of more than three months duration.<sup>[5]</sup> The surgical goals must continue to be to reduce or return anatomy to normal, improve function and restore normal occlusion with procedure posing minimal or no morbidity, as well as eliminating the chance of recurrence.<sup>[7]</sup> Definitive guidelines regarding management are lacking in the literature.<sup>[8]</sup> Protracted TMJ dislocation may rarely be treated by conventional methods of closed reduction, but most need

surgical intervention.<sup>[9]</sup> Surgical treatment including ones like the indirect traction and direct approach involved open-joint surgery. Additional procedures in unsuccessful cases may include extraarticular orthognathic techniques to correct malocclusion or TMJ replacement.<sup>[1]</sup> To achieve good prognosis, it is important to prevent redislocation after surgery and to maintain the mouth opening volumes through constant physical therapy.<sup>[10]</sup>

## CONCLUSION

Treatment for long-standing TMJ dislocation includes various techniques. Yet, despite attempts at closed reduction, most cases are responsive to open reduction. We have seen that in this particular case; eminectomy followed by a condylectomy was necessary to achieve stable occlusion and free mandibular movements. Post-surgery physiotherapy is an essential for such cases to attain a better prognosis.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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