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## General anaesthesia as an effective aid for reduction of acute temporomandibular joint dislocation: a case report

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### Abstract

TMJ dislocation can be anterior, posterior, medial, lateral and superior but anterior dislocation is the commonest type of dislocation seen in clinical practice. Management of TMJ dislocation can be conservative or surgical depending on different situations with varying success rate. Purpose of this case report is to present a case of acute dislocation managed conservatively under general anaesthesia after repeated failed attempt to reduce under local anaesthesia and to show general anaesthesia as an effective aid for reduction of acute TMJ dislocation.

**Keywords:** Temporomandibular joint, acute dislocation, manual reduction, general anaesthesia

### Introduction

The temporomandibular joint or TMJ is a ginglymo-arthrodiar joint whose articulation involves both hinge and translational type of movements. Both the condyle of mandible articulates in the glenoid fossa or mandibular fossa of temporal bone [1, 2]. Movement of condyle that is rotational, anterior translation, posterior translation and mediolateral translation and their range is controlled by both active and passive forces produced by neuromuscular coordination, ligaments and biomechanical constraints in the dentition and TMJ [3-5]. Sometimes, the condylar head is displaced beyond the glenoid fossa in either an anterior, posterior, medial, lateral, or superior direction. This is referred to as dislocation, and it may be partial (subluxation) or complete (luxation or true dislocation) [6]. Subluxation or partial dislocation is a self-reducing condition whereas in case of luxation, patient needs assistance of other person to help him to reduce condyle to its original position in order to close its mouth again [1, 2]. Out of total dislocated joints in the body, mandibular dislocation represents of 3% cases [7]. TMJ dislocation can be anterior, posterior, medial, lateral and superior but anterior dislocation is the commonest type of dislocation seen in clinical practice [8, 9]. TMJ dislocation most commonly occurs in second and third decade of life but can affect both children and elderly. Predisposition for dislocation is more in females as compared to males but cause is still remain unknown [2]. Certain type of activities that can cause acute TMJ dislocations such as opening the mouth too wide, chewing, laughing, epileptic attacks, prolonged dental and otorhinological procedure, trauma, gastroscopy or during surgery under general anaesthesia. Management of TMJ dislocation can be conservative or surgical depending on different situations with varying success rate [6, 10, 11].

Objective of this case report is to present a case of acute dislocation managed conservatively under general anaesthesia after repeated failed attempt to reduce under local anaesthesia and to show general anaesthesia as an effective aid for reduction of acute TMJ dislocation.

### Case Report

A 52 year female reported to our trauma center with a chief complaint of pain over rt. TMJ and unable to close her mouth since 6 hrs after an episode of trauma to lower jaw due to fall from height. She also had an associated soft tissue injury on thigh. An extraoral examination revealed the presence of facial asymmetry and jaw deviation to right side (fig.1). On intraoral examination there was no occlusion as well as the mandibular deviation to the right side.

It is characterized by the midline of the maxillary and mandibular midline do not match, partial edentulous jaw with multiple carious tooth. The radiographic evaluation with help of CT scan revealed the dislocation of left condyle medially and right condyle laterally (fig2, fig3). Based on clinical and radiological examination, a diagnosis of acute bilateral TMJ dislocation was made.

Patient was initially given analgesic and muscle relaxants to relieve pain then multiple attempt was made under local anaesthesia to reduce the dislocation with manually (Hippocratic method) but dislocation was not reduced. The patient was then considered for reduction either open or closed under general anaesthesia. Basic investigations was done. After the basic investigations like CBC, RBS, LFT/RFT, ECG and chest x ray came within limit, the patient was taken under general anaesthesia and manual reduction one more time attempted and dislocation was reduced (fig.5). Postoperative CT scan was done to check and establish the correct position of both the condyles in the glenoid fossa (fig.6). Since the patient had partial edentulous jaw, inter-maxillary fixation cannot be done after reduction but patient was instructed for soft diet and to maintain less mouth opening since it may lead to dislocation. Patient was then followed on OPD basis at 1week, 2week, 4 week and 3months intervals. No complaints of further dislocation reported by the patient.

### Discussion

TMJ dislocation can be classified as partial (subluxation) or complete (luxation), bilateral or unilateral, acute, and chronic protracted or chronic recurrent [12]. TMJ dislocation can arise from both traumatic and non-traumatic causes and the treatment modality for its reduction also evolved due to its different aetiology and presentations. Factors that can predispose mandibular dislocation include: TMJ ligament weakness, injury to the capsule and ligaments, degenerative joint disease, neurological disease, lack of muscle coordination, erosion of articular eminence, morphological abnormalities of the condyle and articular eminence, and loss of vertical height due to tooth loss [13]. Treatment modality for TMJ dislocation varies from simple conservative methods to complex surgical procedures. The conservative method is mostly the first treatment modality (the treatment of choice) in TMJ dislocations without associated fractures in acute case presentation [6, 14, 15] or with added sedation, muscle relaxants and/or general anaesthesia [16, 17]. The conservative method most commonly used is Hippocrates maneuver (bimanual reduction of dislocated joints). The technique is easy to apply and could be carried out in the accident and emergency department as well as on the dental chair in the clinic. The technique requires that the operator puts his thumbs over the molar teeth of the patient and push the dislocated jaw downward and backward (fig.4) [13]. This manoeuvre takes a lot of effort and is usually modified with the administration of sedatives. Failure of reduction is not uncommon. Furthermore, the physician has to take the risk of being bitten and possible disease transmission. Various modification are

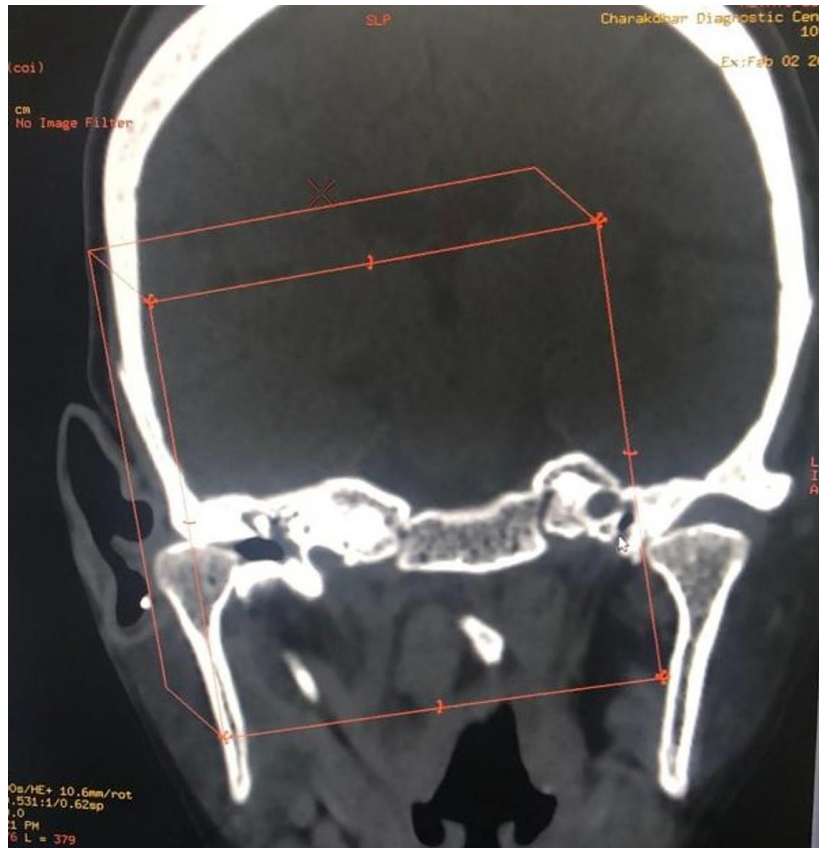
described in the literature for conservative treatment method that include Wrist-pivot technique by Lowery *et al.* [18] the Extraoral technique by Chen *et al.* [19] the "Syringe technique" [20] the Combined ipsilateral staggering technique by Thomas *et al.* [21] and the Gag reflex procedure in which the soft palate is rubbed across with a dental probe to initiate relaxation of the lateral pterygoid muscle and spontaneous reduction and closure of the mouth [22].

The main issue with TMJ dislocation is the presence of severe muscular spasms so the main focus of treatment is to deal with stress, anxiety and spasm in joint muscles. There can be several ways in which these problem can be be dealt with and which may include convincing patients that the procedure will restore the jaw to its original position, sedatives, muscle relaxants, massage in the area around TMJ muscle, and manipulation appropriately [23] or lastly to do reduction under general anaesthesia. In case of acute dislocation, TMJ reduction can be done without anaesthesia whereas in chronic and difficult cases, local anaesthetic use and muscle relaxant and analgesic drug administration are required to give comfort to patients in the process of reduction [23]. After achieving reduction, the postoperative instructions given for not opening mouth too wide, and consume soft diet. Head bandage or inter-maxillary fixation mostly done for 10-14 days which will rest the joints in normal position. Provision of anti-inflammatory and analgesic drugs can be prescribed for 3-5 days [23].

In case of chronic long standing dislocation, the reduction under general anesthesia is the better option. Surgical procedures should be considered as the last treatment modality. For cases of recurrent, chronic, and habitual dislocations, surgery is a treatment of choice. These procedures include: capsular plication, eminectomy, and Le Clerc procedure [13, 24].



**Fig 1:** Clinical picture showing the presence of facial asymmetry and jaw deviation to right side.

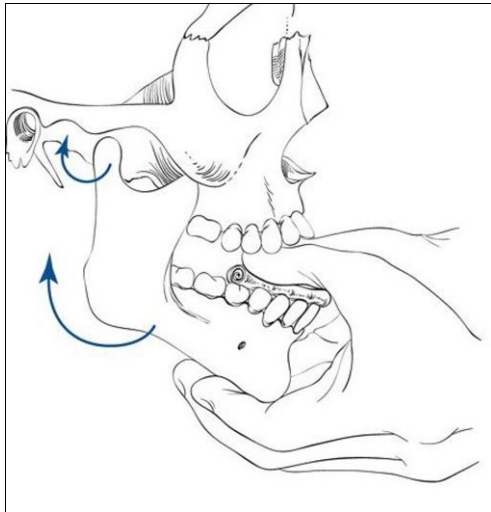


**Fig 2:** Coronal section of CT scan showing the dislocation of left condyle medially and right condyle laterally.



**Fig 3:** 3-D section of CT scan showing the dislocation of left condyle medially and right condyle laterally.





**Fig 4:** Picture showing operator's hand position in manual reduction of TMJ dislocation <sup>[13]</sup>.



**Fig 5:** Post-operative clinical picture showing reduced TMJ dislocation and facial symmetry.



**Fig 6:** Post-operative 3-D section of CT scan showing the reduced bilateral TMJ.

## Conclusion

Management of TMJ dislocation can be done conservatively with manual reduction or with surgical procedure depending on type of dislocation. The main problem with TMJ dislocation is the presence of severe muscular spasms so the main focus of treatment should be to deal with stress, anxiety and spasm in joint muscles. There can be several ways in which these problem can be dealt with and which may include convincing patients that the procedure will restore the jaw to its original position, sedatives, muscle relaxants, massage in the area around TMJ muscle, and manipulation appropriately or lastly to do reduction under general anaesthesia. So if all technique fail reduction under general can have the successful outcome and it can be considered as an useful aid in management of acute TMJ dislocation.

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