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Case Report

Seizures and Jaw Luxation: A Rare Case Report Unveiling the Connection

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Abstract

Temporomandibular joint (TMJ) dislocation is a rare complication of generalized tonic-clonic seizures. We present the case of a 58-year-old woman with epilepsy on lamotrigine who developed persistent mouth opening following a prolonged seizure. Clinical examination and CT imaging confirmed bilateral anterior TMJ dislocation without fractures. She underwent successful closed manual reduction under sedation, with restored jaw function confirmed by follow-up CT. This case emphasizes the need to consider TMJ dislocation in postictal patients with jaw immobility. Prompt diagnosis using imaging and early intervention are essential to prevent long-term complications and ensure optimal functional recovery.

Keywords: *Temporomandibular Joint Dislocation; CT; Seizure*

Introduction

Temporomandibular joint (TMJ) dislocation is an uncommon condition, but when it occurs, it significantly impacts the affected individual and often requires prompt medical intervention. In its acute phase, TMJ dislocation greatly affects oral health due to severe pain or discomfort and the resulting difficulty in speaking, chewing, and eating [1].

TMJ hypermobility is categorized into subluxation and luxation. Subluxation of the TMJ occurs when the condyle moves forward beyond the articular eminence during jaw opening, temporarily locking in an open position before spontaneously returning to the fossa, either on its own or with the patient's manual assistance [2]. The purpose of this article is to discuss the hyperextension of the temporomandibular joint (TMJ), which, in the case of seizures, may result in subluxation or dislocation of the joint.

Case Report

A 58-year-old female with a history of epilepsy, treated with lamotrigine for three years, presented to the emergency department after a 30-minute generalized tonic-clonic seizure. Postictally, she was alert, stable, and showed no respiratory distress or oropharyngeal trauma. However, physical examination revealed a persistent wide-open mouth and inability to close the jaw (Figure 1 and 2). Palpation revealed bilateral depressions anterior to the tragus, consistent with anterior displacement of the temporomandibular joints (TMJs). The coronoid processes were prominently palpable near the maxilla.

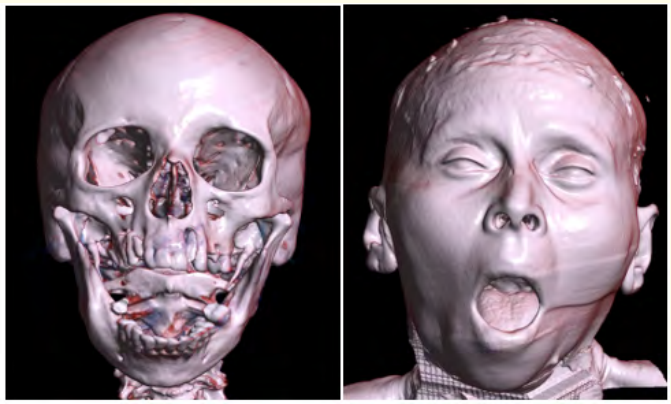


Figure 1: *3D CT scan of the facial massif showing the locked open jaw due to bilateral temporomandibular joint dislocation.*

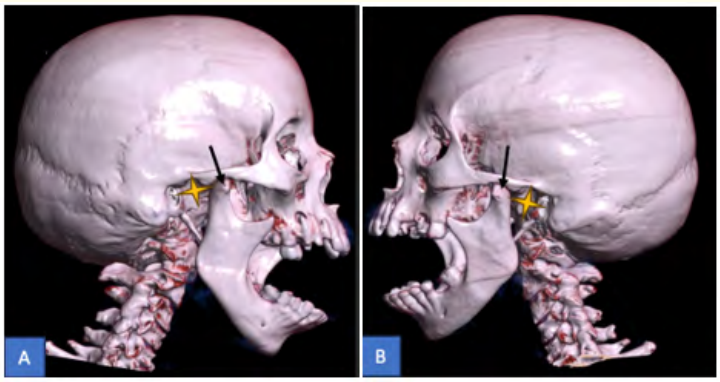
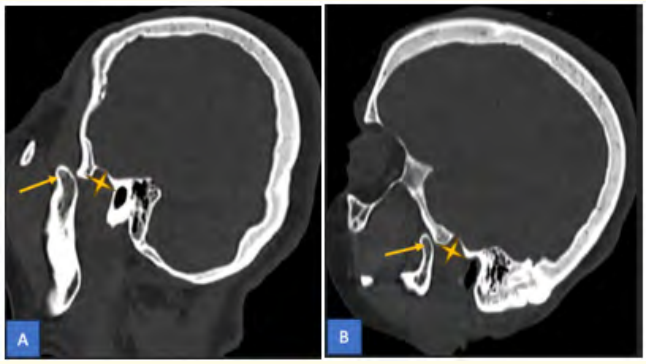


Figure 2: *3D CT scan of the facial massif showing anterior displacement of the condyle (black arrow) out of the mandibular fossa (yellow star) on both the right (A) and left side (B).*

A CT scan of the facial bones was performed, confirming bilateral anterior dislocation of the mandibular condyles beyond the articular eminences (Figure 3). There were no associated fractures or additional soft tissue injuries.



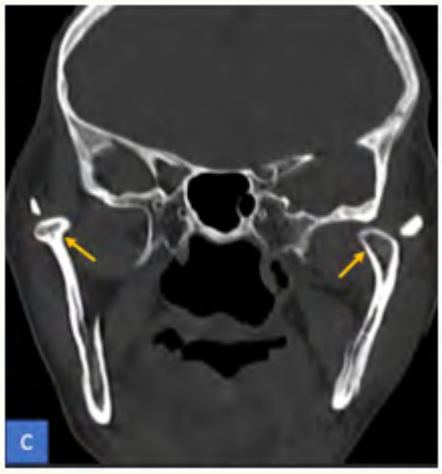


Figure 3: *Sagittal (A, B) and coronal (C) CT scan of the facial massif with bone window showing the anterior displacement of the condyle (yellow arrow) relative to the mandibular fossa (yellow star) on the right and left side.*

A maxillofacial surgeon performed a closed manual reduction under sedation the same day. The procedure resulted in immediate clinical improvement, with restored jaw mobility and occlusion. A follow-up CT scan confirmed successful anatomical reduction of both TMJs (Figure 4). The patient was discharged the next day with dietary advice and instructions for outpatient follow-up.

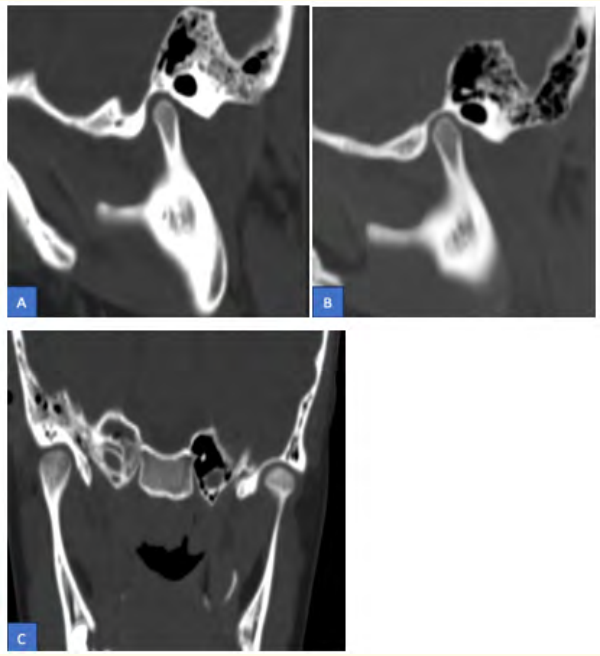


Figure 4: *Sagittal (A, B) and coronal (C) CT scan of the facial massif with bone window showing bilateral restoration of the temporomandibular joint articulation after reduction.*

This case highlights a rare but important seizure complication. Prompt recognition and imaging are essential to confirm the diagnosis and ensure timely management.

Discussion

The occurrence of TMJ dislocation is rare; two emergency departments, with a combined total of 100,000 annual visits, reported an average of 5.3 cases of TMJ dislocation per year over a seven-year period [3]. Bilateral TMJ dislocation is most common when the mandible is positioned in a fully open state, while in unilateral dislocation, the mandible is deviated to the opposite side with a partially open mouth. TMJ dislocation accounts for 3% of all reported joint dislocations in the body [4].

The anatomy of the temporomandibular joint (TMJ) allows smooth condyle movement over the articular eminence. Subluxation occurs when the posterior slope of the eminence is short and steep, while the anterior slope is longer and less steep. In hypermobile joints, disc rotation reaches its limit before condyle translation due to the steep eminence [5].

Temporomandibular joint dislocation may occur as a rare consequence of seizure activity due to intense, uncontrolled muscular contractions during the tonic phase. As highlighted by Kumar., *et al*. [6], such dislocations often present postictally and can be confirmed through imaging, particularly CT scans. Recognizing this association is crucial for timely diagnosis and management to prevent complications.

Clinically, musculoskeletal disorders are diagnosed through patient history and examination. Luxation is evident when the patient cannot close their mouth independently. Subluxation, or condylar hypermobility, is pathological only if it causes joint pain or masticatory muscle discomfort. A clicking sound during mouth opening may signal condylar subluxation, reflecting anterior movement along the articular eminence [7].

Imaging is used to confirm TMJ luxation and exclude other maxillofacial injuries, such as condylar or mandibular ramus fractures and bilateral or caudoventral TMJ luxations. Skull radiographs, particularly dorsoventral or ventrodorsal views, are effective for assessing asymmetry in TMJ luxation, while oblique views can isolate each TMJ. Radiographs can be taken using standard machines or dental film and sensors.

CT is essential for diagnosing TMJ luxation and assessing related injuries. It provides detailed images to confirm luxation, detect asymmetries, and identify associated fractures or trauma. CT scans also offer three-dimensional reconstructions, aiding in treatment planning and understanding the injury's complexity. This imaging modality is particularly valuable for evaluating cases with poor prognoses, such as caudoventral luxation with fractures. CT ensures precise diagnosis and effective management of TMJ luxation [8].

MRI is a valuable tool in diagnosing TMJ luxation, as it provides detailed images of soft tissues, including the articular disc, ligaments, and surrounding muscles. It helps assess disc displacement, joint inflammation, and associated soft tissue damage. MRI offers a non-invasive method for evaluating the extent of TMJ luxation and planning appropriate treatment [9].

Treatment of spontaneous luxation involves joint movement limitation to prevent further episodes, along with manual reduction, often assisted by anxiolytics to relax the masticatory muscles. Mechanical oral devices can be used to limit excessive mouth opening. In more severe cases, eminectomy may be performed, allowing for spontaneous return of the condyle to the glenoid fossa during mouth closure, though it does not fully prevent future luxation [10].

Conclusion

TMJ luxation is a complex condition that requires accurate diagnosis and management. Imaging techniques, like X-rays and MRI, help assess the injury's extent. Treatment options range from conservative methods such as manual reduction and oral devices to surgical

interventions like eminectomy. Early detection and a personalized treatment plan are vital for preventing long-term complications and ensuring optimal outcomes.

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