

Acute Temporomandibular Joint Dislocation Immediately Following Mandibular First Molar Extraction: A Case Report and Review of Clinical Management

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ABSTRACT

Introduction: Temporomandibular joint (TMJ) dislocation is an uncommon but potentially distressing complication that may occur during dental treatment as a result of prolonged mouth opening, excessive mandibular translation, or predisposing joint laxity. Although frequently reported following lengthy dental procedures and third-molar surgeries, acute TMJ dislocation after a routine extraction is infrequently described in the dental literature.^{1,7} Prompt recognition and chairside management are essential to prevent patient discomfort, muscle spasm, and the need for emergency intervention.

Case Presentation: A 26-year-old healthy female presented for extraction of the mandibular right first molar (#30) due to extensive dental caries with pulpal involvement, cracked tooth syndrome, dental pain, and associated periapical abscess. Medical history was noncontributory, and the patient denied previous surgeries, tobacco use, or a history of temporomandibular joint disorders. Local anesthesia was achieved with one carpule of 4% articaine with 1:100,000 epinephrine administered by infiltration and one carpule of 2% lidocaine with 1:100,000 epinephrine administered as an inferior alveolar nerve block. Extraction was completed uneventfully using elevators and forceps, and hemostasis was achieved. Immediately following the procedure, the patient developed an inability to close her mouth consistent with acute mandibular dislocation. Manual reduction was performed chairside using downward and posterior mandibular pressure, resulting in immediate restoration of mandibular function and symptomatic relief. Postoperative instructions focused on avoiding excessive mouth opening and minimizing the risk of recurrence.

Discussion: Acute TMJ dislocation during dental treatment is uncommon but may occur even during routine procedures requiring sustained mouth opening.^{1,7,10} Risk factors include prolonged mandibular depression, ligamentous laxity, previous episodes of dislocation, and excessive opening during treatment.^{7,11} Early recognition and immediate manual reduction remain the cornerstone of management.^{7,10} Dentists should be familiar with the clinical presentation and reduction techniques to ensure prompt intervention and prevent complications.

Conclusion: This case highlights an uncommon complication occurring after routine mandibular molar extraction and demonstrates successful chairside management through immediate manual reduction. Awareness of TMJ dislocation, its predisposing factors, and appropriate management strategies is essential for all dental practitioners.^{1,7}

Keywords: Temporomandibular joint dislocation, mandibular dislocation, tooth extraction, dental complications, lockjaw, chairside management, case report.

INTRODUCTION

Temporomandibular joint dislocation occurs when the mandibular condyle becomes displaced beyond the articular eminence and is unable to return spontaneously to its normal position within the glenoid fossa.^{1,7,11} The condition is most commonly anterior in nature and typically presents with inability to close the mouth, preauricular discomfort, difficulty speaking, and patient anxiety.^{2,13} Although temporomandibular joint disorders are frequently encountered in clinical practice, acute dislocation remains a relatively uncommon event in general dentistry.^{2,6}

Dental treatment may precipitate TMJ dislocation because many procedures require prolonged maximal mouth opening. Extractions, endodontic therapy, prosthodontic procedures, and oral surgical interventions have all been implicated as potential triggers.^{1,7,15} Most published reports focus on third molar surgery or lengthy procedures; however, dislocation may also occur during routine extractions in otherwise healthy individuals without a prior history of joint disease.^{7,15}

The condition can be alarming for both the patient and clinician if not immediately recognized. Delayed management may result in muscle spasm, increased pain, and difficulty performing a successful reduction.^{7,10} Consequently, dentists should be familiar with the clinical presentation, diagnosis, and management of TMJ dislocation occurring in the dental setting.^{2,7}

This report describes an acute TMJ dislocation that developed immediately following routine extraction of a mandibular first molar in a young healthy female and reviews practical considerations for recognition and chairside management.

Case Presentation

A 26-year-old female presented to the dental clinic with pain associated with the mandibular right first molar (#30). Clinical and radiographic examination revealed extensive caries involving the pulp, a cracked tooth, persistent dental pain, and a periapical abscess without sinus tract formation. Extraction of tooth #30 was recommended.

The patient's medical history was reviewed and found to be noncontributory. She reported no history of temporomandibular joint dysfunction, prior jaw dislocation, previous surgeries, tobacco use, or significant systemic disease. Preoperative vital signs were within normal limits, with a recorded blood pressure of 111/75 mmHg.

After discussion of risks, benefits, and alternatives, informed consent was obtained. Local anesthesia was achieved with one carpule of 4% articaine with 1:100,000 epinephrine administered by local infiltration and one carpule of 2% lidocaine with 1:100,000 epinephrine administered as a right inferior alveolar nerve block.

Extraction of tooth #30 was performed using elevators and forceps without surgical complications. Hemostasis was achieved, and routine postoperative instructions were provided.

At the conclusion of treatment, the patient reported inability to close her mouth and appeared distressed. Clinical examination suggested acute anterior mandibular dislocation.^{1,2,7} The mandible remained depressed, and active closure could not be achieved by the patient.

Immediate chairside management was initiated. Manual reduction was performed by applying downward and posterior pressure to the mandible.^{8,2} The mandibular condyles were successfully repositioned into their normal anatomical location, resulting in immediate restoration of mandibular function and relief of symptoms.

The dislocation episode lasted approximately five to six minutes from onset to successful reduction. Immediate improvement in comfort and mandibular function was noted following reduction. The patient was instructed to avoid excessive mouth opening, yawning, and wide mandibular movements during the healing period. Precautions to minimize recurrence were reviewed, and the patient was discharged in stable condition.^{5,11}

Follow-Up

The patient returned to the clinic approximately two months following extraction. At that time, she denied recurrence of mandibular dislocation, temporomandibular joint pain, limitation of mouth opening, difficulty chewing, or other related symptoms. No additional intervention was required.^{5,6}

Review of the Literature

Temporomandibular joint (TMJ) dislocation is an uncommon condition characterized by displacement of the mandibular condyle beyond the articular eminence with inability to return to its normal anatomical position without assistance.^{1,2,3} Acute anterior dislocation is the most frequently encountered form and is typically associated with excessive mouth opening during activities such as yawning, laughing, vomiting, endotracheal intubation, or dental treatment.^{2,4} Although uncommon in routine dental practice, TMJ dislocation represents a recognized complication that clinicians should be prepared to identify and manage promptly.^{1,2}

Several authors have reported that dental procedures requiring prolonged mouth opening may precipitate acute TMJ dislocation. Oral surgical procedures, third molar extractions, endodontic treatment, and lengthy restorative appointments have all been implicated.^{1,2,7} The proposed mechanism involves excessive anterior translation of the mandibular condyle beyond the articular eminence, followed by reflex spasm of the masticatory muscles that prevents spontaneous reduction.^{3,11} Predisposing factors include female sex, younger age, previous episodes of dislocation, ligamentous laxity, connective tissue disorders, and pre-existing temporomandibular joint dysfunction.^{2,5,11}

The published literature consistently emphasizes the importance of rapid recognition and intervention. Patients frequently present with inability to close the mouth, difficulty speaking, drooling, anxiety, and preauricular discomfort.^{2,4,13} This presentation differs markedly from trismus, in which patients experience restricted mouth opening. Failure to distinguish between these conditions may result in delayed treatment and increased patient discomfort.^{2,7}

Manual reduction remains the standard first-line treatment for acute anterior TMJ dislocation. Traditional reduction techniques involve inferior and posterior manipulation of the mandible to guide the condyle below the articular eminence and back into the glenoid fossa.^{2,8} Numerous modifications to the traditional technique have been described, including wrist-pivot, recumbent, and syringe-assisted methods.⁸ Regardless of the technique employed, successful outcomes are most likely when reduction is performed promptly before the development of significant muscle spasm.^{2,8}

The prognosis following successful reduction is generally favorable, particularly when treatment is initiated soon after onset. Most patients experience immediate restoration of mandibular function and relief of symptoms.^{2,5} However, recurrent dislocation may occur in susceptible individuals, especially those with underlying joint hypermobility or a previous history of dislocation.^{5,6,11} Consequently, preventive recommendations commonly include avoidance of excessive mouth opening, support of the mandible during yawning, adherence to a soft diet for several days, and referral for specialist evaluation when recurrent episodes occur.^{5,6}

Although several reports describe TMJ dislocation associated with dental treatment, published cases involving routine nonsurgical extraction of a mandibular first molar remain relatively limited.^{7,15} The present case contributes to the existing literature by documenting acute TMJ dislocation occurring immediately after an uncomplicated extraction in a healthy young female without a prior history of temporomandibular joint disorders. Successful chairside reduction within minutes of onset and the absence of recurrence at two-month follow-up further demonstrate the importance of early recognition and intervention in achieving favorable outcomes.^{2,8,15}

DISCUSSION

Temporomandibular joint (TMJ) dislocation is an uncommon but recognized complication of dental treatment. The condition occurs when the mandibular condyle translates anterior to the articular eminence and becomes

unable to return spontaneously to the glenoid fossa.^{1,2,3} In most cases, dislocation is bilateral and anterior, resulting in an inability to close the mouth, preauricular discomfort, altered speech, drooling, and significant patient anxiety.^{2,13} Although acute dislocation has been reported following yawning, laughing, vomiting, endotracheal intubation, and maxillofacial procedures, it may also occur during routine dental treatment requiring prolonged mouth opening.^{2,4,7}

In the present case, a healthy 26-year-old female developed acute mandibular dislocation immediately following a routine extraction of the mandibular right first molar. The extraction itself was uncomplicated and did not require surgical sectioning, flap reflection, or extensive bone removal. However, sustained mandibular opening during administration of local anesthesia and extraction likely contributed to excessive anterior translation of the condyle beyond the articular eminence.^{1,2,11} Once displaced, reflex contraction of the muscles of mastication may have prevented spontaneous reduction.^{3,11}

Several risk factors have been associated with TMJ dislocation. These include prolonged mouth opening, joint hypermobility, capsular laxity, connective tissue disorders, previous dislocation episodes, female sex, and younger age.^{2,5,11} Interestingly, the patient in this case had no known history of TMJ dysfunction or previous dislocation, making the occurrence relatively unexpected. This highlights the fact that acute TMJ dislocation may occur even in otherwise healthy individuals undergoing routine dental care.^{7,15}

Prompt recognition of the condition is critical. Unlike trismus, in which the patient cannot adequately open the mouth, TMJ dislocation typically presents as an “open lock” in which the patient is unable to close the mouth.^{2,7,13} Failure to recognize this distinction may delay appropriate treatment. In the present case, immediate diagnosis allowed chairside management before the development of significant muscle spasm and pain.^{2,8}

Manual reduction remains the first-line treatment for acute anterior TMJ dislocation.^{2,7,8} Traditional reduction is achieved through downward and posterior pressure on the mandible, allowing the condyle to move inferior to the articular eminence before returning to its normal anatomical position.^{2,8} In this case, reduction was successfully accomplished using downward and backward mandibular manipulation, resulting in immediate symptom resolution and restoration of function. The successful chairside reduction prevented the need for emergency department referral, sedation, or specialist intervention.^{2,8}

In the present case, reduction was achieved within approximately five to six minutes of symptom onset, likely contributing to the favorable outcome. Early intervention may reduce the development of muscle spasm and facilitate successful reduction.^{2,8} Notably, the patient remained asymptomatic and reported no recurrence at two-month follow-up, suggesting that prompt management and postoperative precautions were effective in preventing short-term complications.^{5,6}

Following reduction, patients should be educated regarding measures to prevent recurrence. Recommendations typically include avoidance of excessive mouth opening, limitation of wide yawning, maintenance of a soft diet for several days, and support of the mandible when yawning or laughing.^{5,6} Patients with recurrent dislocation may require referral for further evaluation and potential surgical or minimally invasive interventions.^{5,6}

This case emphasizes the importance of clinician awareness of acute TMJ dislocation as a potential complication of routine dental extraction. Although uncommon, timely diagnosis and appropriate management can result in rapid resolution and excellent patient outcomes.^{1,2,7}

Clinical Implications

- This case provides several practical lessons for dental practitioners:
- Acute TMJ dislocation can occur during routine extractions and not solely during complex oral surgery procedures.^{1,2,7}

- Female patients and those undergoing prolonged mouth opening may be at increased risk.^{2,5,11}
- The condition should be differentiated from trismus; dislocation presents with inability to close the mouth, whereas trismus presents with inability to open the mouth.^{2,7,13}
- Immediate recognition and chairside reduction may prevent referral to emergency services.^{2,8}
- Patient education following reduction is important to reduce the risk of recurrent episodes.^{5,6}
- Dentists should maintain familiarity with basic manual reduction techniques as part of emergency preparedness in dental practice.^{2,7,8}

Table 1. Potential Risk Factors for TMJ Dislocation During Dental Treatment

Risk Factor	Clinical Significance
Prolonged mouth opening	Excessive anterior condylar translation
Female sex	Increased prevalence reported in literature
Young adults	Greater joint mobility and ligamentous laxity
Previous TMJ dislocation	Strong predictor of recurrence
Generalized joint hypermobility	Increased susceptibility to displacement
Lengthy dental procedures	Extended stress on TMJ structures
Multiple injections or oral surgery	Increased duration of mandibular opening
Connective tissue disorders	Reduced joint stability

Table Legend: Common factors reported to increase susceptibility to temporomandibular joint dislocation during dental procedures.^{2,5,11}

Figure 1. Proposed Mechanism of Acute TMJ Dislocation During Dental Extraction

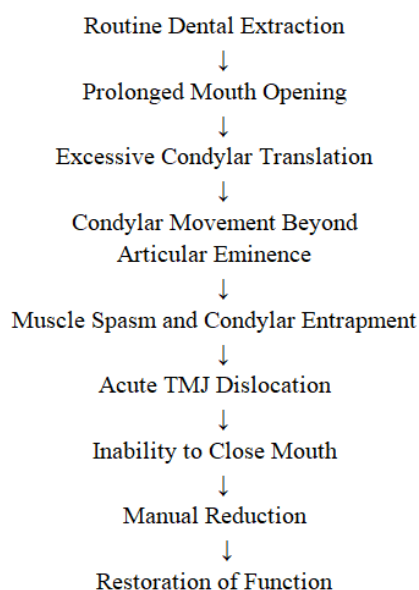


Figure Legend: Conceptual pathway demonstrating the development of acute temporomandibular joint dislocation during dental treatment and its resolution following manual reduction.^{1,2,8}

Limitations

This case report has several limitations that should be acknowledged. First, it describes a single clinical event involving one patient, which limits the ability to generalize the findings to broader patient populations. Individual anatomical variations, joint laxity, procedural factors, and patient-specific characteristics may influence the risk of temporomandibular joint dislocation during dental treatment.^{1,2,11}

Second, no preoperative or postoperative imaging was obtained to confirm the diagnosis radiographically. The diagnosis was based on clinical presentation, immediate recognition of the inability to close the mouth, and successful restoration of mandibular function following manual reduction. Although the clinical findings were highly suggestive of acute anterior TMJ dislocation, imaging could have provided additional diagnostic confirmation.^{2,7}

Third, although follow-up approximately two months after the event revealed no recurrence or residual symptoms, longer-term follow-up was unavailable. Consequently, the possibility of future dislocation episodes or late temporomandibular complications cannot be fully excluded.^{5,6}

Finally, the precise contribution of specific risk factors such as duration of mouth opening, individual ligamentous laxity, and condylar morphology could not be determined. Future case series and larger observational studies are needed to better characterize the incidence, risk factors, prevention strategies, and long-term outcomes of acute TMJ dislocation associated with routine dental procedures.^{1,2,11}

Future Recommendations

Further research should focus on collecting additional case reports and clinical series to improve understanding of temporomandibular joint dislocation occurring in dental settings.^{1,2} Prospective studies evaluating patient risk factors, procedural duration, preventive measures, and recurrence rates may assist clinicians in identifying individuals at increased risk.^{5,11} Greater emphasis on clinician education regarding early recognition and chairside reduction techniques may also help improve patient outcomes and reduce unnecessary referrals to emergency departments.^{2,8}

CONCLUSION

Acute temporomandibular joint dislocation is a rare but clinically significant complication that may occur during routine dental extraction procedures.^{1,2} This case describes immediate postoperative mandibular dislocation in a healthy 26-year-old female following extraction of the mandibular right first molar. Prompt recognition and successful chairside manual reduction within minutes of onset resulted in immediate restoration of mandibular function and avoidance of further complications.^{2,8} The patient remained symptom-free without recurrence at two-month follow-up.^{5,6}

Dental practitioners should be familiar with the presentation, diagnosis, and management of TMJ dislocation to facilitate rapid intervention and minimize patient distress.^{2,7} Increased awareness of this uncommon complication may improve clinical preparedness and patient outcomes in general dental practice.^{1,2,7}

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Data Availability Statement

This statement does not apply to this article.

Ethics Statement

Ethical approval was not required for this case report in accordance with institutional policies and applicable regulations. Written informed consent for publication was obtained from the patient.

Informed Consent Statement

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical information. All identifying information has been omitted to protect patient privacy.

Clinical Trial Registration

This research does not involve any clinical trials.

Conflict of Interest

The authors declare no conflict of interest.

Permission Statement

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