

Fibrous Ankylosis of the Temporomandibular Joint: Report of a Case With Atypical Presentation

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A case of chronic unilateral mandibular dislocation with development of fibrous ankylosis is presented. This was an unusual presentation of intracapsular tissue ankylosis to the eminencia, as well as retrocondylar cicatrix combined with contralateral mandibular osseous compensations and remodeling with resulting ramus impingements upon relocation of the condyle. Various diagnostic and therapeutic considerations are reviewed and discussed.

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Ankylosis of the temporomandibular joint (TMJ) can be classified as osseous or fibrous, and as intracapsular or extracapsular.¹ According to the literature, trauma in early childhood is the most common cause of TMJ ankylosis,²⁻³ and it is often associated with growth disturbances that lead to mandibular hypoplasia and asymmetry. The incidence varies from 31% to 98%, depending on the study.³⁻⁶ Local or systemic infection, mostly secondary to contiguous spread from mastoiditis or otitis media, account for 10% to 49% of cases. Systemic disease, such as ankylosing spondylitis, rheumatoid arthritis, and psoriasis, accounts for about 10% of cases.³⁻⁶ The present study reports a case of fibrous ankylosis of the TMJ with unusual clinical presentation. The study shows that the importance of evaluation for concurrent asymmetric remodeling of the mandible with resultant ramus impingements must not be overlooked during initial treatment planning.

Report of a Case

The patient, a girl aged 14 years, presented with a history of pain in her mandible and TMJs for about 4 to 5 years. This pain reportedly occurred in a gradual manner. However, the patient did not seek treatment until she consulted an orthodontist regarding her malocclusion. The orthodontist immediately noticed a severe asymmetry of her mandible and limited range of mandibular motion and referred her for evaluation.

The mother of the patient could not recall any significant incident of trauma to the jaws, except that the patient did fall off of a swing when she was about 9 or 10 years old. It was uncertain whether her TMJ problem was related to the trauma.

Initial clinical examination revealed marked deviation of the mandible to the right side. There was bilateral crossbite secondary



Fig 1 Patient with mandibular deviation and bilateral crossbite at initial clinical examination.



Fig 2 Limited interincisal opening at initial clinical examination.



Fig 3 Tomograph of left TMJ reveals subluxation of the condyle in closed-mouth position.



Fig 4 Tomograph of left TMJ reveals slight translation of the condyle at an interincisal opening of 15 mm.

to the deviation (Fig 1). There was also occlusal instability, and the patient was unable to occlude her teeth into a comfortable and stable position. The dentition was in good condition without caries. There was a significant diastema between the maxillary central incisors. The patient's maximum interincisal opening was 15 mm (Fig 2) with a protrusive excursion of 1 to 2 mm, lateral excursion to the right of 2 mm, and no lateral excursion to the left.

The patient complained of pain around the left TMJ and mandible, although neither TMJ emitted pain on loading when biting on a tongue blade.

No joint noises were audible on examination. The patient claimed that her pain was exacerbated with chewing, and she reportedly had to cut her food into small pieces to eat. The patient's general medical condition was unremarkable.

A panoramic radiograph and an axially corrected sagittal tomograph were taken. The radiographs showed anterior subluxation of the left mandible condyle at around the 5-o'clock position of the eminence in centric occlusion (Fig 3). On open-mouth position, the condyle translated to the 6-o'clock position of the eminence (Fig 4). The right condyle seemed slightly anteroinferiorly dis-

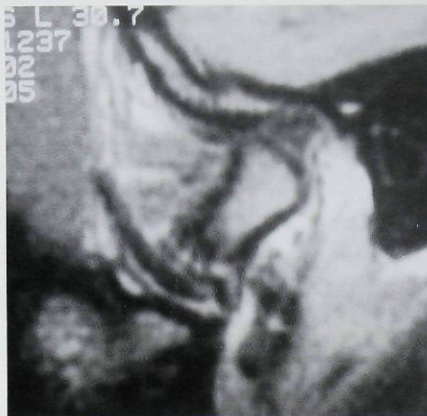


Fig 5 Magnetic resonance imaging reveals subluxated left condyle with normal disc relationship.



Fig 6 Magnetic resonance imaging reveals maintenance of normal condyle-disc relationship when the left condyle translated from its subluxated position.

placed. The amount of condylar translation again was limited as a result of the inability of the patient to open widely.

Magnetic resonance imaging (MRI) revealed the right TMJ to be normal with the exception of the decrease in condylar translation. The MRI of the left TMJ showed anterior subluxation of the condyle with the teeth in occlusion. The condyle and disc were normal in shape. In the subluxated position, a normal relationship between the condyle and disc remained (Fig 5). This normal relationship was maintained on opening of the mouth, although again, the amount of translation of the condyle was limited (Fig 6).

The initial impression was that the left TMJ was chronically subluxated with fibrous ankylosis. However, it was the possible that the right TMJ might also be fibrosed secondary to chronic immobility. The surgical plan was to perform bilateral TMJ open arthroplasty with release of the fibrous ankylosis.

When the patient was placed under general anesthesia, her maximal interincisal opening could be stretched to 50 mm. The left condyle remained on the eminence, and it was not possible to reduce the condyle back to the fossa. However, it was possible to move the mandible about 12 mm to the right side. Attempts to translate the right condyle and move the mandible to the left were only moderately successful. The mandible could be moved to the left no farther than 7 mm.

Intraoral palpation around the right posterior maxilla and ascending ramus areas confirmed the diagnosis of contralateral coronoid impingement against the maxillary buttress. It was decided at this time that a right TMJ open arthroplasty would not be required, but rather a right coronoidectomy was necessary because of the bony remodeling that had occurred during the years of chronic asymmetric mandibular subluxation.

The left TMJ was approached via an endaural incision in the usual manner for exposure of the TMJ. When the lateral capsule was entered, the superior joint compartment was found to be fibrosed. The fibrous ankylosis had to be released with both blunt and sharp dissection. In the bilaminar zone area, there was also substantial fibrous tissue that was debrided and partially resected. The disc was found to be in good condition, and the condyle was not exposed. Lateral capsular and distal restraining sutures were then placed using O-Ethibond sutures (Ethicon). These were placed to help restrain the tendency for extreme anterior subluxation of the condyle-disc relationship to the fossa-eminence. The TMJ surgical site was then closed in a routine fashion.

Attention was then focused on the right intraoral area. A right coronoidectomy was performed via an intraoral retromolar incision. The coronoid process was found to be long and fin shaped. Additional bone removal medially was necessary at the base of the process to assure freedom from impingement.

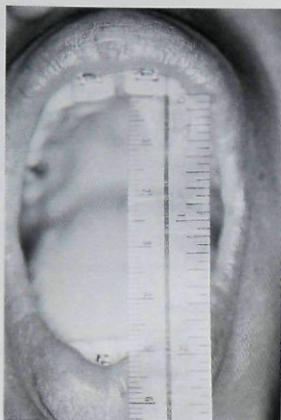


Fig 7 (Left) Maximum interincisal opening of 50 mm 6 months postoperation.

Fig 8 (Below) Occlusion of the patient 6 months postoperation.

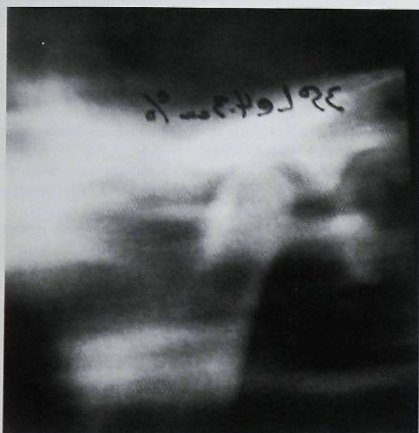
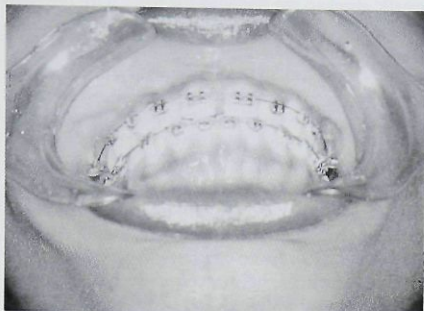


Fig 9 Postoperative tomograph of the left TMJ displays centric condylar position.



Fig 10 Postoperative tomograph of the left TMJ displays good condyle translation on opening.

After the coronoideotomy was completed, the mandible could be translated to the left 11 to 12 mm. This could be well mobilized with the right lateral movement. Maximum interincisal opening was at 50 mm, and the patient's occlusion was reduced to a satisfactory condition. Arch bars were placed on the maxillary and mandibular dentition, and light elastic occlusal guidance was utilized. At the 1-week postoperative visit, the patient's interincisal opening was 27 mm, the protrusive excursion

was 5 mm, and the lateral excursion was 6 to 7 mm. The patient was placed under physical therapy management to aid in joint mobilization.

After 6 months, the patient had a maximum interincisal opening of 50 mm with protrusive and lateral excursions of 8 mm. The occlusion remains good to this date (Figs 7 and 8). Six-month follow-up tomographs showed that the left condyle was centrally situated in the fossa with good translation on opening (Figs 9 and 10).

Discussion

Treatment of TMJ ankylosis has varied from open arthroplasty and from placement of a temporary elastic sheet to the lining of the fossa with different autogenous or alloplastic materials and to complete TMJ reconstruction with costochondral graft or joints.³⁻¹⁵ Kaban et al¹³ emphasized the importance of aggressive ankylosis resection, early mobilization, coronoidectomies, and the use of costochondral graft and the lining of the fossa with autogenous materials in the successful treatment of TMJ ankylosis. Success in preventing reankylosis also is said to depend on long-term patient compliance in undertaking frequent and usually painful mandibular movement exercises.¹⁵

The patient in the present study had a fibrous ankylosis, and although the condyle was normal and the disc was in good shape, major reconstruction was needed. The interesting feature of this case is its unusual clinical presentation, including the mandibular ascending ramus and contralateral coronoid remodeling in a transverse dimension. Trauma as the cause of the ankylosis and subluxation is uncertain, yet likely.

It is interesting to note that the left condyle was fibrosed to the 5-o'clock position of the eminence but was not dislocated beyond the eminence. This position is usually not a very stable position, and one would expect the condyle to be able to reduce itself back into the fossa. One may surmise that the deviated occlusion might have retained the mandible in this awkward position. However, clinical examination revealed an unstable malocclusion without locking interdigitation between the dentition. Another interesting feature of this case is that the left condyle was able to translate forward from its subluxated position but unable to go back to the fossa. Since the patient's mandible could be manipulated to open up to 50 mm under general anesthesia (with deviation), the clinical restriction of the mandibular opening most likely was a result of pain and muscle splinting.

The patient's TMJ could be hypermobile and easily dislocated. One can surmise that after the trauma and subluxation of the left condyle, muscle splinting might have prevented its reduction. Hematoma formation at the posterior attachment of the disc could have led to fibrosis and thus prevented subsequent reduction of the condyle back to the fossa.

This case illustrates the importance of evaluating the contralateral mandibular skeletal symmetry for possible coronoid impingement in unilateral ankylosis cases. With chronic right mandibular deviation secondary to left temporomandibular joint subluxation and retrodisical fibrosis, contralateral mandibular osseous compensation may occur in the ascending ramus and coronoid areas, leading to necessary diagnostic observation and planning both preoperatively and intraoperatively.

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Resumen

Anquilosis fibrosa de la articulación temporomandibular:
Reporte de un caso con una presentación atípica

Se presenta un caso de dislocación mandibular unilateral crónica con el desarrollo de una anquilosis fibrosa. Esta fue una presentación inusual de anquilosis de tejido intracapsular a la eminencia, lo mismo que la presencia de una cicatriz retrocondilar combinada con compensaciones óseas mandibulares contralaterales y remodelación. Esto trajo como consecuencia choques en la rama cuando el cóndilo se colocaba en una nueva posición. Se revisan y se discuten varias consideraciones diagnósticas y terapéuticas.

Zusammenfassung

Fibröse Ankylose des Kiefergelenkes: Präsentation eines atypischen Falles

Ein Fall von chronischer einseitiger Verschiebung des Unterkiefers mit Entwicklung einer fibrösen Ankylose wird beschrieben. Es war ein ungewöhnliches Auftreten einer Ankylose aus intrakapsulärem Gewebe im Bereich der Eminentia, zusammen mit knöcherner mandibulärer Kompensation und Remodellierung der Gegenseite. Daraus resultierte eine Ramusverlängerung und eine Verlagerung des Kondylus. Verschiedene diagnostische und therapeutische Überlegungen werden diskutiert.