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An Unusual Case of Pseudo Ankylosis of Temporomandibular Joint Due to Pterygomandibular Fusion in a 12-Year-Old Male Child- A Case Report

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ABSTRACT
Background**:** Maxillofacial trauma is the major culprit behind the disruptive pathology of the temporomandibular joint leading to ankylosis. False/pseudo ankylosis refers to the restriction of mandibular movement that occurs as a result of extra-articular pathology i.e., a physical obstruction that is outside the TMJ. Pseudo-ankylosis is extremely rare compared to true ankylosis. The signs and symptoms of this condition are similar to an ankylosis, i.e., mouth opening limitation. Therefore, imaging techniques like orthopantomography and CT scans play a crucial role in the diagnosis.

Case Report: Described here, is a case of post-traumatic pseudoankylosis due to left pterygomandibular fusion in a 12-year-old boy, with no intra-articular pathology of the temporomandibular joint. The diagnosis was made on the basis of the images obtained in CT scans. Although coronoidectomy is the mainstay in the treatment of such cases, this case however required left condylectomy with osteotomy of the pterygomandibular bony fusion, followed by physiotherapy in the immediate post operative period.

Conclusion: Pterygomandibular fusion is an extremely rare condition embedded in the structural incompatibility disorders of the temporomandibular joint. Its management has to be planned according to individual patients' complaints and clinical findings, aiming to achieve functionally adequate mouth opening.

Keywords: Pseudo ankylosis, Condylar fracture, Temporomandibular joint, Extra-articular

I. INTRODUCTION

Restricted mobility of the temporomandibular joint (TMJ), is commonly observed secondary to local conditions of the maxillofacial area such as trauma, oral surgery, and infection.

According to the site involved, Kazanjian (1938) divided temporomandibular joint (TMJ) ankylosis into true (intracapsular) and false/pseudo ankylosis (extracapsular). When there is fibrous or bony ankylosis/fusion between the mandibular condyle and the mandibular fossa of the temporal bone, it is referred to as true ankylosis. False/pseudo ankylosis refers to the restriction of mandibular movement that occurs as a result of pathology or physical obstruction that is outside the TMJ. Pseudo-ankylosis is extremely rare compared to true ankylosis [1].

Pterygomandibular fusion is an extremely rare condition embedded in the structural incompatibility disorders of the temporomandibular joint (TMJ). This disorder is normally associated with a history of local trauma leading to callus formation at the site of fracture which later progresses to osteophyte formation.In some cases, the ensuing periarticular fibrosis progresses to fusion between these osteophytes to the pterygoid plate leading to pseudo-ankylosis.

Not all the patients present symptoms, this condition can be present for years before a patient presents with any complaint.

The signs and symptoms of this condition are similar to an ankylosis, i.e., mouth opening limitation. Therefore, imaging techniques like orthopantomography and CT scans play a crucial role in the diagnosis [6].

II. CASE DISCUSSION:

A 12-year-old male presented with complaints of difficulty in mouth opening. He gave an alleged history of fall 8 years back, in which he sustained an injury to the lowerjaw. There was no history of loss of consciousness, vomiting, or seizure. There was no history of epistaxis.He complained chiefly of progressive mouth opening limitation which he first noticed five years back,

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which was insidious in onset and very gradually progressive.
On local examination,the mouth opening was 5 mm with no deviation. The occlusion was normal. He found it difficult to open his mouth which was not associated with any mandibular deviation, and side-to-side movements of the mandible were present.

Figure 1. Mouth opening limitation with no mandibular deviation. Occlusion was normal with the presence of side-to-side movement of the mandible.

There was no pain in the temporomandibular joint or masticatory muscles at the time of the exam with limited mandibular excursion movements and no odontogenic infection signs.

3D CT face showed no ankylotic mass in the left TMJ, and the joint spaces were preserved bilaterally. The left coronoid was a bit enlarged with a hyperplastic left condyle. Callus can be appreciated in the left subcondylar region suggestive of an old fracture. There was osteophyte formation in that region which appeared to be fusing with the medial pterygoid plate.

Figure 2. Coronal view of the CT scan of the Temporomandibular joints, showing preservation of the joint spaces bilaterally, enlarged left condyle, and callus in the left sub-condylar region.

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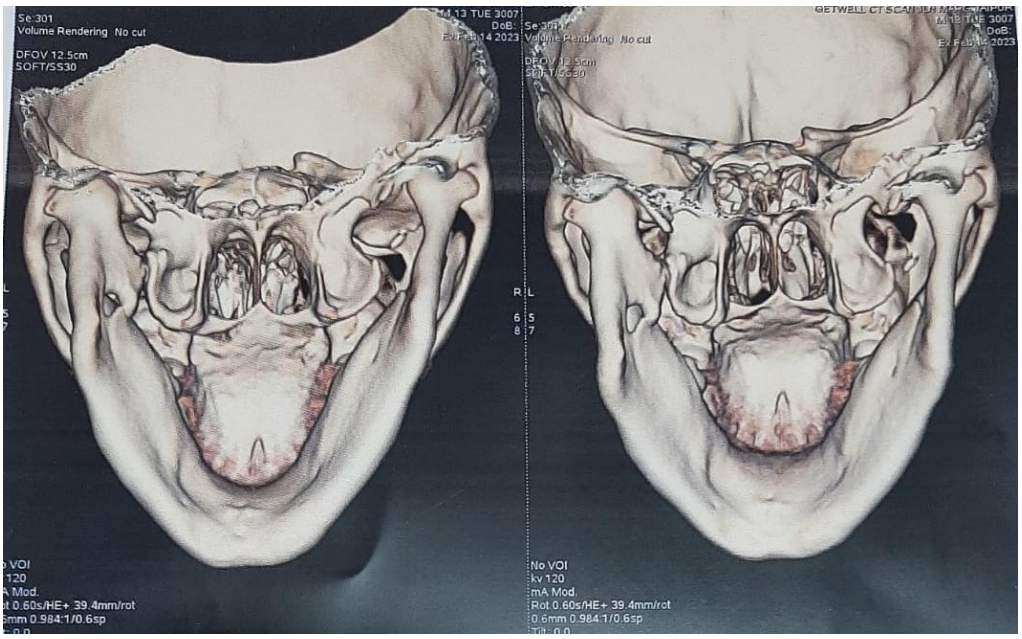

Figure 3. 3D reconstruction showing left condylar hyperplasia with pterygomandibular bony fusion.

The treatment proposed was left coronoidectomy and osteotomy of the pterygomandibular fusion. The procedure was performed under general anesthesia, with nasotracheal intubation on the right with the aid of nasal fibreoptic scope, due to limited mouth opening.

An intraoral access was performed on the left side to expose the coronoid process and a coronoidectomy was done. Only a 5mm mouth opening could be achieved following coronoidectomy. Since inadequate mouth opening was achieved, pre-auricular access was performed to expose the left TMJ. Condylectomy of the hyperplastic left condyle had to be performed to achieve space to reach the pterygomandibular bony block. Ostectomy of the pterygomandibular fusion was done and a Silicon sheet was placed in the joint space. A mouth opening of 30mm was achieved.

On the first postoperative day, the patient was clinically stable, without complaints, with approximately 20 mm of mouth opening. Physiotherapy was started on the first postoperative day to stimulate mouth opening.

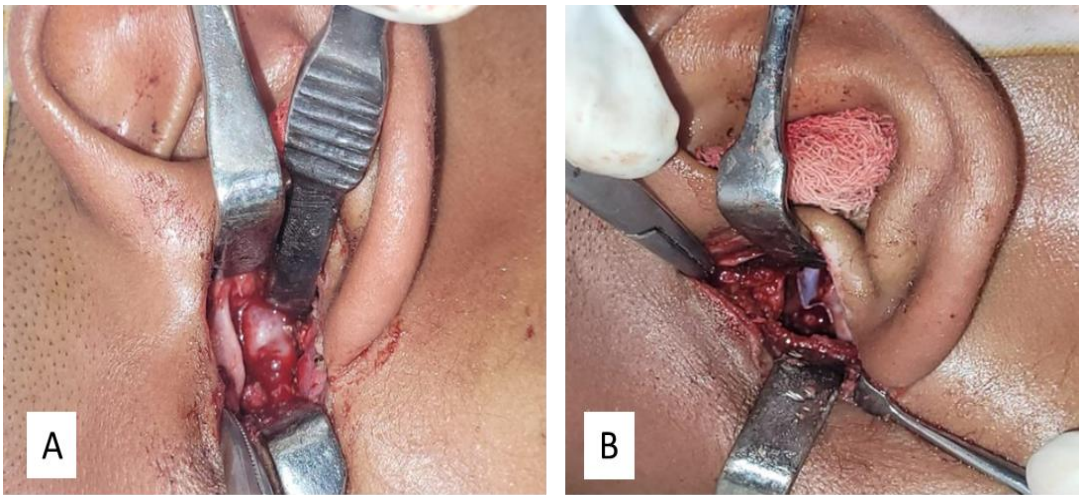

Figure 3. [A] Hyperplastic left condyle as seen from the pre-auricular access. [B] Silicon sheet in the joint space after condylectomy and osteotomy of the pterygomandibular bony fusion.

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III. DISCUSSION

There are different types of false ankylosis (pseudo ankylosis). For example, the coronoid process may fuse with the temporal bone, zygomatic arch, or maxillary bone in poorly managed faciomaxillary trauma. There can also be fibrous/ scar adhesions in the temporalis and masseter muscles. Extensive haemorrhage from a dislocated condylar fracture spreads to extracapsular locations. Ossification occurs whenever the hematoma is populated by endosseous vessels in the presence of a sufficient degree of immobility [2,3]

Patients with poorly treated condylar fractures may experience a variety of chronic issues. Malocclusion and deviation of the jaw on opening are common complaints. Ankylosis and pain in the TMJ can develop, and a diminished mouth opening can endure as calculated by the interincisal distance. Muscle spasms and facial asymmetry have also been witnessed.

Simple pseudo ankylosis is defined as ankylosis that occurs outside of the joint without causing any radiographic alterations to the TMJ's articular surfaces. Contrarily, complex pseudo ankylosis describes extra-articular ankylosis with subsequent intracapsular degenerative alterations and/or ankylosis.

In our case, during surgery, along with the extraarticular pathology, the condyle was found to be hyperplastic. (The articular disc, however, was normal). This may be a secondary response to a lack of movements; hence exploration of joint is mandatory when an extraarticularankylosis is released.

There are very few reported cases of pseudo ankylosis.

F. Allevi et al published a case report of two cases of post-traumatic pseudo ankylosis of the mandible – one had coronoid zygomatic arch ankylosis and another one was a case of coronoid temporal bone ankylosis, both managed by bilateral coronoidectomy and post-operative physiotherapy [2]

CE Baraldi et al reported a case of pseudo ankylosis of TM joint caused by congenital zygomatic malformation with hyperplasia of the coronoid process. It was managed by unilateral coronoidectomy and post-operative physiotherapy.[4]

R.K. P. et al, in their case report, described an atypical case of pseudo ankylosis due to anterior dislocation of the fractured mandibular condyle. It was managed by ipsilateral coronoidectomy and TMJ arthroplasty followed by physiotherapy.[5]

AF de Araujo et al, in their case report published in 2020 described a case of Hyperplasia of the articular eminence of the mandibular condyle, a rare condition that affects the temporomandibular joint structurally and results in alteration of the joint surfaces that resemble pseudo-ankylosis. This disorder is normally associated with a history of trauma, leading to deviation of the condyle from its normal trajectory. It was treated surgically in which an eminectomy was performed followed by coronoidectomy. [6,7]

IV. CONCLUSION:

Pseudoankylosis due to pterygomandibular fusion is an extremely rare condition. Also, in our case, there was hyperplasia of the condylar eminence with no bony or fibrous ankylosis of the temporomandibular joint. Since the clinical presentation is the same as that of a true ankylosis, imaging techniques like CT scans play a pivotal role in the diagnosis. In our opinion, its management has to be structured according to individual patients' complaints and clinical findings, aiming to achieve functionally adequate mouth opening.

Abbreviations:
TMJ: Temporo mandibular joint
CT scan: Computed Tomography scan
3D CT: 3-Dimensional Computed Tomography

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