

Osteomyelitis as a consequence of ankylosis of TMJ: A case report

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Abstract

The word ankylosis means stiff joint. Ankylosis is restriction of movement of the condyle disc complex resulting in restriction of mouth opening. Trauma is the leading cause of TMJ ankylosis. TMJ ankylosis leads to decrease in interincisal distance leading to poor oral hygiene and nutritional intake. Here is a case of 18 year old female patient who complained of pus discharge from her right side of face since 3-4 months. She presented with history of poor oral hygiene due to restricted mouth opening. On clinical evaluation, there was restriction in movement of right condyle along with decreased height of ramus. Correlating clinical and radiological findings, a diagnosis of osteomyelitis with ankylosis of right condyle and right hemifacial hypoplasia was given and was referred to higher centre for needful management. Although not directly but indirectly ankylosis is related to osteomyelitis as TMJ ankylosis causes reduced mouth opening leading to poor oral hygiene which subsequently leads to dental caries and when untreated osteomyelitis as one of its consequences.

Keywords: Ankylosis, Osteomyelitis, Trauma, Inter-maxillary distance.

Introduction

The word Ankylosis has its origin in the Greek language, meaning 'stiff joint'. TMJ is a bilateral diarthrodial joint. This unique joint can perform both hinge and sliding function and is the only synovial joint in humans where the articulating surfaces are covered by fibro cartilage. True TMJ ankylosis is an intracapsular union of the disc-condyle complex to the temporal articular surface that includes fibrous adhesion or bony fusion between condyle of mandible and glenoid fossa and articular eminence of squamous temporal bone.¹The American Academy of Orofacial Pain (AAOP) defines TMJ ankylosis as a restriction of movements due to intracapsular fibrous adhesions, fibrous changes in capsular ligaments (fibrous-ankylosis) and osseous mass formation resulting in the fusion of the articular components (osseous-ankylosis).²

TMJ ankylosis may be classified based on the site (intra articular versus extra articular), type of tissue involved (bony, fibrous or fibro-osseous tissue), degree of fusion (complete versus incomplete) and number of joints affected (unilateral or bilateral).³ Trauma is the leading cause of the TMJ ankylosis but

other rare conditions such as ankylosing spondylitis and septic arthritis can also cause ankylosis.¹

Osteomyelitis is the inflammation of bone and bone marrow that develops in the jaws after a chronic odontogenic infection or a variety of other reasons. It involves the medullary cavity and has a tendency to progress along this space and involve the adjacent cortex, periosteum and soft tissue. It is more common in mandible than in the maxilla because of the dense, poorly vascularized cortical plates and the single blood supply from the inferior alveolar neurovascular bundle.⁴

TMJ ankylosis results in arrested condylar growth. The intermaxillary distance does not increase. As a result, there is poor oral hygiene which markedly increases the risk of dental caries and dental sepsis.⁵

Case Report

An 18 year old female patient came with a chief complaint of pus discharge from right side of her face since 3-4 months. She presented with history of mild to moderate pain in lower right back tooth region 5-6 months back following which she noticed a swelling in the mouth which periodically ruptured leading to pus discharge. She did not visit any doctor then nor took

any medications. 3-4 months back a swelling developed in the right side of the face near the angle of mandible with pus discharge. She took over the counter drugs but it did not subside.

She presented with no history of any known illness except for reduced mouth opening since childhood. Personal history revealed that she brushes once a day with toothbrush and toothpaste but found it difficult to clean her mouth properly due to restricted opening. She also presented with history of restricted diet due to her reduced mouth opening.

General examination revealed she was conscious, responsive, well oriented to time, place and person with all the vital signs in the normal range. She presented with history of fever.

Extra-oral examination revealed retruded mandible with deviation of mandible towards right side and deviation of midline to the right side and reduced mouth opening (9mm). Reduced height of ramus of mandible was noted.

Local examination revealed a localized swelling almost oval in shape in right lower third of the face measuring about 5×3cm in dimension, about 0.5-1cm away from the angle of mandible and involving the lower border of mandible. The overlying skin was brownish pink in colour with scab formation in multiple areas over the swelling. On palpation the swelling was localized with its borders blending into the surrounding areas. It was firm in some areas and soft and fluctuant in certain areas with pus discharge upon palpation.

Intra-oral examination revealed midline shift. There was tenderness to palpation in the buccal vestibule region in relation to lower right premolar and molar region. Further examination was not possible due to inadequate mouth opening.

A provisional diagnosis of osteomyelitis with ankylosis of right condyle and right hemifacial hypoplasia was given.

She was advised panoramic radiograph and CT scan to know the extent of the lesion. Radiographs revealed extensive irregular bone loss in the right body, angle, ramus region extending till the neck of the condyle and involving the coronoid process of the mandible and almost involving the right lower border of mandible. It also revealed a bunch of radiopacities

and sequestrum at the apex of right lower 1st molar region. The radiographs also revealed multiple impacted teeth. The radiographs further revealed ankylosis of right condyle to the glenoid fossa and right hemifacial hypoplasia. Radiographs confirmed the diagnosis of osteomyelitis with ankylosis of right condyle and right hemifacial hypoplasia.

She was prescribed with tablet amoxicillin-clavulanic acid 625mg 8hourly per oral and tablet metronidazole 400mg 8hourly per oral along with analgesics. Due to the complexity of the case, she was immediately referred to higher center for surgical intervention. The patient lost to follow up following her treatment at higher centres.



Fig. 1: Clinical picture



Fig. 2: Involvement of body of mandible right side



Fig. 3: Involucrum and sequestrum formation in right side of mandible



Fig. 4: Ankylosis of right condyle

Discussion

Ankylosis is defined as abnormal immobility and consolidation of a joint (Dorland, 1957). It is the union of the disc condyle complex to the opposing temporal articular surface.⁵

The three main causes of TMJ ankylosis are trauma, inflammation and infection. Damage to the fragile vasculature at the condylar heads during intrauterine fetal movement is a possible etiology for congenital ankylosis. Trauma sustained by the newborn during a difficult forceps delivery and trauma inflicted by an abusive adult have been implicated. Both untreated fractures and badly comminuted condylar head fractures treated by immobilization for extended periods have resulted in ankylosis.

TMJ ankylosis in children results in arrested condylar growth. The loss of growth and function results in muscle and bone atrophy and, in time, micrognathia, microgenia, and retrognathia. The tongue

position, pattern of swallowing, activity of the muscles of facial expression, and oral habits are functional causes or contributors to the deformity. The child may ingest a poor diet which contributes to a failure to thrive and diminished growth.¹ Bilateral ankylosis leads to micrognathia. With unilateral lesions the centre of the mandible is usually deviated. The intermaxillary distance does not increase to accommodate the erupting permanent teeth, and the lower arch fails to lengthen. As a result the teeth are under-erupted and multiple mandibular impactions may occur (Thoma, 1964; Tratman, 1939). The risk of dental sepsis is markedly increased due to poor dental hygiene wards the affected and underdeveloped side.⁵

Osteomyelitis can be defined as an inflammatory condition of the bone, which begins as an infection of the medullary cavity, rapidly involves the haversian systems and extends to involve the periosteum of the affected area. Suppurative osteomyelitis can involve all three components of bone: periosteum, cortex and marrow. In established suppurative osteomyelitis, symptoms include deep pain, malaise, fever and anorexia.⁶

Osteomyelitis is considered to be one of the most difficult cases to treat due to its heterogeneous nature in terms of pathophysiology, clinical presentation and management. Progressive bone destruction and formation of sequestrum are characteristic features of the disease.⁷ Considering the above case, it is more difficult to manage because of the restricted mouth opening due to ankylosis of TMJ.

The chronic osteomyelitis usually transforms from previous acute osteomyelitis due to inadequate treatment and local or systemic contributing factor. Clinical features may include local pain, fever, swelling, purulent discharge, intra-oral and skin fistula, unhealed soft tissue in the oral cavity, parasthesia in the involved area, pathological fracture and trismus.⁸

Diagnosis is based on data collected from history, clinical and radiographic findings. The most distinguishing feature of chronic osteomyelitis is sequestra and laminating new periosteal bone. The changes owing to ankylosed TMJ can be seen in at mandibular angle, antegonial notching, reduced height of ramus and severe micrognathia.

Topazian et al recommended treatment mainly with Beta lactam, clindamycin, and metronidazole. Many microorganisms responsible for osteomyelitis are penicillin resistant; such as Prevotella, Porphyromonas and Fusobacterium. For this reason, metronidazole should be incorporated. Marx suggested that in osteomyelitis cases, minimum antibiotic treatment should be of 2 weeks.⁹ Extensive necrosis of the bone indicates ischemic nature of the affected region. Hence, radical resection of the necrotic mandible and mucosa is performed and complete disease clearance is obtained. Saucerization implies freeing the upper cortical section to expose medullar cavity and debride necrotic tissue; which is useful in chronic phases. Decortication implies removal of infected bone cortex. This promotes resolution since the procedure removes nonvascular tissues and surrounding microorganisms. Resection is useful for low degree or refractory stages. In this case, along with the above procedure for management of osteomyelitis, either gap arthroplasty, interpositional arthroplasty or joint reconstruction can be carried out along with reconstruction of ramus of mandible.¹⁰

Conclusion

TMJ ankylosis are caused due to trauma, inflammation and infection. Although not directly but indirectly ankylosis is related to osteomyelitis as TMJ ankylosis causes reduced mouth opening leading to poor oral hygiene which subsequently leads to dental caries and when untreated osteomyelitis as one of its consequences.

Source of Funding

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Conflict of Interest

None.

References

1. Wadhawan R. Ankylosis of temporomandibular joint: An overview. *Asian Pac J Nurs* 2015;2(1):1-7.
2. Cunha CO, Pinto LM, de Mendonça LM, Saldanha AD, Conti AC, Conti PC. Bilateral asymptomatic fibrous-ankylosis of the temporomandibular joint associated with rheumatoid arthritis: a case report. *Braz Dent J* 2012;23:779-82.
3. Butt FM, Guthua SW, Kegereki EM. Preliminary Outcome of Case Series of the Management of Unilateral and Bilateral Craniomandibular Ankylosis in Kenya- An Ongoing Prospective Study. *Open J Stomatol* 2015;5:227-33.
4. Rajkumar G C, Hemalatha M, Shashikala R, Kumar D V. Recurrent chronic suppurative osteomyelitis of the mandible. *Indian J Dent Res* 2010;21:606-8.
5. Robin L M Gray. Corono-condylar ankylosis in childhood due to infection. *British journal of Oral Surgery*:40-46
6. Topazian R G et al. Osteomyelitis of Jaw. *Oral Maxillofac Infect* 1994;3:251-86
7. W. B. Donohue, L. M. Abelardo. Osteomyelitis of the jaw. *C.M.A. J* 1970;103:748-50.
8. Monika Poonia,, Supreet Kaur Sidhu, Monika Solkhe, Sandeep Singh Sihmar. Chronic osteomyelitis of maxilla: a rare case report. *J Oral Med, Oral Surg, Oral Pathol Oral Radiol*, 2016;2(2):88-90.
9. Sunita Malik, Gurdarshan Singh. Chronic Suppurative Osteomyelitis of the Mandible: A Study of 21 Cases. *OHDM* 2014;13(4):971-74.
10. Karthik Shamanna, Rasika Rao, Asima Banu. Osteomyelitis of Maxilla: A Rare Case. *J Pub Health Med Res* 2014;2(1):50-2.

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