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Review Article

Breaking the Jaw Barrier: A Comprehensive Review of Temporomandibular Joint Ankylosis

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Abstract

Temporomandibular Joint Ankylosis (TMJ ankylosis) is a severe maxillofacial condition characterized by restricted mandibular movement due to fibrous or bony fusion of the temporomandibular joint components. The disorder commonly develops following trauma, infection, systemic diseases, or surgical complications and can significantly impair mastication, speech, oral hygiene, and facial aesthetics. In children, TMJ ankylosis is particularly devastating because it interferes with mandibular growth and psychosocial development. The condition may present as unilateral or bilateral and ranges from mild fibrous adhesions to complete osseous fusion. Accurate

diagnosis requires thorough clinical evaluation supported by radiographic investigations such as computed tomography and magnetic resonance imaging. Management primarily involves surgical intervention, including gap arthroplasty, interpositional arthroplasty, or joint reconstruction, followed by aggressive physiotherapy to prevent recurrence. Early diagnosis and timely treatment are essential to restore joint function, improve quality of life, and minimize facial deformities. This article reviews the etiology, classification, clinical manifestations, diagnostic methods, treatment modalities, complications, and preventive strategies associated with TMJ ankylosis.

Introduction

Temporomandibular Joint Ankylosis is a pathological condition involving the fusion of the mandibular condyle to the glenoid fossa, resulting in limitation or complete loss of jaw movement. The temporomandibular joint (TMJ) is one of the most complex synovial joints in the human body,

responsible for essential functions such as chewing, speaking, swallowing, and facial expression. Ankylosis of this joint can therefore produce profound functional and psychological consequences. The condition is more frequently observed in children and young adults due to the high incidence of facial trauma during early life. If left untreated, TMJ ankylosis may cause facial asymmetry, mandibular hypoplasia, nutritional deficiencies, and airway compromise. Advances in imaging techniques and surgical management have significantly improved patient outcomes, though recurrence remains a challenge

Anatomy of the Temporomandibular Joint

The TMJ is a bilateral synovial articulation between the mandibular condyle and the temporal bone. It consists of:

- Mandibular condyle
- Glenoid fossa
- Articular disc
- Synovial membrane
- Joint capsule and ligaments
- Muscles of mastication

The joint allows both rotational and translational movements necessary for mandibular function. Any pathological alteration in these structures may lead to restricted mobility and eventual ankylosis.

Etiology

Trauma

Trauma is considered the most common cause of TMJ

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ankylosis, especially condylar fractures in children. Inadequate treatment or delayed management may lead to hematoma formation and abnormal bone healing

Infection

Middle ear infections, septic arthritis, tuberculosis, and osteomyelitis may spread to the TMJ region and initiate inflammatory changes resulting in fibrosis or bone fusion.

Systemic Disorders

Diseases such as rheumatoid arthritis, ankylosing spondylitis, and psoriasis may involve the TMJ and contribute to ankylosis.

Surgical and Radiation Factors

Previous surgeries or radiotherapy in the facial region can produce fibrosis and reduced joint mobility.

Clinical Features

Patients with TMJ ankylosis commonly present with:

- Progressive reduction in mouth opening
- Difficulty chewing and speaking
- Facial asymmetry
- Mandibular deviation
- Poor oral hygiene
- Snoring and sleep apnea
- Bird-face deformity in bilateral cases
- Psychological distress and social withdrawal

Children often exhibit growth retardation of the mandible due to impaired joint function.

Treatment

The treatment objective is to restore mandibular movement, improve facial aesthetics, and prevent recurrence.

Surgical Management

Gap Arthroplasty

Excision of the ankylotic mass to create a gap between fused bones.

Interpositional Arthroplasty

Placement of autogenous or alloplastic material between joint surfaces after removal of ankylotic tissue.

Joint Reconstruction

Reconstruction may involve costochondral grafts, distraction osteogenesis, or total joint prostheses.

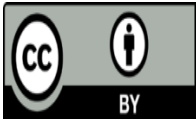
Conclusion

Temporomandibular Joint Ankylosis is a complex and disabling condition that affects both functional and aesthetic aspects of life. Trauma remains the leading cause, particularly among children. Early diagnosis, accurate imaging, appropriate surgical intervention, and long-term physiotherapy are essential for successful management. Advances in reconstructive surgery and rehabilitation continue to improve prognosis and patient quality of life. A multidisciplinary approach involving maxillofacial surgeons, physiotherapists, and dental professionals is crucial in achieving optimal outcomes and preventing recurrence.

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