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Case Report

UNILATERAL TEMPOROMANDIBULAR JOINT ANKYLOSIS– A CASE REPORT

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ABSTRACT

Temporomandibular joint (TMJ) ankylosis is defined as osseous or fibrous fusion of the condyle of the mandible and the mandibular fossa of temporal bone (Nitzan et. al. 1998). It renders the afflicted person unable to use their oral cavity well. Temporomandibular joint (TMJ) ankylosis or hypomobility involves fusion of the mandibular condyle to the base of the skull. It is a major clinical problem that affects many patients suffering from facial trauma, infection, or systemic disease. Clinical presentation depends on the age at which ankylosis occurs and whether ankylosis is unilateral or bilateral. The treatment of TMJ ankylosis poses a significant challenge because of technical difficulties and a high incidence of recurrence. Surgery and postoperative physiotherapy are regarded as the mainstay treatment for TMJ ankylosis.

Key words: Temporomandibular joint, Ankylosis, Hypomobility, Trauma, Unilateral.

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INTRODUCTION

Ankylosis is a Greek terminology meaning "stiff joint. It can be defined as *inability to open mouth due to either a fibrous or bony union between the head of the condyle and glenoid fossa* [1]. Temporomandibular joint (TMJ) ankylosis is a disorder that leads to a restriction of the mouth opening from partial reduction to complete immobility of the jaw. It is most commonly associated with trauma (13100%), local or systemic infection (053%), or systemic disease, such as ankylosing spondylitis, rheumatoid arthritis, or psoriasis [2,3]. Temporomandibular joint (TMJ) ankylosis is the common cause of acquired mandibular deformity in children as well as in adult if it is not treated in early age. Hypomobility of the joint also affects the surrounding structures as well as the joint itself.

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Ankylosis which arises in early childhood usually results into facial asymmetry [4]. It is most commonly associated with trauma (13- 100%) local or systemic infection (10-49%) or systemic diseases (10%) such as ankylosing spondylitis, rheumatoid arthritis or psoriasis. Ankylosis can also occur as a result of TMJ surgery [5].

Ankylosis occurring in childhood may grossly alter the facial skeleton, affect the child psychologic development [6]. In children, ankylosis usually occurs from an intra-capsular compression fracture or rarely from a suppurative arthritis of middle ear infection [7, 8]. Patients characterized with young, severe TMJ trauma, comminuted condylar fracture or the sagittal fracture or those with medially dislocated condylar fracture, prolonged immobilization of the mandible, and disc displacement are prone to developing ankylosis [9-11].

Although TMJ ankylosis is one of the most common pathologies afflicting the facial skeleton, it is also the most overlooked and undermanaged problem in

children [11]. Impairment of speech, difficulty with mastication, poor oral hygiene, rampant caries, disturbances of facial and mandibular growth, malocclusion, and acute compromise of airway, etc. present a unique challenge to pediatric dentists in terms of the patient′s physical and psychological management [12].

TMJ ankylosis may be classified according to the site (intra or extra articular), type of tissue involved (bony, fibrous or fibro-osseous tissue) and the degree of fusion (complete or incomplete). It may be also classified into Type I, in which the condyle is present and they are only fibrous adhesions. Type II, in which there is bone fusion, the condyle is remodeled, and the medial pole is intact. Type III, in which there is an ankylotic block, the mandibular ramus is fused to the zygomatic arch, the medial pole remains intact and Type IV in which there is true ankylotic block and the anatomy is deranged because the ramus is fused to the skull base [13].

CASE REPORT

An 8-year-old male patient reported to our out-patient department with a chief complaint of difficulty in mouth opening for 6 months. History revealed an accident 1 ½ years ago, (fall from bicycle) following which he was prescribed medication to relieve pain.

Local examination revealed that he had a restriction in mouth opening and deviation of mandible towards the left side with a maximum opening 4 mm (Figure 1) and 2mm lateral excursive movements to either side. On palpation, Pain was present in relation to the left TMJ. Tenderness on palpation was present on palpating the temporalis and masseter muscle. Base on the history and clinical features a Provisional diagnosis of TMJ ankylosis (Left side) was given and the patient was subjected to radiographic investigations.

Panoramic radiograph (Figure 2) revealed a reduction in joint space is evident in relation to the left TMJ. He was advised a computed tomography which revealed an alteration of the shape and structure of the condyle and TMJ and a hyper dense mass surrounding the left condyle (Figure 3). A final diagnosis of unilateral ankylosis of the TMJ (left side) was established based on the clinical presentation and radiographic confirmation.

The patient was surgically managed by removal of the ankylotic mass along with the condyle and placement of costochondral graft with repositioning of the temporalis muscle (Figure 4). The patient had an improvement of mouth opening of 13 mm (Figure 5) immediately after the procedure. He is presently under orthodontic treatment for management of growth defect of the mandible owing to the TMJ ankylosis. There have been no signs of recurrence of ankylosis.

Fig 1. Mouth opening of 4mm preoperatively

Fig 2. A panoramic radiograph showing a reduction in joint space

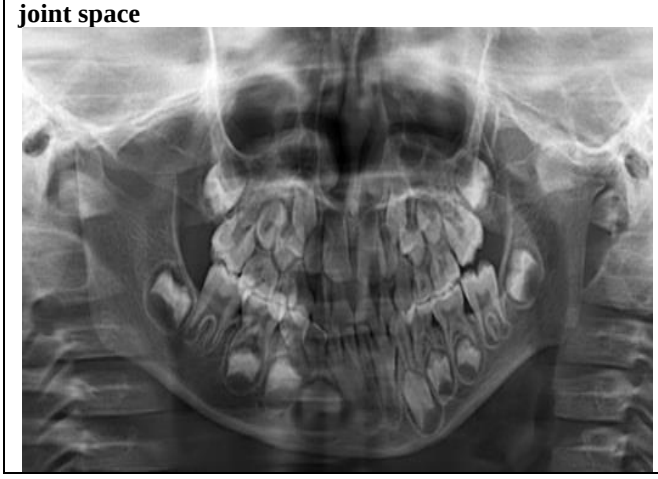
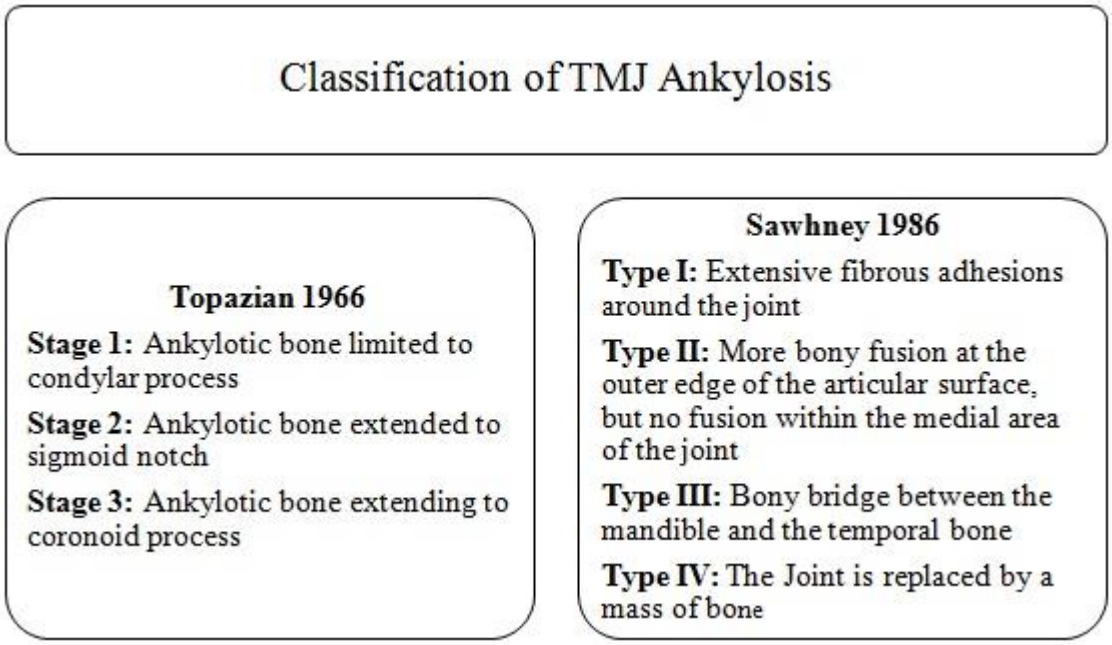


Fig 3. Axial and coronal sections of CT exhibiting a hyper dense mass in relation to and surrounding the left condyle

Fig 4. Repositioning of temporalis fascia and stabilization of costochondral graft following removal of the ankylotic mass

Fig 5. Improved mouth opening postoperatively

Fig 6. Classification of TMJ ankylosis



DISCUSSION

Temporomandibular joint (TMJ) ankylosis is defined as osseous or fibrous fusion of the condyle of the mandible and the mandibular fossa of temporal bone [14]. Kazanjian (1938) classified TMJ ankylosis according to the site involved into true (intracapsular) and false (extracapsular) ankylosis. Intracapsular ankylosis refers to fibrous or bony ankylosis that occurs between the condylar head of the mandible and the mandibular fossa of the temporal bone. While extracapsular ankylosis refers to restriction of mandibular movement that occurs as result of pathology or physical obstruction that is outside the TMJ [15].

Intracapsular (True) ankylosis was further classified according to extent by Topazian and Sawhney [16, 17]. (Figure 6) Aetiology of TMJ ankylosis may either be congenital or acquired. Acquired TMJ ankylosis may be caused by trauma, infection [17-19] systemic inflammatory disorders[17], irradiation, previous surgery and neoplasm [20-23]. Our patient belonged to stage 1 of Topazian's classification and Type 4 of Sawhney's classification.

Most studies suggest that trauma is the most common cause of TMJ ankylosis [24-27]. In the pre-antibiotic era infection was the most common cause of ankylosis21. Some studies suggest that disc displacement is a prerequisite for posttraumatic ankylosis to occur. These authors maintain that this displacement allows a direct contact between the distal fragment of the mandible and the mandibular fossa or a clot occupies the region between the two surfaces. In children, clinical presentation depends on the age at which ankylosis occurs, duration and

on whether ankylosis is unilateral or bilateral. When ankylosis occurs after growth has ceased, it presents mainly with limitation of mouth opening [27].

If the cause is trauma, it is hypothesized that intraarticular hematoma, along with scarring and formation of excessive bone, leads to the hypomobility. Infection of the TMJ most commonly occurs secondary to contiguous spread from otitis media or mastoiditis, but it may also result from hematogenous spread of infectious conditions such as tuberculosis, gonorrhea, or scarlet fever. Systemic causes of TMJ ankylosis include ankylosing spondylitis, rheumatoid arthritis, and psoriasis [28].

The goals for the release of TMJ ankylosis are to create a pseudoarthrosis that will improve function or movement of the mandible, prevent relapse, relieve airway obstruction if present, achieve normal growth and correction of deformity in children, restore appearance and occlusion in adults and facilitate maintenance of good oral hygiene [29, 30].

A 7step protocol that has been developed for the treatment of TMJ ankylosis is [31]. (1) aggressive resection of the ankylotic segment, (2) ipsilateral coronoidectomy, (3) contralateral coronoidectomy when necessary, (4) lining of the joint with temporalis fascia or cartilage, (5) reconstruction of the ramus with a costochondral graft, (6) rigid fixation of the graft, and (7) early mobilization and aggressive physiotherapy.

A variety of techniques for the treatment of TMJ ankylosis have been described including intraoral coronoidectomy, ramus osteotomy, high condylectomy, forceful opening of the jaw under general anesthesia, autogenous Costochondral graft (CCG), and free vascularized whole joint transplants [32-33]. In addition, several prosthetic options for TMJ reconstruction exist, including Silastic sheeting material (Vitek Inc., Houston, TX, USA), the TMJ condylar prosthesis, custom glenoid fossa implants, articular eminence implants, and mandibular reconstruction plates with condylar heads [34]. TMJ ankylosis treatment throughout the world suggest early surgical intervention, elaborate resection, early mobilization, and aggressive physiotherapy for atleast 6 months postoperatively [1, 11, 12].

CONCLUSION

A complaint of restricted mouth opening that is progressive and which has followed a trauma should evoke the clinicians mind to think in terms of a TMJ ankylosis. It is a progressive state and when present in a child will have a negative impact on the physical and social wellbeing of the individual. If left untreated due to an improper assessment and diagnosis it will lead to gross dentofacial change as a disfigured appearance. A thorough knowledge and the use of the appropriate imaging modality will guide the clinician in making a definitive diagnosis which results in proper treatment and care of the patient.

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors

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Nil

CONFLICT OF INTEREST

No interest

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