

## Unilateral Temperomandibular Joint Ankylosis- A Case Report

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**ABSTRACT:** Ankylosis of temperomandibular joint (TMJ) involves fusion of mandibular condyle to the base of the skull. When it occurs in a child it can have devastating effects on the future growth and development of jaws and teeth. Furthermore in many cases it has a profoundly negative influence on the psychosocial development of the patient, because of the obvious facial deformity, which worsens with growth. This paper presents a case report of unilateral TMJ ankylosis diagnosed and successfully treated in a 9 year old male patient. achondropaaaaachondroplasia.

**Keywords:** Trauma, Temperomandibular joint, Ankylosis

### I. Introduction

Temperomandibular joint (TMJ) ankylosis 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 (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<sup>1</sup>.

Ankylosis of the temperomandibular joint (TMJ) is an intracapsular union of the disc condyle complex to the temporal articular surface that restricts mandibular movements including fibrous adhesions or bony fusion between condyle, disc, glenoid fossa and eminence. It is a serious disability condition that may cause problems in mastication, digestion, speech, appearance and hygiene. It also causes disturbance of facial and mandibular growth and acute compromise if the airway invariably resulting in physical and psychological disability<sup>2</sup>. Ankylosis may be defined as the fusion of joint surfaces by bone or fibrous tissue. Temperomandibular joint Ankylosis is a condition that may cause chewing, digestion, speech, esthetic, hygiene and physiological disorders<sup>3</sup>.

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. We present a case report of TMJ ankylosis diagnosed and successfully treated in a 9 year old male patient<sup>4</sup>.

### II. Case Report

A 9 year old boy reported with a chief complaint of inability to open the mouth. At initial presentation his height was 129cm and weight 30kg. He was healthy and no complications had been reported at birth.



**Figure 1: Lateral view**

Extra oral assessment revealed obviously hypoplastic mandible with a Class II dental relationship. The mandibular midline was 8cm to the right of the facial midline, and the occlusal plane was canted. Facial profile was concave with incompetent lips with facial asymmetry with mandible deviated towards the right side of the face, No palpable lymph nodes and mouth opening was minimal. On intraoral examination normal soft tissue mucosa, dental caries in 53 and 83, presence of retained 72, upper and lower anterior crowding, and presence of

unilateral posterior cross bite. Clinical diagnosis was further confirmed radiographically by orthopantomograph (OPG) to find out decreased joint space, antegonial notch, mushrooming condyle and coronoid hyperplasia.



**Figure 2: OPG view**

The following treatment plan was developed for the patient

- Gap arthroplasty through a submandibular or periauricular approach.
- Coronoidectomy
- Costochondral graft with rapid internal fixation.
- Placement of splint
- Aggressive use of continuous passive movement and tongue blades.
- Orthodontic treatment and orthognathic surgery later.

The initial surgery was accomplished under local anesthesia. Gap arthroplasty and coronoidectomy was accomplished through submandibular approach. During the procedure the mouth opening was about 20mm. The splint was secured by means of skeletal fixation. Maxillomandibular fixation was maintained for 2 days and the patient was discharged from the hospital 3 days after surgery with good range of motion. He started an exercise program involving the use of tongue blade to stretch the mouth maximally. Twin block was started 3 months after initial surgery. At that time vertical opening was about 25cm. At his most recent follow up, his occlusion remained stable and he had good range of motion vertical opening of 26mm and left and right lateral excursive movement of 4mm and 6mm respectively.



**Figure 3: Mouth opening (post-op)**

Mouth opening and facial expression were evaluated 7 days, 30 days and 60 days post operatively. The patient had attended postoperative sessions showing forwards mouth opening and wound healing aspects as well as healthy rehabilitation.

### **III. Discussion**

Temporomandibular joint (TMJ) ankylosis is one of the challenging TMJ disorders that can negatively affect oral related daily functions like mastication, speech and hygiene<sup>5</sup>.

Ankylosis which arises in early childhood usually results into facial asymmetry. In children, ankylosis usually occurs from an intra capsular compression fracture or rarely from a supportive arthritis of middle ear infection. The main etiological findings are trauma, systemic diseases or infections. Physiological limitations such as difficulties on swallowing, mastication and speech are the complications seen. Clinically the patient presents with severe limitation of mouth opening resulting in compromised oral hygiene procedures<sup>6</sup>.

Ankylosis in children usually occurs from a Type IV fracture of condyle. Ankylosis occurring in childhood may grossly affect the facial skeleton, affects the child psychological development. In children, ankylosis usually occurs from an intracapsular compression fracture or rarely from suppurative arthritis of middle ear infection<sup>7</sup>.

The causes and treatment of TMJ ankylosis has well documented with trauma and infection identified on the two leading causes. In children, TMJ ankylosis can result in mandibular retrognathism with attendant esthetic and functional deficits. Therefore treatment should be initiated as soon as the condition is recognized with the main objective of re-establishing joint function and harmonious jaw function<sup>8</sup>.

TMJ ankylosis is often described as either fibrous or bony and in traditional opinions, fibrous ankylosis can progress into bony ankylosis. The most common etiology of TMJ ankylosis is trauma, mainly condylar

fracture. Although a close relationship exists between condylar fracture and TMJ ankylosis, the pathogenesis of the disease remains ill-defined and very few studies have been investigated the issue<sup>9</sup>.

The onset of disease usually occurs in children under 10 years with a roughly equal gender involvement. A progressive reduction in jaw movement is the main clinical presentation. It should be noted that most patients can still move their jaws slightly at the initial examination and complete limitation of mouth opening is rare which means that opening movement exists throughout the entire course of bony ankylosis. Generally the formation of bony ankylosis takes a long time ranging from several months to several decades after the occurrence of injury<sup>10</sup>.

In the treatment of TMJ ankylosis in children to maintain a normal growth and the development of the face is equally important to provide a satisfactory mouth opening with free movement of the mandible. Difficulties in mastication, poor oral hygiene, rampant caries, facial growth disturbances possible pharyngeal narrowing and the development of obstructive sleep related breathing disorders may be possible complications after failure in the treatment of TMJ ankylosis. Surgical treatment always has a particular importance in children. The potential for the growth impairment adds some problems<sup>11</sup>.

The principal surgical methods include simple gap arthroplasty, interpositional arthroplasty and total joint replacement with a prosthesis. A seven step protocol has been developed for the treatment of TMJ ankylosis

1. Aggressive resection of bony or fibrous ankylotic mass.
2. Dissection and stripping of temporalis muscle, scar release from the ramus and ipsilateral coronoidectomy.
3. Contralateral Coronoidectomy and stripping of the masseter, medial pterygoid and temporalis muscle.
4. New joint lining is constructed.
5. Reconstruction of the condyle with costochondral graft.
6. Rigid fixation of the graft.
7. Early mobilization and aggressive physiotherapy<sup>12,13</sup>.

In this case of unilateral TMJ ankylosis other remarkable observation is that the opposite joints were found healthy for many years. It is well known that in cases of intermaxillary fixation, the movement of healthy condyles is restricted for 4-6 weeks<sup>14</sup>.

In this patient there has been significant improvement in the antero posterior position of the mandible and noticeable increase in the patient's size since the release of ankylosis. The net result had been a high degree of patient satisfaction.

#### **IV. Conclusion**

TMJ ankylosis affects not only the condylar head, glenoid fossa and mandibular growth but also affects structures of skull base such as sphenoid and temporal bone. Reconstruction of the joint using autogenous or allogenic materials for the treatment of TMJ ankylosis is effective, considering the postoperative maximum mouth opening, recurrence and function of the joint.

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