



CASE REPORT

Unilateral Ankylosis of the Right Temporomandibular Joint in a Two Year Old Child - A Case Report

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ABSTRACT: Ankylosis of the temporomandibular joint (TMJ) is the inability to open the mouth due to fibrous or osseous union between the head of the mandible and glenoid fossa. This report describes a case of 2-year old female child who presented with progressive inability to open the mouth due to bony ankylosis of the right (TMJ).

Key words: Ankylosis, Temporomandibular joint, restricted mouth opening.

The term "Ankylosis" has rooted from Greek, meaning "stiff joint".^[1] Ankylosis is a chronic hypomobility or immobility of a usually movable articulating structure. Ankylosis of the temporomandibular joint (TMJ) immobilizes the mandible. When it occurs in children it impairs mandibular growth and results in mandibular asymmetry and retrognathism. Ankylosis induces functional and esthetic disturbance, and interferes with nutrition and oral hygiene. Failure to alleviate the ankylosis can result in permanent speech impairment, difficulties with mastication, poor oral hygiene, rampant caries, facial and mandibular growth disturbances, and acute and chronic airway compromise.^[2]

This case report describes a two year old female child who reported to our department with the progressive inability to open the mouth with structural deformation of face and functional impairment of speech and mastication due to ankylosis of the right TMJ.

CASE REPORT

A two year old female child was brought to the department of pediatric and preventive dentistry with the complaint of progressive inability in opening the mouth for the past 1 year. Parent recognized the inability in mouth opening only after the child was started on solid diet. The patient also had difficulty in speech and mastication. The past medical history revealed that the patient had sepsis at the right pre-auricular region at 20 days after birth, for which an incision and drainage was done through an extra-oral approach. Other details elicited in the medical and dental history was non-

contributory.

On extra-oral examination, the patient had marked facial asymmetry with fullness on the right side of the cheek. The mandible was micrognathic with deviation towards right side and a prominent anti-gonial notch was palpable [Fig-1,2] A surgical scar of around 1 cm was evident in the right pre-auricular region. Mouth opening was around 2mm with deviation of midline towards the right side [Fig-3].

Radiographic examinations comprised of orthopantomogram and computed tomography that revealed extreme lytic destruction of the right condylar head with obliteration of the articular surface [Fig-4,5] CT images in the axial plane in bony window setting showed obliteration of disc space and bony fusion of the condylar head to the temporal bone. Contrast enhanced computed tomography (CECT) images showed obliteration of disc space with no contrast enhancement and approximately 1000 HU.

Based on these findings, the diagnosis of unilateral right bony ankylosis of the TMJ was confirmed.

The treatment options were explained to the parents and patient was subjected for pre-anesthetic evaluation. Surgical option of gap arthroplasty with reconstruction with costo-chondral graft (CCG) was planned. The parents were emotionally unprepared for the procedure because of the child's younger age and requested for deferring the treatment for a span of year. The patient was kept under observation and physiotherapy (exercises using wooden spatula) was advised to limit the progression of the problem.

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Figure:1: Ankylosis of right TMJ with marked facial asymmetry and retrognathic mandible



Figure:2: Prominent ante gonial notch



Figure:3: Restricted mouth opening (2mm) with deviation towards right side

DISCUSSION

TMJ ankylosis can be defined as "inability to open mouth due to either a fibrous or bony union between the head of the condyle and the glenoid fossa". Because of immobility of the joint, the jaw function gets affected.^[1] Ankylosis of the TMJ can be classified into true ankylosis (intracapsular) and pseudoankylosis (extracapsular). True ankylosis of the TMJ results mostly from infection, trauma, rheumatoid arthritis, neoplasm, local surgical complications, chemical burns and extension of intracapsular ankylosis. Pseudoankylosis results from muscular, osseous, neurological, or psychiatric disorders.^[4] When TMJ ankylosis occurs in infancy, there might be a delay in diagnosis and treatment.^[5]

In the present case the parent recognized the problem only after the child was started on a solid diet at around 2 years in spite of the episode of sepsis and surgical intervention taken place at 20 days after birth.

Knowing the cause of TMJ ankylosis helps in understanding its pathophysiology. In the present case, there was a history of sepsis in the right pre-auricular region treated surgically, evident with a surgical scar. Hence, the etiology could be due to infection or local complication of the previous surgical procedure or a combination of both, but it was difficult to substantiate the exact cause as there were no proper records.

TMJ ankylosis starting during the growth period results in serious deformities of the mandibular shape and size together with the related soft tissue matrix. Mandibular asymmetry or bird face deformities will be the outcome according to whether the case is unilateral or bilateral. Maxillary deformity follows this resulting in canting of the occlusal plane in unilateral cases and shortening of the posterior maxillary height in bird face deformity, giving rise to the characteristic steep mandibular and occlusal planes. The retrognathic mandible with short rami, along with the narrow bigonial distance, seriously affect the dimensions of the oropharynx, giving rise to obstruction of the airway at that level.

The long-standing ankylosed joints result in chronic isometric contractions of the masticatory muscles. This gives rise to elongation and thickening of the coronoid process (temporalis muscle), shortening of the mandibular ramus/rami (pterygo-masseteric muscle sling), recession of the chin and its elongation in a

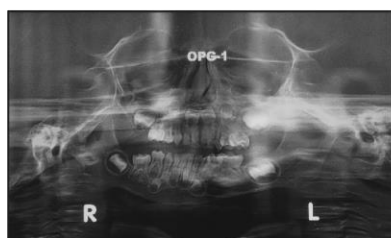


Figure 4: Orthopantomographic image revealing obliteration of the right TMJ disc space

cephalo-caudal direction (suprahyoid depressor muscles), and the development of the antegonial notch owing to the antagonistic actions of the pterygomasseteric sling and the depressor muscles.^[6]

All These features were typically observed in our patient. The treatment of TMJ ankylosis has never been easy because of the wide variations in the clinical features and the methods of the patient's presentation. The treatment strategy varies with age, whether there is facial deformity or not, and if the condition is recent or long-standing.

Innovative and efficient protocols were introduced to solve this problem. In children, in addition to the release of ankylosis, the primary concern is to keep the growth potential of the facial skeleton. Thus, reconstruction of the Condyle Ramus unit (CRU) using CCG, followed by active mouth opening exercises, is mandatory.^[6] The postoperative and long-term clinical results like symmetry, arch coordination, correction of occlusal canting, mandibular deviation, facial growth, and prevention of re-ankylosis were better obtained and controlled only in those cases that underwent long-term orthodontic activator therapy postoperatively.^[9]

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, and free vascularized whole-joint transplants.^[3] Of these, the following three were mostly performed a) Gap Arthroplasty (resection of bony mass without interposition material), (b) Joint Reconstruction (by bone grafts or microvascular reconstruction by transfer of second metatarsophalangeal joint, distraction osteogenesis, or

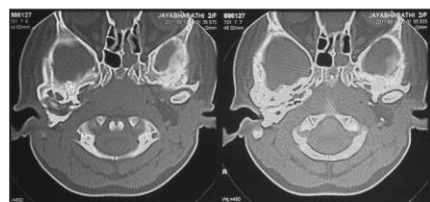


Figure 5: Computed Tomographic image revealing lytic destruction with obliteration of the right TMJ disc space

joint prosthesis), (c) Interpositional Arthroplasty (resection of bony mass with interposition of biological or non biological material).^[8]

TMJ ankylosis treatments throughout the world suggest early surgical intervention, elaborate resection, early mobilization, and aggressive physiotherapy for at least 6 months postoperatively.

A 7-step protocol that has been developed for the treatment of TMJ ankylosis is:

- (a) Aggressive resection of the ankylotic segment
- (b) Ipsilateral coronoidectomy
- (c) Contralateral coronoidectomy when necessary
- (d) Lining of the joint with temporalis fascia or cartilage
- (e) Reconstruction of the ramus with a CCG
- (f) Rigid fixation of the graft
- (g) Early mobilization and aggressive physiotherapy.^[3]

A number of surgical approaches have been devised to restore normal joint functioning, but the surgical intervention for TMJ ankylosis is frequently followed by re-ankylosis, occlusal disturbance, retrusion of the mandible, sleep dyspnea, and alternation of functional masticatory movement. The most frequently reported complications after treatment of ankylosis are limited mouth opening and re-ankylosis.^[4]

In children, TMJ ankylosis can have devastating effects on the future growth and development of the jaws and teeth. These problems have functional and esthetic implications, as well as difficulties pertaining to nutrition and oral hygiene. It also has a profoundly negative influence on the psychosocial development of the patient, because of the obvious facial deformity,

which worsens with growth.^[3] Treatment should be initiated as soon as the condition is recognized, with the main objective of re-establishing joint function and harmonious jaw function and to facilitate the positive psychological development of the child.^[7]

Despite the well recognized importance of early intervention, there exists an emotional barrier among the parents in our society, which prevents them from undertaking the treatment due to early age of the child as in our case. Hence to limit the further progression of this devastating condition, active physiotherapy was advised in our case. The patient was advised for review at regular intervals, after explaining the prognosis and importance of early intervention.

CONCLUSION

Ankylosis of the TMJ can lead to structural, functional and psychologic impairment in the growing child. An early interdisciplinary approach, with empathetic considerations could help the pediatric dentist to restore back the valuable smiles of these younger ones.

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