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CASE REPORT

TEMPOROMANDIBULAR JOINT ANKYLOSIS: A CASE REPORT

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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 (13-100%), local or systemic infection (0-53%), or systemic disease, such as ankylosing spondylitis, rheumatoid arthritis, or psoriasis.[2, 3]

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.[4] 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.[5] The first sign of a significant problem may be increasing limitation of jaw opening, usually noticed by the dentist. Pain is uncommon. Early diagnosis and treatment are crucial if the worst sequelae of this condition are to be avoided.

This paper describes a case of unilateral bony ankylosis of TMJ causing problems in mastication, speech, appearance, and hygiene in a 4-year-old child.

CASE REPORT: A 5-year-old boy reported with the complaint of inability to open mouth since two to three years. Parents didn't give any history of trauma or infection. Parents recognized the inability to open mouth only after the child started with solid diet.

Extra oral examination revealed facial asymmetry with fullness of cheek on the right side. Mandible was micrognathic. The child showed almost nil mouth opening

Radiographic examinations comprised of orthopantomogram and computerized tomography that revealed a lack of structural organization and obliteration of right TMJ space. Based on these findings, a diagnosis of unilateral right bony TMJ ankylosis was confirmed.

TREATMENT: A sequential protocol for the treatment of TMJ ankylosis is based on aggressive resection of ankylotic mass. While respecting, a special approach has to be directed particularly from the medial aspect of the joint which is in close proximity with internal maxillary artery to ensure that bony, fibrous, and granulation tissues are completely removed. After complete evaluation, a surgical treatment with gap arthroplasty on right TMJ was planned under general anesthesia. Gap arthroplasty is a term used to describe the operation in which a section of bone is removed and no substance is interposed between the two cut bony surfaces.

The surgical approach consisted of alkayat and bramley preauricular incision. Full thickness mucoperiosteal flap was reflected and the ankylotic mass was exposed. The section consisted of two horizontal osteotomy cuts which were placed at the level of joint (below the zygomatic arch) and

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removal of a bony wedge was done so that a gap is created between the roof of the glenoid fossa and ramus. It is not possible to remove the entire block in toto; hence, the bone was removed carefully by using surgical burs until the bone is thinned which was then removed using chisel or osteotome.

The joint cavity was then irrigated with betadine, and the bony margins were smoothed using bone file. Forceful mouth opening of about 25 mm was done using Heister's jaw opener at the time of surgery. Suction drain was placed, and the flap was sutured using 3-0 vicryl for deeper layers and skin was closed using 4-0 prolene. The width of the bone removal is considered crucial. It is recommended to create a gap of at least 1 cm to prevent reankylosis. It is also important to create a gap of equal dimension both laterally and medially, so that the possibility of reankylosis due to bone contact is avoided.

Post-operative Course: The post-operative course was uneventful. A mouth opening of 12 mm was noted 2 days after surgery. Vigorous post-operative physiotherapy was started to maintain the mobility of the joint. After 5 days with physiotherapy using wooden spatula, mouth opening was noted to be 16 mm. Later mouth opening exercises was started. The patient was instructed to continue with exercises for at least a period of 1 year.

DISCUSSION: Ankylosis of the TMJ involves fusion of the 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 the jaws and teeth. It also has a profoundly negative influence on the psychosocial development of the patient, because of the obvious facial deformity, which worsens with growth.[6] 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).[7,8] It was also classified by Kazanjian[9] as either true or false.

True ankylosis is a condition that results in osseous or fibrous adhesion between the surfaces of the TMJ, within the limits of the articular capsule. False ankylosis results from diseases not directly related to the joint. The most common etiological factors are trauma and infection.[10] If the cause is trauma, it is hypothesized that intra-articular 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.[11] Su-Gwan[10] studied seven operated patients and found that trauma was the main cause of ankylosis (85.7%)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),[12] and free vascularized whole-joint transplants.[13]

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.[14] TMJ ankylosis treatment throughout the world suggest early surgical intervention, elaborate resection, early mobilization, and aggressive physiotherapy for atleast 6 months postoperatively.[1,4,5] A 7-step protocol that has been developed for the treatment of TMJ ankylosis is: [15]

(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 CCG, (6) rigid fixation of the graft, and (7) early mobilization and aggressive physiotherapy. In children, TMJ ankylosis results in impaired mandibular growth and mandibular retrognathism. These problems have functional and esthetic implications, as well as difficulties pertaining to nutrition and oral hygiene.

Treatment should be initiated as soon as the condition is recognized, with the main objective of re-establishing joint function and harmonious jaw function.[15] Therefore, immediate treatment is necessary to promote proper growth and function of mandible and to facilitate the positive psychological development of the child. The case reported above is of complete, fibrous, unilateral true ankylosis. This was considered to be caused by trauma in early childhood though the parents didn't give any history of trauma.

Here, the above-mentioned treatment protocol formed the basis of the treatment plan that was undertaken in this patient, except for coronoidectomy, and also, the joint was not lined with temporalis fascia or cartilage or reconstructed with CCG. Immediate surgical intervention was undertaken which improved the mouth opening of the child from 1-2 mm to around 16 mm 1 week after surgery. It is of prime importance that rigorous physiotherapy is undertaken to further improve mouth opening and mainly to prevent re-ankylosis. In this case, simple chewing gum exercises were started on the second day after surgery followed by use of wooden spatulas which was found to significantly increase the ease and the degree of mouth opening.

CONCLUSION: Any pathology that afflicts the TMJ and restricts the mouth opening carries a mental stigma that overweighs the physical disability posed by the problem in growing children. Such children are psychologically handicapped and hence call for a unique approach toward their rehabilitation. A detailed history, clinical and functional examination, radiographic examination facilitating correct diagnosis followed by immediate surgical intervention, and physiotherapy can help us to restore physical, psychological, and emotional health of the child patient.

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Fig. 1:pre-operative photograph of patient

Fig. 2: pre-operative photo showing inability in mouth opening

Fig. 3: Intraoral photograph showing left intra occlusal opening

Fig. 4: Intraoral photograph showing right intra occlusal opening

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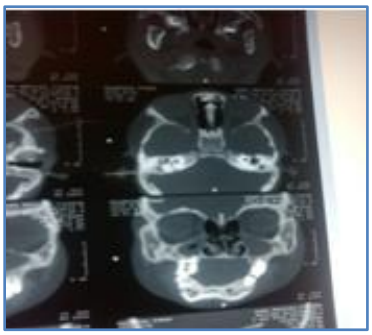

Fig. 5: C.T of the patient showing Unilateral ankylosis on right TMJ

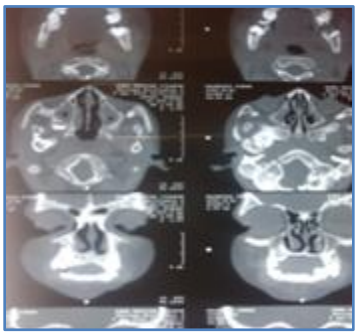

Fig. 6: C.T of the patient showing Unilateral ankylosis on right TMJ

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