

CASE REPORT

Aggressive Surgical Resection Or Distraction Osteogenesis - Surgeons Dilemma In Treating Tmj Ankylosis Of Seven Year Old Malnourished Child- A Case Report

¹Ganesan Sureshkumar, ²Balasubramaniyan Nathiya, ³D Durairaj, ⁴James antony Bhagat M, ⁵ Rajprakash B

¹Professor, Department of Oral and Maxillofacial Surgery, Sri Venkateshwaraa dental college and hospital, Ariyur, Pondicherry

²Reader , Department of Oral and Maxillofacial Surgery, Adhiparasakthi Dental College and hospital Melmaruvathur, TamilNadu, India

^{3,4} Professor, Department of Oral and Maxillofacial Surgery, Adhiparasakthi Dental College and hospital Melmaruvathur, TamilNadu, India

⁵Reader, Saveetha dental college and Hospital, Chennai

Correspondence:

Dr.B.Nathiya

Reader, Department of Oral and Maxillofacial Surgery, Adhiparasakthi Dental College and Hospital Melmaruvathur, TamilNadu, India

Email drnathiyab@apdch.edu.in

ABSTRACT

This article describes the management of a 6-year-old female patient having bilateral right TMJ bony (true) ankylosis and left fibrous ankylosis having mandibular retrognathism and she was also suffering from eating, speech problems, snoring, difficulty in breathing, daytime somnolence and she is severely malnourished due to inability to eat because of nil mouth opening.. Bilateral gap arthroplasty and temporalis myofascial graft interpositioning through preauricular approach were done in surgical phase followed by the aggressive jaw physiotherapy in postsurgical period.

Keywords: Ankylosis, Gap arthroplasty, Interpositional arthroplasty, Distraction osteogenesis

INTRODUCTION

Ankylosis of temporomandibular joint (TMJ) is an intracapsular union of the disc-condyle complex to temporal articular surface that restricts mandibular movement, including the fibrous adhesions or bony fusion between condyle, disc, glenoid fossa, and articular eminence[1]. TMJ ankylosis is more commonly associated with trauma (13–100%), local or systemic infection (10–49%), or systemic diseases (100%), such as ankylosing spondylitis, rheumatoid arthritis, and psoriasis. However, it can also occur congenitally or secondary to severe rheumatoid arthritis or to tumors in the area of TMJ. Ankylosis can also occur as a result of TMJ surgery[2-5]. A variety of techniques for treatment of ankylosis have been described in the literature. However, no single method has produced uniformly successful results. Limited range of motion and re-ankylosis (usually within 6 months after operation)

are the most frequently reported complications.[2]

Case Report

A 6-year-old female patient reported with the chief complaint of an inability to open mouth, restricted jaw movement, difficulty in respiration, snoring, daytime somnolence, malnourished. She had skeletal and dental class-II malocclusion. Thorough clinical and radiographic examination revealed the case of bilateral right side bony TMJ ankylosis and left side fibrous ankylosis. (Fig 1) Her lower jaw is like Andy Gump deformity, typical bird face appearance due to micrognathia. Andy Gump was a cartoon character with a very insignificant chin, who first appeared in the Chicago Tribune in 1917, created by cartoonist Sidney Smith [6]. In our case the patient is severely malnourished due to inability to masticate food, limiting her intake to liquids or semisolids and also presented with nil mouth opening. She had convex profile, severely retrognathic mandible, absence of chin button, and bimaxillary protrusion. She complained about the snoring and difficulty in sleeping on lying down and daytime somnolence presented with obstructive sleep apnea hyponea syndrome. On Palpation joint movements is absent or nil. She was also the sufferer of emotional, social, and psychological disturbances with low level of self-confidence and self-esteem.

Fiber optic assisted awake nasotracheal intubation was achieved. The temporomandibular joint was approached through a curvilinear preauricular incision extended 3 cm into the temporal region for exposure of the temporalis fascia. The dissection proceeded in this plane to the zygomatic arch. The periosteum over the arch was incised horizontally and the joint entered through a incision over the lateral capsule. After exposure and identification of the site of ankylosis, aggressive excision of the fibrous and/or bony mass was carried out, the upper cut is marked, and the lower cut is placed 1.5 cm below it. Special attention was directed to the medial aspect of the joint to ensure total resection. Excision of the ankylotic tissue and coronoidectomy usually resulted in loss of one third of the ramus height. Following excision of the ankylotic mass and coronoidectomy, the maximum interincisal opening was measured. The MIO was less than 35 mm (without the use of force), so we done a contralateral coronoidectomy through extraoral approach as well as resection of fibrous mass on the contralateral side. The TMJ was lined with a finger-shaped temporalis fascia flap rotated over the arch into the joint as described by Pogrel and Kaban (Fig 2). The temporalis flap was pedicled inferiorly on the deep temporal artery. The thickness of the flap was dictated by the joint space requirement. A minimum of 4 mm is necessary to support function of the condyle and maintain vascularity. The flap was sutured medially, anteriorly and posteriorly with 4-0 Vicryl. Patients were followed on a monthly basis.

Results

PREOPERATIVE EVALUATION

Mean preoperative Maximal interincisal opening was nil. Lateral excursions were severely limited or absent in affected joints. Mandible is severely micrognathic with typical bird face appearance.

INTRAOPERATIVE FINDINGS

The mean intraoperative maximum interincisal opening under general anaesthesia was 40 mm. After resection and coronoidectomy, the glenoid fossae were lined with temporalis fascia.

POSTOPERATIVE FOLLOW-UP

The mean MIO was 31 + 3.2 mm with normal lateral excursions achieved. Favourable result was achieved which improves the function to take oral food. Extensive physiotherapy usually plays a crucial role in restoring normal TMJ function. Patient attender was educated how to use the Heister jaw stretcher to increase mobility of mandible. Aggressive use of continuous

passive force was employed, movement and tongue blades were used. Results were promising, and 3cm range of mouth opening was achieved and satisfactorily maintained after surgery.

Discussion:

Different modalities of surgical management of TMJ ankylosis have been described in the literature, including Gap arthroplasty, Interpositional gap arthroplasty, and Total joint reconstruction.[8-9]. There is no agreed treatment described, and results have often been variable and less than satisfactory.[2,10,11] Gap arthroplasty, including coronoidectomy, is a simple method with a short operating time. However, the disadvantages are many, including the creation of a pseudoarticulation, a short ramus, failure to remove all the bony pathology, increased risk of re-ankylosis, and lack of functional restoration of the joint. In addition, complications include the development of an open bite in bilateral cases, premature occlusion on the affected side, open bite on the contralateral side in unilateral cases, and suboptimal postoperative range of motion. For these reasons, Gap arthroplasty has largely been abandoned for the treatment of TMJ ankylosis.[2,11] The temporalis muscle is the most widely used among interpositional material due to its ease of use, dependable blood supply, proximity to the temporal joint, good functional results, minimal risk of facial paralysis, successful clinical results, and minimal complications.[12] Different authors have advocated the use of prearthroplastic distraction osteogenesis for a period of three months followed by aggressive resection of ankylotic mass. In our case, patient is severely malnourished for her age and is not cope up with the use of external distractors ,we planned as a preliminary surgical phase of aggressive resection of ankylotic mass to achieve mouth opening to improve her physical status followed by second stage correction of skeletal deformity. Selection of various surgical modalities for a particular case although depends up on the patient's age, weight, type and severity of ankylosis, degree of facial deformity, patient preference and compliance, and the availability of the techniques and expertise at the time of treatment.[13] Despite there being no standard surgical concept in TMJ ankylosis surgery, a sufficiently wide surgical exposure, sufficient and radical resection, early and aggressive long-term physiotherapy, and patient compliance are widely regarded as factors positively influencing success[14,15]

Conclusion:

Considering the age , weight of child and severity of malnourishment due to inability to open mouth we considered to choose a surgical resection of ankylotic mass followed by second stage correction of skeletal phase.

ETHICAL COMPLIANCE

The authors have stated all possible conflicts of interest within this work. The authors have stated all sources of funding for this work. If this work involved human participants, informed consent was received from each individual. If this work involved human participants, it was conducted in accordance with the 1964 Declaration of Helsinki. If this work involved experiments with humans or animals, it was conducted in accordance with the related institutions' research ethics guidelines.

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(a)



(b)



(c)



(d)

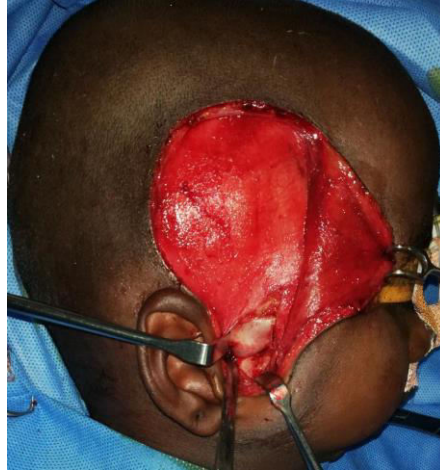


(e)

Figure 1: (a)–(e) Pretreatment, before TMJ ankylosis surgery. Mouth opening restricted Nil mouth opening . CT reveals ankylosis in TMJ.



(a)



(b)



(c)



(d)



(e)



(f)



(h)

Figure 2: (a)–(h) Bilateral Gap arthroplasty and temporalis flap interpositioning through preauricular approach.