

CASE REPORT

Temporomandibular Joint Ankylosis: Release and Reconstruction with Anterior Pedicle Temporalis Flap - A Case Report

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ABSTRACT

Temporomandibular joint (TMJ) ankylosis is one of the most important joint disorders which result from either trauma or due to local and systemic infections. It is a disabling condition that causes problems in mastication, digestion, speech, cosmesis, and maintenance of oral hygiene. A 30-year-old female patient reported to Medisense Clinic, Kolkata. Radiographic investigation showed obliteration of the right TMJ space with a broad bony ankylosis. The left side showed signs of previous release of ankylosis with reduced joint space and broad joint. Interpositional arthroplasty with temporalis muscle flap on the right TMJ and bilateral coronoidectomy was carried out under general anesthesia. At 6 months, the mouth opening was 32 mm with minimal scarring. Patients suffering from TMJ ankylosis are not only affected functionally but also esthetically, and the loss of mandibular function and major dentofacial sequel cause various psychosocial problems. This case highlights the advantages of temporal myofascial flap as interposition material for prevention of reankylosis.

Keywords: Ankylosis, Dentofacial, Joint disorders, Mandibular function, Temporomandibular joint.

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INTRODUCTION

Temporomandibular joint (TMJ) ankylosis is one of the most important joint disorders which result from either trauma or due to local and systemic infections.^[1] It is a disabling condition that causes problems in mastication, digestion, speech, cosmesis, and maintenance of oral hygiene.^[2] It can also cause disturbances of facial growth which invariably results in physical and psychological disability.^[3] Moreover, the life of the patient may at any time be jeopardized by transient or trivial obstruction to the airway and the very nature of the diet which predisposes toward the development of caries and periodontal diseases due to poor maintenance of the oral hygiene.^[4]

It usually results from injury (13–100%) or local or systemic infection (10–40%). However, it may also occur due to systemic diseases (10%) such as ankylosing spondylitis, rheumatoid arthritis, and psoriasis^[5] or from operation on the TMJ. The hypothesis has been proposed for traumatic cases that intra-articular hematoma, scarring, and formation of excessive bone give rise to hypomobility.^[1-5] TMJ ankylosis is usually classified as intraarticular and extraarticular. The intra-articular variety is often called true ankylosis and extra-articular variety being termed, false ankylosis. Joint involvement may be unilateral or bilateral.^[6,7] In true ankylosis, there is fibrous or bony union between the articular surfaces of TMJ, and the result is extreme limitations of mandibular opening but rarely complete immobility of the joints.^[8] In false ankylosis, the articular surfaces of TMJ are not involved and movement of the condyle is palpable on forced opening.^[9] The aims of treatment are to establish movement of the joint with adequate mouth opening, maintain functional occlusion, reconstruct the joint using biological material, and to prevent recurrence.^[10-12] There is no published consensus about the best treatment.^[5] Several techniques have been described,^[11,12] but there are three basic surgical techniques that have been developed.

The first is gap arthroplasty, in which the osseous mass between the articular cavity and the mandibular ramus is resected without interpositional material being inserted. Second, interpositional arthroplasty in

which a gap is created by resecting the osseous mass into which biological material is interposed, such as a temporal muscle flap, or a non-biological material such as acrylic or silastic.^[11,12] Finally, the joint can be reconstructed. The osseous mass is resected and the joint reconstructed by autogenous bone grafts or a total joint prosthesis.^[13-16] The most commonly followed protocol for the management of ankylosis is that given by Kaban *et al.* for pediatric patients.^[15] This includes early surgical intervention, aggressive resection (1.5–2.0 cm), ipsilateral coronoidectomy (if mouth opening <35 mm), contralateral coronoidectomy (if mouth opening <35 mm after the ipsilateral coronoidectomy), lining of the TMJ with temporalis fascia or cartilage, reconstruction of the ramus with a costochondral graft or distraction osteogenesis, rigid fixation, early mobilization and aggressive physiotherapy, and regular long-term follow-up, and finally, cosmetic surgery after growth has been completed.

CASE REPORT

A 30-year-old female patient reported to Medisense Clinic, Kolkata, with a chief complaint of inability to open her mouth since the age of 6 years. She presented with a history of trauma due to self-fall at the age of 6 years. She had been operated at the age of 7 years for release of ankylotic mass on both sides. However, within a month, there was a relapse and the patient was unable to open her mouth. The initial clinical examination revealed an obviously hypoplastic mandible with Class II molar relationship. The patient had almost nil mouth opening. There was no palpable movement of TMJ bilaterally and only slight rotation on the left side was evident. Bilateral fullness of cheek and shortening of ramal length were noted. Radiographic investigation included orthopantomogram and cone beam computed tomography that revealed a lack of structural organization and obliteration of the right TMJ space with a broad bony ankylosis [Figure 1]. The left side showed signs of previous release of ankylosis with reduced joint space and broad joint [Figure 2]. Based on the clinical and radiological evidence, a diagnosis of bony right recurrent TMJ ankylosis (Type IV Sawhney) was made. A surgical treatment of gap arthroplasty with interpositional temporalis muscle flap on the right TMJ [Figures 3 and 4] as well as coronoidectomy bilaterally was planned under general anesthesia. A mouth opening of 35 mm was noted intraoperatively after bilateral coronoidectomy [Figure 5]. The post-operative course was uneventful. Vigorous post-operative physiotherapy was started to maintain the mobility of the joint. Later, mouth opening exercises were given using Hister's mouth gag. At 6 months, the mouth opening was 32 mm with minimal scarring [Figures 6 and 7].

DISCUSSION

Patients suffering from TMJ ankylosis are not only affected functionally but also esthetically, and the loss of mandibular function and major dentofacial sequelae cause various psychosocial problems.^[1] Controversies

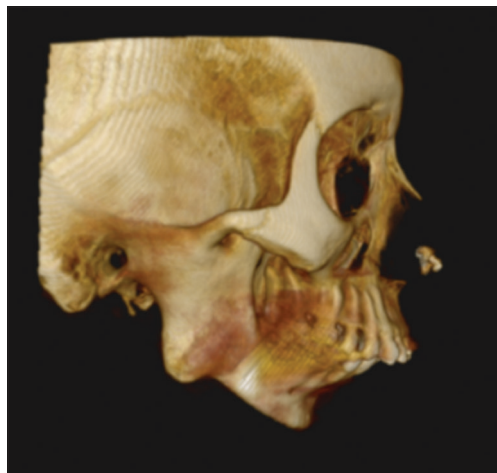


Figure 1: Cone beam computed tomography three-dimensional reconstruction of the right temporomandibular joint



Figure 2: Cone beam computed tomography three-dimensional reconstruction of the left temporomandibular joint

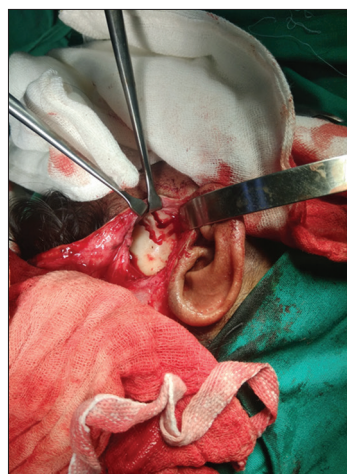


Figure 3: Bony cuts marked



Figure 4: Gap arthroplasty



Figure 6: Preauricular scar at 5 months



Figure 5: Mouth opening after arthroplasty and coronoidectomy



Figure 7: Mouth opening at 6 months 32 mm

exist about the superiority of either gap or interposition arthroplasty and the type of graft to be interposed.^[17] As stated by Kaban *et al.*, the longer the duration of hypomobility, the more severe will be the muscle atrophy and facial asymmetry. In addition, secondary elongation and hypertrophy of the coronoid process occurs, further restricting jaw motion. The prognosis for a favorable outcome with treatment is inversely related to the number of years of ankylosis.^[18] Topazian highlighted the unacceptably high recurrence rate of ankylosis even after using wide gap arthroplasties and promoted the use of interpositional grafting as a more effective means of reducing reankylosis.

Pogrel and Kaban described the advantage of temporalis myofascial flap as follows:^[19]

- Vascularity and arc of rotation of the flap.
- No distant donor site was necessary if carried through Pogrel and Kaban technique.^[20]
- No damage to facial nerve branches.
- Morbidity of donor site (both functionally and esthetically) was minimal.

This case highlights the advantages of temporal

myofascial flap as interposition material for prevention of reankylosis.

CONCLUSION

Patients suffering from TMJ ankylosis are not only affected functionally but also esthetically, and the loss of mandibular function leads to various psychosocial problems. Aggressive gap arthroplasty together with interposition of temporalis myofascial flap is a good option, especially in recurrent cases.

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