

Temporomandibular Joint Ankylosis in Young Adult: A Case Report

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Temporomandibular joint (TMJ) ankylosis is a debilitating condition. It involves the mouth opening, dentofacial deformity, diet problem, and quality of life. When it occurs in a child, it can have devastating effects on the future growth and development of the 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. TMJ ankylosis results in a limitation of the mouth opening. This disorder can result in an array of problems with diet, facial deformity, and poor oral hygiene. Three main surgical modalities described in the literature for its management are gap arthroplasty, interpositional arthroplasty and total joint replacement. Recurrence remains the main problem after surgery. Aggressive resection and intensive postoperative physiotherapy are recommended to prevent re-ankylosis.

Keywords: Alkayat-bramley incision, Gap arthroplasty, Temporomandibular joint ankylosis

INTRODUCTION

The temporomandibular joint (TMJ) ankylosis is the fusion of the mandibular condyle to the Glenoid fossa. It can have negative effects on the future growth and development of the jaws and teeth, when it occurs in a child. Furthermore, in many cases it has a seriously negative influence on the psychosocial development of the patient, because of the facial deformity, which worsens with growth. Trauma and infection are the two major causes of ankylosis.¹ TMJ ankylosis results in a limitation of the mouth opening. This disorder can result in an array of problems with diet, facial deformity, and poor oral hygiene.² The treatment of TMJ ankylosis is always surgical. This treatment includes the removal of bone mass that involves articulation, which creates enough space to allow the interposition or full reconstruction of TMJ with prosthesis; however, there are no consensus in existing literature of the best treatment for TMJ ankylosis. Several authors studied and developed different techniques, but recurrence remains as

the major problem when treating TMJ ankylosis.³ Surgical treatment of TMJ ankylosis removes the ankylotic mass and maintains joint movement, allowing a normal mouth opening, and improving the quality of life by reducing the risk of Dentofacial Deformity. However, in most cases, surgery itself is not easy because of a fusion with the skull base and the possibility of injury to the maxillary artery, middle meningeal artery, and facial nerve.⁴ The main factor of successful treatment of TMJ ankylosis is early detection, good intraoperative mouth opening achievement, implementation of an intensive physiotherapy program, and a good post-operative follow-up. For obtaining good result in treatment, a long period of physical therapy is Mandatory. The main objective of this treatment is to prevent bone neoformation in articulations, as well as to minimize fibrosis and to prevent scar retraction, trismus, atrophy, and muscle spasm.⁵

CASE REPORT

A 19-year-old female patient came to the department of oral and maxillofacial surgery at Sardar Patel Post graduate Institute of Dental and Medical Sciences with a chief complaint of reduced mouth opening for 5 months. She gave a history of pus discharge from left ear 5 years back, for which she had undergone minor surgery 2 years back. Since then she complains of reduction of mouth opening, which gradually decreased to present level.

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Clinical examination revealed, hypoplastic mandible at left side, chin was deviated toward left side, fullness of face on left side, and flattening of face on right side, the interincisal opening was 3 cm. There was no movement palpable over the left TMJ.

Radiographic investigations included orthopantomogram (OPG) (Figure 1) and computer tomography (CT) scan; these images confirmed bony ankylosis of left TMJ and elongation of left coronoid process.

As interincisal opening of patient was only three cm, general anesthesia (GA) was induced by fiberoptic nasotracheal intubation, Alkayat Bramley incision was given (Figure 2), careful dissection of temporal fascia was done (Figure 3), TMJ was exposed, Anterior border of ankylosed mass was identified, Ankylotic mass was resected (Figure 4), a gap of 2 cm was created, which caused 30 cm of mouth opening, As per Kaban's protocol, ipsilateral coronoidectomy was done, which caused 37 cm of mouth opening, layer wise closure was done by 3-0 Polyglactin 910 suture material

and 3-0 Braided black silk by simple interrupted suturing method (Figure 5).

On surgical site a compression dressing was applied, patient was advised to have soft diet, medication for pain control and muscle relaxants were prescribed, 2 days after



Figure 1: Orthopantomogram of temporomandibular joint ankylosis

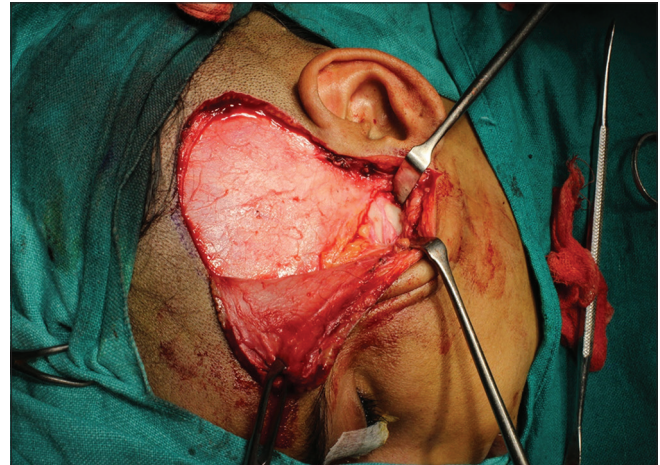


Figure 3: Dissection of temporal fascia

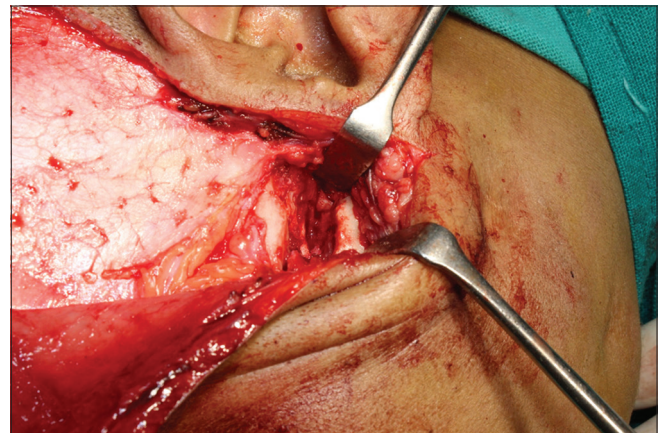


Figure 4: Ankylotic mass was resected



Figure 2: Outline of the Alkayat Bramley incision



Figure 5: After closure

the surgery, the physiotherapy program was started, after surgery, formation of sufficient gap was observed on OPG, patient was observed for a month, no late complications of re-ankylosis or malocclusion were observed. Mouth opening after 1 month of surgery was measured to be 35 mm, strict instructions for physiotherapy was given. The patient is on regular follow-up after surgery.

DISCUSSION

The causes of TMJ ankylosis have been well documented^{6,7} with trauma and infection identified as leading causes.¹ Ankylosis of TMJ can occur at any age; however, it has a higher incidence in younger patients.⁸ In case of the children, the anterior wall of external auditory meatus is closed by a cartilage, which is prone to lysis by bacterial enzymes involved in otitis media, so it causes intracapsular infection of TMJ. Children have abundant adenoid tissues, which causes nasopharyngeal infections. Thus, it leads to otitis media. Shape and structure of condyle also causes increase in incidence of ankylosis in children. The condylar cortex is thin and the neck of condyle is wide in children. Vertical impact on the chin causes comminuted fracture of the mandibular condylar head and hemiarthrosis. TMJ ankylosis can cause mandibular retrognathism with esthetic and functional defects.⁹ Moreover, the progression of the pathology is more severe in children because of the defective cartilage osteogenesis and damage caused by the ankylotic process and of the loss of muscle guidance up on the growth process of mandible.¹⁰ Therefore, treatment should be initiated as soon as possible, with the main objective of re-establishing joint function and jaw function.^{9,11}

As per Kaban's latest protocols, these guidelines should be followed:

- 1) Aggressive excision of the fibrous and/or bony ankylotic mass,
- 2) Coronoidectomy on the affected side,
- 3) Coronoidectomy on the contralateral side, if steps 1 and 2 do not result in a maximal incisal opening greater than 35 mm or to the point of dislocation of the unaffected TMJ,
- 4) Lining of the TMJ with a temporalis myofascial flap or the native disk, if it can be salvaged,
- 5) Reconstruction of the ramus condyle unit with either distraction osteogenesis or costochondral graft and rigid fixation,
- 6) Early mobilization of the jaw. If distraction osteogenesis is used to reconstruct the ramus condyle unit, mobilization begins the day of the operation. In patients who undergo costochondral graft reconstruction, mobilization begins after 10 days of maxillomandibular fixation
- 7) All patients receive aggressive physiotherapy.

Surgical management for TMJ ankylosis includes inter

positional arthroplasty, total joint replacement, and gap arthroplasty. Inter positional arthroplasty includes interposition of a barrier between two osteotomized segments which prevents the reunion of bone. Inter positional materials used may be alloplastic materials or autogenous material. Alloplastic materials include titanium, teflon, silastic, stainless steel, acrylic, silicon, etc. These materials have been used in past with varying degree of success. The main complication with metallic condyles is that it tends to erode roof of the glenoid fossa and cause perforation of the middle cranial cavity. Total joint reconstruction is being performed more often, but it is better done after growth is fully completed. Autogenous materials include full thickness skin, cartilage, fascia lata, temporal muscle fascia, costochondral joint, etc. For harvesting these materials, extra surgical site is created which may cause complications and increases the morbidity. It also causes an increase in the number of investigations.

Gap arthroplasty involves resection of bone distal to the ankylosed TMJ and allowing pseudoarthrosis to develop in between the two ends of bone.¹² The size of bone removed should be at least 15 mm. Proper care should be taken to prevent damage to the maxillary artery and inferior alveolar artery that lie medial to TMJ. The main disadvantage of gap arthroplasty is the recurrence, which may be avoided by aggressive and proper physiotherapy. Hence, patient compliance is mandatory to achieve adequate and long-term results. The procedure should be followed by vigorous postoperative physiotherapy.^{3,13}

In long-standing cases of TMJ ankylosis, the coronoid process gets elongated which causes an obstruction in the movement of the mandible, along with atrophy of temporalis muscle, which restricts mandibular opening even after the ankylosis is released. In order to achieve satisfactory mouth opening of 35 mm following the release of ankylosis, it becomes imperative to excise the ipsilateral coronoid process. If mouth opening is inadequate, then contralateral coronoidectomy is done.

Post-operative physiotherapy is of utmost importance to maintain the results achieved by Surgery. Failure to do so may lead to re-ankylosis. Physiotherapy should start after 2 or 3 days postoperatively and should be continued for a period of 2 years. Initially physiotherapy is done with ice-cream sticks and later Heister's jaw exerciser should be used. In cases of accidental iatrogenic damage to the facial nerve, TENS is indicated. Periodic follow-up and supervision of physiotherapy is mandatory.

CONCLUSION

TMJ ankylosis is a debilitating condition which when occurs in children's causes specific growth pattern deformities

and also causes problems with diet and oral hygiene. It causes mandibular hypoplasia toward affected side, chin deviation toward affected side, fullness of the face on the affected side, flattening of the face on the opposite side. Many treatment modalities are present for TMJ ankylosis, but most acceptable modality is gap arthroplasty as it causes least tissue trauma. Despite of the surgical modality implied one common factor affecting prognosis is regular physiotherapy, patient should be properly informed, and motivated to follow physiotherapy schedule as failing to do so may cause re-ankylosis. The patient should be kept on regular follow up.

REFERENCES

1. Straith CL, Lewis JR Jr. Ankylosis of the temporo-mandibular joint. *Plast Reconstr Surg* 1948;3:464-77.
2. Su-Gwan K. Treatment of temporomandibular joint ankylosis with temporalis muscle and fascia flap. *Int J Oral Maxillofac Surg* 2001;30:189-93.
3. Roychoudhury A, Parkash H, Trikha A. Functional restoration by gap arthroplasty in temporomandibular joint ankylosis: a report of 50 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999;87:166-9.
4. Talebzadeh N, Rosenstein TP, Pogrel MA. Anatomy of the structures medial to the temporomandibular joint. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999;88:674-8.
5. Friedman MH. Postsurgical temporomandibular joint hypomobility: Rehabilitation. *Rev Cir Traumatol Buco-Maxillo-Fac* 1993;5:37-42.
6. Miller GA, Page HL Jr, Griffith CR. Temporomandibular joint ankylosis: review of the literature and report of two cases of bilateral involvement. *J Oral Surg* 1975;33:792-803.
7. Topazian RG. Etiology of ankylosis of temporomandibular joint: analysis of 44 cases. *J Oral Surg Anesth Hosp Dent Serv* 1964;22:227-33.
8. Sawhney CP. Bony ankylosis of the temporomandibular joint: follow-up of 70 patients treated with arthroplasty and acrylic spacer interposition. *Plast Reconstr Surg* 1986;77:29-40.
9. Kaban LB, Perrott DH, Fisher K. A protocol for management of temporomandibular joint ankylosis. *J Oral Maxillofac Surg* 1990;48:1145-51.
10. Valentini V, Vetrano S, Agrillo A, Torroni A, Fabiani F, Iannetti G. Surgical treatment of TMJ ankylosis: our experience (60 cases). *J Craniofac Surg* 2002;13:59-67.
11. Guyuron B, Lasa CI Jr. Unpredictable growth pattern of costochondral graft. *Plast Reconstr Surg* 1992;90:880-6.
12. Kim JY, Kim JY, Jung YS, Nam W. Treatment of temporomandibular joint reankylosis by submandibular anchorage technique with temporalis myofascial flap. *Maxillofac Plast Reconstr Surg* 2014;36:78-83.
13. Rajgopal A, Banerji PK, Batura V, Sural A. Temporomandibular ankylosis. A report of 15 cases. *J Maxillofac Surg* 1983;11:37-41.

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