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Case Report

Post traumatic temporomandibular joint ankylosis & reconstruction plate fixation on mandibular body: A unique case report

Dr Aravinth R[1], Dr Sathyanarayanan R[2], Dr Tamizhp Pozhil Guna[3], Dr Priyanka Ganesan[4], Dr Meghana S Bagalkotkar[5], Dr.Prasoon Saurabh[6]

[1]Post graduate Resident, Department of Oral and Maxillofacial surgery, Indira Gandhi Institute of Dental Sciences Pondicherry;
[2]MDS (Oral and Maxillofacial Surgery), Professor and HOD, Department of Oral and Maxillofacial Surgery, Indira Gandhi institute of Dental Sciences, Pondicherry;
[3]MDS (Oral and Maxillofacial Surgery), Senior lecturer, Indira Gandhi Institute of Dental Science, Pondicherry;
[4]Postgraduate Resident, Department of Oral and Maxillofacial surgery, Indira Gandhi institute of Dental Sciences Pondicherry;
[5]MS(General Surgery),M.Ch(Plastic Surgery), Assistant Professor, Department of Plastic Surgery, Mahatma Gandhi College and Research Institute Of Medical Science, Pondichery;
[6]MS (General Surgery), M.Ch (Neurosurgery), Consultant Neurosurgeon, RN Superspeciality Hospital and Research Center Pvt.Ltd, Khajpura, Bailey Road, Patna, Bihar

ABSTRACT:
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 Treating Temporomandibular joint is always a dilemma in surgeon's mind especifically when it comes to managing an already treated case. Our case reports a treated fracture which was operated using Dynamic Compression plates and later led to TMJ ankylosis. We have re-operated it and removed the DCP, released the ankylotic mass and placed a Reconstruction plate.
Key Words: Post Traumatic, TMJ Ankylosis, Reconstruction Plate

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Corresponding Author: Dr Aravinth R, Post graduate Resident, Department of Oral and Maxillofacial surgery, Indira Gandhi Institute of Dental Sciences Pondicherry

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INTRODUCTION

The temporomandibular joint (TMJ) is a unique joint in the body because it is the only joint where both the right and left sides must move synchronously. It is also the only joint that is lined by fibrocartilage. Similarly, it is also the only joint in which factors remote to the joint can affect the joint function, e.g., the teeth in occlusion, and it is the only joint in which emotional status of the patient affects leading to TMJ pain dysfunction syndrome. TMJ ankylosis is a joint pathology as a result of bony and/or fibrous adhesion of the joint apparatus, resulting in partial or total loss of function.[1] Since the TMJ is a unique joint in which both jaws must open synchronously for function, any pathology in one or both joints results in functional problems with associated poor quality of life. Etiologies of TMJ ankolysis range from

trauma (e.g., forceps delivery and fall on the chin), infection (e.g., middle ear infection and cancrum oris), and ankylosing spondylitis. Several classifications have been proposed in the classification of TMJ ankylosis in order to have a picture of surgical difficulty. It has been classified simply as true or false ankylosis. The true ankylosis is further classified by Sawhney into types I, II, III, and IV.TMJ ankylosis is a nightmare and also confusion from the perspective of contemporary oral surgeon. Diagnosis and surgical planning is the key to successful surgical outcome. Many controversies exist in management like indication for surgery, and the correct surgical procedure in temporomandibular joint disease. Surgical skill, active intelligence, pragmatic surgical application is need of an hour for the management of temporomandibular joint surgeries.[7,9] Peculiarity and different perspective of surgical scenarios, surgical exposure is mandatory need for better surgical outcome. The true ankylosis is further classified by Sawhney into types I, II, III, and IV. Type I occurs where the condyle is medially angulated and associated with a deformed articular fossa together with a mild-to-moderate amount of new bone formation. Type II is found where there is no recognizable condyle or fossa, but instead a large mass of new bone extending from the ramus to the base of the skull. Type III ankylosis usually results from a medially displaced fracture dislocation with bone bridging the mandibular ramus to the zygomatic arch, Type IV is found when the joint architecture is replaced completely by bone with fusion of the condyle, sigmoid notch, and coronoid process to the zygomatic arch and glenoid fossa

CASE HISTORY

Male Patient aged 64 years came to our dental department with a chief complaint of pain and difficulty in mouth opening for past 3 months. On presenting illness patient has difficulty in mouth opening and tenderness while closing and opening of mouth associated with difficulty in chewing. Patient undergone for surgery following road traffic accident about 26 years back. On eliciting the past history patient gives alleged history of road traffic accident two wheeler versus tanker in a year 1991 and sustained injury over face and history of LOC positive for 5 hours ,no history of ENT bleed, history of oral bleed primary treatment was done in cuddalore GH, followed with open reduction and internal fixation was done in Chennai GH.. Extra oral Examination reveals patient has facial asymmetry mandible deviated to right side mouth opening restricted 10 mm. Lateral movement absent on the right side. Intraoral examination swelling about 4x5 cm which is present over left lower premolar region plate got exposed through the swelling. It was diagnosed post traumatic temporomandibular joint ankylosis. Opted for Surgical Management of bilateral gap arthoplasty with re osteotomy at left body of mandible with reduction and fixation.

SURGICAL MANAGEMENT

Bilateral gap arthroplasty with re-osteotomy of left body of mandible,open reduction and internal fixation under general anaesthesia was planned for this case. Under all aseptic condition under general anaesthesia vestibular incision placed, layerwise dissection was done.Coronoidectomy done using chisel and mallet(osteotomy) and rotary instruments. Intraorally local anaesthesia infiltrated in right ramus region. Incision placed over existing scar and layer by layer dissection was done. Removal of right coronoid process was done.

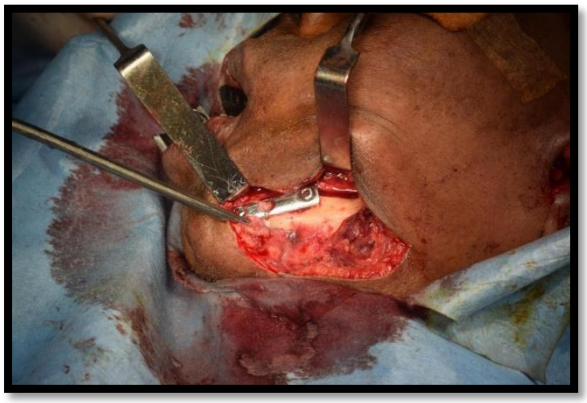
FIGURE 1- EXCISED HARD TISSUE MASS OF TMJ ANKYLOSIS

(Figure 1) Local anaesthesia infiltrated over left pre-auricular region and incision placed, The TMJ was surgically accessed via a standard preauricular approach with temporal extension. The superficial temporal fascia was identified, and its plane was followed inferiorly and anteriorly to reach the zygomatic arch. The periosteum over the zygomatic arch was incised and reflected, followed by vertical incision of the joint capsule. The ankylotic mass was exposed and excised. Tendons of the masseter and medial pterygoid muscles were carefully dissected and maximum mouth opening was tried intraoperatively,layer by layer dissection done condylectomy done, thorough betadine and saline irrigation given, mouth opening achieved about 35 mm.

FIGURE 2-MEASURING INTRA OPERATIVE MOUTH OPENING AFTER CONDYLECTOMY

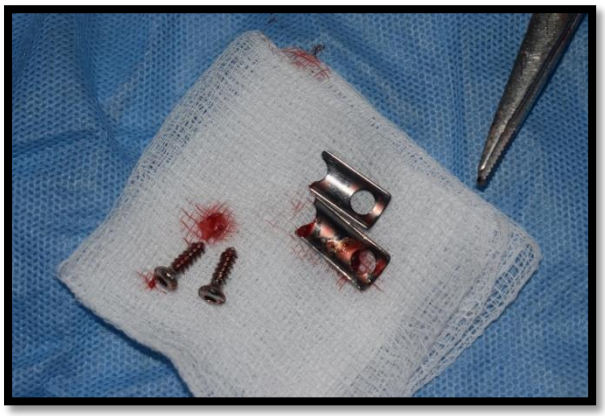
(Figure 2) Local anaesthesia infiltrated over the left submandibular region and left lower buccal vestibular region,incision placed over existing laceration layerwise dissection done,compression plates got exposed

FIGURE 3- EXPOSING COMPRESSION PLATES ON MANDIBULAR BODY REGION



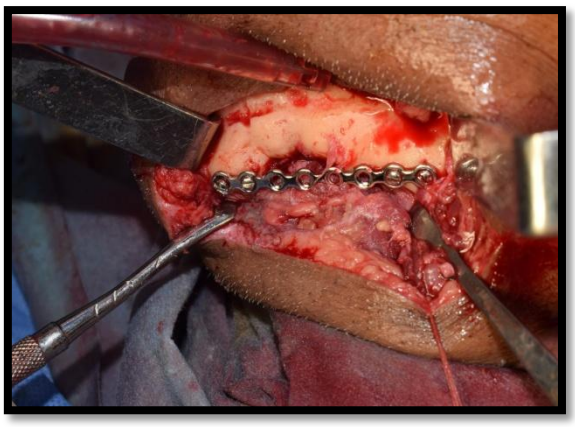
(Figure 3) and the compression plates removed from left body of mandible

FIGURE 4- COMPRESSION PLATES REMOVED



(Figure 4) and fixed using 2mm long stainless steal reconstruction plate with 2x6 mm screw.

FIGURE 5- RECONSTRUCTION PLATING DONE



(Figure 5) After thorough betadine irrigation and saline irrigation ,extra oral incision closed using 3.0 vicryl layerwise and skin closure by 4.0 prolene .Intra oral incision closed using 3.0 vicryl. Extra oral dressing done, patient tolerated the procedure well and extubation was uneventful.

DISCUSSION

Temperomandibular joint (TMJ) ankylosis is osseous or fibrous fusion of the condyle of the mandible and the mandibular fossa of temporal bone. TMJ ankylosis is a rare condition that renders the afflicted individual unable to masticate, articulate well and maintain good oral hygiene.[4],[5],[6] Unilateral ankylosis reveals unilateral hypoplasia of the mandible and deviation of the chin to the affected side Previously published data on the histological manifestations of traumatic TMJ ankylosis are very rare. In 1957, through examining a post-mortem specimen of partial fibrous ankylosis secondary to injury, Blackwood[13] found an enlarged condyle, a flattened surface of the glenoid fossa, and dense avascular fibrous tissue filling the cavity of the condyle. Sarma and Dave[14] analysed 60 specimens and found that all of the samples were composed of two parts. The non-adhesive part demonstrated an atrophic condylar articular surface, and the bony-adhesive part presented with new bone formation. According to the findings of Wu et al.[15], fibrous ankylosis is shown as fibrous tissue intruding into the bone marrow of the condyle with degeneration of the condylar cartilage, whereas bony ankylosis manifests as new bone formation on the rough ankylotic surface of the condyle with slight bone degeneration

The most common etiological factor is trauma and it is hypothesized that intra-articular hematoma, along with scarring and formation of excessive bone, leads to the hypomobility.[9] The present case also had a history of trauma with probability of scar tissue formation. If ankylosis is suspected to be caused due to muscle fibrosis / formation of immature scar tissue formation, physical therapy and use of trismus

appliance could be of use.[10] Physiotherapy includes exercises which relaxes the masticatory muscles and improves its strength. Objective of physiotherapy include:

1. Reduction of oedema
2. Soften and causing stretch of scar tissue
3. Increasing the range of joint movement
4. Increasing muscle strength of masticatory muscles..

Sathyanarayanan and Aravinth et al reviewed pragmatic application of botulinium toxin in post operative management of temperomandibular joint ankylosis[16] stated that BTA[botulinium toxin A] therapy can relax the adjacent masticatory muscles and, thereby, improve the muscle inflammation, leading to improved mouth opening. In addition, it has been reported that BTA injection into the masticatory muscles including the lateral pterygoid muscles has a favorable therapeutic effect. Kaban et al [17] proposed a management protocol for temperomandibular joint (TMJ) ankylosis consisting of 1) aggressive resection, 2) ipsilateral coronoidectomy, 3) contralateral coronoidectomy when necessary, 4) lining of the TMJ with temporalis fascia or cartilage, 5) reconstruction of the ramus with a costochondral graft, 6) rigid fixation, and 7) early mobilization and aggressive physiotherapy is presented.

POST OPERATIVE CARE

Patient was prescribed post operative antibiotics and analgesics. Patient developed drooping of lips on left side.It was advised to take nerve conduction study to evaluate exact site of nerve damage. The electrophysiological study is suggestive of bilateral facial neuropathy at the level of stylomastoid foramen. Patient followed with prednisolone and vitamin B12 for nerve rejuvenation. Meticulous Adjuvant therapy given by physiotherapy for better outcome.Patient positively progressed and responded well with a span of a 6 months.

CONCLUSION

The above case scenario is the live witness for TMJ ankylosis shows a intricate surgical skills and multi disciplinary approach for better outcome.. A typical unique case of this kind reveals complications are sort out with ease by multi disciplinary approach,on table surgical presence and competence with long term follow up.

REFERENCES

1. MacIntosh R B. The use of autogenous tissues for temporomandibular joint reconstruction. J Oral Maxillofac Surg. 2000;58(1):63–69. [PubMed] [Google Scholar]
2. Ko E W Huang C S Chen Y R Temporomandibular joint reconstruction in children using costochondral grafts J Oral Maxillofac Surg 1999577789–798., discussion 799–800 [PubMed] [Google Scholar]
3. Perrott D H, Umeda H, Kaban L B. Costochondral graft construction/reconstruction of the ramus/condyle unit: long-term follow-up. Int J Oral Maxillofac Surg. 1994;23(6, Pt 1):321–328. [PubMed] [Google Scholar]
4. Saeed N R, Kent J N. A retrospective study of the costochondral graft in TMJ reconstruction. Int J Oral Maxillofac Surg. 2003;32(6):606–609. [PubMed] [Google Scholar]
5. Matsura H, Miyamoto H, Ishimaru J, Kurita K, Goss A N. Effect of partial immobilization on reconstruction of ankylosis of the temporomandibular joint with an autogenous costochondral graft: an experimental study in sheep. Br J Oral Maxillofac Surg. 2001;39(3):196–203. [PubMed] [Google Scholar]
6. Mercuri L G. Alloplastic temporomandibular joint reconstruction. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1998;85(6):631–637. [PubMed] [Google Scholar]
7. Saeed N, Hensher R, McLeod N, Kent J. Reconstruction of the temporomandibular joint autogenous compared with alloplastic. Br J Oral Maxillofac Surg. 2002;40(4):296–299. [PubMed] [Google Scholar]
8. Wolford L M Karras S C Autologous fat transplantation around temporomandibular joint total joint prostheses: preliminary treatment outcomes J Oral Maxillofac Surg 1997553245–251., discussion 251–252 [PubMed] [Google Scholar]
9. Reid R Cooke H Postoperative ionizing radiation in the management of heterotopic bone formation in the temporomandibular joint J Oral Maxillofac Surg 1999578900–905., discussion 905–906 [PubMed] [Google Scholar]
10. Nitzan D W, Abu Tair J, Lehman H. Is entire removal of a post-traumatic temporomandibular joint ankylotic site necessary for an optimal outcome? J Oral Maxillofac Surg. 2012;70(12):e683–e699. [PubMed] [Google Scholar]
11. Long X, Li X, Cheng Y. et al.Preservation of disc for treatment of traumatic temporomandibular joint ankylosis. J Oral Maxillofac Surg. 2005;63(7):897–902. [PubMed] [Google Scholar]
12. Zhang Y, He D M. Clinical investigation of early post-traumatic temporomandibular joint ankylosis and the role of repositioning discs in treatment. Int J Oral Maxillofac Surg. 2006;35(12):1096–1101. [PubMed] [Google Scholar]
13. Blackwood HJ: Intra-articular fibrous ankylosis of the temporomandibular joint. Oral Surg Oral Med Oral Pathol. 1957, 10: 634-642. 10.1016/S0030-4220(57)80012-7
14. Sarma UC, Dave PK: Temporomandibular joint ankylosis: an Indian experience. Oral Surg Oral Med Oral Pathol. 1991, 72: 660-664. 10.1016/0030-4220(91)90006-X.
15. Wu XG, Hong M, Sun KH: Severe osteoarthrosis after fracture of the mandibular condyle: a clinical and histologic study of seven patients. J Oral Maxillofac Surg. 1994, 52: 138-142. 10.1016/0278-2391(94)90395-6.
16. Aravinth R , Sathyanarayanan R , Guna TP, Jude NJ, Raghu K. Botulinium Toxin in Oral and Maxillofacial Surgery: A Review Article. J Adv Med Dent Scie Res 2020;8(11):X-XX

17. Kaban LB, Perrott DH, Fisher K. A protocol for management of temporomandibular joint ankylosis. J Oral Maxillofac Surg. 1990 Nov;48(11):1145-51; discussion 1152. doi: 10.1016/0278-2391(90)90529-b. PMID: 2213309.