

## Oral and Maxillofacial Surgery

### Clinical study of a case of bilateral temporomandibular joint bony ankylosis managed with gap arthroplasty and fascia lata as interpositional graft



Manisha Marathe  
MDS, Lecturer

---

Correspondence Address  
Oral and Maxillofacial Surgery and Implantologist  
MVPS Medical College and Hospital  
Adgaon, Nashik 422007  
Maharashtra.

## Abstract

Temporomandibular joint ankylosis involves fusion of the mandibular condyle to the base of the skull. The most common causes are trauma and infection. When it occurs in a child, it negatively affects the future facial growth and the development of jaws and teeth. In some cases, it has a profoundly negative effect on the psychosocial development of the patient because of the obvious facial deformity, which worsens with growth. Need for the surgical correction is to restore the functions, i.e., chewing, speech, etc.

We successfully managed a case of bilateral Temporomandibular joint bony ankylosis with gap arthroplasty and interposition fascia lata graft to prevent the reankylosis and functional restoration.

### || Key Words

Temporomandibular joint, Ankylosis, Interpositional graft, Fascia lata.

## || Introduction

Temporomandibular joint ankylosis is a disabling condition of mastication, where the mandible is fused to glenoid fossa with bony or fibrotic tissues. This interferes with normal life activities like mastication, speech, oral hygiene and it can be potentially life threatening when struggling to acquire an airway in an emergency. Temporomandibular ankylosis causes hypomobility of Temporomandibular joint that affects the surrounding structures like decreased vertical height of ramus, mandibular hypoplasia resulting into typical bird face appearance. Ankylosis can result from trauma, infection, arthritis sometimes it is congenital deformity, previous Temporomandibular joint surgery, idiopathic factors<sup>[1]</sup> and iatrogenic causes. Facial trauma is the most common cause followed by infection.<sup>[2,3]</sup> Facial trauma in growing patients generally results in dentofacial deformity.<sup>[4]</sup>

Ankylosis release is the oldest and common form of Temporomandibular joint surgery. To prevent the reankylosis of TMJ, different interposition grafts have been used, such as pterygomasseteric slings, temporalis muscle/ fascia, skin, auricular cartilage and dermal fat graft.

Our patient was presented with bilateral bony ankylosis with extreme functional disability to masticate. We managed it with bilateral gap arthroplasty and fascia lata as interpositional graft with satisfactory outcome.

## || Case Report

A 30 year old female with complaint of inability to chew food due to restricted mouth opening and history of fall from tree at the age of nine years reported to us. She had gradual restriction of mouth opening since then.

Initial clinical examination showed receded chin with deviation on the left side. There was no palpable movement over bilateral tmj region. The patient presented the typical bird face appearance.(Fig.1)

In our case the interincisical opening (IO) was less than one finger. (Fig.2) the patient was malnourished and underweight and was not able to eat solid food.

Radiographic investigations included 3-Dimensional computed tomographic reconstruction. These investigations along with clinical examination and history confirmed bilateral TMJ bony ankylosis with



Fig.1: Facial Deformity



Fig.2: Restricted mouth opening

severe limitation of jaw movements. On the right side, condyle and coronoid processes were fused with zygomatic arch (Fig.3)

Similarly, on the left side there was fusion of condyle and coronoid along with ramus with the zygomatic arch.(Fig.4)

The patient was operated under general anaesthesia with fiberoptic nasal intubation. On the right side preauricular approach was taken and gap arthroplasty done with excision of ankylosed mass.(Fig. 5) Around ten mm of gap was created between ramus and skull base.(Fig.6 ) Betadine soaked gauze was kept in the surgical area. The same procedure was repeated on the left side with gap arthroplasty.



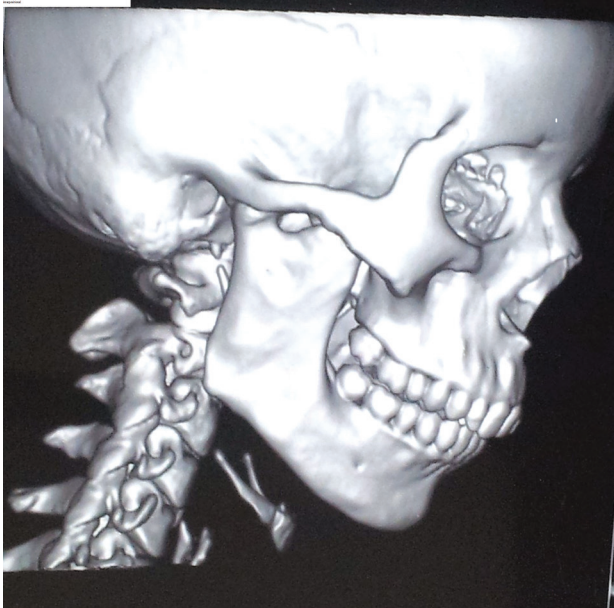


Fig.3: Fused condyle and coronoid processes



Fig.4: Fused condyle and coronoid processes

During the entire procedure facial nerve was safely dissected and retracted. (Fig.7)

Then we proceeded to harvest the lateral thigh fascia lata to use it as interpositional graft.

#### Technique

Under all aseptic precautions, after painting and draping the surgical site, a linear incision was made on the side of the thigh using the ilio-tibial groove as a guide, ten cm linear incision was made (Fig.8 ),

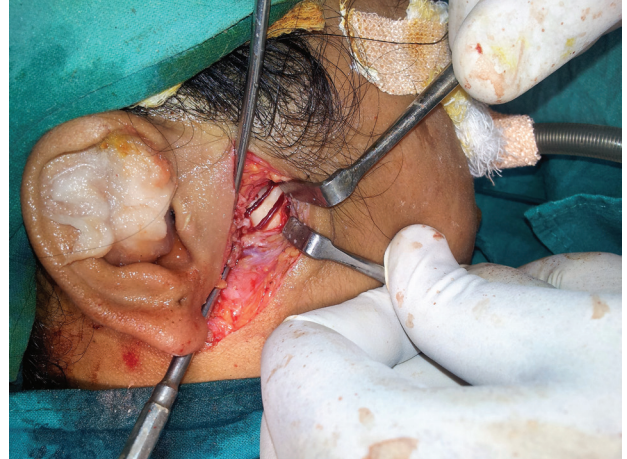


Fig.5: Arthroplasty



Fig.6: Gap Arthroplasty



Fig.7: Arthroplasty on opposite side





Fig.8: harvesting fascia lata



Fig.9: Interpositional grafting



Fig.10: Improved mouth opening



Fig.11: Follow up

dissection was carried down through the subcutaneous fat and the fascia lata was exposed. This thick fascia lata arises superiorly from the tensor fascia lata and gluteus medium and maximus muscles and inserts distally on the lateral condyle of the tibia. A fasciotomy incision was given parallel to the skin incision.

Careful blunt dissection was carried out with index finger to separate the fascia from the underlying muscle. A template with amount of graft needed was done with latex material of surgical gloves, then was transposed to fascia lata and the tissue was grafted. It was draped in a wet dressing until used to avoid the inadvertent trauma to the muscle. The desired amount of graft was harvested (six cm x three cm).

Graft was stabilised laterally, medially, anteriorly and posteriorly between the mandibular ramus and skull base with 3-0 vicryl.(Fig.9 )

The skin was closed in layers using subcutaneous interrupted 3.0 vicryl sutures and 3.0 nylon sutures. An elastic wrap was placed on the thigh to eliminate dead space during healing for the period of two weeks. During the six months follow-up the patient had no signs of reankylosis and donor area related complaints with mouth opening of 31 mm. (Fig.10) There were no signs of facial nerve injury

## || Discussion

Temporomandibular ankylosis is a disabling condition of mastication, articulation and facial deformity. The most common causes of Temporomandibular joint ankylosis are trauma and infection.

Trauma often results in haematoma which eventually organizes and ossifies to develop Temporomandibular joint ankylosis. In some of the cases, excessive bone formation results in bony thickening in front of the tragus, the thickness of bony block varies with the severity of injury.

Infection in TMJ area is due to otitis media and haematogenous infections. Other causative factors are rheumatoid arthritis, pagets disease, ankylosing spondylitis .

Temporomandibular joint ankylosis was classified by Kazanjian <sup>[5]</sup> as intra articular and extraarticular according to location. According to type of tissue involved it is classified as bony, fibrous, fibroosseous and according to the extent of fusion it is classified as complete and incomplete <sup>[6,7]</sup>.

The rationale behind interposition arthroplasty is that the presence of dead space after resection leads to haematoma formation, local pluripotent stem cells may then be induced to differentiate into fibroblast and osteoblast with deposition of collagen and bone. Decrease vascularity and oxygen tension favours the transformation of fibrous tissue into cartilage and bone. The objective is to create a functioning pseudoarthrosis and prevent recurrence and provide adequate mobility.

In 1860 Verneuil was the first to suggest the interpositional muscle and fascia between the bony cuts, and then many materials proposed for TMJ arthroplasty like muscle, autogenous bone, cartilage, fat, dermis, fascia, skin, metatarsal and sternoclavicular

joint. Numerous alloplastic materials used for partial and total reconstruction of the temporomandibular joint<sup>[8]</sup>. Arthroplasty without interpositional graft requires gap between ten and 20 mm and has a high recurrence rate of 53%.<sup>9</sup> So it is better to perform the gap arthroplasty and interpositional grafting for prevention of recurrence<sup>[10]</sup>.

Fascia lata graft is a strong, pliable tissue, easy to harvest and no important nerves or vessels were encountered during surgery. Graft harvest time is approximately five to ten minutes. Few complications reported with fascia lata harvest are haematoma, dehiscence , nerve injury (distal branches of lateral cutaneous nerve of thigh), muscle herniation. None of these complications was seen in our case.

## || Results

After six months of follow up, no donor site complications, no reankylosis were observed. Functional restoration with maximum mouth opening with interincisical distance of about 31mm. (Fig.11) .

No facial nerve related complications in the immediate post-operative period and during follow-up were reported.

## || Conclusion

According to our study , we consider Fascia lata as a good interposition tissue material, which is easy to harvest , strong, durable in gap arthroplasty; it avoids reankylosis and provides adequate mouth opening and mobility to the Temporomandibular joint.

## Co-author



Ganesh S. Chaudhari  
M.B.B.S.,M.S.(General Surgery),  
M.Ch.(Plastic and Reconstructive Surgery)  
Associate Professor  
MVPS Medical College and Hospital  
Adgaon, Nashik - 422007  
Maharashtra

## || References

1. EROL B, TANRIKULU R, GOANrgun B. A clinical study on ankylosis of the temporomandibular joint. J craniomaxillofac surg. 2006;34:100.
2. Lello GE. Surgical correction of temporomandibular joint ankylosis. J craniomaxillofac surg 1990;18:19.
3. Topazian RG. Etiology of ankylosis of temporomandibular joint: analysis of 44 cases. J oral surg Anesth Hosp Dent Serv 1964;22:227.
4. Miyamoto H, Kurita K, Ogi N. The role of the disk in sheep temporomandibular joint ankylosis. Oral Surg Oral Med
5. Kazanjian VH. Ankylosis of temporomandibular joint. Surg Gynaecol Obstet 1938;67:333-48.
6. Rowe NL. Ankylosis of temporomandibular joint. J R Coll Surg Edinburg 1982;26:67-79.
7. Sawhney CP. Bony ankylosis of the temporomandibular joint: follow up of 70 patients treated with arthroplasty and acrylic- spacer interposition. Plast Reconstr Surg 1986;77:29-38.
8. Verneuil A. De la creation d'une fausse articulation par section ou resection partielle de l'os maxillaire inferieur comme moyen de remedier a l'ankylose vraie ou fausse de la machoire inferieur. Arch Gen Med 1860;15:174.
9. Bulgannawar BA, Rai BD, Nair Ma, kalola R (2011) Use of temporalis fascia as an interpositional arthroplasty in temporomandibular joint ankylosis: analysis of 8 cases. J Oral Maxillofac Surg 69(4):1031-1035.
10. Cobey MC. Arthroplasties using compressed ivalon sponge. Clin Orthop 1967;54:139-44.