Use of Abdominal Adipose Tissue for Interposition in Unilateral Temporo-Mandibular Joint Ankylosis - A Case Report

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Abstract

Introduction: Temporo-mandibular ankylosis is a debilitating condition resulting in immobile lower jaw, reduced mouth opening, facial asymmetry and reduced general health status. This article is a case report of post traumatic unilateral TMJ ankylosis in a young female treated successfully by surgery wherein the abdominal adipose tissue with dermis was used for interposition to prevent reankylosis.

Case Report: A female patient twenty two years old diagnosed as unilateral TMJ ankylosis. The surgical treatment of gap-arthroplasty with inter-positional grafting with abdominal fat pad and bilateral coronoidotomy was planned

Discussion: The success in the preventing Reankylosis after TMJ gap arthroplasty is related primarily to the appropriate surgical technique with adequate removal of bone, early vigorous postoperative physiotherapy, maintained for long term. The case reported has no obvious facial deformity, one stage treatment of release of ankylosis and interposition of abdominal fat has improved patients mouth opening. The ease of harvesting and sufficient size of tissue definitely makes abdominal derma fat as choice of interpositional autogenous tissue in case of TMJ ankylosis.
**Conclusion:** The results obtained in our study are highly satisfactory and encouraging, supporting the role of abdominal dermis fat graft as the interposition material in TMJ Ankylosis cases. However, a large sample size and a longer follow-up period are required to consolidate the findings.

**Keywords:** Abdominal Adipose Tissue; Temporo-Mandibular; Intracapsular Condylar; Glenoid Fossa; Coronoid.

**Introduction**

Temporo-mandibular ankylosis is a debilitating condition resulting in immobile lower jaw, reduced mouth opening, facial asymmetry and reduced general health status. Management of ankylosis occurs through surgical intervention; several authors agree that it is necessary to use an interpositional material to prevent re-ankylosis after gap arthroplasty. The primary function of the interpositional material is to prevent the reankylosis by eliminating contact between bone surfaces. Appropriate interpositional material include: 1-autogenous tissue: meniscus, muscle, fascia, skin, cartilage, fat or combination of these tissues; 2: allogeneic tissues; cartilage and dura; 3; alloplastic: silastic materials like acrylic, proplast, and silicon; 4: xenograft tissues: usually of bovine origin (collagen and cartilage).

The prevalence of ankylosis as given by one study conducted in India is 0.46 per 1000 population in the 3-15 years of age group. The etiology in this age group is forceps delivery or ear infection. In the older population the commonest reason is trauma. The intracapsular condylar fracture if not treated properly the ankylosis of TMJ (Temporo-mandibular joint) results. This article is a case report of post traumatic unilateral TMJ ankylosis in a young female treated successfully by surgery at our department wherein the abdominal adipose tissue with dermis was used for interposition to prevent reankylosis.

**Case Report**

A female patient twenty two years old reported with complaint of inability to open mouth since 10 years. She gave history of trauma and mandibular fracture twelve years back. The mouth opening gradually reduced since then. The general condition was fairly good. The face appeared asymmetric with fullness on left side, & flattening on right side of face. The mouth opening of only seven mm as seen in Figure 1. The condylar movements on right side was diminished and no movement on left side. The occlusion was deranged with midline shift. The Orthopentamogram (OPG) shows (Figure 2) normal right condyle. The left condyle had wide neck and a bony chunk between glenoid fossa and ramus. The coronoid process appeared elongated. The case was diagnosed as unilateral ankylosis of TMJ. The lateral view for evaluation of the pharyngeal airway was done, it was sufficient. The CT scan images figure 3 shows loss of architectural morphology of left mandibular condyle and temporal fossa showing moderate amount of new bone formation, articular surface irregularity, erosion along left condyle and articular eminence with significantly reduced TMJ space.

![Figure 1: Reported (pre op) mouth opening of patient.](image1)

![Figure 2: The pre operative OPG.](image2)
The case was diagnosed as unilateral TMJ ankylosis. The surgical treatment of gap-arthroplasty with interpositional grafting with abdominal fat pad and bilateral coronoidotomy was planned. The necessary blood investigations were done. The patient was taken under general anaesthesia with fibreoptic intubation maintained on hypotensive anaesthesia. The alKayat-bramley incision was taken for approaching the ankylosed mass in temromandibular region as seen. The skin & superficial fascia flap reflected to expose the pre auricular TMJ region. The oblique incision taken on the zygomatic arch and the subperiosteal dissection done to expose the ankylosic mass as seen in figure 4. A complete bony union of glenoid fossa in sphenoid bone and the superior part of ramus was seen. A condylar retractor was positioned and gap arthroplasty performed. Figure 5 shows the gap created of 1.5mm. The smooth surface on medial side was confirmed as remnant of head of the condyle displaced in previous fracture. The ipsilateral coronoidectomy was performed through same surgical approach. The contra lateral coronoidotomy was performed intraorally. The mouth opening achieved after this was 45mm as seen in figure 6.

The interpositional graft was harvested from the abdominal region as seen in figure 7 through an elliptical incision. A dermal plus adipose tissue was harvested. It was transferred to the gap as free flap and inserted (Figure 8).
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placement of fluffed gauze and elastic dressing minimizes the incidence of hematoma formation. Postsurgical ileus and inadvertent peritoneal perforation are possible sequelae during abdominal fat harvest.

The temporalis fascia with muscle is routinely used for interposition in the gap after release of TMJ ankylosis. The adjacent donor site, ease of harvesting and good blood supply makes it a good choice. The drawback observed is the trismus developed postoperatively causes difficulty in maintaining the mouth opening achieved postoperatively and occasional hematoma formation. Difficulty in mouth opening and vigorous post operative exercise are troublesome for the patient if Temporalis muscle is used as the interposition material due to compression of the nerves which may subsequently reduce the mouth opening. An ugly bulging in the temporal region after harvesting of that side may not be neglected. However the versatility of the Temporalis Myofacial flap technique in Interpositional material is not certain and failure may occur. The jaw movements and physiotherapy are well tolerated and maintained by patients if the gaps were filled with dermis fat grafts. The dermis fat graft minimizes the occurrence of excessive joint fibrosis and heterotopic calcification and consequently providing improved range of motion. Graft procurement is quick and easy with minimal morbidity and the wound and scar in the anatomical skin creases are accepted cosmetically.

The case reported has no obvious facial deformity, one stage treatment of release of ankylosis and interposition of abdominal fat has improved patients mouth opening. The ease of harvesting and sufficient size of tissue definitely makes abdominal dermis fat as choice of interpositional autogenous tissue in case of TMJ ankylosis. The case need follow up for long time.

**Conclusion**

The success in the preventing Reankylosis after TMJ gap arthroplasty is related primarily to the appropriate surgical technique with adequate removal of bone, early vigorous postoperative physiotherapy, maintained for long term.

The results obtained in our study are highly satisfactory and encouraging, supporting the role of abdominal dermis fat graft as the interposition material in TMJ Ankylosis cases. However, a large sample size and a longer follow-up period are required to consolidate the findings.

**References**