



Conchal cartilage as interpositional graft material for the management of TMJ ankylosis

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Aim

Ankylosis may be defined as the fusion of the articular surfaces with bony or fibrous tissue. Temporomandibular Joint (TMJ) ankylosis is one of the most debilitating condition affecting the facial skeleton and its surgical correction is limited by a high recurrence rate, particularly in patients undergoing surgery without the use of interpositional materials. A variety of interpositional materials, both alloplastic ones and autografts, and alloplast have been used to prevent recurrence after arthroplasty. This article reports on the use of conchal cartilage as interpositional material in the surgical treatment of TMJ ankylosis in a young female patient with unilateral TMJ ankylosis.

Key words:

*Temporo-
mandibular joint;
Ankylosis;
Conchal
cartilage.*



Introduction

Ankylosis of TMJ is one of the most debilitating conditions affecting the facial skeleton. Recurrence is a significant postoperative complication after release of TMJ ankylosis. A relapse rate as high as 50% has been reported (1). In order to prevent or minimize such relapse, the use of various allografts and autografts as interpositional material has been advocated. Although the use of alloplasts eliminates the need for a donor area, their use has been associated with various complications like implant fragmentation, migration, foreign body reaction etc. (2-4). In comparison autogenous grafts are more popular as interpositional material. A variety of autogenous materials have been used, such as costochondral grafts, dermis, and temporalis muscle or fascia. Many investigators believe that the choice of interposition material is important in

preventing recurrence (5, 6). This article reports and discusses the advantages of the use of free conchal cartilage as interpositional graft material for the management of TMJ ankylosis.

Case report

A 19 years old female patient was referred to the Oral & Maxillofacial surgery clinic with chief complaint of restricted mouth opening from childhood. From the collection of a detailed case history it was found that she had had a trauma to the chin region when she was about the age of 2 years, for which no treatment was taken. During the examination the mouth opening was only around 4 mm (fig. 1). Extra-oral examination revealed facial asymmetry with fullness on right side and deviation of chin on the right side. On palpation the movements of TMJ were not felt

on the right side. A cone beam CT was done which showed complete bony union between the ramus of the mandible and the glenoid fossa (fig. 2).

Release of ankylosis was planned by interpositional arthroplasty under GA. The patient was intubated by fiber optic intubation technique using a 4mm diameter flexible bronchoscope (Storz) and a no. 7 armored tube. The TMJ was exposed using a standard preauricular incision, after incising skin, superficial fascia and temporo-parietal fascia was incised to expose the ankylotic mass. Multiple burr holes were drilled and later were joined to complete the gap arthroplasty. A gap of approx. 1.5 cm was created between the ramal segment and glenoid fossa. The conchal cartilage approx. 2 x 1 cm was harvested via an incision in posterior region of the helix (fig. 3). The cartilage was shaped and sutured to the residual disc and also to the holes drilled in the bone, so as to form a barrier between the two segments, in order to prevent



FIG. 1 Preoperative extraoral view: mouth opening is about 4 mm.

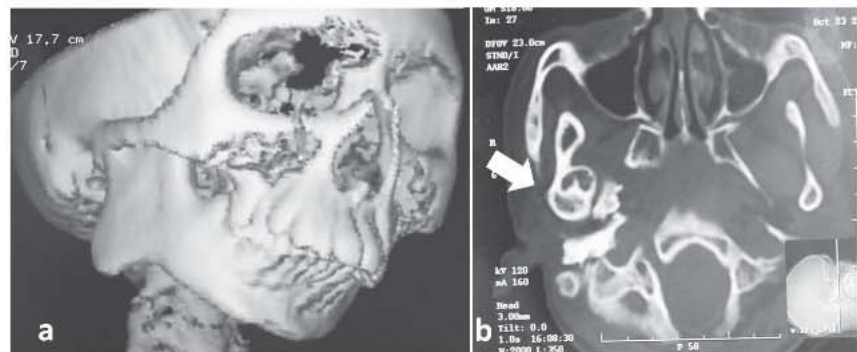


FIG. 2 Preoperative Cone Beam Tomogram: a) 3D CT showing complete bony union between the ramus and the glenoid fossa; b) axial view taken at level of TMJ showing complete obliteration of joint space with bony union between condyle-ramus and glenoid fossa (block arrow).



FIG. 3 A: incision for harvesting the conchal cartilage. B: the harvested cartilage.



FIG. 4 Conchal cartilage sutured in place as interpositional graft.



FIG. 5 Postoperative mouth opening at 18 months (about 32 mm).

development of reankylosis (fig. 4). The patient underwent extensive physiotherapy in the immediate post-operative period. At the 18 month post-operative follow-up the patient retained a mouth opening of about 32 mm and had no other significant complaint (fig. 5). The donor site also showed no residual defect. The postoperative radiograph showed a pseudo-joint on the right side without any bony mass or growth between the newly created joint surfaces.

Discussion

There the treatment of ankylosis varies from condylectomy, gap arthroplasty to interpositional arthroplasty with or without costochondral grafting. There is a variety of materials used as interpositional material, which are either autogenous or alloplastic materials; their main goal being to form a physical barrier between the raw bony surfaces of the ramus and the glenoid fossa which are formed through the osteotomy procedure carried out during gap arthroplasty. The temporalis myofascial flap is very frequently used for this purpose, however it is associated with complications such as temporal hollowing and the procedure of harvesting the temporalis myofascial flap is difficult and lengthy, prolonging the operating time. The use of conchal cartilage as autograft harvested from various parts of the body has been successfully

reported owing to the low metabolism characteristic the of cartilage, so that no foreign body reactions usually occur. Tucker et al (8) reported that in a comparative study in monkeys the use of auricular cartilage as interpositional material after dissection and high condylar shave, the cartilage trophism was not altered and degenerative alterations of the joint occurred in less cases in the test group than in controls, in which the disc was removed and no interpositional graft was placed. Lei (7) reported successful clinical use of conchal cartilage after TMJ ankylosis in seven pediatric patients.

The usefulness of conchal cartilage in TMJ arthroplasty include:

- a) readily available autogenous tissue;
- b) the graft is relatively easy and quick to harvest;
- c) it can be harvested from the same operative field;
- d) the graft remains inert and does not undergo resorption for a long period of time; thus it acts as an excellent barrier to separate the ramal stump from the glenoid fossa;
- e) it does not cause any aesthetic deformity of the donor site;
- f) the contour of the cartilage fits the condyle process well.

The final outcome of the case reported in this article supports the use of autologous conchal cartilage as interposition autograft as a successful treatment option for TMJ ankylosis.

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