A Modification of the Classical Dautrey's Procedure - A Case Report

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Abstract

Rationale: The rationale was to establish a permanent surgical solution for nonreducing dislocations of the temporomandibular joint (TMJ). **Patient Concerns:** The patient presents with a long-standing history of chronic subluxation of the TMJ bilaterally, with the need to forcibly manipulate and reduce the dislocated jaw. **Diagnosis:** Chronic recurrent dislocation of the TMJ. **Treatment:** A modified Dautrey's procedure was performed on the right side, with the osteotomized segment being transferred medially and inferiorly. **Outcome:** After 5 years of follow-up, there was no incidence of recurrent dislocation. **Take-away Lesson:** This modification is a viable option in both unilateral and bilateral reducing and nonreducing dislocations.

Keywords: Chronic recurrent dislocation, osteotomy, temporomandibular joint, zygomatic arch

Introduction

Temporomandibular joint (TMJ) subluxation and dislocation occur in 16% of the population.[1] Certain principles for the identification and management of dislocation of the TMJ[2] and a variety of treatment modalities have been tried.[3]

Medical modalities include the use of sclerosing agents, blood, and alcohol injections into the upper joint space to produce capsular fibrosis and eliminate excessive condylar movements. However, this method requires repetitive injections, and recurrence was common with the added complications of fibrosis or bony ankylosis and cartilage degeneration.[2]

Surgical modalities aim at eliminating the blocking factors or increasing the obstruction to condylar movement, thus preventing its anterior mobility. This was accomplished by both soft-tissue and hard-tissue procedures.[4]

Soft-tissue procedures include the plication of the capsule, lateral pterygoid myotomy, meniscectomy, and scarification of the temporalis tendon.[4]

Other hard-tissue methods such as eminectomy, eminoplasty, condylotomy, condylectomy, discectomy, gap arthroplasty, augmentation of the eminence, glenotemporal osteotomy, inverted L-plate, sagittal split osteotomy, fixation of miniplates, screws, plates, or total joint replacement have also been tried.[2,5]

Among the hard-tissue procedures, one of the more successful treatment modalities of recurrent dislocation of the TMJ was the use of the zygomatic arch to form a mechanical obstruction to the forward movement of the condyle.[2]

A vertical osteotomy of the zygomatic arch was first used, and this procedure was further modified with an oblique arch osteotomy. This is known as "Dautrey's procedure."[6] However, sometimes, recurrence presents because the obstruction is always lateral to the pole of the mandibular condyle, thereby allowing the condyle to dislocate medially.[7] Furthermore, the down fractured arch creates a dip over the malar prominence.[7,8]

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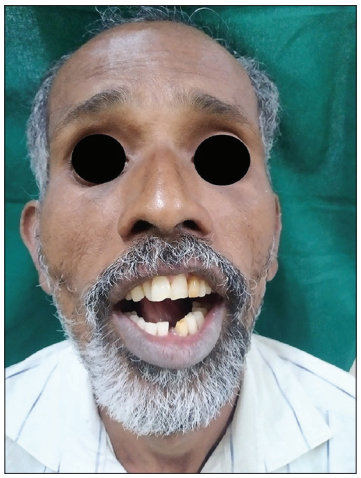

Figure 1: Bilateral nonreducing dislocation of the temporomandibular joint

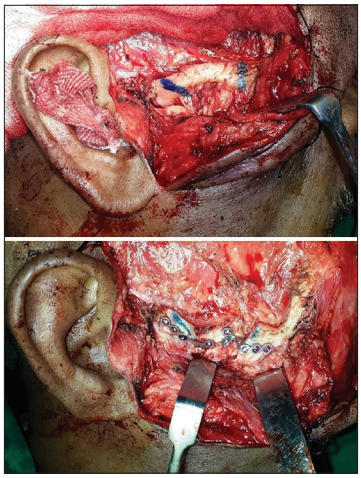

Figure 3: Planned osteotomy cuts and medially displaced fragment

The elastic memory in the arches of younger patients results in relapse. Furthermore, pericapsular fibrosis occurs, and rarely, the deep erosion produced by pressure atrophy of the lateral aspect of the condyle occurs.[7,8]

Here, we present a modification of the classic Dautrey's procedure which attempts to correct the drawbacks of the procedure, namely, medial translation of the condyle, malar flattening, and recurrence of dislocation.

The uniqueness of this procedure lies in the fact that no one to date has osteotomized the zygomatic arch fully, repositioned it inferior and medially, and placed it as an obstruction to the hypermobile condyle.

Aim

The aim is to access the efficacy of a medially placed zygomatic arch segment to treat chronic recurrent dislocation of the TMJ.

Case Report

A 47-year-old male presented with a bilaterally dislodged TMJ [Figure 1]. The patient presents with a history of chronic

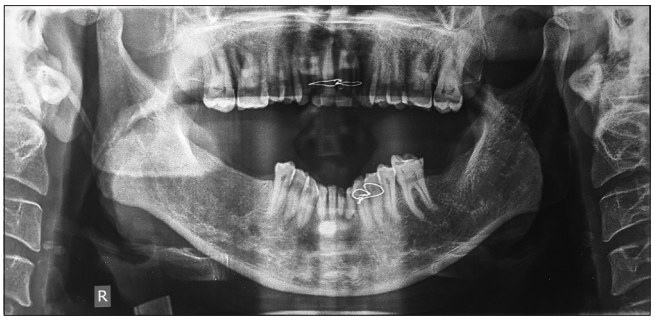

Figure 2: Preoperative X-ray

Figure 4: Postoperative occlusion and mouth opening

Figure 5: Postoperative view showing no malar flattening

subluxation of the right TMJ which was manually reducible. However, of late, he has a bilateral nonreducible dislocated joint. Both sides could be reduced back into the glenoid fossa under local anaesthesia, but there was repeated dislocation on the right side. Preoperatively, mouth opening was 35 mm, after which the right side joint subluxated, and the patient had an anterior open bite of 10mm. Preoperative OPG was taken [Figure 2].

The dislocated right side TMJ was addressed surgically under general anaesthesia.

Access was through a bicoronal incision, and on the right side, the eminence was flat, and the condyle was manually manipulated into the glenoid fossa. On the left side, the articular eminence was found to have a significant prominence. Intraoperatively, after reduction, when the mandibular movements were attempted, it was found that, while the left joint did not dislocate, the right side joint repeatedly dislocated. This was due to the flattened eminence.

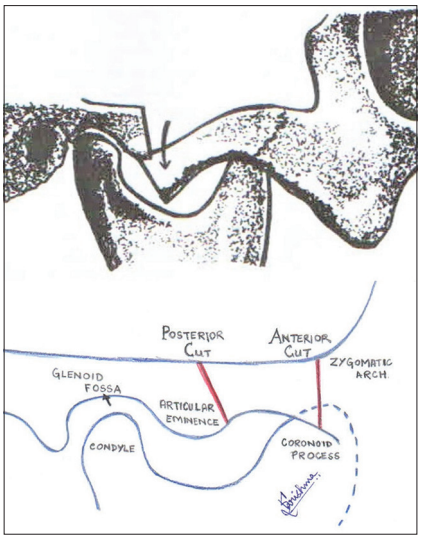

Figure 6: Classical Dautrey's osteotomy and modified osteotomy

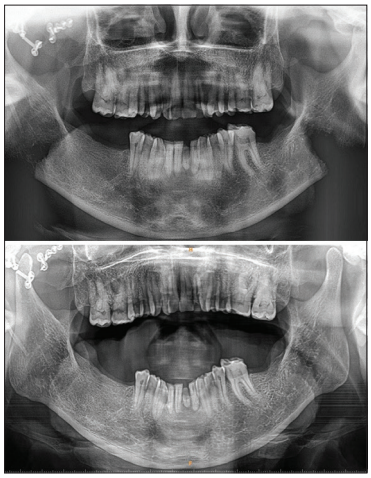

Figure 7: Postoperative closed-mouth and open-mouth OPG

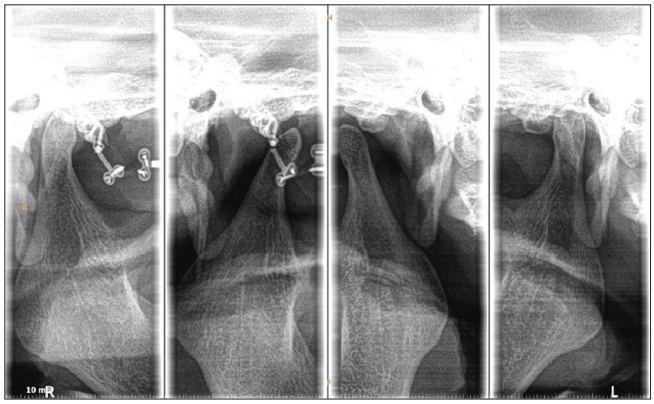

Figure 8: Postoperative temporomandibular joint view (open-mouth and closed-mouth)

Hence, the decision was made to address only the right side.

An oblique cut was made in front of the articular eminence, and another vertical cut was made at the temporal process of the zygomatic bone [Figure 3]. Extreme care was taken not to strip off the muscle attachments at the inferior aspect of the zygomatic arch to help maintain the vascularity of the arch. The segment was transferred medially and inferiorly to be in line with the pterygoid fovea. Two miniplates were used to secure this segment [Figure 3].

All mandibular movements were performed again to ensure that there was no dislocation. Extreme care was taken to avoid damage to the 7th nerve. The closure was done with drains *in situ*.

The patient was followed up for 5 years, and there was no incidence of recurrent dislocation. Neither was there a loss of the displaced segment of the arch [Figure 4] nor malar flattening [Figure 5].

Discussion

Deformity of the face and functional impairment are the signs of recurrent dislocation of the jaw. However, the self-reducing nature of the condition in many patients and financial constraints are reasons for not being treated.[9]

Dautrey recommended that the procedure should be performed bilaterally for all unilateral or bilateral dislocations. Iizuka treated only the affected side in unilateral cases. We performed surgery on the right side only. The patient has not had a single episode of dislocation even after 5 years.

Dautrey proposes only one osteotomy cut of the arch close to the eminence. We feel that there is no control when the fragment is pulled down forcibly, and the propagation of the anterior fracture is not under the control of the surgeon. To avoid this issue, we employed two cuts while maintaining the vascularity. Schematic representation of classical osteotomy[10] versus modified osteotomy is shown in Figure 6.

Originally fixation devices to stabilize the down fractured zygomatic segment were absent. However, some studies have suggested the need for the fixation of the osteotomized fragments. We used L-plates and straight plates to secure the fragments.

Classically, the lowered bone segment is impacted medial to the articular tubercle, and anteriorly, it is a greenstick fracture; therefore, no fixation is needed. However, some authors had encountered failure with the original procedure, which they concluded was because of the medial displacement of the condylar head. Therefore, we corrected this by placing the zygomatic arch far medially to engage the condylar head in the center of the pterygoid fovea.

The reduced mouth opening in zygomatic arch fractures is due to V-type in-fracture of the arch which impairs forward movement of the coronoid process. In our procedure, the coronoid process moves anteriorly, and the mechanical obstruction is only to the movement of the condyle. Here, there is no obstruction to the coronoid process with no hindrance to mouth opening.

There was a concern as to whether there would be a cheek flattening due to the absence of the middle segment of the

arch but this was absent. The drape of the skin flap permits the camouflage of the displaced segment which is not a V-type in-fracture but is a much smaller segment.

Postoperatively, the patient had mouth closure with good occlusion and mouth opening of 38 mm, and radiographs were taken [Figures 7 and 8].

Conclusion

This procedure is a permanent viable option in both unilateral and bilateral dislocations of the TMJ.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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