

Management of the Bilateral Chronic Temporomandibular Joint Dislocation

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Abstract

Temporomandibular jaw dislocation is an uncontrolled anterior movement of the condyle beyond the articular eminence. It can occur mostly in young adults, and the symptoms are mouth opening disturbance, preauricular skin depression, tense masticatory muscles, and pain. The main purpose of the eminectomy procedure is removal of a part of the articular eminence to maintain free movement of the condyle. The surgical procedure may be performed by conventional surgery or piezosurgery. The present case report describes the management of a recurrent mandibular dislocation in a 28-year-old patient who had also treated conservatively with autologous blood injection. In this report, bilateral eminectomy was performed by piezosurgery to provide soft-tissue protection, precise cut, and optimal view of the surgical area. The management technique is discussed within the current literature.

Keywords: Eminectomy, piezosurgery, recurrent mandibular dislocation, temporomandibular joint

INTRODUCTION

Mandibular dislocation is an involuntary forward movement of the condyle beyond the articular eminence and requires manipulation to return to its normal position. Temporomandibular joint (TMJ) dislocation is mostly associated with either trauma or excessive opening of the mandible. Acute dislocation of the TMJ is managed with manual reduction. On the contrary, chronic persistent dislocations mostly require surgical or conservative treatment.^[1]

Conservative approaches are reported as injection of sclerosant or autologous blood around the temporomandibular joint and injection of botulinum toxin A into the lateral pterygoid muscles. Surgical methods are introduced in cases of failure at conservative treatment modalities and patients with prolonged or recurrent dislocation.^[2]

Different surgical methods have been described in literature including positioning the disc anterior to the condyle augmentation of the articular eminence with down-fracture of the zygomatic arch and fixation medial to the articular tubercle, insertion of implants into the articular eminence, scarification of the temporalis tendon redirectioning of the temporalis tendon, lateral pterygoid myotomy, and deepening of the

glenoid fossa by resection of the disc. Alternative techniques are eminectomy and condylotomy.^[3]

The eminectomy is first described in 1951 by Myrhaug for the treatment of recurrent and habitual mandibular dislocation for removing a portion of the eminence to allow the condyle to move freely.^[4] The present case described the eminectomy procedure for the management of the bilateral recurrent mandibular dislocation.

CASE REPORT

A 28-year-old male patient was referred to the department of oral and maxillofacial surgery, with a complaint of chronic persistent dislocations for 5 years. The patient's general health was good. He had no history of previous mandibular trauma. On clinical examination, pain in the bilateral preauricular region and reciprocal click on both sides were observed. Mandibular movement was restricted

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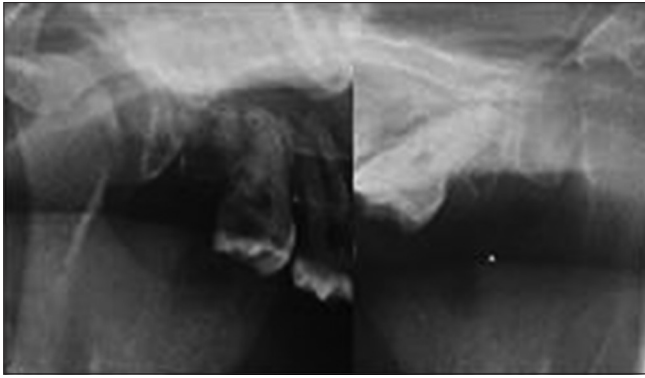


Figure 1: Preoperative panoramic view of the right and left condyle



Figure 2: Three-dimensional model of the patient



Figure 3: Intraoral view of the articular eminence

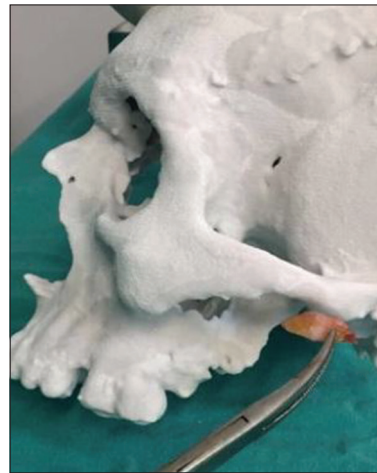


Figure 4: The model and the left articular eminence



Figure 5: Removed articular eminence of both sides

on both sides. At clinical examination, it was observed that the temporal, masseter, and lateral pterygoid muscles were tender and painful bilaterally. Intraoral examination showed that he had a good oral hygiene. No occlusal disturbances were observed. Orthopantomogram revealed that the right and the left condyles being positioned anterior to the glenoid fossa [Figure 1].

The patient informed that he had undergone an autologous blood injection. After the treatment, his symptoms recurred. Therefore, surgical management (bilateral eminectomy) of the mandibular dislocation was planned. A three-dimensional model from the cone beam computed tomography data was received to guide and

assist in operation for providing precise cut of the articular eminence [Figure 2].

Bilateral eminectomy surgery was performed under general anesthesia. Standard preauricular approach was used. A vertical incision was made into the temporal fascia over the root of the zygomatic arch in the region of the glenoid fossa. The articular tubercle was exposed by subfascial and subperiosteal dissection [Figure 3]. The superior joint space was opened and checked by manipulation of the mandibular movement. The articular eminence was controlled on the model and both were removed using piezosurgery during the operation [Figures 4 and 5]. The temporomandibular ligament and the joint capsule were sutured to the zygomatic arch through 3–4 drill holes, and the overlying soft tissues were closed in layers.

The patient made an uneventful recovery being discharged from hospital the following day. During the 3 weeks after surgery, the patient was instructed to limit opening while eating and yawning to maintain the formation of adhesions. Beginning in the 4th week, he was encouraged physical activity to prevent excessive fibrosis and limited opening.

DISCUSSION

Dislocation of the TMJ is due to either imbalance in neuromuscular function or structural deficit. Other causes include over function such as forceful wide opening of the mouth, dental treatments, or endotracheal intubation. Some antipsychotic medications may also lead to dislocation. Some syndromes are also associated with the pathology. In the present case, no syndrome, previous causative dental treatment, structural deficit or history of antipsychotic medications, and trauma were observed.^[5]

There have been several reports of the use of BTX-A as a treatment for TMJ dislocation, but the efficacy of the technique is controversial.^[5] Another one of the conservative treatment is autologous blood injection which provides the formation of an organized coagulum and fibrous tissue, which keep the joint motions limited.^[6] On the other hand, in our case, the autologous blood injection which was previously performed by another surgeon did not work.

Therefore, we preferred to perform a surgical option as a solution. Condylectomies, mandibular shortening and ankylosis, and the down-fracture of the zygomatic arch have complications such as facial asymmetry and a limited degree of jaw movement.^[7] Therefore, eminectomy procedure has been chosen as a final surgical treatment of the present case.

Eminectomy is generally performed under general anesthesia. On the other hand, rare reports of eminectomy described the procedure under local anesthesia and sedation. Iwanaga *et al.* reported that they performed intravenous propofol sedation and local anesthesia in two eminectomy cases. No anesthetic complications were reported in their case series. They suggested that local anesthesia might be an alternative choice to general anesthesia for elderly patients who have many health problems which may cause challenges for general anesthesia. They also mentioned that the use of sedation may allow patients to obey operator instructions during surgery, so the surgeon may easily observe the TMJ movements.^[8]

Stassen and O'Halloran reported a group of patients who have had this procedure performed using local anesthesia and intravenous conscious sedation (CS). They stated that the advantage of CS is that normal, nonparalyzed joint movements may be observed, in physiologic function. They mentioned that, during general anesthesia, the muscle relaxation agents may cause the condylar position to be more posterior than that when they are awake. The condyle can be subluxated or drawn out of the glenoid fossa, giving an impression of normal mouth opening.^[9] In our case, the patient did not show any serious health problem which may cause a challenge for general anesthesia and the eminectomy procedure was planned bilaterally. Therefore, we preferred to operate in a conventional way, under general anesthesia.

The use of piezosurgery has been increased in the TMJ surgery. Spinelli *et al.*^[10] reported that substantial reduction in bleeding was noted with the piezoelectric bone cutter when compared to

traditional mechanical surgery during TMJ ankylosis surgery. Jose *et al.*^[11] reported that piezoelectric bone removal for the release of ankylosis of the TMJ is associated with minimal bleeding, few postoperative complications, and satisfactory mouth opening at 6-month follow-up of the patients. Chiarini *et al.*^[12] used piezosurgery in surgical treatment of unilateral condylar hyperplasia and they reported that the use of a piezoelectric cutting device allows a safe and less invasive high condylectomy. Consistent with current literature, in our case, we observed reduced bleeding and wide surgical view during osteotomy of the articular eminence using piezosurgery.

The complications associated with the eminectomy procedure are reported as persistence of the mandibular dislocation, osteoarthritis of the TMJ, fracture of the condylar head, postoperative discomfort, transient facial nerve weakness, preauricular paraesthesia, and lateral deviation on opening.^[13,14]

In the present case, no complications were observed during and after the surgery. The authors suggest to maintain surgical model of the TMJ to prevent possible complications which may occur during osteotomy.

CONCLUSION

The eminectomy procedure can be used safely with the aid of preoperative model planning and piezosurgery device in the management of chronic mandibular dislocation. Eminectomy was found helpful to reduce pain in the joint and improved TMJ mobility.

Declaration of patient consent

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

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Conflicts of interest

There are no conflicts of interest.

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