

# Long-Term Temporomandibular Joint Dislocation Treated with Bilateral Eminectomy and Chin-Cap: Case Report

## Uzun Süreli Temporomandibular Eklem Dislokasyonunun Çift Taraflı Eminektomi ve Chin-Cap ile Tedavisi

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**ABSTRACT** Temporomandibular joint (TMJ) dislocation is defined as an excessive forward movement of the condyle beyond the articular eminence resulting in a condition that fixes the joint in the open position, preventing any translation. Acute dislocation of the TMJ may be reduced manually under local anesthesia, intravenous sedation or general anesthesia. However, chronic persistent or prolonged dislocations usually require surgical intervention. Various surgical interventions have been proposed for the management of prolonged dislocation. Some of these are more conservative, such as reduction with the aid of interosseous wire, modified intermaxillary fixation, eminectomy and myotomy, while others are more radical such as condylectomy, midline mandibulotomy, inverted L-shaped ramus osteotomy or sagittal split ramus osteotomy. This case report describes the clinical and radiological findings and comprehensive treatments with bilateral eminectomy and chin-cap support of a patient with long-term and prolonged bilateral TMJ dislocation resulting from misdiagnosis.

**Key Words:** Temporomandibular joint; temporomandibular joint disorders; dislocations; therapy

**ÖZET** Temporomandibular eklem (TME) dislokasyonu, kondilin aşırı öne hareketi sonucu artiküler eminensi geçerek, eklemün açık pozisyonda sabitlendiği ve herhangi bir translasyon hareketine imkan vermeyen pozisyonda kalması olarak tanımlanmaktadır. TME'nin akut dislokasyonu lokal anestezi, intravenöz sedasyon veya genel anestezi desteğinde manuel redüksiyonla düzeltilebilir. Dislokasyonun uzadığı veya kalıcı hale geldiği durumlarda sıklıkla cerrahi tedaviye ihtiyaç duyulmaktadır. Uzamış eklem dislokasyonu vakalarının tedavisinde çok çeşitli cerrahi yöntemler önerilmiştir. Bunlardan bir kısmı; modifiye intermaksiller fiksasyon, telle angulustan mandibulayı çekerek redükte etmek, miyotomi ve eminektomi gibi nispeten daha konservatif yaklaşımlar iken, bir kısmı da kondilektomi, mandibular orta hat osteotomisi, ters L ramus osteotomisi ve sagittal split ramus osteotomisi gibi daha radikal işlemlerdir. Bu olgu raporunda, hatalı teşhis nedeniyle uzun süreli ve kalıcı hale gelmiş çift taraflı TME dislokasyonu hastamızın klinik ve radyolojik bulguları ile başarısız konservatif yaklaşımlar nedeniyle bilateral eminektomi ile kondiler redüksiyonun yapıldığı ve chin-cap ile desteklendiği kapsamlı tedavisi sunulmuştur.

**Anahtar Kelimeler:** Temporomandibuler eklem; temporomandibuler eklem bozuklukları; çıkıklar; tedavi

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**T**emporomandibular joint (TMJ) dislocation is defined as a nonreducing displacement of the mandibular condyle anterior and superior to the articular eminence, resulting in the inability to close the mouth.<sup>1</sup>

Predisposing factors for mandibular dislocation can be classified into six categories: birth-related, iatrogenic (prolonged dental procedures, traumatic

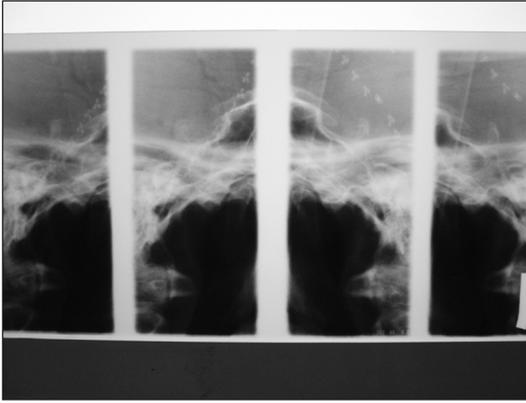
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extractions or, inappropriate use of a laryngoscope or a bronchoscope), trauma, drug-induced (reported with the use of reserpine and phenothiazine), physiological (yawning or sneezing), and systemic (epilepsy).<sup>2-5</sup>

Sanders and Newman<sup>2</sup> reported that long term over closure with resultant stretching of the joint capsule and ligaments may result in subluxation or dislocation in edentulous patients or subjects with loss of posterior support.

Reduction of prolonged mandibular dislocation may be difficult because of masticatory muscle spasm.<sup>3</sup> Long-term dislocation can cause fibrosis and adhesions in the TMJ, which makes manual reduction more difficult and may require surgical reduction.<sup>4</sup> However, prolonged dislocation of the TMJ is comparatively rare.<sup>5</sup>



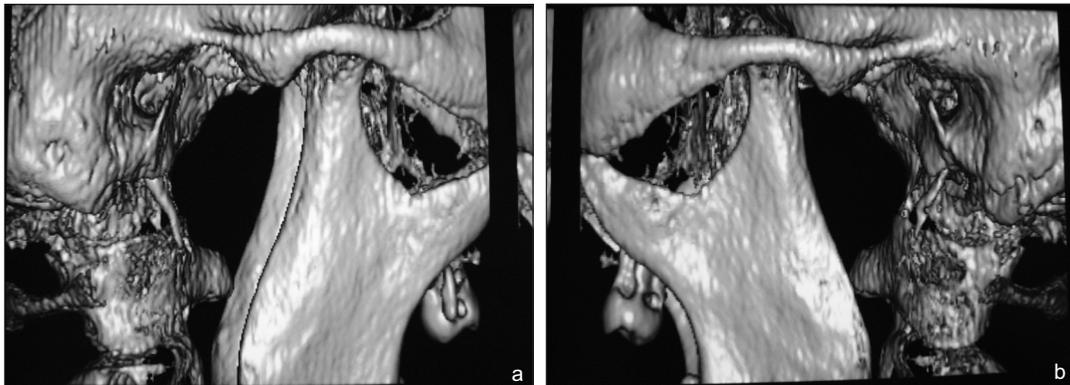
**FIGURE 1:** Preoperative panoramic radiographs of the condyles in the open and closed positions.

The treatment plan for prolonged TMJ dislocations should be individualized taking into account clinical factors such the duration of the dislocation, the patient's age and, general health and the severity of disease in the affected joint. Conservative treatment modalities should be preferred at initial presentation, while surgical options should be preferred in refractory cases.<sup>3</sup>

The aim of this case report is to emphasize the importance of eminectomy in cases of prolonged TMJ dislocation requiring surgical reduction.

## CASE REPORT

A 56 year-old woman was referred to the oral and maxillofacial unit with a presenting symptom of pain in the temporal area and an inability to chew, bite or close her mouth. The patient was calm and able to communicate with mildly slurred speech. She was able to close her lips to form words and had minimal drooling. She had no history of facial trauma. Her history revealed a previous dislocation of TMJ while yawning 4 months earlier. Her medical history was non-contributory. The patient stated that she had been referred to a physician for treatment following the dislocation. The patient reported that a physician had diagnosed the disorder as a facial paralysis and had prescribed analgesic - anti-inflammatory drugs and vitamins. Since the patient's symptoms failed to improve after 3 months, she was referred to ear nose and throat department of a university hospital. She stated that although the specialist had diagnosed



**FIGURE 2a, b:** Sagittal CT sections showing anterior dislocation of the condyles.

the dislocation of the TMJ, reduction could not be achieved. She was then referred to our clinic for TMJ reduction. We examined the patient 4 months after dislocation of the TMJs. This revealed bilateral pain in the TMJs, a prognathic appearance with a long face, anterior open bite, and inability to close her mouth and speak. Mandibular movements were painful, and lateral and protrusive movements were restricted. The patient reported no-clicking, popping or previous history before dislocation. Panoramic radiography and computerized tomographic scans showed anterior dislocation of both mandibular condyles (Figures 1, 2a and 2b). Several attempts at manual reduction of the condyles failed reduce the dislocation. We then planned to treat the dislocation under sedation with an option of surgical reduction under general anesthesia. The patient provided an informed consent form for this purpose. After sedation, unsuccessful attempts were made to reduce the dislocation manually. We therefore decided to perform bilateral eminectomy for reduction with preauricular approach. Reduction of the condyles was achieved with the use of considerable force following surgery. However, this reduction could not be maintained without the application of constant pressure. Following closure of the surgical sites, a light pressure dressing was applied by means of a Barton head bandage. Partial dislocation reoccurred after the patient awoke. In order to resolve the partial dislocation we decided to use a chin-cap with effective tension (Figure 3). Following adaptation of the chin-cap, reduction occurred spontaneously in 1 hour. The range of mandibular motion was judged to be adequate, and the patient had no open bite (Figure 4). We advised her to use the chin-cap for 6 weeks in order to prevent recurrence. Six months postoperatively, the patient continued to function satisfactorily, with a maximum vertical opening of 38 mm without dislocation (Figures 5 and 6). She had no pain, infection, scar, clicking, popping or any paralysis. Panoramic radiographs showed that the condyles were in a correct position while the mouth was open and closed (Figure 7).

## DISCUSSION

There have been a few previous reports of protracted dislocation of the TMJ.<sup>3-10</sup> Some authors have noted that the nature of the dislocated condyle is not always obvious to the patient.<sup>6-8,11</sup> Although diagnosis of TMJ dislocation is easy (because it occurs suddenly and the patient is locked in a wide-open mouth position), inexperienced physicians may misdiagnose the condition, leading to treatment failure. Some cases remain undiagnosed and untreated for many months especially in intensive care units.<sup>4,5,9,10</sup> This seems to be especially true in geriatric and edentulous patients, such as in our case.<sup>5</sup>

Sanders et al. reported that when physiological vertical dimension is lost because of prolonged edentation, long-term over-closure can initiate TMJ-related problems, as in our case.<sup>6</sup> If prosthetic rehabilitation does not occur, the result may be



FIGURE 3: Postoperative appearance with chin cap.



FIGURE 4: Intraoral view on the second day postoperatively.



**FIGURE 5:** Maximum jaw opening without dislocation at the sixth month post-operatively.



**FIGURE 6:** Maxillomandibular relationship was normal in the late period.

loosening of the TMJ capsule and stretching of the lateral ligament, causing dislocation. Prolonged dislocation leads to fibrosis and adhesions in the joint, which makes manual reduction more difficult and may require surgical reduction.<sup>4,6</sup>

The current approach favors conservative treatment of all TMJ dislocations at initial presentation. A diverse series of reduction techniques has been described in the literature.<sup>1,12-14</sup> Hayward suggested that cases of prolonged dislocation may occasionally be treated successfully without open reduction. However, the difficulty of reduction increases in line with the duration of dislocation. When dislocation is prolonged or recurrent, surgical treatment is often necessary.<sup>15</sup>

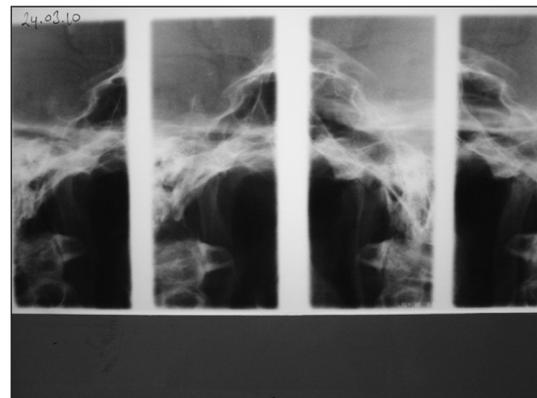
A wide variety of surgical procedures has been reported for management of prolonged TMJ dislocation. These include eminectomy, lateral pterygoid myotomy, temporal muscle myotomy,

condylotomy, condylectomy, reduction with the aid of interosseous wire (placed at the bilateral mandibular angles), midline mandibulotomy, inverted L-shaped ramus osteotomy, sagittal split ramus osteotomy, use of a ramus hook and stripper, reduction by modified intermaxillary fixation and endoscope-assisted reduction.<sup>3-10,14,16-19</sup>

Cardoso et al. compared eminectomy and use of a bone miniplate in the articular eminence for the treatment of recurrent TMJ dislocation, and concluded that both techniques were effective in the treatment of recurrent dislocation of the TMJ although eminectomy proved to be more effective in terms of reducing TMJ noise and articular pain.<sup>20</sup>

Huang et al. recommend that the treatment method be selected based on the duration of the dislocation.<sup>9</sup> They suggested that when dislocation is less than 3 weeks in duration, closed reduction techniques should be selected. If the dislocation has persisted for 4 weeks or more, it can be treated by open reduction. As a first level of open reduction technique, they suggested mandibular traction with wire or retractor following myo-periosteal stripping. If the duration of TMJ dislocation exceeds 6 months, more radical procedures such as condylectomy, eminectomy or TMJ replacement will be required.

We elected to use bilateral eminectomy since this is effective, simple and prevents potential recurring dislocation. Another advantage is that eminectomy does not lead to intracapsular defor-



**FIGURE 7:** Radiographic appearance of condyles in the open and closed positions after six months.

mations or derangements. Difficulty in maintaining the position of the condyles in the mandibular fossa following eminectomy, suggests that shortening of the lateral pterygoids was probably responsible. In order to obtain a constant reduction, a chin cap was used for 6 weeks to guide and maintain the joints in the fossa. Soft tissues including the muscles adapted well to their new position, and recurrent dislocation was avoided. An additional benefit of this technique is that, in contrast to condylec-

tomy or condylotomy, it does not give rise to occlusal problems.

Following reduction of long-standing dislocation, effective fixation is necessary in order to prevent recurrence, especially in edentulous patients. In cases of prolonged TMJ dislocation in which conservative treatments fail, we recommend using a chin-cap for at least three weeks following eminectomy to prevent recurrence and to facilitate reduction.

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