

Conservative management of dislocated temporomandibular joints: A case report

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Dislocation of the temporomandibular joint (TMJ) occurs when the mandibular condylar head is displaced completely out of the glenoid fossa and cannot be reduced by the patient. The occurrence of bilateral anterior dislocation is the most common. Dislocations can be classified into three types in terms of duration and frequency of dislocation, i.e., acute, chronic and recurrent.

There are various treatment modalities for dislocation from conservative try to surgical intervention. The selection for the appropriate modality mainly depends on the types of dislocation as previously stated. The authors report three cases of dislocation with different treatment modalities according to the duration of dislocation. In particular, we tried prosthetic approach instead of surgical intervention in the patient with chronic dislocation.

Keyword: Conservative management, Dislocation, Temporomandibular joint

I. Introduction

Dislocation of the temporomandibular joint (TMJ) occur when the mandibular condylar head is displaced completely out of the glenoid fossa and cannot be reduced by the patient.¹⁾

A mechanism leading to dislocation has been suggested. Normal closure begins with retraction of the mandible followed by elevation.

Dislocation occurs when the coordination is disturbed and elevation precedes retraction: the protracting lateral pterygoid muscles fail to relax before the masseter and temporalis muscles elevate the mandible.^{2,3)}

Predisposing factors include laxity of mandibular and capsular ligaments, large bony eminence and muscle fatigue from overuse.^{4,5)} Spontaneous dislocation usually associated with sudden wide opening or prolonged extensive opening during dental procedure or general anesthesia.²⁾ Sometimes, dystonia, hypermobility syndromes (Marfan syndrome, Ehlers-Danlos syndrome) and seizures may cause the dislocation.⁶⁾ If long-term over-closure, secondary to loss of the dentition, lasts without prosthetic rehabilitation, loosening of the TMJ capsule and stretching of the lateral ligament, causing dislocation may occur.⁷⁾

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Mandible dislocations can be unilateral or bilateral and occur anteriorly, posteriorly, laterally, or superiorly. Bilateral anterior dislocation is the most common. They can also be acute, chronic, or chronic recurring.¹⁾ Many treatment modalities for dislocation have been suggested. First, an attempt to reduce the condyle by the manipulation should be made. If the conservative methods are unsuccessful or recurrence is frequent, surgical intervention may be needed.

We report two cases of successful manual reduction and suggest a conservative alternative in an edentulous patient with the failure of manual reduction.

Case 1

68-year-old woman was referred to our dental hospital after repeated unsuccessful attempts to reduce a bilateral dislocation of the TMJ in local dental clinic. The accident occurred during the extraction of the mandibular second molar about 1 hour ago before the visit to us. She had no medical history.

Her mandible was in protruded position and she could not move her jaw voluntarily. Radiographic findings confirmed bilateral anterior dislocation of TMJs (Fig. 1).

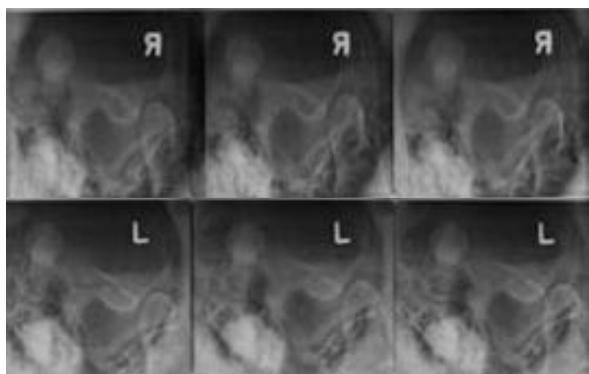


Fig.1. Transcranial radiograph shows both TMJ dislocation.

The reduction using the traditional manual method was successful. The patient was cautioned to avoid wide mouth opening and heavy chewing for about 3 weeks. Analgesics were prescribed for the pain control. After 3 weeks, normal range of motion was restored to the joint without recurrence of dislocation.

Case 2

87-year-old woman visited to our hospital with the chief complaint of the inability to close her mouth. It happened 1 week ago and continued despite the trial of manual reduction in the emergency room.

The patient had a medical history of hypertension and diabetes mellitus. In addition, she was suffering from dementia in the care hospital. On intraoral examination, we found that she was edentulous with the wearing of full dentures. Although we could not assess the occlusion state and take x-ray due to the poor behavior control, we checked the preauricular depression on both sides and confirmed the dislocation of both condyles clinically.

The luxation was not reduced by the manipulation. For the pain control, the patient was given an analgesic and muscle relaxant. After 3 days, manual reposition with 2 ml lidocaine injection in the auriculotemporal nerve and lateral pterygoid muscle was tried. But it turned out to be unsuccessful with the increased patient's discomfort and anxiety. Therefore, we decided to try the reduction with the help of anesthesiology department and under the sedation with nitrous oxide (N₂O), closed reduction was re-tried successfully. Because the dislocation recurred immediately after reduction, elastic band was applied to around the head and chin for immobilization. After 4 days, she removed the elastic band in the care hospital and did not come to our hospital again.

Case 3

71-year-old woman came to our hospital complaining of chin deviation and occlusion change with chewing difficulty. This condition occurred at 6-month ago with severe pain. At first, she considered it as facial paralysis and had an MRI in the department of neurology. After she knew the absence of any abnormality in the MRI result, she did not try further treatment during the past 6 months.

When she came to our clinic, the pain was almost disappeared. We found that she was edentulous with the wearing of ill-fitting full dentures and the jaw was protruded with the shift to the left side. The radiograph showed the anterior dislocation of the right TMJ (Fig. 2).

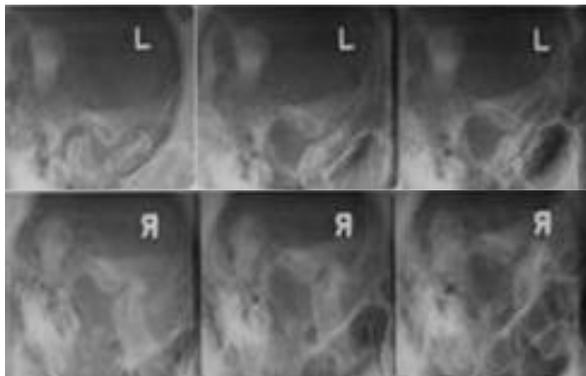


Fig.2. Transcranial radiograph shows Rt. TMJ dislocation.

An attempt to reduce the dislocation manually under local anesthesia failed. Next time, under the sedation with N₂O and sevoflurane, manipulation was re-tried but dislocation was not reduced. We referred the patient to the department of prosthodontics for denture adjustment. Because the patient's chief complaint was the difficulty of chewing food due to the jaw deviation and she had almost normal range of motion, we decided to restore the occlusion by the

prosthodontic treatment and considered the surgical methods later. At the follow-up, the patient was satisfied with the modified occlusion (Fig. 3).



Fig.3a. Pre-treatment clinical photos present prognathic jaw relationship and open bite of both posterior teeth.





Fig.3b. Posterior open bite was resolved by resin restoration.

II. Discussion

Diagnosis of dislocation of the jaw is usually made by the following clinical features: inability to close the mouth, severe pain anterior to the ears, absence of the condyle from the glenoid fossa resulting in a visible, palpable preauricular depression and a prognathic appearing lower jaw. If dislocation is unilateral, the jaw deviates away from the involved side.⁶⁾ However, the appearance of dystonia or paralysis of the facial musculature or condylar fracture can be nearly identical to that of TMJ dislocation.^{5,8)} If the misdiagnosis is made, the patient may be untreated for many months or years as our third case. To confirm the diagnosis, radiograph is necessary.

There are many closed reduction methods. As sometimes these procedures may be difficult due to the reflex spasm of the muscles, in these cases, local anesthesia into joint capsule or masticatory muscles, sedation, or general anesthesia can be considered to aid in manual reduction. It is

based on the theory that dislocation is maintained by muscle spasm and secondary to painful stimuli arising from capsule.^{9,10)} We used local anesthesia and sedation with N₂O and sevoflurane. N₂O can be a sedative, anxiolytic, analgesic, or a weak anesthetic agent.¹¹⁾ N₂O is used commonly in combination with a volatile anesthetic agent such as sevoflurane that is more potent inhalational anesthetic agent than N₂O. Taken together, the efficacy was significantly better than that of N₂O alone.¹²⁾

As another conservative method, botulinum toxin injection into the lateral pterygoid muscles for recurrent dislocation has been suggested. The botulinum toxin injection is safe and reliable as a treatment with minimal side effects for recurrent TMJ dislocations. Ziegler et al.¹³⁾ reported that initially, repeated injections were required, but after at least four injections, the patients remained symptom-free for over half a year after cessation of the injection therapy. When conservative measures fail and discoordination of the lateral pterygoid muscles are aggravating cause of dislocation, this procedure especially could be an alternative to invasive surgical interventions.¹³⁾

In our two cases, in which the mandible had been dislocated for 1 hour to 1 week, reduction was accomplished by manual method. However, it was not successful in another case of dislocation that had lasted for 6 months. In chronic condition, the condylar dislocation becomes increasingly irreducible manually because of fibrosis within the joint cavities and, possibly shortening of the masticatory muscle especially temporalis and lateral pterygoid muscles.¹⁴⁾ If above-mentioned conservative tries for reduction fail, surgical treatments become necessary. There are many literatures

of surgical approaches including direct open manipulation of the condyle, condylectomy, eminectomy and myotomy of lateral pterygoid muscle.⁴⁾ Although these methods can lead to favorable results, the use of surgical interventions may be restricted in some cases due to the age, medical history, patient's demand and others.⁸⁾ For these reasons, Ozcelik et al.⁸⁾ reported one case of recurrent dislocation treated with prosthetics. They used metal guidance flange on right side of mandibular removable partial denture in order to prevent mandibular deviation to the left side caused by unilateral dislocation. We resolved the case, which was resistant to various manual methods, by occlusal reconstruction. According to the study of Benny, when the condyle dislocated anterior to the articular eminence chronically, the evidence of the development of a new anterior articulation was observed.¹⁵⁾ That is, the mandibular function may be improved to some level even if the condyle remains dislocated. Just occlusal rehabilitation is needed for chewing function. Many studies have been reported if the closed reduction is failed, surgical treatment may be the best way. However, in the light of patient's age, various medical history and complications of surgery, treatment with prosthetics may be the alternative to surgical intervention in chronically adapted condition of dislocation.

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국문초록

턱관절 탈구의 보존적 치료법에 대한 증례보고

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턱관절의 탈구는 과두가 관절와를 벗어나 환자 스스로 원래 위치로 정복하지 못할 때 발생한다. 양측성 전방 탈구가 가장 흔하며 탈구의 빈도와 발생 기간에 따라 급성, 만성, 재발성으로 분류하기도 한다. 턱관절 탈구의 치료법으로 수조작 같은 보존적 방법부터 수술적 접근법까지 다양한 방법들이 있으며 치료법의 선택은 주로 탈구가 발생한 기간에 따라 달라진다. 본 증례를 통해서 수조작을 시행하여 턱관절의 탈구를 성공적으로 치료한 증례와 과두의 정복에 실패했으나 만성적으로 적응된 환자에서 수술적 치료 대신 보철 치료로 교합을 회복시켜준 사례를 소개하고 그 의의에 대해 고찰해보고자 한다.

주제어: 보존적 치료, 탈구, 턱관절
