

CASE REPORT

DIAGNOSIS AND TREATMENT OF ANTERIOR TEMPOROMANDIBULAR JOINT LUXATION

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ABSTRACT

Temporomandibular joint luxation is the pathologic state when the condyle exits the glenoid fossa during open bite. Anterior luxation are the most frequent. They can happen during various dental procedures. It is presented the case of a 20 years old male which is diagnosed with an anterior acute right temporomandibular joint luxation set in a dental office, during a tooth extraction. After the tooth is extracted, the luxation is orthopedically reduced and stabilized with chin device fixed with a cephalic bandage. Various symptoms and management of this joint displacement, which can be encountered by dental practitioners, are highlighted. Treatment should be considerate an immediate emergency in the dental office or in maxillofacial surgery unit, otherwise degenerative responses can occur in the joint leading to more invasive procedures for stabilization or it can lead to functional sequelae.

KEYWORDS: *temporomandibular joint, anterior luxation, fixation.*

1. Introduction

Anterior luxation in the temporomandibular joint can occur quite often. It is produced when the mandibular condyle slides over the temporal tubercle, the condyle and the disk are locked into this anterior position. There are numerous factors that can be determinant or favoring. Anatomic particularities such as shallow glenoid fossa, plate temporal tubercle or mandibular condyle are favoring factors for the onset of luxation [1]. Hormonal changes such as those found in young adults, can make the joint capsule or ligaments become more lax which is another predisposing factor for luxation. In other

cases a decrease in the tonus of the muscles that elevate the mandible (temporalis, masseter, pterygoid) can be an onset for luxation [2].

Determinant factors are considered to be the procedures that lead to an exaggerate opening of the mouth such as: yawning, laughter, trauma in a posterior-anterior direction, accidental injuries on the chin with open mouth and not that rare during prolonged dental procedure that require an open bite [3]. The intention of the authors is to present this disorder with a clinical case and a literature review. Dental practitioners should be aware of this pathology and pose the required skills for its management, delaying the optimal treatment could lead to an unfavorable result.

2. Case presentation

It is presented the case of a 20 years old male patient who presented himself to a dental office regarding extraction of the first lower right molar. The patient had no medical history. During the surgical procedure, because of the pressure exerted by the practitioner to the right side of the mandible, an exaggerate open bite occurred followed by an abnormal sound in the right temporomandibular joint. The patient described an acute joint pain at this moment. After the procedure was done the dentist observed that the patient could not close his mouth. The doctor suspected an anterior TMJ luxation and sent the patient to the maxillofacial department.

At clinical exam the patient presented with open bite, salivary incontinence, slight depression anterior to the acoustic canal (figure 1). At palpation there was a lack of mandibular movement. There was a facial asymmetry through the deviation of the chin and the interincisive line to the left.



Figure 1. Extraoral photo: clinical exam showing open bite

The cheek was flattened on the affected side, the condyle being visible below the zygomatic arch. At the occlusion exam an open bite of 4mm was observed. There was also trismus. The patient complained of acute pain on the right side. At the x-

ray exam (CT scan with 3D reconstruction) the diagnosis was revealed as acute anterior right TMJ luxation resulted during dental extraction (figure 2).

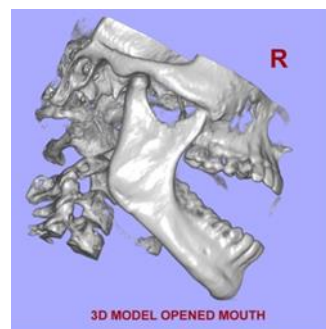


Figure 2. CT scan with 3D reconstruction showing the condyle anterior of the glenoid fossa

Treatment was applied immediately and it consisted of orthopedic reduction of luxation and provisional fixation of the mandible with a chin device. The treatment was explained to the patient. He was put in an up right position in the dental chair. A local anesthetic (mepivacaine hydrochloride 3%) was injected to relax the functional muscle (temporalis, masseter, pterygoid). The reduction procedure means that the condyle must be placed posterior into the joint; the method is called the Hippocrates technic.



Figure 3. Chin device in place

The doctor must be situated in front of the patient with the thumbs on the occlusal surface of the last molar, or better in the vestibule, the other fingers embracing the basal mandible.

Through the course of light motion the condyle is pushed downwards and then posterior so it can slide past the temporal tubercle into the glenoid fossa. At the moment of the reduction there is a slight joint click and the mouth closes immediately. After the reduction an elastic fixation chin device was set which was anchored with a cephalic string. It was maintained 10 days (figure 3).

After this period a functional treatment followed, the diet consisted of liquid and semiliquid products. The mouth must not be open wide after the healing period.

3. Results and discussions

Anterior temporomandibular joint luxation is preceded by a forced opening of the mouth accompanied by the impossibility to close it. In normal mandibular kinetics, the condyle slides with the disk on the posterior side of the temporal tubercle and this motion is stopped by the ligaments, the joint capsule and the tubercle. When an anterior luxation occurs the condyle surpasses the tubercle and the disk is pulled back into the glenoid cavity resulting into an obstacle for the condyle to return to its anatomical position. The ligaments and the capsule are tensed. The elevating muscles of the mandible have an increased reflex tonus that fixates the condyle in this anterior position. The coronoid process can find itself stocked into the inferior and posterior side of the zygomatic bone resulting into another obstacle for the condyle.

Treatment is divided in steps. First option is always the conservative one. For the muscle to relax there are numerous possibilities: physiotherapy, relaxing exercises, muscle relaxing drugs such as

Midocalm (50mg). Next step is to fix the occlusal problems that usually occur [4]. Another method for reducing is to rotate the mandible by inserting cotton rolls between the last molar of the patients while the doctor pushes on the chin into downwards and posterior.

After the fixation devices are removed the patient is instructed not to open immediately the mouth wide.

If conservative treatment is not working Botulin toxin can be used in local injection in the lateral pterygoid muscle [5,6].

If the luxation is old because of scar tissue that has formed around the joint orthopedic reduction doesn't have success. A so called surgical reduction is performed: the joint is opened (arthrotomy), the damaged (perforated, thickened, folded) disk is removed along with the fibrous tissue and the condyle is pushed back into the joint with the help of an extraction elevator [7].

After 14 days in which the mandible is fixed to the maxilla, function movements are introduced to the patient to prevent the onset of constriction or ankylosis. In very rare cases when it is impossible to reposition back the condyle, the condyle head is resected and a condyle prosthesis is applied [8].

When dealing with recurrent anterior TMJ luxation many surgical procedures have been tried.

A technic relies on fixating a flap of derma from the preauricular fossa anterior of the joint capsule. This will result in a fibrous healing that will impair with condyle movement. Another method is to increase the height of the condyle utilizing a segment of bone from the zygomatic arch. One procedure increases the temporal tubercle by applying a metal T shaped plate at the zygomatic arch. The temporal tubercle can also be heightened by using autologous grafts taken from the iliac bone or costochondral graft [9]. If the disk is damaged and its movements are not synchronous with the condyle it can be fixed to the

condyle, or it can be removed (diskektomy) with or without replacement (diskoplasty) [10]. Condyle can be removed followed by immediate grafting with autologous bone (rib) or alloplastic materials if it has a growth disorder.

4. Conclusions

TMJ luxation is a disorder that must be diagnosed and managed by dental practitioners in their offices. Anterior luxation can occur during standard dental treatment. Thus early recognition and immediate care must be provide to these patents so that they can benefit from conservative actions and the onset of complications that imply more invasive procedures is delayed.

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