

REVIEW ARTICLE



Temporomandibular joint disorders - Part II

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Abstract

This article is the continuation of temporomandibular joint (TMJ) disorders - Part I. This article focuses on the intracapsular disorders of the TMJ and the most common types that we as a dentist encounter. The condition of the intracapsular structure of TMJ affects the position of the TMJs; it also affects the occlusal relation.

Introduction

Intracapsular disorder of the temporomandibular joint (TMJ)

Any disease, deformation, or disorder that involves the tissues within the capsule of the TMJ is known as intracapsular disorder.^[1]

Stages

Piper's classification

Piper's classification for intracapsular temporomandibular disorders (TMDs) relates specific structural disorders to the progressive patterns that routinely occur as TMJs go through stages from health to severe degeneration.

There are seven structural elements to evaluate pain:

1. Disk alignment
2. Disk shape
3. Ligament
4. Joint space
5. Muscle
6. Bone surface
7. Pain.

Disk alignment

Normal disk alignment positions the disk on the condyle so that all the compressive forces are directed through its avascular, non-innervated bearing area. Variations in the disk alignment have major implications related to the signs and symptoms of TMD. It is important to analyze disk alignment at both the medial and lateral poles of each condyle.

Disk shape

Determining whether the disk is elongated, folded, or deformed into a compressed mass can explain variations in joint signs and symptoms and is often a determinant in treatment planning and prognosis.

Ligament

Laxity of the ligaments makes disk derangement possible if muscle incoordination is allowed to exert tensile forces on the disk. If the disk is not deformed, then a peaceful neuromusculature can be maintained, and laxity of the ligament is not itself a single cause for disk displacement.

Joint space

The “space” between the condyle and fossa is not a void. It is the result of radiolucency of the disk and appears as a dark space on the film that represents the thickness of the disk. If the disk is displaced, the condyle moves higher into the fossa and the space is diminished.

Muscle

There will always be a reason for any muscle to be hyperactive, and the most common primary causes in the masticatory musculature will be either trauma or some form of structural disharmony or deflective occlusal interference. Even when emotional stress levels are high or clenching and bruxing is evident, there will almost always be a structural muscle in coordination.

Bone surface

Signs may range from mild surface changes on the condyle and eminence to complete destruction of the condyle.

Pain

Need for analyzing the type, location, and severity of pain should be known. Important aspect of this analysis is to determine whether intracapsular structures are the source of any, all, or none of the pain. Compressive loading of the joints in different jaw positions is the most effective way to determine this.^[1]

Intracapsular disorders (articular disk disorder)

Articular disk displacement is an abnormal relationship between the following:

- The disk
- The mandibular condyle
- Articular eminence.

Caused by the stretching or tearing between glenoid fossa and attachment of the disk of the condyle. Articular disk disorder is divided into stages on the basis of signs and symptoms combined with the result of imaging studies:

- i. Articular disk disorder with reduction
- ii. Articular disk disorder with intermittent locking
- iii. Articular disk disorder without reduction (closed lock).

Articular disk disorder with reduction (clicking joint)

It occurs due to the loosening of articular disk as it tends to elongate or tear or restrain the ligaments and has displaced from its original position on top of the condyle. Usually, pain is during mandibular movements, and it is noticeable at the time of click.

Treatment

- a. Flat plane stabilization splints
- b. Anterior positioning appliances - introduced by Farrar, it creates an occlusal relationship that needs the mandible to be maintained in forward position.

Articular disk disorder without reduction (closed lock)

It occurs more frequently in patients with clicking joints which starts with the progression of intermittent brief locking and ends up in permanent locking. Opening of the mandibular is limited when there is interference between the disk and the normal translation of the condyle along the glenoid fossa. There is also limited lateral movement along with pain.

Treatment

Non-surgical

- a) Manual manipulation
- b) Exercise program
- c) Flat plane occlusal stabilization appliance
- d) Anti-inflammatory drugs.

Surgical

- a) Arthrocentesis
- b) Arthroscopy.

Posterior disk displacement (open lock)

During opening, the condyle slips over the anterior rim of the disk with the disk being caught and brought backward in the abnormal relation to the condyle when the mouth is closed. In this condition, there is sudden inability to bring the upper and lower teeth together in maximal occlusion. There are restricted lateral movements along with pain in the affected side, whereas there is no restriction of mouth opening.

Management

Recommended treatment for symptomatic articular disk disorder

- Splint therapy
- Manual manipulation and other form of physical therapy
- Anti-inflammatory drugs
- Arthrocentesis
- Arthroplasty
- Vertical Ramus osteotomy.^[2,3]

Degenerative joint disorder (osteoarthritis and hypertrophic arthritis)

It is primarily a disorder of articular cartilage and subchondral bone, with secondary inflammation of synovial membrane. It is related to aging and common in joint subjected to stress and strain. Osteoarthritis can take place at any age, although, as the age increases, the chances of osteoarthritis also increase. A study conducted on the age group of 73–75 years found that 70% of the subjects have radiographic proof of osteoarthritis. About 9.6% of men and 18% of women above the age of 60 years have symptomatic osteoarthritis.

Symptoms include inflammation joint effusions, clicking, snapping or unilateral pain over the condyle, crepitus, limited mouth opening, in certain cases there may be destruction of the disc.^[3,4]

Diagnosis

The diagnosis is started with a organized review of a history of the patient and detailed physical examination. This information should be included with preliminary radiographic evidence to conclude a differential diagnosis. Since the clinician has a differential diagnosis, the diagnosis may be confirmed through suitable imaging studies along with necessary clinical laboratory studies. This whole process of completing the different aspects is significant for the successful management of these patients.

Treatment

Non-pharmacologic

Patient education and self-management include counseling of the patient and education about the natural path of the disease. Modification in the activity consists of patient education on soft diet, avoiding extreme opening of the mouth and avoiding chewing gum along with modification of habits. The employ active and passive movement of the jaw, manual therapy techniques, rectification of posture of the body, and relaxation techniques should also be suggested. Dental procedures such as orthodontic treatment, rehabilitation of the mouth, and fixed partial denture must be avoided in the active phase of the disease. In this phase of the disease, reversible procedures and stabilization procedures must be carried out to present finest results.

Pharmacological

Pharmacological treatment modalities comprises of acetaminophen, cyclooxygenase-2 selective and non-selective oral NSAIDs, topical NSAIDs and capsaicin, intra-articular

injections of corticosteroids and hyaluronates, glucosamine and chondroitin sulphate for relief of the symptoms; glucosamine sulphate, chondroitin sulphate and diacerein are used for their structure modifying effects and utilization of opioid analgesics for the management of refractory pain. NSAIDs are tremendously helpful for treating patients with TMJ Osteoarthritis as they have a dual effect of reducing pain and reducing inflammation.^[4]

Conclusion

A patient suffering from TMDs can have symptoms, in any combination, which may consist of alteration and restriction in mandibular movement, pain in facial and preauricular muscle which may worsen with function, crepitation or clicking of the joint, unexplained tooth pain, and chronic daily headache. The first necessity for successful occlusal treatment is stable and comfortable TMJ. This understanding of the TMJ is the foundation to diagnosis and treatment of almost everything a dentist does.

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