

Information for Patients

Temporomandibular Disorders and Headache

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Key Points:

1. A temporomandibular disorder involves the chewing muscles, temporomandibular joint and connected structures.
2. The signs and symptoms of TMD are often transient and self-limiting. Simple and reversible treatments have to be preferred over irreversible procedures.
3. The goals of treatment for TMD are to decrease pain and to restore normal function.
4. Five basic treatment tools include a) patient education and self care, b) cognitive and behavioral intervention, c) pharmacologic management, d) physical medicine techniques, e) surgery.

Overview

Temporomandibular disorders (TMD) are a collective term embracing a number of clinical problems that involve the chewing muscles, the temporomandibular joint (TMJ) and associated structures, or both. This is also called Temporomandibular Pain Disorder Syndrome by at least some. The syndrome is described by pain and tenderness of the chewing muscles, joint sounds with jaw opening and limited jaw movement. Pain in the TMJ may occur in 1 in 10 of the population and TMD has been reported in nearly one-half of the US population. Work in this field has not specifically sorted headache from facial pain. In non-patient population studies, 3 out of 4 have at least one joint dysfunction sign (clicking, limited range of motion) and about 1 in 3 have at least one symptom (pain, pain on palpation). Out of those with a sign or symptom, fewer than 1 in 20 require treatment and even fewer have headache as the primary pain. Because both headache and TMD are so common they may be one and the same or separate entities. The TMJ and associated face and mouth structures should be considered as triggering or persisting factors for migraine. Scientific study has described the pathways and mechanisms for pain referral from the head to the temporomandibular joint and visa versa. Headache may result from temporomandibular structures or pain may be referred to the temporomandibular joint, secondary to a primary headache diagnosis. It is essential not to confuse the issue and suggest a cause and effect relationship because both are present or based on treatment responses. Longitudinal studies suggest that TMD is a disorder usually effecting females between 15 and 30. It is suggested the disorder is self limiting and takes about 7-10 years to resolve and rarely are TMD's a problem later in life. This is possibly due to the nature of the lining of the TMJ with its ability to remodel.

Classification Criteria by the International Classification of Headache Disorders²

Criteria exist for use by headache specialists to diagnose TMD created by the classification committee of the International Headache Society. TMD are listed as: Headache or facial pain attributed to temporomandibular joint (TMJ) disorder criteria:

- A. Recurrent pain in one or more regions of the head and/or face
- B. X-ray, MRI and/or bone scintigraphy demonstrate TMJ disorder
- C. Evidence that pain can be attributed to the TMD, based on at least one of:
 1. pain is precipitated by jaw movements and/or chewing of hard or tough food
 2. reduced range of or irregular jaw opening
 3. noise from one or both TMJs during jaw movements
 4. tenderness of the joint capsule(s) of one or both TMJs
- D. Headache resolves within 3 months, and does not recur, after successful treatment

Comment: Pain from the temporomandibular joint or related tissues is common. It is due to the so-called temporomandibular joint disorders (e.g., disk displacements, osteoarthritis, and joint hypermobility) or rheumatoid arthritis, and may be associated with myofascial pain and headache.

Etiology

It is not clear what triggers a TMD. Perhaps it is arthritis, or perhaps associated with trauma to the joint. This does not need to be a major trauma, as in a direct assault on the joint, but possible due to smaller traumas such as perpetual grinding or clenching of the teeth.

The TMJ is made up of two bones, the temporal bone and condyle, which are separated by a fibrous disk, and surrounded by a capsule. The TMJ is lined by fibrocartilage, which is cartilage largely composed of fibers like those in ordinary connective tissue. This gives the joint the tendency to remodel. Inflammation within the joint accounts for TMD pain and the dysfunction (abnormal movement) is due to a disk, condyle incoordination. When the disk, which separates the two bones making up the TMJ, slips forward a noise or clicking can be heard, as the condyle rides over the disk. This may progress to locking, where the mouth does not open more than 25 mm (normal 45mm). This is due to anterior movement of the disk where the condyle can't ride over the forward located disk. Imaging the TMJ with MRI can help identify the disk position; tomographic imaging is also very helpful in identifying degenerative changes and condyle movement. Muscle pain disorders may include spasm, myositis, muscle splinting and myofascial pain. The most frequent muscle disorder included in TMD classification is myofascial pain. Myofascial pain is described as dull and/or aching pain associated with the presence of trigger points (tender areas) in muscles, tendons or fascia. A trigger point is identified as a localized spot of tenderness in a palpable taut band of muscle, tendon or ligament, which when pushed replicates the pain sensation. These trigger points may be the hallmark of tension-type headache.

Treating headache by targeting TMD's

The goals of treatment for TMD are to decrease pain, and to restore normal function. Because the signs and symptoms of TMD can be transient and self-limiting, simple and reversible treatments have to be preferred over complicated and irreversible procedures. These goals may be achieved through a structured, time limited program, which addresses the physical disorder and the perpetuating factors. The five basic areas that should be considered are summarized below and include a) patient education and self care, b) cognitive and behavioral intervention, c) pharmacologic management, d) physical medicine techniques, and e) surgery.

Patient education and self care

Satisfactory management requires an explanation and reassurance. Persistent jaw joint noise may be interpreted as a sign of disease. Understanding that joint noise may occur in otherwise healthy joints may be difficult to accept. Likewise complaints of limited mouth opening and other signs of joint dysfunction must be interpreted and assessed in the context of age, gender and general health. You deserve realistic expectations regarding treatment outcome and must have reasonable goals. Simple modification of lifestyle and oral habits may be sufficient to alter symptom intensity.

Cognitive and behavioral intervention

Behavior modification programs are often accompanied by relaxation training, hypnosis or biofeedback. Muscle relaxation training techniques are varied, and the choice of technique will depend on the skill of the therapist and suitability of the patient. This approach has been shown to be generally effective in reducing or controlling muscle pain.

Pharmacologic management

Drugs are used in the management of TMD to control symptoms. These include anti-inflammatories (both steroidal and non steroidal), muscle relaxants and antidepressants and antiepileptic agents. The antidepressants and antiepileptic agents are used to help the body block pain signals.

Physical therapy

Physical therapy modalities provide a popular and safe approach to the management of TMD's. Treatment goals are generally based on physical rehabilitation of the

joint by reducing joint inflammation, restoring joint mobility and elimination of muscle pain through heat and stretching. Occlusal appliances have been the mainstay of dental therapies for TMD since Costen first published his report on jaw joint pain in 1934. Typically, occlusal appliances are made from rigid heat cured acrylic which covers the occlusal surfaces of either the upper or lower dentition. The potential benefits of occlusal appliance use have been attributed to removing strain from the joint surface, relaxation of masticatory muscles, and reduction or elimination of teeth clenching and grinding. However, these accepted mechanisms of action are largely unproven by research. A second appliance design called a repositioning device or splint is less commonly used. Its function is to reposition the mandible in a forward or protruded direction, theoretically to aid recovery of the inflamed discs tissues. These devices have significant risk of altering the bite, and therefore are discouraged in most situations. Currently the NTI (Nociceptive Trigeminal Inhibition Tension Suppression System (NTI-tss) is popular and, although these can be effective, negative or adverse events may outweigh their benefit including cases of aspiration into the lungs. Splint therapy is usually necessary and safe only during the day.

Occlusal therapy

The association between occlusion and TMD is one of the most controversial topics in dentistry. Malocclusion or misalignment of the teeth is often suggested to be a cause of headache in susceptible individuals. However, 'occlusal theories' are weakly supported by research. The malocclusions which are seen in adults are probably of little consequence, as skeletal adaptation has already occurred. However certain dental abnormalities such as missing posterior cross bite in the occlusion, excessive vertical or horizontal discrepancy between the upper and lower anterior teeth may contribute in a small way to the development of TMD.

Surgery

Given the self limiting nature of most TMD surgical intervention is rarely warranted. Joint injection with corticosteroid is frequently part of treatment programs but lacks literature support for its value. Authors have expressed concern regarding the potential for condylar damage due to repeated injection of corticosteroid. As a result, clinicians are urged to limit use of this modality for individual patients. Improvement of jaw mobility and reduced joint pain with irrigation (arthrocentesis) of the joint with lactated Ringer's solution or normal saline may occur. Arthroscopy is a more invasive approach than arthrocentesis but allows for direct viewing of the joint surfaces. Data exists for the usefulness in the restoration of mouth opening for both procedures. The use of open joint surgery is relatively rare but may be justified in cases where circumstances are extreme, and disability associated with joint disease impacts greatly on quality of life.

Conclusion

TMD are a collection of clinical entities that are often very painful and disabling. Yet, they are self limiting and usually respond to conservative therapy. Basic principals of management to reduce pain and restore range of motion will reduce disability and often contribute to reducing primary headache if it co exists.

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