

**TMD** (temporomandibular joint syndrome or temporomandibular joint disorder) includes many signs, symptoms, and conditions that affect the two joints of the jaw, their related articulation, cartilage (articular disc), connective tissue, multiple ligaments, bone, musculature (muscles of mastication), circulation, nervous intervention (mandibular branch of the trigeminal nerve) and surrounding structures. These highly innervated complicated joints function to allow jaw movements for chewing, speaking, and facial expressions. These disorders can all cause pain and limit the function of the joint. In fact, the second most common cause of facial pain relates to TMD (the first most common cause is toothache). For most pain in the area of the jaw joint or muscles is not a serious problem. Discomfort is occasional and temporary, often occurring in cycles. The pain can go away with little or no treatment. For others, significant long-term symptoms occur.

While no clear definition exists, two main classifications broadly divide TMD into 2 syndrome types:

- **Muscle-related TMD:** multiple causes; such as, clenching or grinding of teeth; but no apparent destructive changes to the joint
- **Joint-related TMD:** causes include dislocations of the joint; degenerative joint disorders; infections; systemic disease; genetic malformations; trauma; and neoplasia

Treatment and diagnosis can be challenging. Facial pain can be a symptom of many conditions, such as sinus or ear infections, various types of headaches, and facial neuralgias (nerve-related facial pain). Ruling out these problems first helps in identifying TMJ disorders. As many as 75% of people in the United States will have signs and symptoms consistent with TMD, however, only about 5-10% fulfill the criteria for a true diagnosis of TMD. It is necessary to rule out other known causes of pain. Often, problems with one joint can impact the opposite joint resulting in bilateral symptoms; additionally, both muscle related and joint related TMD can exist in the same patient. Irritated nerve pathways in any of the surrounding structures, as well as, from the muscles or joint itself, can spread pain signals accounting for a varied severity, chronicity, and location of pain in the skin, teeth, side of the head, and scalp. Pain and dysfunction can negatively affect a patient's life with important psychological and psychosocial aspects. A multidisciplinary approach to treatment may be necessary in difficult cases.

### **Muscle-related TMD**

The most common cause of pain, tenderness, and spasm of the muscles controlling the jaw is hyperactivity and dysfunction due to pathologic movements and activities or some degree and duration of malocclusion. Psychological factors also contribute to increased muscle tension and spasm resulting from jaw movements that are physical manifestations of psychological stress such as clenching or grinding, and habits that create strained jaw positions or movements.

### **Joint-related TMD**

The most common cause is disk displacement. The disc is the fibrocartilaginous structure (articular disc or meniscus) that provides the gliding surface for the upper protuberance of the lower jaw bone (condyle) against the concave fossa posteriorly and convex eminence anteriorly of the temporal bone of the skull. Anterior displacement of the posterior band of the disc during jaw opening can cause pain and/or popping or grating noises (crepitus). If the posterior band of the disc returns to normal position before the completion of jaw opening, it is called "anterior displacement with reduction". It must be emphasized that, the presence of pops and clicks during anterior displacement with reduction does not necessarily denote pathology. There is no scientific proof that sounds—such as clicking—in the jaw joint lead to serious problems. In fact, jaw sounds are common in the general population. Jaw noises alone, without pain or limited jaw movement, do not indicate a TMJ disorder and do not warrant treatment.

When the posterior band of the disc remains displaced anteriorly at all times during jaw movement, it is called "anterior displacement without reduction". Spasm of the muscles of mastication may occur secondarily; the jaw may deviate to the side of the pathology; full jaw opening may be impossible, and locking can occur.

The other causes of joint-related TMD are diseases such as degenerative joint disease, rheumatoid arthritis, ankylosis, dislocations, infections, and neoplasia.

## **Incidence and distribution**

TMD primarily affects women 4:1 over men, especially Caucasian women 20-40 years of age. Approximately 10 million people have TMD, and about 25% of the population will have symptoms at some point in their lives. Some patients exhibit acute symptoms that will last several weeks, while others have chronic symptoms that persist even with extensive therapy. Most patient's symptoms eventually resolve, although some have recurrent episodes with periods of remission.

## **Signs and Symptoms**

Pain, particularly in the chewing muscles and/or jaw joint, is the most common symptom. Other symptoms may include:

- radiating pain in the face, jaw, or neck
- jaw muscle stiffness
- limited movement or locking of the jaw
- painful clicking, popping or grating in the jaw joint when opening or closing the mouth
- a change in the way the upper and lower teeth fit together

## **TMD Treatment**

Because more studies are needed on the safety and effectiveness of most treatments for jaw joint and muscle disorders, experts strongly recommend using the most conservative, reversible treatments possible. Conservative treatments do not invade the tissues of the face, jaw, or joint, or involve surgery. Reversible treatments do not cause permanent changes in the structure or position of the jaw or teeth. Even when TMJ disorders have become persistent, most patients still do not need aggressive types of treatment.

### **Conservative Treatments**

Because the most common jaw joint and muscle problems are temporary and do not get worse, simple treatment may be all that is necessary to relieve discomfort. The conservative, reversible treatments described below are useful for temporary relief of pain – they are not cures for TMD.

#### **Self-Care Practices**

There are steps you can take that may be helpful in easing symptoms, such as:

- eating soft foods
- applying ice packs
- avoiding extreme jaw movements (such as wide yawning, loud singing, and gum chewing),
- learning techniques for relaxing and reducing stress
- practicing gentle jaw stretching and relaxing exercises that may help increase jaw movement. Your health care provider or a physical therapist can recommend exercises if appropriate for your particular condition. See **conservative TMD exercises**.

#### **Pain Medications**

For many people with TMJ disorders, short-term use of over-the-counter pain medicines or nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, may provide temporary relief from jaw discomfort. Botox is currently not approved by the FDA for use in TMJ disorders.

#### **Stabilization Splints**

Your dentist may recommend an oral appliance, also called a stabilization splint or bite guard, a plastic guard that fits over the upper or lower teeth. Stabilization splints are the most widely used treatments for TMD. Studies of their effectiveness in providing pain relief, however, have been inconclusive. It should be used only for a short time and should not cause permanent changes in the bite. If a splint causes or increases pain, or affects your bite, stop using it and see your health care provider. If symptoms continue over time or worsen, tell your doctor.

**Irreversible Treatments**

Irreversible treatments that have not been proven to be effective – and may make the problem worse – include orthodontics to change the bite; crown and bridge work to balance the bite; grinding down teeth to bring the bite into balance, called “occlusal adjustment”; and repositioning splints, also called orthotics, which permanently alter the bite.

**Surgery**

Treatments, such as surgical procedures, invade the tissues. Surgical treatments are controversial, often irreversible, and should be avoided where possible. There have been no long-term clinical trials to study the safety and effectiveness of surgical treatments for TMJ disorders. Nor are there standards to identify people who would most likely benefit from surgery. Failure to respond to conservative treatments does not automatically mean that surgery is necessary.

**Implants**

Replacement of jaw joints with artificial implants may cause severe pain and permanent jaw damage. Some of these devices may fail to function properly or may break apart in the jaw over time. Patients who have had previous temporomandibular joint surgery, should be very cautious about considering additional operations. Persons undergoing multiple surgeries on the jaw joint generally have a poor outlook for normal, pain-free joint function. Before undergoing any surgery on the jaw joint, it is extremely important to get other independent opinions and to fully understand the risks.

*NIH: National Institute of Dental and Craniofacial Research NIH Publication No. 17-3487 September 2017*

*Medscape July 08, 2016*

*Medscape February 22, 2017*