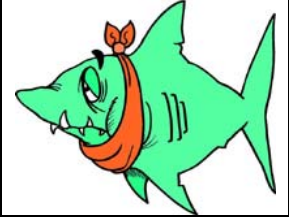


Temporomandibular Disorder (TMD)



In this final article discussing Repetitive Strain Injuries and associated disorders, we describe Temporomandibular Disorder (TMD). This disorder, also referred to as Temporomandibular Joint Disorder, causes pain in the area of the jaw and/or associated muscles. Each time someone experiencing TMD tries to swallow, yawn, talk, or chew, they experience either sharp, searing pain, or they may feel a dull constant pain. Often there are muscle spasms. Popping, clicking, or grinding sounds may occur in the jaws and occasionally the jaw may lock in the open or closed position. Pain in the ear is common, which is why many people believe they have an ear infection when they might have TMD.^{1,2,3,4}

Problems in treatment arise from the physician's inability to accurately diagnose the disorder since it may involve the muscles, the joint itself, or both.⁵ In addition, TMD usually involves many factors, such as hormonal, micro and macro traumas, emotional distress, poor diet, etc.¹⁰ Diagnosis has become more accurate in the past few years, however. In many cases, the problem resolves itself within a few weeks without treatment, since stress-related muscle tension is often the culprit. When the stressful situation passes, the muscles relax and the pain is alleviated.^{2,3} Self-treatment for mild cases is often quite effective.

If problems persist for more than a few weeks, it is a good idea to seek treatment. Start by visiting your physician to rule out other causes of the pain (such as infection). Both dentists and otolaryngologists are able to deal with the problems associated with TMD, so the physician is likely to refer you to one of these professionals. Please note: bite adjustment, such as occlusal balancing or orthodontia, has not proven successful in treating TMD, though it is unfortunately still advised by many dentists.¹⁰ It is invasive and irreversible.

Harry Hatasaka, DDS, MSD, in Palo Alto, is an excellent resource, as is the myofascial release therapist who works with him. His contact information is listed on the Therapeutic Resources page of the under Psychiatrists and other MD's.

Anatomy and Symptoms

There are muscles around your jaw that contract and relax to move the jaw joint open and closed. Normally these muscles work in harmony with the other parts of your jaw. The temporomandibular joint is a ball-and-socket type joint. The mandible is your lower jaw, which has a round end, called the condyle. The condyle moves in the socket (fossa) of the temporal bone. Between the condyle and the fossa is a disk (meniscus) of fibrous tissue which serves to cushion the movement within the Temporomandibular Joint (TMJ) when the jaw moves.^{8,9} This is illustrated in the figure below.

The TMJ is susceptible to all the conditions that affect other joints of the body including overuse, arthritis, dislocations, and developmental anomalies.⁵ 90% of the people seeking treatment for TMD are women of childbearing age.⁴ There are several potential theories as to why women are more susceptible, but there is no conclusive research to explain it.

Problems with the TMD can involve the muscles, the joint, or a combination of both. The (trigeminal) nerve that is associated with the TMJ branches to the eyes and other areas of the head. This is why there is often referred pain in other areas when TMJ problems arise, including headaches, eye pain, sinus pressure, ear and dental pain.⁵ Each branch of this nerve contains two types of fibers; those which transmit pain quickly (myelinated) and smaller fibers which are more susceptible to chronic dull pain and pressure (nonmyelinated). This explains why there may be different pain sensations associated with TMD.⁵

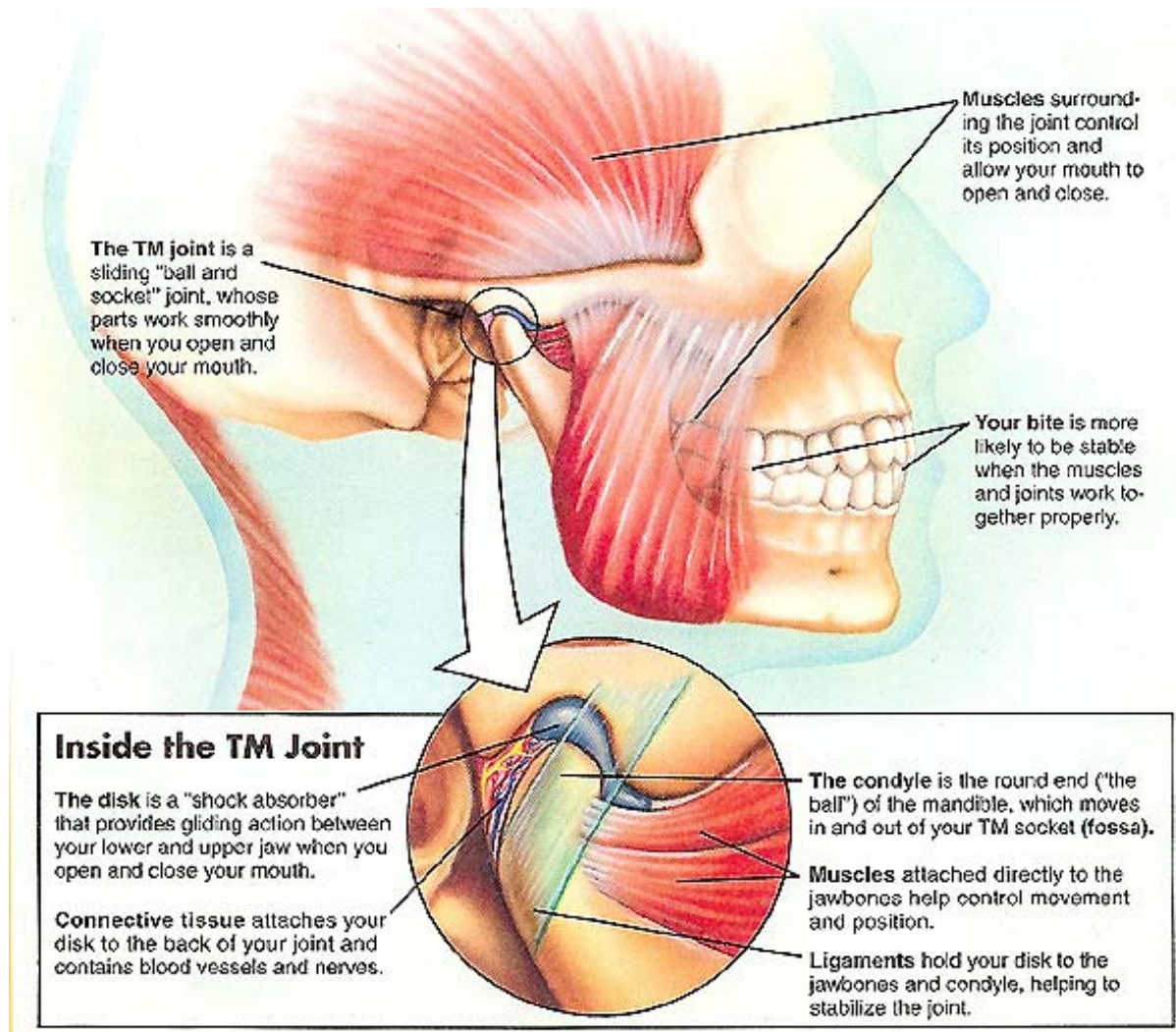


Illustration from Reference 8: Krames

Myofascial disorders

Muscular and connective tissue disorders are the most common cause of TMD.^{1,6,10} Psychological and psychosocial factors play a large part in these disorders.^{1,3,5,6} Stress is a major contributor in many cases. Clenching and grinding of the teeth causing muscle tension and force on the teeth and jaw joint often go away once stress is reduced.² In many cases, muscle tension is primarily located in the neck and shoulders which causes pain in the TMJ.⁷ 75% of orofacial pain is referred by trigger points from the shoulder and neck muscles.¹⁰ Habitual gum chewing causes problems of overuse strain.

There are at least six recognized disorders of the head and neck involving acute inflammation of the muscle and connective tissue resulting from overuse, infection, trauma, and muscle spasm.⁵

The lymphatic system is one of the most overlooked systems in the body, according to Harry Hatasaka, DDS.¹⁰ The lymphatic system traps and disposes of "garbage", including lactic acid, other muscle metabolites, dead bacteria and viruses in the body. Grinding of the teeth is one of the many symptoms sometimes associated with poor lymphatic drainage.¹¹ The lymph system has two drainage points, both located in the thoracic area in the front of the neck. Since the lymph system doesn't have any way to move in the body, it is dependent on muscle contraction to move it through the one-way duct system. So, exercise of the large muscles is very important to maintaining a healthy lymph system.¹¹ Tensed and contracted muscles, especially in the neck and shoulder region, can slow or stop the flow of lymph entirely, affecting large portions of the body.¹¹

Treatment

There are four phases to treatment of myofascial pain. Phase 1 is effective for about 50% of the cases. Phase 2 is effective for another 25% of cases. Phase 3 is effective for another 15% of cases. 10% of cases require Phase 4 treatment.

Phase 1.

- Education about the causes of muscle fatigue and spasm
- Increase awareness of clenching and grinding behavior^{5,8}
- Temporary soft diet to relax muscles^{5,8}
- Avoid gum chewing^{5,8}
- Non-steroidal anti-inflammatory (eg. aspirin), opiates and muscle relaxers.^{5,9} Alternative muscle relaxants are 1,000 mg calcium citrate or 500 mg of magnesium glycinate, split into two doses, taken on a daily basis.⁶
- Ice packs alternating with moist heat^{1,8}
- Exercise (especially resistive rebounding or mini-trampoline) to stimulate the lymphatic system.¹¹
- Drink plenty of plain water. Hydration aids in optimal lymphatic drainage.¹¹ Plain water rather than other beverages, even coffee, tea, or juices, hydrates the body best.¹¹
- Breathing exercises with visualization and guided image therapy⁶
- Craniosacral work by a trained osteopath⁶
- Acupuncture for symptom relief⁶
- Muscle massage²

Phase 2.

- If phase I fails to resolve the problems, medications and soft diet are continued, but a splint (night guard) is added. The splint should be worn at night, but may also be required during some of the day to reduce clenching and grinding of the teeth. The splint may also improve the alignment of the upper and lower teeth.¹ It should not be worn continuously because the molars may become displaced.⁵

Phase 3.

- If phase 2 fails, physical therapy of the muscle groups and electrogalvanic stimulation or biofeedback will be added.

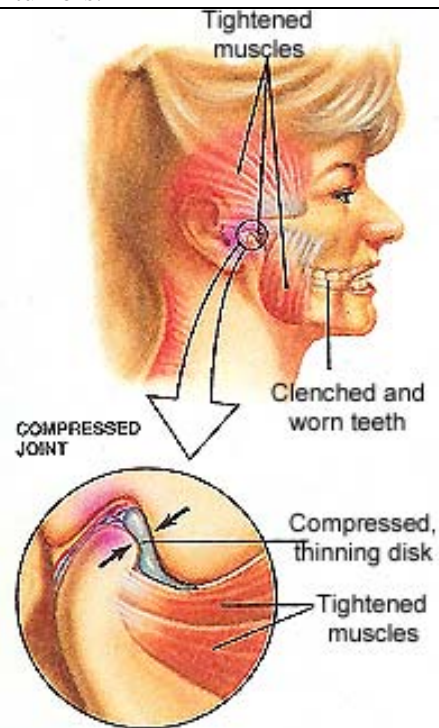
Phase 4.

- If phase 3 fails to eliminate problems, psychological counseling for stresses and/or trigger point injections are recommended.⁵
- Surgery in these cases has not been proven effective in long-term, controlled studies.⁴

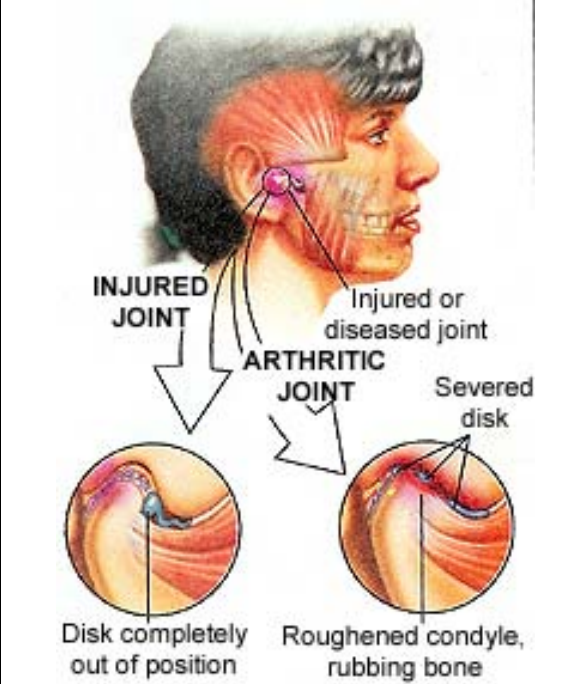
Joint disorders

The second most common cause of persistent head and neck pain is problems with the joint itself.⁵ These disorders involve internal derangements of the joint, degenerative joint disease, and inflammation of the joint. It is difficult to distinguish joint disorders from muscle disorders because the symptoms are often similar. Clicking or popping of the jaw, or locking in the open or closed position, is often associated with joint disorders.⁵ However, clicking and popping alone does not necessarily indicate a disorder. Magnetic resonance imaging (MRI) produces detailed images of soft tissue revealing damage in disks or ligaments. CT or transcranial x-rays is useful to determine joint damage, fracture, deformities, or tumors.^{5,8}

The main problem in joint disorders is displacement of the disk of cartilage (meniscus) which served as a shock absorber within the ball and socket jaw joint.^{1,3,4,5,8} This disk can also be compressed in the case of clenching or grinding of the teeth (bruxism).



In advanced cases, the disk can be completely displaced leading to breaking up or severing of the disk, resulting in the bones rubbing together with no cushioning. This can be caused not only by bruxism, but by a blow to the jaw or other similar trauma injury. The popping sounds are caused by the condyle moving under the displaced disk.⁵



Treatment

Early treatment of joint disorders is similar to myofascial disorders. Soft diet, jaw rest, non-steroidal anti-inflammatories or opiates, and muscle relaxants may relieve the problems. If not, a splint may help reposition the condyle relative to the disk. The clicking/popping may not be eliminated, but it may be reduced.

If these measures do not work, arthroscopic or open surgical repair may be necessary.^{5,8} Arthroscopic surgery is used to remove scar tissue adhesions and loose bodies, and to reposition or repair the disk.^{5,8} In advanced cases, where the disk has been severed, an artificial meniscus may be necessary.^{5,8} In cases of congenital deformity or traumatic injury where the condyle is permanently disfigured, reconstructive surgery is necessary.⁵ Less than 1% of all TMJ disorders require surgery.⁵ Surgery is risky, irreversible, and not always successful.⁹ Artificial disks as well as arthroscopic surgery is not yet proven with long-term controlled research.⁹

Historically, bite (occlusal) correction including orthodontics, occlusal equilibration, and full mouth reconstruction have been used in the attempt to correct TMD. These invasive methods have not been proven successful, are irreversible, and have occasionally made problems more severe.^{9,10} For this reason, orthodontics, prosthetics, and oral surgery are not recommended except in a very few extreme cases where no other alternatives are possible.¹⁰ Repeat surgery generally results in making things even worse.¹⁰

This article and all of our articles are intended for your information and education. We are not experts in the diagnosis and treatment of specific medical or mental problems. When dealing with a severe problem, please consult with a healthcare or mental health professional and research the alternatives available for your particular diagnosis prior to embarking on a treatment plan. You are ultimately responsible for your own health and treatment!

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