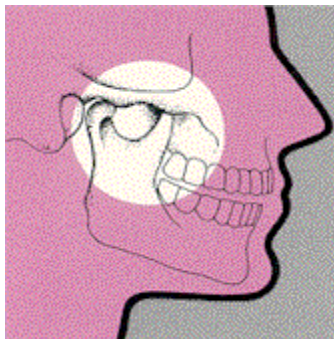


## HOW THE CHEWING MUSCLES AND JAW JOINTS WORK

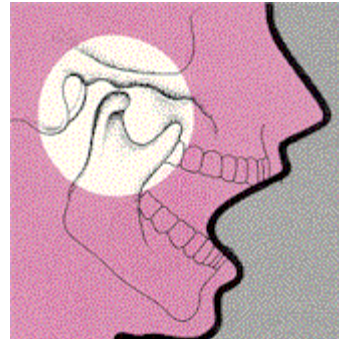
The structures that make it possible to open and close the mouth are very specialized and work together when you chew, speak and swallow. These structures include the muscles, ligaments, bones and joints of the jaw.

Five pairs of muscles on each side allow you to open and close your mouth and also control forward, backward, and side-to-side movements of the lower jaw. Also involved in these movements are the temporomandibular joints (TMJ). Each of these important joints has two sections, connected by a disk, that make possible the hinge and gliding actions needed to open the mouth widely (Fig. 1).

Figure 1



Position of TMJ with mouth closed



Position of TMJ with mouth open wide

Any problem that prevents this complex system of muscles, ligaments, bones, and joints from working together properly may result in a TMJ disorder.

### **SIGNS AND SYMPTOMS OF TMJ DISORDERS**

TMJ disorders have many signs and symptoms. Some of the most common include the following:

- Pain in or around the ear. This pain often spreads to the face.
- Tenderness of the jaw muscles.
- Clicking/popping noises when one opens or closes the mouth.
- Malocclusion
- Difficulty in opening one's mouth.
- Jaws that get stuck, lock, or go out.
- Pain brought on by yawning, chewing, or opening the mouth widely.
- Certain types of headaches or neck aches.

Your health care professional can determine the cause of your symptoms by conducting a series of diagnostic tests. These may include a complete medical history, a clinical examination, X-rays, and / or casts of your teeth.

## CAUSES OF TMJ DISORDERS

TMJ disorders often result when the chewing muscles and the temporomandibular joint do not work together correctly. When this occurs, the muscles often cramp. This spasm can then become part of a cycle that results in tissue damage, pain and muscle tenderness (Fig. 2).

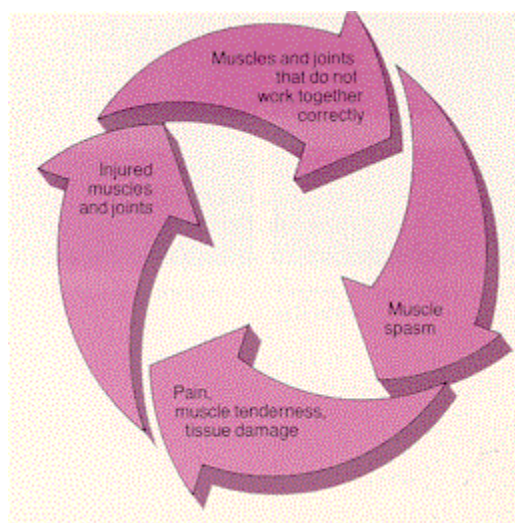


Figure 2 - Cycle of symptoms involved in TMJ disorders

Although accidents such as injuries to the jaw, head or neck, or diseases such as arthritis, may result in some TMJ problems, factors relating to the teeth and bite are also believed to be common causes of TMJ disorders.

Among these factors are the following:

1. Oral habits such as clenching the teeth or grinding the teeth. These habits can tire the muscles and cause them to go into spasm. The spasm causes pain, which in turn causes more spasm. The end result of this spasm-pain-spasm cycle may eventually be a TMJ disorder. Many people unconsciously "clench" their teeth during the day, often in response to unperceived environmental stressors.
2. Problems in the way the teeth fit together or bite. Improperly aligned teeth can sometimes place the chewing muscles under stress and cause them to go into spasm, thus setting off the harmful cycle described above.
3. Oral habits and problems with the bite often work together to cause TMJ disorders.

Example 1: Paula is under a great deal of pressure from work. She develops a habit of grinding her teeth while sleeping. This causes a muscle spasm and, eventually, pain and tenderness in her jaw muscles. Because of these problems, a slight change in the position of Paula's jaw occurs, and her teeth no longer fit together correctly. She develops a new chewing pattern and this increases the muscle spasm.

Example 2: Ever since he was a boy, David's teeth have not fit together correctly when his mouth is closed. This never seemed to be much of a problem for him, but now his bad bite triggers teeth clenching and causes his chewing muscles to function incorrectly. A muscle spasm occurs, and pain limits the normal range of David's jaw movements. As a result, David's chewing pattern changes and this contributes to his TMJ symptoms.

## TREATMENT FOR TMJ DISORDERS

Since the teeth, chewing muscles and temporomandibular joints all can be involved in a TMJ disorder, treatments vary. Your health care professional will decide what type of treatment is needed for your particular problem. Often, treatment will involve a series of phases. This step-by-step plan is in your best interest because only minor corrective treatment may be needed. If pain and other symptoms persist, a more involved treatment, such as changing the way your teeth fit together, or even surgery, may be needed. However, surgery is recommended only when a precise cause of the disorder has been pinpointed and usually should not be undertaken until more conservative treatments of the disorder have been tried first.

Some common methods of treating TMJ disorders are listed below:

1. Elimination of Spasms and Pain - This can be done by applying moist heat to the face, receiving manual therapies to the muscles, ligaments, and joints from a health care professional, and eating soft, non-chewy foods. These are especially helpful for acutely painful flares. Bite plates or occlusal (bite) splints can also be made. This treatment helps to eliminate the harmful effects of clenching or grinding the teeth. Bite guards/splints are more helpful over time to prevent acute flares.
2. Counseling or Biofeedback/Relaxation Training - Many times counseling is used along with other forms of treatment. If emotional stress is the factor that causes clenching or grinding of the teeth, that stress should be reduced or eliminated. Biofeedback, a relaxation technique that teaches people to control tension throughout various parts of the body with the aid of an electronic monitoring device, can also be helpful in reducing muscle tension in the jaw. Such mind/body techniques as the Alexander Method can be helpful in muscle re-education.

3. Correcting the Way the Teeth Fit Together - If your bite is incorrect or uneven, it can be adjusted by selective grinding of the teeth. Orthodontic appliances (braces) and other dental procedures may also be used to reduce problems caused by improperly aligned teeth.
4. Surgery - If muscle spasms have occurred for long periods, the TMJ itself may become injured or arthritic. In addition the bones and soft tissues of the TMJ may slip out of normal position because of trauma such as a blow to the head, or some other cause. Occasionally, in cases such as these, surgery may be needed to correct the TMJ problem.

Your dentist and other health professionals who provide treatment for TMJ disorders care about your health and comfort. Follow the recommendations they give you and discuss with them any concerns you may have. Remember, in many cases the pain, headaches, and other symptoms associated with TMJ disorders can be successfully treated.

**Source:**

"TM - Temporomandibular Disorders", printed by American Dental Association, Bureau of Health Education and Audiovisual Services, Chicago, IL, 1985.  
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