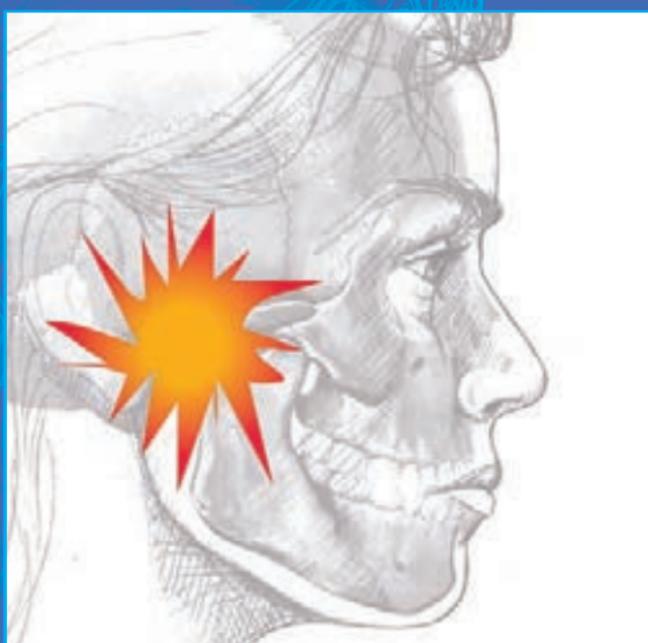


T M J

DISORDERS



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
National Institutes of Health

## CONTENTS

- 2 WHAT IS THE TEMPOROMANDIBULAR JOINT?
- 4 WHAT ARE TMJ DISORDERS?
- 6 WHAT CAUSES TMJ DISORDERS?
- 7 WHAT ARE THE SIGNS AND SYMPTOMS?
- 8 HOW ARE TMJ DISORDERS DIAGNOSED?
- 9 HOW ARE TMJ DISORDERS TREATED?
- 14 IF YOU THINK YOU HAVE A TMJ DISORDER...
- 15 RESEARCH
- 16 HOPE FOR THE FUTURE

## **TMJ DISORDERS**

Temporomandibular joint and muscle disorders, commonly called “TMJ,” are a group of conditions that cause pain and dysfunction in the jaw joint and the muscles that control jaw movement. We don’t know for certain how many people have TMJ disorders, but some estimates suggest that over 10 million Americans are affected. The condition appears to be more common in women than men.

For most people, pain in the area of the jaw joint or muscles does not signal a serious problem. Generally, discomfort from these conditions is occasional and temporary, often occurring in cycles. The pain eventually goes away with little or no treatment. Some people, however, develop significant, long-term symptoms.

If you have questions about TMJ disorders, you are not alone. Researchers, too, are looking for answers to what causes these conditions and what the best treatments are. Until we have scientific evidence for safe and effective treatments, it’s important to avoid, when possible, procedures that can cause permanent changes in your bite or jaw. This booklet provides information you should know if you have been told by a dentist or physician that you have a TMJ disorder.



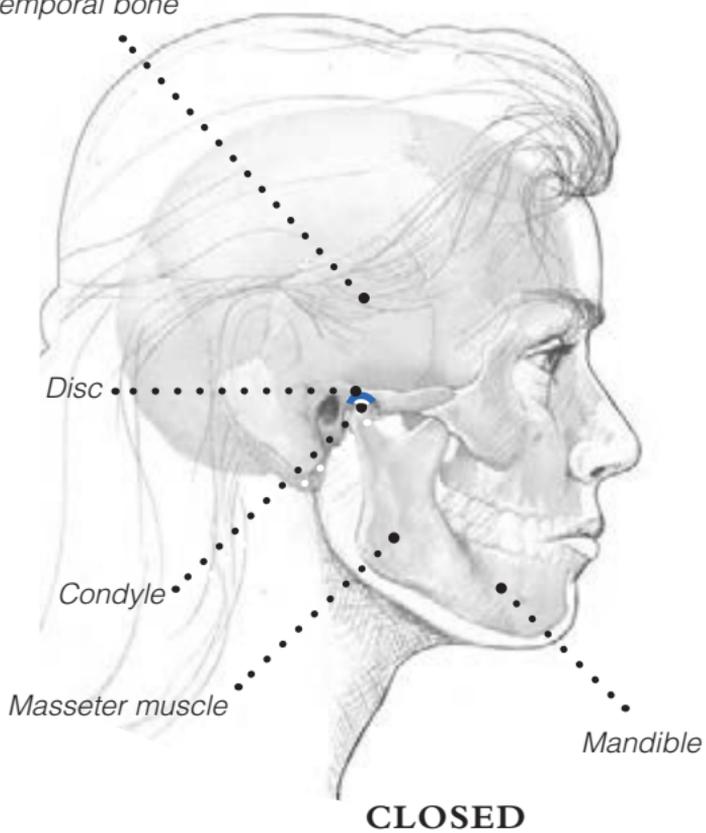
## **WHAT IS THE TEMPOROMANDIBULAR JOINT?**

The temporomandibular joint connects the lower jaw, called the mandible, to the bone at the side of the head—the temporal bone. If you place your fingers just in front of your ears and open your mouth, you can feel the joints. Because these joints are flexible, the jaw can move smoothly up and down and side to side, enabling us to talk, chew and yawn. Muscles attached to and surrounding the jaw joint control its position and movement.

When we open our mouths, the rounded ends of the lower jaw, called condyles, glide along the joint socket of the temporal bone. The condyles slide back to their original position when we close our mouths. To keep this motion smooth, a soft disc lies between the condyle and the temporal bone. This disc absorbs shocks to the jaw joint from chewing and other movements.

The temporomandibular joint is different from the body's other joints. The combination of hinge and sliding motions makes this joint among the most complicated in the body. Also, the tissues that make up the temporomandibular joint differ from other load-bearing joints, like the knee or hip. Because of its complex movement and unique makeup, the jaw joint and its controlling muscles can pose a tremendous challenge to both patients and health care providers when problems arise.

*Temporal muscle covering  
temporal bone*





## WHAT ARE TMJ DISORDERS?

Disorders of the jaw joint and chewing muscles—and how people respond to them—vary widely. Researchers generally agree that the conditions fall into three main categories:

- 1** Myofascial pain involves discomfort or pain in the muscles that control jaw function.
- 2** Internal derangement of the joint involves a displaced disc, dislocated jaw, or injury to the condyle.
- 3** Arthritis refers to a group of degenerative/inflammatory joint disorders that can affect the temporomandibular joint.

A person may have one or more of these conditions at the same time. Some people have other health problems that co-exist with TMJ disorders, such as chronic fatigue syndrome, sleep disturbances or fibromyalgia, a painful condition that affects muscles and other soft tissues throughout the body. These disorders share some common symptoms, which suggests that they may share similar underlying mechanisms of disease. However, it is not known whether they have a common cause.

Rheumatic disease, such as arthritis, may also affect the temporomandibular joint as a secondary condition. Rheumatic diseases refer to a large group of disorders that cause pain, inflammation, and stiffness in the joints, muscles, and bone. Arthritis and some TMJ disorders involve inflammation of the tissues that line the joints. The exact relationship between these conditions is not known.

How jaw joint and muscle disorders progress is not clear. Symptoms worsen and ease over time, but what causes these changes is not known. Most people have relatively mild forms of the disorder. Their symptoms improve significantly, or disappear spontaneously, within weeks or months. For others, the condition causes long-term, persistent, and debilitating pain.



## **WHAT CAUSES TMJ DISORDERS?**

Trauma to the jaw or temporomandibular joint plays a role in some TMJ disorders. But for most jaw joint and muscle problems, scientists don't know the causes. Because the condition is more common in women than in men, scientists are exploring a possible link between female hormones and TMJ disorders.

For many people, symptoms seem to start without obvious reason. Research disputes the popular belief that a bad bite or orthodontic braces can trigger TMJ disorders.

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.

## WHAT ARE THE SIGNS AND SYMPTOMS?

A variety of symptoms may be linked to TMJ disorders. Pain, particularly in the chewing muscles and/or jaw joint, is the most common symptom. Other likely symptoms 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.



## **HOW ARE TMJ DISORDERS DIAGNOSED?**

There is no widely accepted, standard test now available to correctly diagnose TMJ disorders. Because the exact causes and symptoms are not clear, identifying these disorders can be difficult and confusing. Currently, health care providers note the patient's description of symptoms, take a detailed medical and dental history, and examine problem areas, including the head, neck, face, and jaw. Imaging studies may also be recommended.

You may want to consult your doctor to rule out other known causes of pain. 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.

## HOW ARE TMJ DISORDERS TREATED?

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.

#### *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.

### *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. When necessary, your dentist or physician can prescribe stronger pain or anti-inflammatory medications, muscle relaxants, or anti-depressants to help ease symptoms.

### *Stabilization Splints*

Your physician or dentist may recommend an oral appliance, also called a stabilization splint or bite guard, which is a plastic guard that fits over the upper or lower teeth. Stabilization splints are the most widely used treatments for TMJ disorders. Studies of their effectiveness in providing pain relief, however, have been inconclusive. If a stabilization splint is recommended, 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.

The conservative, reversible treatments described are useful for temporary relief of pain – they are not cures for TMJ disorders. If symptoms continue over time, come back often, or worsen, tell your doctor.

### **Botox**

Botox® (botulinum toxin type A) is a drug made from the same bacterium that causes food poisoning. Used in small doses, Botox injections can actually help alleviate some health problems and have been approved by the Food and Drug Administration (FDA) for certain disorders. However, Botox is currently not approved by the FDA for use in TMJ disorders.

Results from recent clinical studies are inconclusive regarding the effectiveness of Botox for treatment of chronic TMJ disorders. Additional research is under way to learn how Botox specifically affects jaw muscles and their nerves. The findings will help determine if this drug may be useful in treating TMJ disorders.



## **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*

Other types of 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, for example, does not automatically mean that surgery is necessary. If surgery is recommended, be sure to have the doctor explain to you, in words you can understand, the reason for the treatment, the risks involved, and other types of treatment that may be available.

### *Implants*

Surgical 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.

If you have already had temporomandibular joint surgery, 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.

The U.S. Food and Drug Administration (FDA) monitors the safety and effectiveness of medical devices implanted in the body, including artificial jaw joint implants.

Patients and their health care providers can report serious problems with TMJ implants to the FDA through MedWatch at

<http://www.fda.gov/medwatch> or telephone toll-free at 1-800-332-1088.



## **IF YOU THINK YOU HAVE A TMJ DISORDER...**

Remember that for most people, discomfort from TMJ disorders will eventually go away on its own. Simple self-care practices are often effective in easing symptoms. If treatment is needed, it should be based on a reasonable diagnosis, be conservative and reversible, and be customized to your special needs. Avoid treatments that can cause permanent changes in the bite or jaw. If irreversible treatments are recommended, be sure to get a reliable, independent second opinion.

Because there is no certified specialty for TMJ disorders in either dentistry or medicine, finding the right care can be difficult. Look for a health care provider who understands musculoskeletal disorders (affecting muscle, bone and joints) and who is trained in treating pain conditions. Pain clinics in hospitals and universities are often a good source of advice, particularly when pain continues over time and interferes with daily life. Complex cases, often marked by prolonged, persistent and severe pain; jaw dysfunction; co-existing conditions; and diminished quality of life, likely require a team of experts from various fields, such as neurology, rheumatology, pain management and others, to diagnose and treat this condition.

## RESEARCH

The National Institute of Dental and Craniofacial Research (NIDCR), one of the National Institutes of Health (NIH), leads the federal research effort on temporomandibular joint and muscle disorders. In a landmark study, NIDCR is tracking healthy people over time to identify risk factors that contribute to the development of these conditions. Preliminary results from this study have identified a series of clinical, psychological, sensory, genetic and nervous system factors that may increase the risk of having chronic TMJ disorders. These new findings expand our scientific understanding of the onset and natural course of TMJ disorders and may lead to new diagnostic and treatment approaches.

Additionally, researchers are using data from a TMJ implant registry and repository that collected health information from patients who received implants and from those who had implants removed. Recent studies using the data have helped researchers plan for new pain medication trials and other research projects.

### **Pain Studies**

Because pain is the major symptom of these conditions, NIH scientists are conducting a wide range of studies to better understand the pain process, including:

- understanding the nature of facial pain in TMJ disorders and what it may hold in common with other pain conditions, such as headache and widespread muscle pain,



- exploring differences between men and women in how they respond to pain and to pain medications,
- pinpointing factors that lead to chronic or persistent jaw joint and muscle pain,
- examining the effects of stressors, such as noise, cold and physical stress, on pain symptoms in patients with TMJ disorders to learn how lifestyle adjustments can decrease pain,
- identifying medications, or combinations of medications and conservative treatments, that will provide effective chronic pain relief,
- investigating possible links between osteoarthritis and a history of orofacial pain.

## **Replacement Parts**

Research is also under way to grow human tissue in the laboratory to replace damaged cartilage in the jaw joint. Other studies are aimed at developing safer, more life-like materials to be used for repairing or replacing diseased temporomandibular joints, discs, and chewing muscles.

## **HOPE FOR THE FUTURE**

The challenges posed by TMJ disorders span the research spectrum, from causes to diagnosis through treatment and prevention. Researchers throughout the health sciences are working together not only to gain a better understanding of the temporomandibular joint and muscle disease process, but also to improve quality of life for people affected by these disorders.

TMJ DISORDERS is produced and distributed by the National Institute of Dental and Craniofacial Research in partnership with the Office of Research on Women's Health, components of the National Institutes of Health (NIH) in Bethesda, Maryland.

For additional copies of this pamphlet contact:

National Institute of Dental and Craniofacial Research  
National Oral Health Information Clearinghouse  
1 NOHIC Way  
Bethesda, MD 20892-3500  
1-866-232-4528  
<http://www.nidcr.nih.gov>

This publication is not copyrighted.  
Make as many photocopies as you need.



NIH Publication No. 13-3487

August 2013

*NIH...Turning Discovery Into Health®*