

# TMD



**This brochure is produced by the American Academy of  
Orofacial Pain**

**The American Academy of Orofacial Pain is an organization of health care professionals dedicated to alleviating pain and suffering through the promotion of excellence in education, research and patient care in the field of Orofacial Pain and associated disorders.**



**This brochure is intended to provide general information on temporomandibular disorders and is not a substitute for careful evaluation by a physician or orofacial pain expert.**

# INTRODUCTION

Temporomandibular disorders (TMD) are a common subgroup of orofacial pain disorders, often incorrectly referred to as “TMJ”. TMJ is the abbreviation used for the temporomandibular joint or jaw joint. There are two basic types of TMD: MYOGENOUS TMD (muscle generated pain) and ARTHROGENOUS TMD (jaw joint generated pain).

## UNDERSTANDING TM DISORDERS

TMD SYMPTOMS include pain or discomfort in or around the ear, jaw joint, and/or muscles of the jaw, face, temples and neck on one or both sides. The pain may arise suddenly and progress with fluctuating frequency and intensity over months to years. Clicking, popping, grating (crepitus), locking, limited opening or deviating jaw movement, chewing difficulties, and headache are also associated with TMD.

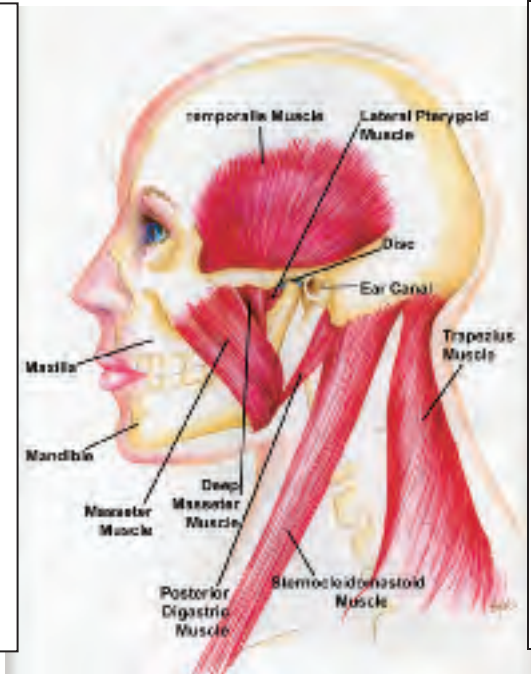
## TMD SYMPTOMS

HEADACHE

EARACHE

JAW PAIN

NECKACHE



TMJ NOISE

- \* Clicking
- \* Popping
- \* Grating

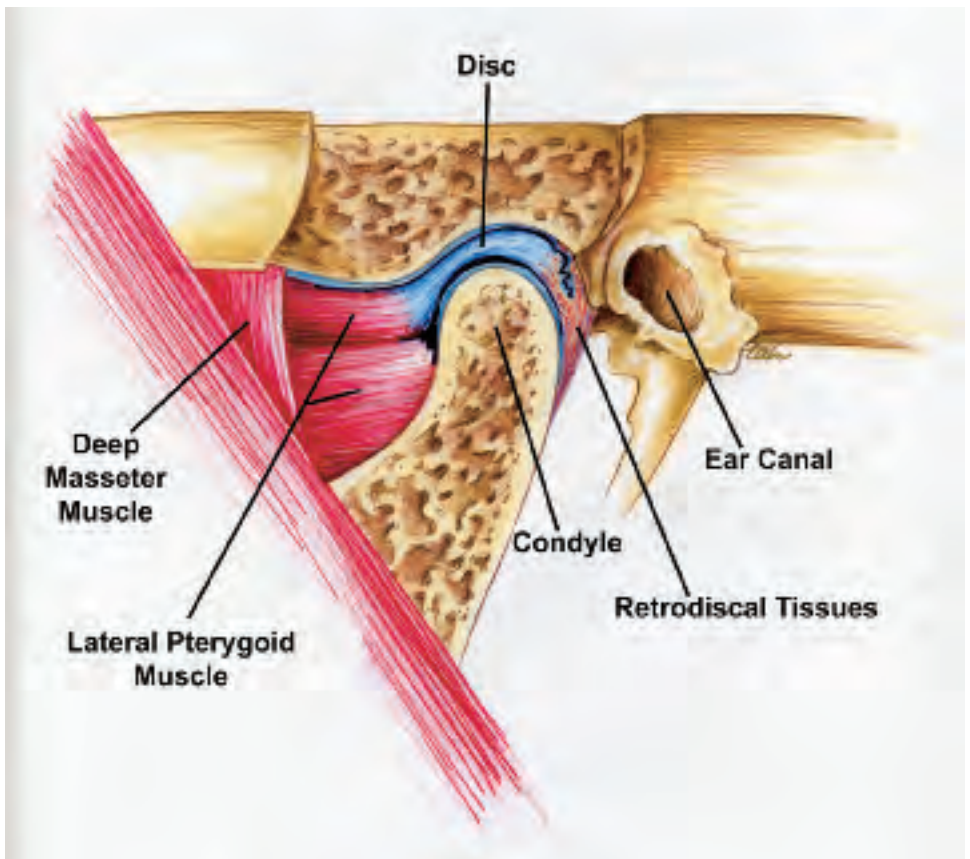
ABNORMAL  
JAW  
OPENING

- \* Catching
- \* Locking
- \* Limitation
- \* Deviation

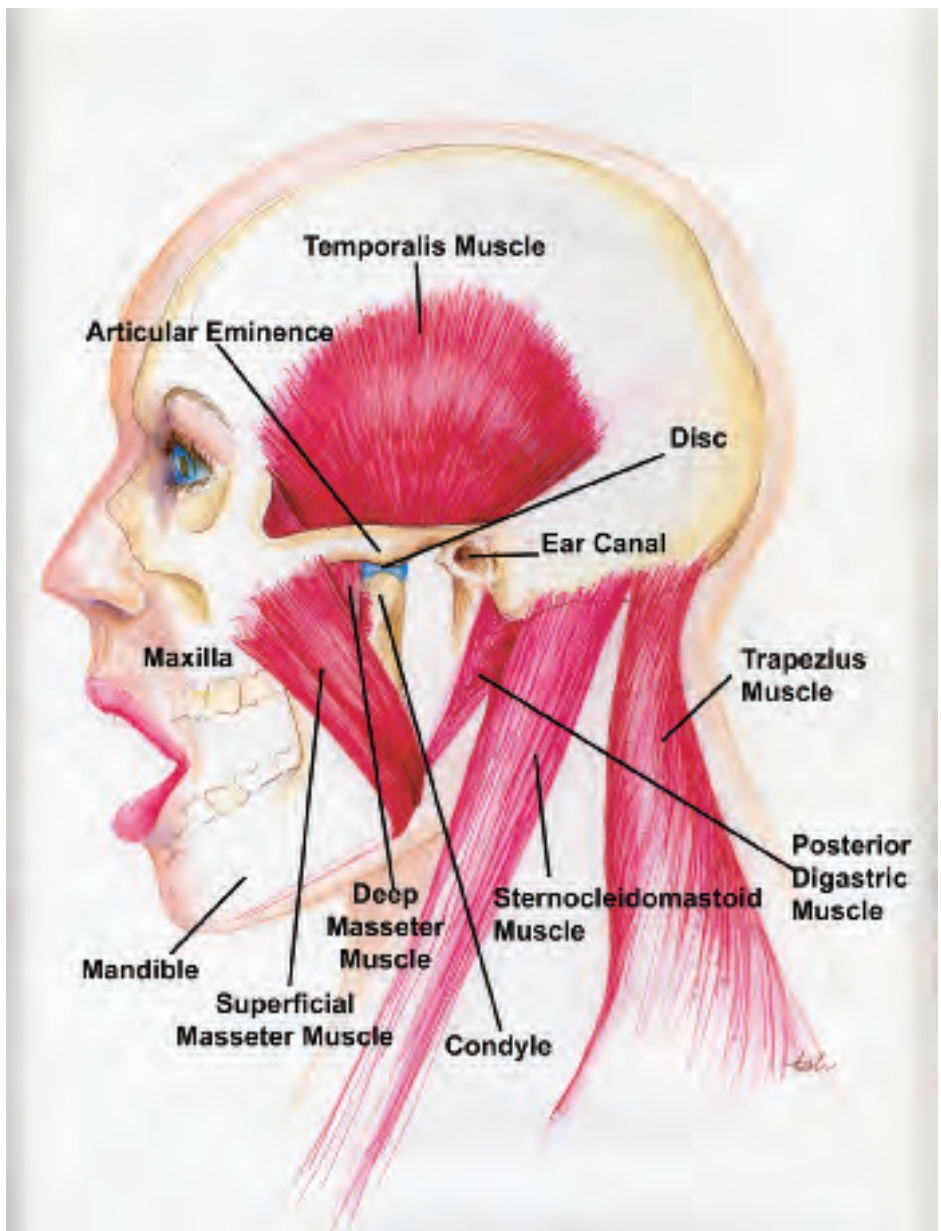
# TMJ ANATOMY

The temporomandibular joint or TMJ is a “loose-fitting”, rotating and sliding joint with a fibrocartilage covered, football shaped ball (condyle), fibrous pad (disc), fibrocartilage lined socket (fossa), ligaments, tendons, blood vessels and nerves. The disc functions as a moving shock absorber and stabilizer between the condyle and fossa. As the jaw opens, normally the condyle first rotates and then slides forward within the fossa with the disc between the condyle and the fossa.

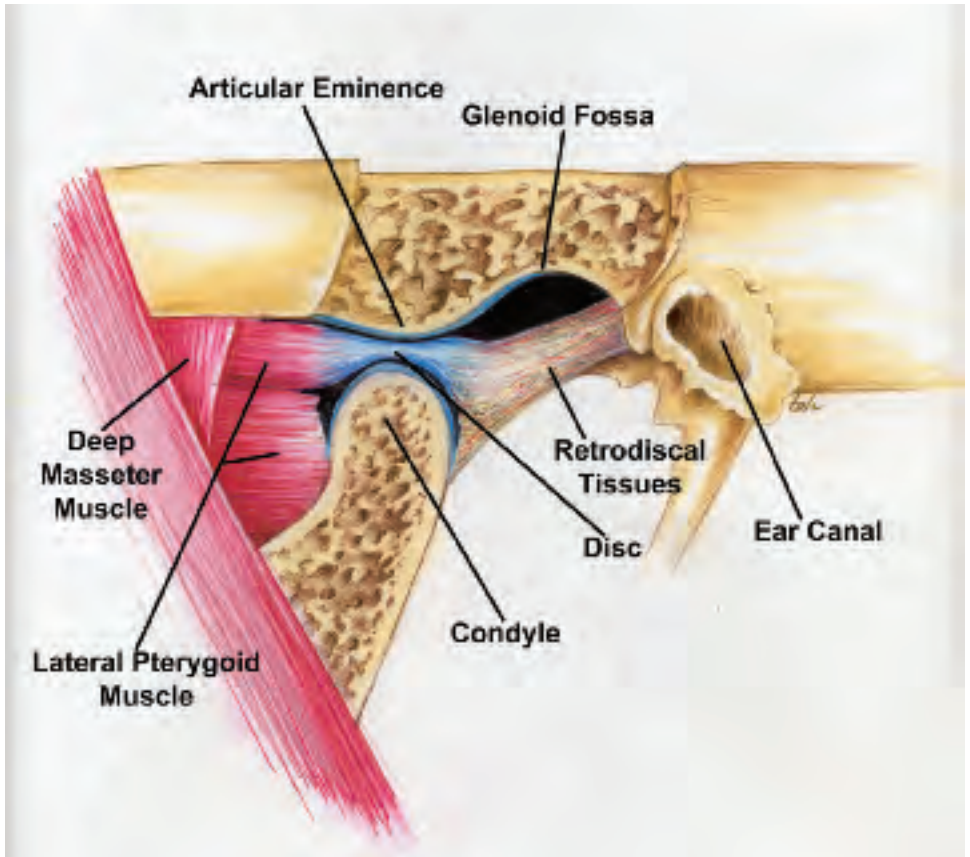
## NORMAL TMJ MOUTH CLOSED



## OPEN MOUTH



## NORMAL TMJ MOUTH OPEN

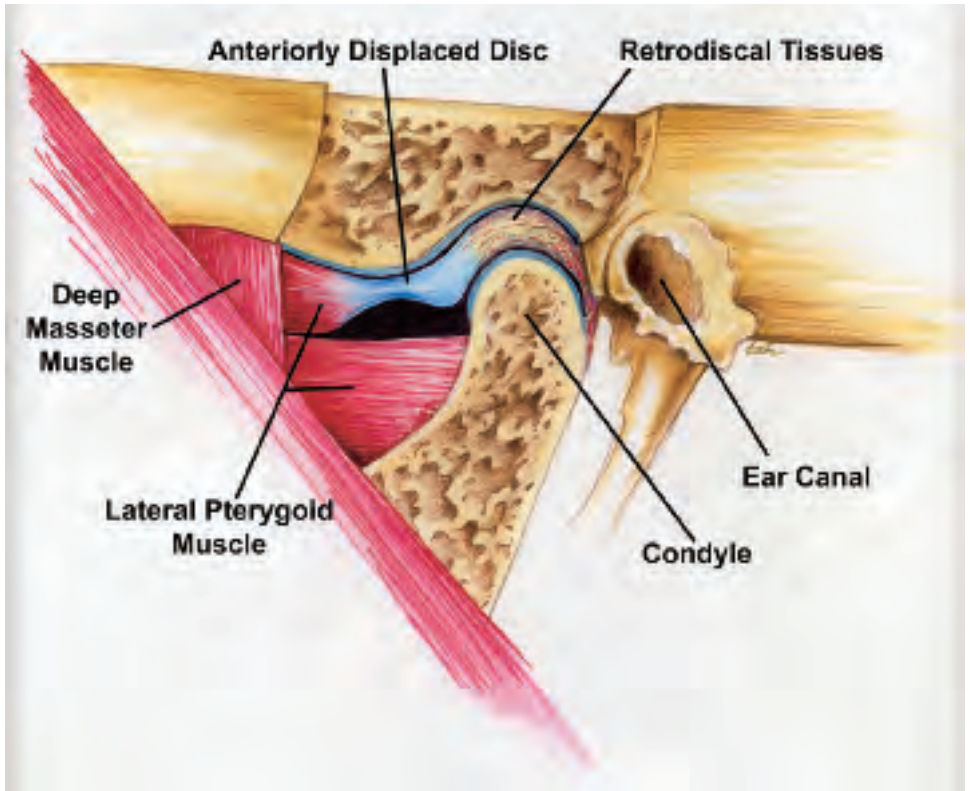


**THE MUSCLES OF MASTICATION** (jaw muscles) attach to the mandible (lower jaw), maxilla (upper jaw), skull and neck. The muscles of mastication open, close, protrude and laterally move the jaw, enabling you to talk, chew, and swallow. The supporting muscles of mastication (neck and shoulder girdle muscles) stabilize the skull on the neck during jaw function.

**MYOGENOUS TMD** (muscle related) usually results from overwork, fatigue or tension of the jaw and supporting muscles resulting in jaw ache, headache and sometimes neckache.



## **ABNORMAL TMJ ANTERIORLY DISPLACED DISC**



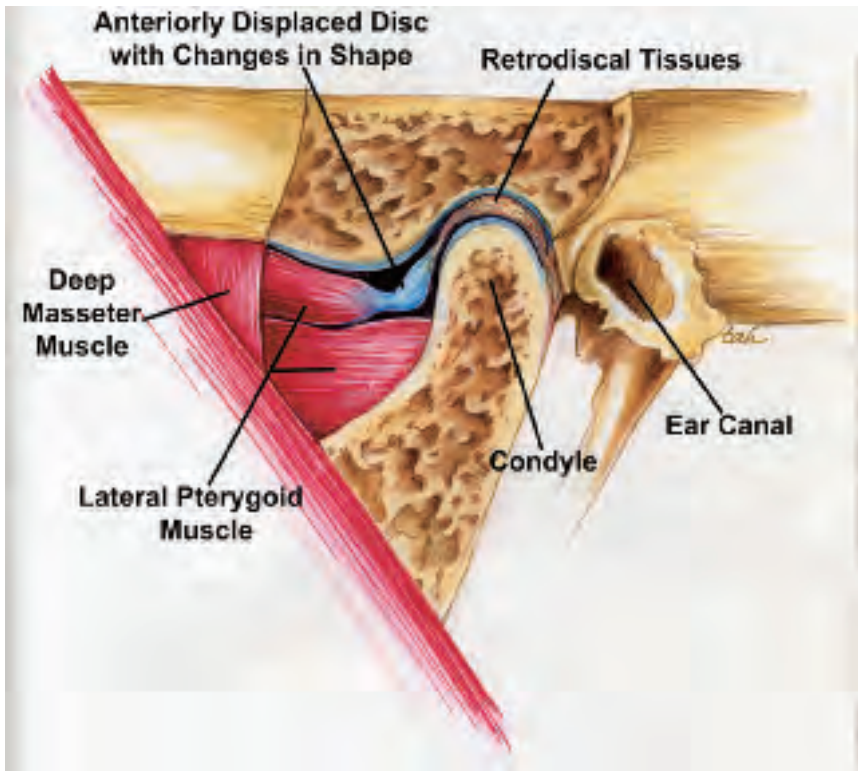
**ARTHROGENOUS TMD** (joint related) usually results from inflammation, disease or degeneration of the hard or soft tissues within the TMJ. Capsulitis and synovitis (inflammation), disc dislocation (also called internal derangement) and degenerative arthritis are the most common arthrogenous disorders of the TMJ.

## **CAUSES FOR TMD**

Causes for TMD are unclear as TMD usually involves more than a single symptom and rarely has a single cause. TMD is believed to result from several factors acting together, including jaw injuries (trauma), and joint disease (arthritis). Tooth clenching and grinding (bruxism) and head and neck muscle tension, while not scientifically proven to be a cause of

**TMD, may perpetuate TMD symptoms and often need to be controlled to reduce and manage TMD. It is important for the TMD patient to understand that the disorder can be chronic in nature and highly dependent upon multiple factors including emotional stability. Because there is no “quick fix” or immediate cure for TMD, the most successful and scientifically supported treatments focus on self-management and control of the aggravating factors.**

**ABNORMAL TMJ  
ANTERIORLY DISPLACED DISC  
WITH CHANGES IN SHAPE AND OTHER  
DEGENERATIVE CHANGES**

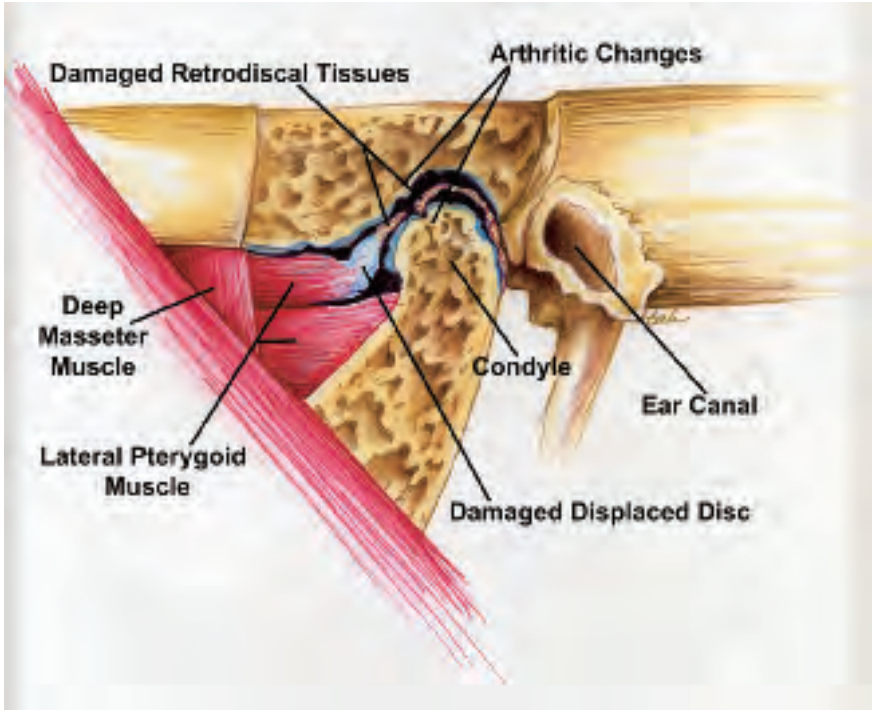


**FACTORS ASSOCIATED WITH TMD**

**TRAUMA:** Direct trauma to the jaws has been scientifically associated with the onset of TMD symptoms. Direct trauma to

the jaws can occur from a blow to the jaw, hyperextension (overstretching) of the jaw, and in some cases, compression of the jaw. Lengthy or forceful dental procedures, intubation for general anesthesia and surgical procedures of the mouth,

## TMJ ARTHRITIS



throat, and upper GI tract (esophagus and stomach) can traumatize the TMJs.

**ABNORMAL HABITS:** Habits such as tooth and jaw clenching, tooth grinding (bruxism), lip biting, fingernail biting, gum chewing, and abnormal posturing of the jaws are common and have not been scientifically proven to result in TMD. Jaw habits are often associated with TMD and may be contributing factors that perpetuate and aggravate ongoing TMD symptoms.

**OCCLUSION:** Dental occlusion refers to the way the teeth fit together or the “bite”. Historically, the dental profession has viewed malocclusion (abnormal bite) as a primary causative



**factor in TMD. Recent valid research studies have shown that malocclusion is usually not the cause of TMD except in a limited number of cases. There may be situations when the way the teeth fit together may play a contributing role in the initiation or progression of those limited situations. Each case needs to be individually evaluated by the orofacial pain doctor to determine a possible relationship.**

**PSYCHOLOGICAL FACTORS:** Many patients with TMD report the onset of jaw dysfunction symptoms or aggravation of preexisting TMD symptoms with increases in emotional stress or psychological imbalance such as depression or anxiety. Scientific studies indicate that many TMD patients experience levels of depression and anxiety that are higher than the non-TMD population. To date, it has not been established whether depression or anxiety is present prior to the onset of TMD and contributes to its cause, or whether the chronic pain associated with TMD leads to anxiety and depression. Many patients will increase their level of tooth clenching and grinding when they experience emotional stress, psychological imbalance or pain.

**DISEASES OF THE TMJs:** Several types of arthritis may develop in the TMJs like any other joint in the body. It is common for osteoarthritis to be present in the aging population. Many other diseases, such as Parkinson's disease, Myasthenia Gravis, strokes, and Amyotrophic Lateral Sclerosis (Lou Gehrig's disease), may lead to excessive or uncontrolled jaw muscle activity.

**OTHER FACTORS:** Abuse of drugs and the use of certain prescription medications can affect the central nervous system and muscles and contribute to TMD.

## **TMD EVALUATION**



# **SCREENING FOR TMD**

**Screening for TMD should be an essential part of routine dental and medical examinations. A brief TMD screening evaluation may include:**

**BRIEF HISTORY** of jaw pain, headache, neckache, noises in the TMJs, catching or locking of the jaws, injuries to the jaw, head, neck and prior TMD or orofacial pain treatment.

**A SCREENING EXAM** may include measurements of jaw opening and side-to-side movements, jaw deviation on opening, palpation (pressure applied with the fingers) of the TMJs, jaw, head and neck muscles to localize painful areas and identify joint noises. Evaluation of the gums, oral soft tissue and teeth, and making a record of disease, excessive tooth wear and general symmetry of the jaw, face and head may also be done. If significant findings for TMD are identified, a more comprehensive history and clinical examination should be conducted.

## **COMPREHENSIVE TMD EVALUATION**

**THE COMPREHENSIVE TMD EVALUATION may include:**

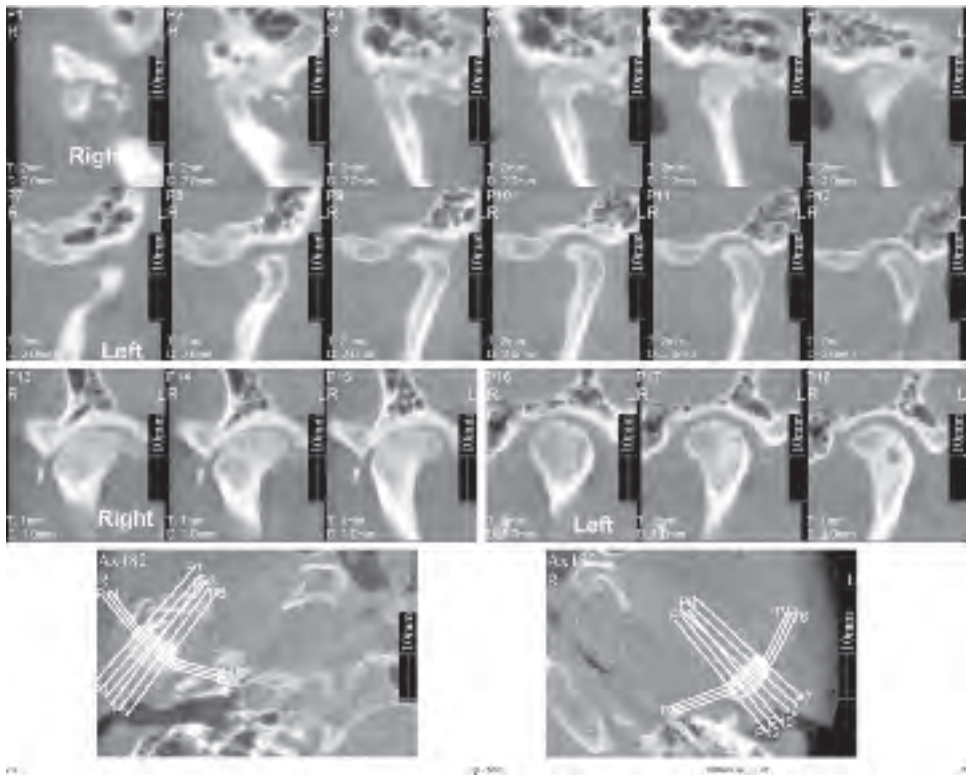
**COMPREHENSIVE HISTORY** of all jaw, head, and neck symptoms, medical history, dental history, personal history, family history and psychological history.

**COMPREHENSIVE PHYSICAL EXAMINATION** of the TMJs, cervical spine, muscles of the jaw, head and neck, neurological and neurovascular structures, teeth, gums, and oral hard and soft tissues.

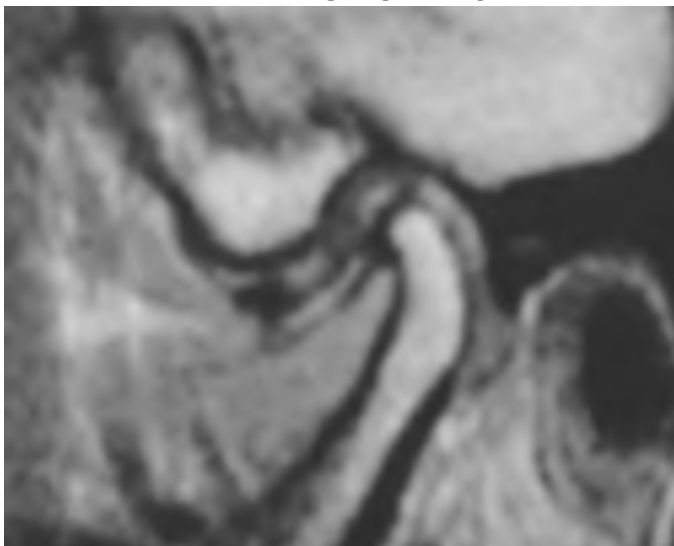
**PSYCHOLOGICAL EVALUATION** including a brief interview and testing when indicated.

**ADDITIONAL TESTS** including X-rays and diagnostic imaging, biopsies, blood tests, urinalysis, neurological tests and diagnostic injections, may be necessary.

## TOMOGRAPHIC IMAGES OF TMJS



## MRI IMAGE OF TMJ





## **MANAGEMENT OF TMD**

**Because there is no known “cure” for TMD, management of patients with TMD symptoms is similar to management of patients with other orthopedic or rheumatologic disorders. The goals of TMD management include decrease in pain, decrease in adverse pressure or “loading” on the jaw joints, restoration of function of the jaw and normal daily activities. These goals are best achieved by identifying all contributing factors and implementing a well defined management program to treat physical, emotional and psychological factors. The management options and sequence of treatment for TMD are consistent with other musculoskeletal disorders found in the body. As in many musculoskeletal conditions, the signs and symptoms of TMD may be temporary and self-limiting without serious long term effects. For these reasons, special effort should be made to avoid aggressive or nonreversible therapy such as surgery, extensive dental treatment or orthodontic treatment. Conservative management techniques such as behavior modification, physical therapy, medication, jaw exercise and orthopedic appliances (orthotics) have proven to be safe and effective in the majority of TMD cases. Most patients suffering from TMD achieve good long term relief with conservative (reversible) therapy. Scientific research demonstrates that over 50% of TMD patients treated with conservative management have few or no ongoing symptoms of TMD.**

## **PATIENT SELF-MANAGEMENT SHOULD INCLUDE**

**Limit jaw opening (yawning, etc.) to no more than 2 fingers width**

**Rest of the jaw by avoiding heavy chewing (gum, bagels, tough meat)**

**Avoid grinding and clenching of teeth by keeping the teeth slightly apart and the jaw relaxed**

**Avoid leaning on or sleeping on the jaw**

**Avoid tongue thrusting and chewing non-food items (fingernails, pens, pencils, etc.)**

**Avoid playing wind, brass and string musical instruments that stress, retrude or strain the jaw**

**Use cold or ice packs or moist heat compresses as directed by your doctor or therapist**

**Massage of the affected muscles**

**Perform gentle range-of-motion exercise of the jaw as directed by your doctor or therapist**

**Use of medications as directed by your doctor**

## **TREATMENT OPTIONS**

**OCCLUSAL ORTHOTIC:** It may be recommended that you wear an orthotic (also known as a splint, night guard, bite guard) that fits over either your upper or lower teeth. An orthotic has many different uses and can be worn either full time or part time, depending what your doctor determines is best for you. Generally, orthotics are used to keep the teeth apart, realign the jaw joints and help the jaw muscles relax. The specific design and adjustment of your orthotic will depend upon your condition, how it changes during the time you wear your orthotic, and your overall treatment plan.



**STRESS MANAGEMENT:** One treatment approach for your TMD problem is to learn to manage your daily stress. Your doctor may recommend several techniques to help you do this. They may include biofeedback, relaxation breathing, guided imagery, and sometimes referral to a therapist.



Example of an orthotic worn on the upper teeth



**PHYSICAL THERAPY:** Physical therapists are trained professionals who help rehabilitate all types of physical injuries. There are many different techniques that are helpful and the most common include jaw exercises, postural and ergonomic training, ultrasound, electrical stimulation, and mobilization. Your doctor and physical therapist will work together to formulate a plan for your treatment.

**OCCLUSAL CORRECTION:** Sometimes it is necessary to improve the way your teeth fit together. This can be accomplished in different ways.

Orthodontics, usually with braces, can move your teeth so they fit together better. In some cases, if the jaws themselves

are misaligned, the jaws are moved with a combination of orthodontics and oral surgery called orthognathic surgery.

Bite Reconstruction is accomplished through extensive dental work like crowns, bridges and, if indicated, implants. This is done to replace missing teeth or to change the size and shape of the teeth so they fit and function together in a more harmonious manner with the jaw joints and muscles.

Surgery is sometimes done to repair or reconstruct the joints when more conservative treatment has failed to improve comfort and function. While rarely needed, surgery can be performed to eliminate debris that accumulated in the joint, to repair damaged tissues and to even replace entire joints, similar to the replacement of other joints like knees, hips and shoulders.

## **CONCLUSION**

Extensive research is being conducted on the safety and effectiveness of TMD/orofacial pain treatments. Most researchers and clinicians strongly recommend reversible and conservative treatments for TMD. Even when TMD symptoms are long standing and severe, most TMD patients do not require invasive treatment. Treatments designed to permanently change the bite or reposition the jaw with orthodontics or dental reconstruction are not usually necessary and should be undertaken with great care.

If irreversible treatment (permanent change) for TMD or orofacial pain is contemplated, we recommend getting a reliable second opinion.

Specially trained dentists, physical therapists, psychologists and physicians are usually the best source for the proper diagnosis and management of TMD and Orofacial pain.

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To locate knowledgeable and experienced experts in orofacial pain, contact:

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**Notes:**