

TMD (Temporomandibular Disorders)

From the Office of Dr. Michael J. Guy 511A Lakeshore Drive, North Bay ON, P1A 2E3

During your comprehensive exam, we discover that you have problems with your bite, with jaw muscles, with your jaw joints, or all. You may suffer from what is known as Temporomandibular Disorder or TMD. TMD/Occlusal therapy is suggested as part of the initial work we do together.

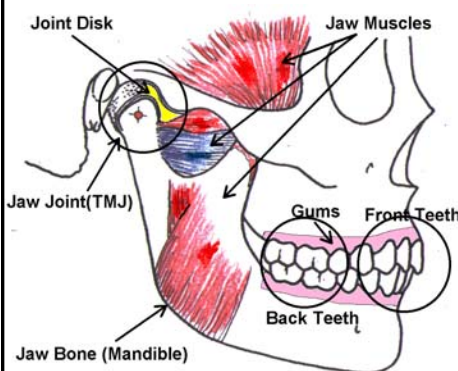
What Are Temporomandibular Disorders?

Temporomandibular disorders (TMD) are often called "TMJ" although this term TMJ refers only to the jaw joint themselves. TMD/TMJ describes a group of diseases that can involve the **Masticatory System** (see Diagram 1). TMDs are physical disorders arising from an imbalance in the delicate working relationship of the jaw and skull with the muscles that attach to and move the jaw as well as the nervous system associated with these systems. This imbalance results in muscle fatigue, spasm and/or joint dysfunction and even changes in the teeth, which in turn causes a variety of symptoms, unique for each person.

How Is It Caused?

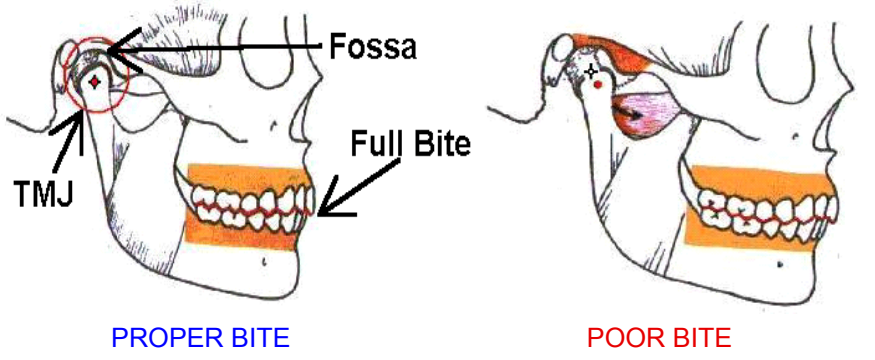
Trauma- Acute trauma to the jaws such as a car accident, a fall, a punch, etc. can cause damage to the muscles and/or joint. The acute

Diagram 1: Masticatory System



It is the chewing system, which includes your teeth, the periodontal support of the teeth, the temporomandibular joints (TMJs) that facilitates the movement of your lower jaw, and the muscles that actually move the jaw. Together they form a highly integrated, bio-mechanical system. They are so integrated, any problem in one area of the system, creating an imbalance, will most likely lead to problems in another area of the system.

Diagram 2: Proper Bite to Poor Bite



pain and loss of function is usually responsive to conservative treatment. Sometimes trauma to the joint can cause chronic damage which may eventually contribute to a TMD problem at a later time.

Bruxism- Bruxism refers to a non functional grinding and clenching of the teeth. Some do this while awake but more often it is done while sleeping. Most people grind their teeth while sleeping to some degree. For whatever reason some people do this very hard to the point where they wear the enamel from their teeth. This bruxing is done by the jaw muscles and by the morning they can be painful due to fatigue. This constant pressure also can damage the TMJs over time. Bruxism is the most common factor found in TMD.

Malocclusion- This term means "bad bite". Perhaps the best way to understand malocclusion is to understand what an *ideal* occlusion is.

It is the type of bite we refer to as a "minimal stress, minimal adaptation, least destructive" type of bite. It occurs when:

- your temporomandibular joint (TMJ) is seated fully into the socket (fossa), in a comfortable, relaxed position and when the muscles are relaxed – all of your teeth should touch simultaneously. (Note in diagram 1 on the good bite the red dot is in the middle of the cross and the teeth in a full bite)
- When you squeeze firmly from this relaxed position, there should be no "shifting" of either the jaw or individual teeth.

(Note in diagram 1 on the poor bite the jaw had to shift forward to achieve a full bite- the red dot is forward of the cross)

This harmony between the TMJs and the teeth is the most important requirement for a comfortable, stable bite. Any disharmony between the TMJs and the teeth requires the jaw muscles to hold the jaw joint out of its socket in order to completely close the teeth together which can lead to muscle fatigue and soreness.

Bad habits- The same habits of poor posture that lead to back, shoulder and neck problems can also contribute to TMD. Other habits such as leaning your chin on your hand, excessive gum chewing, pencil biting, etc can also lead TMD problems.

Emotion - Emotional stress often plays an integral role in the development of TMD. This occurs due to two basic reasons. Stress increases both the severity and duration of bruxism while asleep. Also, many will subconsciously clench and/or grind their teeth more while awake during times of stress. The other way stress contributes to TMD is that during times of stress your adaptability and pain threshold will go down. As a result you are more likely to experience symptoms of TMD if other factors already exist (bruxing, joint damage, etc.). Emotional conditions beyond daily life stress can contribute to TMD as well. Depression, anxiety disorders, and the like can often have TMD problems arise. These conditions are quite stressful and it is not hard to imagine why TMD would develop.

Various Health Problems- Certain diseases can cause or aggravate TMJ problems. such as rheumatoid arthritis or osteo-arthritis, Fibromyagia , etc

What Are The Symptoms?

Table 1 shows all the possible signs and symptoms of TMD.

**Table 1
Symptoms of TMD**

- Jaw muscle pain or soreness, more noticeable in the morning or afternoon
- Jaw muscle pain while chewing, biting, or yawning
- Earache without an infection, sometimes spreading into the face
- Aching on the side of the head and neck pain
- Tooth wear
- Tooth Sensitivity and pain
- Sensitive teeth without any signs of dental problems
- Breakdown- cracking and crazing, scooping defects at the neck, loosening, of teeth
- nerve damage
- Gum recession
- Bone defects around teeth
- Jaw-Joint Pain,
- Locking" of jaw in an open or closed position
- A clicking or grinding noise while opening and closing your mouth
- Difficulty opening and closing your mouth or restricted jaw movement
- A stiff jaw when eating, talking, or yawning

Bite and TMD Examination

Proper diagnosis is critical to make sure you receive treatment for your particular condition. We only recommend treatment after conducting a thorough health history, clinical exam, taking appropriate X-rays, and perhaps confirming the condition through other diagnostic tests.

History Questionnaire

We are looking to see if you have had previous trauma, surgery or any other treatments for a condition that may have been overlooked and TMJ diagnosis was not considered. We also look for a positive history of being treated for a TMJ disorder and whether it was handled effectively.

Jaw-Joint Examination

This determines if the jaw joints are healthy and functioning properly and includes physical tests on the TMJ such as:

- Palpation (pressing various areas),
- Doppler Auscultation (listening for sounds while the jaw moves). Doppler



can detect joint sounds (and therefore joint problems) in their early stages.

- Loading or joint compression tests (using a gentle technique called "Bilateral mandibular manipulation").

Range of Motion Measurements

The mandible has a normal range of motion that should be attainable in opening and closing. It also has a normal range of motion that should be attainable in sliding to the left and to the right. The mandible should also be able to opening and close in an up and down path that is straight without a deviation to the left or to the right. Ranges that fall below the norm are usually indicative of incoordinated muscle function but can also be representative of an internal joint problem.

Muscle Examination

Here we are palpating the muscles of mastication and associated muscles connecting to the mandible, skull, neck and back. Positive muscle soreness is a sign of fatigue and spasm

Study Models and Evaluation of your bite

This examination determines how the upper and lower teeth function (or malfunction) in relation to one another. We will take impressions (moulds of your teeth). The moulds are then attached to an articulator (jaw simulator) for further evaluation. This helps us to determine: The proper and/or improper alignment of the teeth and jaws, where the premature contacts are on your teeth that can cause fractured teeth or headaches, proper relationship of your teeth to the rest of your head and the excessive wear patterns on teeth

Costs For Examination

TMJ Exam, Treatment planning and consultation	01204	105.00
Mounted Diagnostic Casts, facebow, Occlusal records	04922	130.00

TMD Treatment

Treatment may be simple or require more steps for alleviating the condition, depending on the degree of severity. Some of these treatments include:

- Wearing a splint to eliminate the harmful effects of clenching or grinding the teeth, and a better positioning of the jaws
- Self-care- Eating soft foods, avoiding chewing gum, applying moist heat or ice
- Taking a non-aspirin pain reliever or prescription medications such as muscle relaxants, analgesics, or anti-inflammatory drugs
- Physiotherapy- Jaw and neck exercises and Posture training
- Stress Reduction– Biofeedback and Relaxation techniques to control muscle tension .Stress management training techniques
- Adjusting the bite, known as "occlusal equilibration" involving removing interferences when the teeth touch It involves direct reshaping of the biting surfaces by grinding and polishing selected tooth surfaces that interfere with comfortable jaw movements. When correctly done on properly selected patients, it is a conservative and effective treatment.
- Replacement of defective restorations that prevent the jaws from meeting properly Teeth that are badly worn or that need the biting surfaces re-shaped may need crowns or other types of restorations.
- Orthodontics, to put the teeth in proper position
- Surgery -In extreme cases where the joint has been badly damaged, appliance therapy will not work. In this instance we may refer you to an oral surgeon who is specially trained in surgical treatment modalities. Surgical intervention is only necessary when there is no other choice and happens in less than 1% of cases.



INITIAL TMD THERAPY

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Depending on your condition the initial step in treating TMD can involve some or all of the following: self-care therapy, splint wear, medication and other professional therapy.

Self-Care Therapy

The following will help instruct you on how to relax your jaw muscles and joints to reduce the jaw pain you are having.

Position the jaw to avoid tooth contacts

Place the tip of the tongue behind the top teeth and keep the teeth slightly apart. Maintain this position when the jaw is not being used for other function such as speaking and chewing.

Awareness of habits or jaw use patterns:

- Closely monitor your tooth contact. Avoid tooth contact except during chewing and swallowing.
- Closely monitor habits such as: clenching, grinding, gritting, tapping of the teeth or tensing or holding the jaw muscles rigid. Monitor tooth clenching during daily activities such as driving, studying, computer work, social situations, reading, overwork and fatigue, stress, at work or engaging in athletic activities.

Do not test the jaw

- Do not open wide or move it around excessively to assess pain or motion.

- Avoid habitually maneuvering the jaw into positions to assess its comfort or range.
- Avoid habitually clicking the jaw if one is present.

Heat and Ice Therapy

Apply moist heat, ice or a combination of heat and ice to the painful areas. Most people prefer heat but if that increases your pain use the combination or just the ice.

- a. use moist heat for 20 minutes two to four times each day. Moist heat can be obtained by wetting a towel with very warm water. It can be kept warm by wrapping it around a hot water bottle or placing a piece of plastic wrap and heating pad over it. It also can be rewarmed in a microwave oven or under the very warm water.
- b. Use the combination of heat and ice two to four times each day. Apply the heat as recommended above for ten minutes then lightly brush the painful area with an ice cube wrapped in a thin washcloth. Repeat this sequence four or five times.
- c. Apply ice wrapped in a thin washcloth to the painful area until you first feel some numbness then remove it (usually takes about ten minutes).

Diet

- Choose softer foods and only those foods that can be chewed without pain. Don't

chew gum or eat hard (raw carrots) or chewy foods (caramels, steak, begals).

- Cut foods into smaller pieces and avoid foods that require wide mouth opening and biting off with the front teeth.
- Evenly divide the food on both sides of your mouth and chew on both sides.
- Avoid caffeine, because it stimulates your muscles to contract and hold more tension in them. Caffeine or caffeine-like drugs in coffee, tea, most sodas, and chocolate. Decaffeinated coffee has some caffeine while Sanka has none.

Other Habits

- Try to hold your head straight. Good head, neck and back posture help you to have good jaw posture. Use a small pillow or rolled towel to support your lower back.
- Avoid habits as resting your jaw on your hand or cradling the telephone against your shoulders.
- Avoid sleeping habits that strain your jaw muscles or joints, by not sleeping on your stomach and if you sleep on your side, keeping your neck and jaw aligned.
- Support the jaw during yawning by providing mild pressure underneath the chin with the thumb and indexfinger or back of the hand.

TMJ Exercises

The TMD exercises are designed to help re-

TMJ EXERCISES

EXERCISE ONE

The first exercise is an isometric one and should help the muscles that move your jaw work together better. Do six repetitions, six times each day.

Open your mouth the width of your index finger.

Place your finger on the top of your lower front teeth and press down.

Do not allow your jaw to move, Resist the pressure of your finger with the muscles of your jaw.

Keeping your mouth open the same distance, place your finger under your chin. Apply upward pressure and resist it with the muscles of your jaw.

Now try pressing from each side.

Use only one finger for pressure.

Apply the pressure for only five seconds at a time.

EXERCISE TWO

This exercise will help you to open your mouth without causing popping, grinding, and pain in the joint. Practice it until you know how wide you can open with comfort. Then, stick to those limits.

Place your tongue against the roof of your mouth.

Open as far as you can without allowing your tongue to move.

If you hear any popping or grinding, close until the noise stops.

Repeat the exercise, opening only as far as you can without making any noise.

The following exercises, which stretch and strengthen your head and neck muscles, also relieve pressure on your nerves. Practice them several times a day.

EXERCISE THREE

Rotate your shoulders back and down as far as you can.

Hold this pose for five seconds.

Try to make this position your regular posture.

EXERCISE FOUR

Tuck your chin against your chest. You should feel the muscles on the back of your neck stretching.

Hold the position for five seconds.

EXERCISE FIVE

Stand up.

Push your head back until your shoulders and head are in a straight line.

Tuck in your chin.

Hold for five seconds.

EXERCISE SIX

Stand up.

Place the back of your right hand in the center of the small of your back.

Put your left hand across the front of your body and grasp your right side.

Tuck you chin and rotate your head to the left.

Hold position for ten seconds.

lieve the pain and stress you have in your jaw muscles and jaw joints. Practice these exercises as described below.

Splints

A splint is a hard acrylic appliance that is custom fabricated to fit snugly over either your upper or lower teeth. A splint can cover all the teeth on one jaw (full) or only a few (partial).

A splint serves many purposes:

1. It helps tense jaw muscles relax. With the splint in the jaw is freed from the tooth interferences that may be contributing to sore muscles and can settle in a more comfortable position
2. The splint protects your teeth from the harmful effects of parafunctional habits such as grinding and clenching.
3. The splint aids us in arriving at a diagnosis. Whether you become more comfortable after wearing this splint or not has a definite bearing on whether your problem is bite related. Only after your symptoms subside will a more permanent method of improving your condition be suggested.

We use two types of splints in our office: The lower full splint and the NTI-tss. We may recommend either one or both.

Lower Full Splint



The lower splint covers all your lower teeth and the biting surface is meticulously adjusted to fit as perfectly as possible against the opposing teeth. When the splint is in, the jaw should close with even tooth contacts on all your upper teeth.

The lower splint requires two one-hour appointments:

1. At the first we will take models of your teeth and a registration of your bite.

These will be sent to the dental lab for fabrication of the splint. This will take one to two weeks.

2. At the second appointment the splint will be fitted on the lower teeth and the bite adjusted precisely to the upper teeth. You will then be given instructions for wear

As the muscles relax, the bite on the splint may change. Follow-up appointments during this trial period are necessary to monitor your progress and to adjust the splint if it is necessary. If at any time you feel your bite on the splint changes drastically, call our



office and we will try to schedule you with an earlier appointment.

NTI-tss

The NTI-tss is fitted to your two upper front teeth and is worn only while you sleep. The NTI-tss takes about 15 minutes to fit and adjust. The NTI-tss takes advantage of your reflex reaction. When your lower teeth hit the device a signal is sent to the jaw muscles to reduce contraction. By wearing the NTI clenching intensities are reduced by 66% of full power helping muscles relax.

How much does a splint cost?

The average cost of a splint therapy will range from \$600 to \$700. Dental Benefits and eligibility will vary from one carrier to the next. However, to be sure our office will send a pre-determination to your dental

Lower Full Splint + Lab	14612	\$350.00
NTI-tss	14612	\$250.00
Splint adjustment appointment (15 minutes)	14621	\$50.00

benefits company to find this out. The following table is a breakdown of the fees

Instructions

Please wear the splint as instructed.

- Please wear splint at night to protect teeth and jaw muscles from grinding and clenching.
- Please wear splint as much as possible until symptoms are relieved and a diagnosis can be determined

Care for the Splint

At least once per day (especially upon awakening), brush the splint with a soft toothbrush and a creamy soap solution. Mouth wash may also be poured over the splint.

Medication

- Advil or Motrin**– 600 mg, three times/day with meals
- Valium**– 2 mg three times/day
- Elavil**– 10 to 20 mg at bedtime

Additional Professional Care

Physiotherapist (Symetrics)

The Physiotherapist will assess your posture, the biomechanics of the TMJ, and craniocervical junction, evaluate habits (grinding, clenching, etc.) and breathing and swallowing patterns. The treatment will focus on functional restoration of the biomechanics of the head, neck and craniomandibular system using Rocabado Techniques.

Clinical Psychologist

The Clinical Psychologist will use several techniques to help you relax. The most common is:

Cognitive Behavioural Therapy (CBT)-

If the cause of facial pain is through a chronic bruxing habit, CBT is used to help you replace the bruxing habit with better stress coping mechanisms.

What success can I expect?

These initial measures set up conditions for healing; the rate of healing or whether healing will occur at all is dependent upon your individual problem, physiological make up and your compliance or cooperation. Even though our success rate is very high, there are no guarantees that this therapy will prove successful for you. If several weeks of therapy does not appreciably improve your condition, we will discuss other modes of therapy with you at that time.