

**General Guidelines
for the Examination,
Diagnosis and Management
of
Temporomandibular
Disorders**

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There is no scientifically supported protocol for diagnosing or treating temporomandibular disorder (TMD) patients, but the following generalizations are made based on the literature and consensus of leaders in the field. Treating TMD patients can be unpredictable; the best outcome is often dependent upon identifying and reducing the contributing factors.

INITIAL EXAMINATION

The goals of the initial examination are to identify the patient's:

- 1. Primary diagnosis:** the disorder directly responsible for the patient's chief complaint, i.e., myofascial pain, TMJ inflammation, acute TMJ disc displacement without reduction, pulpal pathosis, migraine headache, sinusitis, etc.
- 2. Secondary diagnoses:** other disorders that contribute to the primary diagnosis or cause associated symptoms, i.e., myofascial pain, TMJ inflammation, TMJ disc displacement with reduction, odontalgia, fibromyalgia, muscle/vascular headaches, etc.
- 3. Contributing factors:** factors that initiate, perpetuate or result from the disorder, i.e., nighttime bruxism, gum chewing, daytime clenching, stress, daytime or nighttime posture, etc.
- 4. Symptom patterns:** when the symptoms occur or are most intense and where the symptoms appear to begin, i.e., worse upon awakening and begin in the neck.

PATIENT INTERVIEW

The Initial Patient Questionnaire provided in the appendix is designed to efficiently utilize the time spent interviewing the patient and help identify symptoms, contributing factors and potential non-temporomandibular disorders (non-TMD). I find it best if the patient arrives 15 minutes prior to their appointment and completes this just prior to the appointment. The patient then has better recall for specific questions I will ask about their responses. Two forms of the Initial Patient Questionnaire are provided, one in the appendix that is reproduced and given to the patient, and a second one that follows which I recommend be used when evaluating the Initial Patient Questionnaire. The second one, labeled "Evaluation of Initial Patient Questionnaire," explains why the question was asked and what the responses may indicate. Most of the questions are self explanatory, but it is probably worthwhile discussing the objectives of a few.

Question 5 (when are the symptoms worst) will often help to identify significant contributing factors. Patients with nighttime parafunctional habits usually have an increase in their pain when they first awaken, while patients with daytime parafunctional habits will have an increase in their pain during the day or evening.

Using question 7 (what is the quality of the pain), identify the predominant quality of pain, most TMDs have a primary quality of dull, pressure or ache. If throbbing is a major quality of the pain, consider a primary diagnosis of pulpal pathosis. The first two parts of question 8 further attempts to identify if the primary diagnosis could be pulpal pathosis because the pain from TMD usually does not wake the patient up at night or increase when they lay down, but tooth pain does.¹ For additional information on this subject, please read article 1 in Reference Section. The third portion of question 8 attempts to identify if the pain could be related to the sinuses, which tends to get worse when the patient bends forward while TMD is generally not aggravated by this motion.

Questions 12-14 attempt to help the provider identify a non-TMD that may be a primary or secondary diagnosis or contributing to the TMD.^{2,3} A more detailed explanation of questions 12-14, can be obtained by reading the original article or a follow-up article (articles 2 and 3 in the Reference

Section). Answers to these questions can not be relied upon to provide a definitive diagnosis for which they were written. The provider must then further inquire to fully understand the implications of the answer.

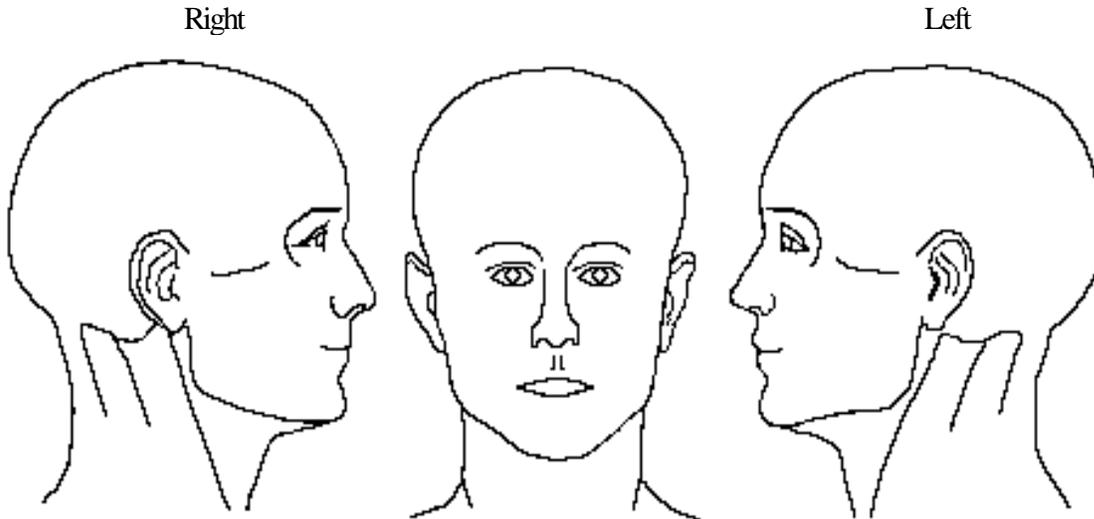
During the initial evaluation, the provider must apply the biopsychosocial model to determine the most prominent contributing factors for the patient. If the most significant component appears to be physical, then the provider may desire to limit treatments to those provided by the dentist and/or physical therapist. If the patient's physical problem appears to have a significant behavioral or psychological component, the support of a psychologist may be sought in the patient's treatment, or an evaluation by the psychologist maybe sought prior to determining the treatment strategy. An example of a referral to a psychologist is provided in the appendix.

Through an interactive dialog, the provider should determine the patient's willingness to participate in the indicated forms of treatment and devise a protocol most appropriate to treat the patient's problem and reduce their contributing factors. In formulating the treatment protocol, the provider should consider each treatment's efficacy, cost, ability to maintain its effectiveness, time commitment, discomfort to the patient and disruption to their life-style.

Throughout therapy, the practitioner must continually reevaluate the patient because the patient's primary problem may resolve and a secondary problem may become the primary problem.

EVALUATION OF INITIAL PATIENT QUESTIONNAIRE

1. On the diagram below, please shade the areas of your pain:



- *This forces the patient to think where their pain is located*

2. When did your pain/problem begin? _____
- *If recent onset and first occurrence, may only want to prescribe Motrin*
3. What seemed to cause it to start? _____
- *This may indicate a major contributing factor that can be changed*
4. What treatments have you received? _____
- *Were these treatments beneficial? May indicate level of care patient will need or previous provider may have missed something, i.e., referred pain from a tooth*
5. When is your pain the worst?
When first wake up ___ Later in the day ___ No daily pattern ___ Other ___
- *Helps identify the significance of nighttime and/or daytime contributing factors and gives a guide to therapy considerations; see Breaking Parafunctional Habit section*
6. What does the pain keep you from doing? _____
- *Reflects how much it affects patient and motivated they may be for treatment*
7. Is your pain (check as many as apply):
Dull ___ Pressure ___ Ache ___ Sharp ___ Throbbing ___ Burning ___ Other ___
Always present? Yes ___ No ___ How often do you have it? _____
- *Dull, pressure or ache are the usual qualities of TMD pain*
- *Sharp usually occurs intermittent and associated with the TMJ*
- *Throbbing pain has three major causes:*
a) *Muscle/vascular pain, the throbbing occurs when the dull pain is at its worst and usually resolves with TMD therapy*
-

b) *Migraine headache, the throbbing pain is independent of the dull pain fluctuations and usually only has slight improvement from TMD therapy. Recommend referring patient to a neurologist for an evaluation.*

c) *Referred tooth pain, questions suggestive of this are asked in question #8*

- *Burning is sometimes found with TMD pain, if related, it resolves with TMD therapy*

8. Does your pain:

Wake you up at night? Yes ___ No ___

- *Could be related to referred tooth pain*

Increase when you lay down? Yes ___ No ___

- *Could be related to a referred tooth pain*

Increase when you bend forward? Yes ___ No ___

- *Could be related to sinus congestion*

Increase when you drink hot or cold foods? Yes ___ No ___

- *Could be related to a referred tooth pain*

9. Please circle the number below to indicate your present pain level.

(No pain) 0 1 2 3 4 5 6 7 8 9 10 (The worst pain imaginable)

10. Please circle your average pain level during the past 6 months.

(No pain) 0 1 2 3 4 5 6 7 8 9 10 (The worst pain imaginable)

11. Please describe any symptoms other than pain that you associate with your problem. _____

- *Look for anything that does not make sense (may be suggestive of non-TMD), i.e., blacking out, an increase in their pain when they bear down for a bowel movement, etc.*

#12-14 evaluate for Non-TMD, talk to the Pt about any “yes” responses and consider the comments noted after the questions

12. Have you had (please circle):

Yes No Head or neck surgery?

- *Is Pt's complaint a surgical complication or recurrence from this?*

Yes No Whiplash or trauma to your head or neck?

- *Does the Pt have a neck disorder contributing to their TMD?*

Yes No Shingles on your head or neck?

- *Does the Pt have postherpetic neuralgia?*

13. Do you have (please circle):

Yes No A fever?

- *TMD does not cause an elevated temperature, does Pt have another disorders that may cause this, i.e., meningitis, sinus infection, etc.*

Yes No Nasal congestion or stuffiness?

- *Is sinus pain the cause for the Pt's complaint or contributing to their TMD pain?*

- Yes No Movement difficulties of your facial muscles, eyes, mouth or tongue?
 - *Does Pt have a neurological disorder?*
 - *Pts often report movement difficulties of their more painful masticatory muscles or TMJ*
- Yes No Numbness or tingling?
 - *Is it something more than TMD causing this neurological deficit?*
 - *Pts often report small areas of numbness or tingling with a temporal and spatial relationship to their TMD*
- Yes No Problems with your teeth?
 - *Does Pt have a tooth problem causing or contributing to their TMD?*
- Yes No Swelling over your jaw joint or in your mouth or throat?
 - *Check it out, it may be the cause for their TMD*
 - *Pts often report swelling over their painful TMJ or masticatory muscles*
- Yes No A certain spot that triggers your pain?
 - *Does Pt have trigeminal neuralgia or some other localized problem?*
- Yes No Recurrent swelling or tenderness of joints other than in your jaw joint?
 - *Does Pt have arthritis or some other systemic disorder contributing to their TMD?*
- Yes No Morning stiffness in your body, other than with your jaw?
 - *Can be of muscle or joint origin and related to systemic disorders*
- Yes No Muscle tenderness in your body (other than in your head or neck) for more than 50% of the time?
 - *Does Pt have fibromyalgia, myofascial pain or a systemic disorder?*

14. Is your (please circle):

- Yes No Problem worse when swallowing or turning your head?
 - *Consider: MFP of the neck cervical spine disorder, Eagle's syndrome, glossopharyngeal neuralgia, subacute thyroiditis, etc.*
- Yes No Problem worse after reading or straining your eyes?
 - *Pt may need new eye glass prescription or bifocals, may have cervical disorder exacerbated by poor posture during the activity, or Pt clenches when during this time*

15. Do your jaw joints make noise? Yes ___ No ___ If yes, which: Left ___ Right ___
 - *If yes, the patient probably has a disc displacement*

16. Have you ever been unable to open your mouth wide? Yes ___ No ___, if yes please explain: ___
 - *Could be due to an acute disc displacement without reduction or a muscle disorder*

17. Have you ever been unable to close your mouth? Yes ___ No ___, if yes please explain: _____

 - *Could be due to an eminence lock (open 50+ mm), the condyle was unable to get over the posterior band (open 10-20 mm), or a lateral pterygoid spasm.*

18. Do you sleep well at night? Yes ___ No ___, please explain:
 - *You may want to consider a referral for relaxation therapy; If they also wake up with morning pain, you may want to prescribe amitriptyline or nortriptyline*
19. How often are you tense during a usual day?
 Always ___ Half the time ___ Seldom ___ Never ___
 - *If always or half of the time checked, consider referring Pt for stress management*
20. How often do you feel depressed during a usual day?
 Always ___ Half the time ___ Seldom ___ Never ___
 - *If always or half of the time checked, consider referring Pt for a psychological evaluation*
21. Do you play a musical instrument and/or sing more than 5 hours in a typical week?
 Yes ___ No ___
 - *This often contributes to the patient's symptoms*
22. Are you aware of clenching or grinding you teeth when sleeping? ___ while driving? ___
 when using a computer? ___ other times? ___ not aware? ___
 - *Encourage patient to stop clenching or grinding at checked times and become aware of other times*
23. Are you aware of oral habits such as chewing your lips or cheeks? ___
 chewing objects? ___ thrusting your jaw? ___ other habits? ___ not aware? ___
 - *Encourage patient to break checked oral habits*
24. What treatment do you think is needed for your problem? _____

25. Is there anything else you think we should know about your problem? _____

26. If your age is 50 or older, please circle the correct response:
 Yes No Does your pain occur only when you eat?
 Yes No Are you pain free when you open wide?
 Yes No Do you have unexplainable scalp tenderness?
 Yes No Are you experiencing unexplainable or unintentional weight loss?
 Yes No Do you have significant morning stiffness lasting more than ½ hour?
 Yes No Do you have visual symptoms or a visual loss?
 - *These features are more prevalent among people who have temporal arteritis (giant cell arteritis). Temporal arteritis is almost exclusively found in people over the age of 50. It causes a reduction in the blood flow to the structures of the head and neck. The decreased masticatory muscle blood flow causes the muscles to tire easily producing a tired, cramped feeling that resolves within 1-2 minutes after use. This symptom is also observed among some TMD patients without temporal arteritis and these questions are to help differentiate the cause for this symptom. If the patient has had this symptom for over a year, it is highly unlikely he/she has temporal arteritis. Temporal arteritis is an important disorder not to*

miss because it may progress to cause blindness. It is better to error with an unnecessary referral than allow this disorder to go undiagnosed. If you suspect the patient has temporal arteritis, they should see a physician that day.

- *A "yes" response to the first two questions is suggestive of jaw claudication, but a TMD patient with mild TMD symptoms may positively respond to both questions.*
- *Consider temporal arteritis when the patient relates unexplainable scalp tenderness, unexplainable or unintentional weight loss, significant morning stiffness lasting more than ½ hour, visual symptoms or visual loss.*
- *A fever (previously asked in the questionnaire) is also more prevalent among people who have temporal arteritis. If this is not due to a dental condition and has not been evaluated by a physician, I recommend he/she be referred for an evaluation.*
- *Another sign of temporal arteritis is an abnormal temporal artery. One can check for this by comparing the left and right temporal arteries. Relative to the other side, an abnormal vessel would be more visible, have no pulse, or have palpable nodes.*
- *For more information on temporal arteritis, see article 4 in the Reference Section.*

CLINICAL EXAMINATION

The masticatory muscles and the TMJs should be palpated for tenderness and altered texture. Often TMJ tenderness can not be evaluated until the patient opens slightly, bringing the TMJs from under the zygomatic arch. They are then palpated on the lateral poles. The retrodiscal tissue is then palpated by having the patient open wide and pressing posterior to the condyle or placing your little fingers in their ear and pulling forward. The TMJs range of motion (ROM) along with noise should be noted. The cervical muscles and spine may be palpated for tenderness; sometimes masticatory pain is primarily due to referred pain from the cervical area.

Intraoral and extraoral swelling or deflection of the soft palate should be appraised. If pulpal pathosis is suspected, the tooth should be tested for a hyperresponsiveness. If this test is positive, it should follow with a PDL injection to the tooth to determine the impact it may have on the patient's pain complaint.¹ If clenching or bruxism is suspected, significant shiny wear facets should be observed.

If the patient is over the age of 50, don't overlook the possibility of temporal arteritis.⁴ Question 26 of the Initial Patient Questionnaire attempts to help you identify patients with TMD symptoms who may have this disorder. An excellent article on this subject and the primary source for question 26, is article 4 in the Reference Section.

Panoramic imaging is warranted when the clinical exam implicates a primary joint problem, a progressive open bite development (suggestive of a decreasing condylar height), or a suspicion that the disorder may be linked to prior trauma.⁵ Panoramic or additional imaging may be warranted when the patient does not respond to therapy as anticipated and this information has the potential to change the patient's course of therapy, or if the patient is being evaluated for TMJ surgery.

DIAGNOSTIC CATEGORIES

Identifying the primary and secondary diagnoses are often difficult because TMD disorders tend to have similar symptoms and often occur concurrently. The disc displacement handout provided in the appendix is designed to help explain the mechanics of a TMJ disc displacement to the patient and may also be helpful in explaining a masticatory muscle disorder. The following categories are the diagnostic classifications established by the American Academy of Orofacial Pain.⁶ Their diagnostic criteria is not meant to be rigid, but rather provide clinical guidance for diagnosis and your clinical judgment should be relied on for final diagnostic decisions.

DIAGNOSTIC CRITERIA FOR MASTICATORY MUSCLE DISORDERS:

- 1. Myofascial pain:** a) regional dull aching pain, generally aggravated by masticatory muscle function and b) hyperirritable sites (trigger points) which can increase and refer the pain.
 - 2. Myositis:** a) pain in a localized muscle following injury or infection, b) diffuse tenderness over the entire muscle, c) increased pain with muscle use and d) moderate to severe limited ROM due to pain and swelling.
 - 3. Myospasm:** a) acute pain at rest as well as with function and b) continuous muscle contraction causing a marked decrease in ROM (if involves lateral pterygoid muscle will usually cause malocclusion).
 - 4. Local myalgia:** this category is for multiple muscle pain disorders for which we have not yet determined diagnostic criteria, i.e., muscle pain from protective splinting, fatigue, autonomic effects, etc.
 - 5. Myofibrotic contracture:** a) limited ROM, b) unyielding firmness on passive stretch, c) little or no pain unless involved muscle is forcibly stretched and d) Pt may have history of trauma, infection or long
-

period of not stretching muscle to its full length.

6. Neoplasia

DIAGNOSTIC CRITERIA FOR JOINT DISORDERS:

1. Congenital or developmental disorders (rarely causes TMD)

- a. Aplasia faulty or incomplete development of mandible or cranial bone
- b. Hypoplasia - underdevelopment of mandible or cranial bone
- c. Hyperplasia - overdevelopment of mandible or cranial bone
- d. Neoplasia - abnormal tissue growth

2. Disc displacement:

a. Disc displacement with reduction: 1) reproducible joint noise that occurs at variable positions during opening and closing and 2) soft tissue imaging reveals disc displacement that reduces during opening and hard tissue imaging does not reveal extensive osteoarthritic changes.

b. Disc displacement without reduction, acute: 1) persistent marked limited opening (<35 mm) with history of sudden onset, 2) deflection to the affected side upon opening, 3) marked limitation to the contralateral side and 4) soft tissue imaging reveals disc displacement without reduction and hard tissue imaging does not reveal extensive osteoarthritic changes

c. Disc displacement without reduction, chronic: 1) history of sudden onset of limited opening that occurred more than 4 months ago and 2) soft tissue imaging reveals disc displacement without reduction and hard tissue imaging does not reveal extensive osteoarthritic changes.

3. Dislocation (also known as open-lock or subluxation): a) inability to close the mandible without specific manipulative maneuver and b) radiographic evidence reveals condyle well beyond the eminence.

4. Inflammatory disorders:

a. Synovitis and capsulitis: 1) TMJ pain increased by palpating the TMJ, loading the TMJ and during function, and 2) hard tissue imaging does not reveal extensive osteoarthritic changes.

b. Polyarthritides (joint inflammation and structural changes caused by a generalized systemic polyarthritic condition): 1) pain with function, 2) point TMJ palpation tenderness, 3) limited ROM secondary to pain and 4) hard tissue imaging reveals extensive osteoarthritic changes.

5. Osteoarthritis:

a. Primary osteoarthritis (deterioration of subchondral bone due to overloading joint): 1) no identifiable etiologic factor, 2) pain with function, 3) point TMJ palpation tenderness and 4) hard tissue imaging reveals structural bony changes (subchondral sclerosis, osteophyte, or erosion).

b. Secondary osteoarthritis (deterioration of subchondral bone due to trauma, infection or polyarthritides): 1) identifiable disease or associated event, 2) pain with function, 3) point TMJ palpation tenderness and 4) hard tissue imaging reveals structural bony changes (subchondral sclerosis, osteophyte, or erosion).

6. Ankylosis:

a. Fibrous ankylosis: 1) limited ROM, 2) marked deviation to affected side, c) marked limited laterotrusion to the contralateral side, d) radiographic findings that reveal absence of ipsilateral condylar translation on opening.

b. Bony ankylosis: a) Extreme limited ROM when condition is bilateral, b) marked deviation to affected side, c) marked limited laterotrusion to the contralateral side, d) radiographic evidence of bone proliferation and absence of condylar translation.

7. Fracture

SPLINT THERAPY

Over the years, various splint designs have been advocated for treating different masticatory muscle problems, temporomandibular joint disorders and combinations. When a splint is inserted, it has an impact on both the patient's mandibular position and the patient's neuromuscular environment. The mandibular position can be passively altered, allowing the neuromuscular system to determine the mandible's position without the influences of tooth contacts or it can be actively repositioned into a predetermined location. A **passive splint design** usually has a flat surface parallel to the occlusal plane, while an **active splint design** usually has occlusal indentations approximately 1 mm deep that guide the mandible to a predetermined location.

We do not fully understand why splints are clinically effective but this section attempts to outline recommendations observed from clinical experience and review of the literature. The areas discussed are:

PASSIVE SPLINT DESIGNS:

1. Flat Plane Occlusal Splint
 - a. Maxillary
 - b. Mandibular
 - c. Soft Splints
2. Anterior Bite Plane
3. Mandibular Bilateral Posterior Splint

ACTIVE SPLINT DESIGNS:

1. Anterior Repositioning Appliance
2. Mandibular Bilateral Posterior Splint

GENERAL SPLINT RECOMMENDATIONS

1. Follow-up Appointments
2. Summary of Manipulation Technique Uses

PASSIVE SPLINT DESIGNS

I employ either a centric relation or a rest closure manipulation for the passive splint designs. The **centric relation** technique uses bimanual manipulation where the condyles are loaded against central portion of the disc, a repeatable position that is acceptable to patients. If you are only able to obtain centric relation by using the leafgauge, then use the rest closure manipulation technique for TMD patients.

Rest closure is performed with the back of chair at a 30° with the floor and a finger lightly touching the inferior portion of the patient's chin as the patient closes. Rest closure is not a loaded nor a repeatable position, but as the splint is adjusted, the patient will establish a consistent contact position.

It is my opinion that patients who have a disc displacement, TMJ inflammation or osteoarthritis should have their splint fabricated in the rest closure position because the loaded position often aggravates the joint's pain or mechanical disorders.

Lateral and protrusive guidance should be developed as shallow as the posterior teeth will allow. This appears to reduce the force required for certain parafunctional activities.

The bite registration for these splints is usually made at the vertical opening that is desired for the splint, approximately 1½ to 2 mm before the patient's first contact.

1. Flat Plane Occlusal Splint

The flat plane occlusal splint is the most commonly used splint and can be fabricated for the maxillary or mandibular arch. It is a full arch splint with occlusal contacts on the canines and all posterior teeth, to prevent extrusion or intrusion of the teeth. They are traditionally used for:

- a. Bruxism and excessive tooth attrition
- b. Masticatory muscle disorders
- c. TMJ disc displacements
- d. TMJ inflammation
- e. TMJ osteoarthritis
- f. Deprogramming proprioception prior to dental treatment to establish jaw position

a. Maxillary Flat Plane Occlusal Splint

If the patient is a strong bruxer or has periodontally weakened anterior teeth, the practitioner may prefer this appliance to prevent the possible flaring of the patient's anterior teeth. Adjust the splint so the canine and buccal cusps of the posterior teeth evenly contact the splint and guidance is as shallow as possible.

b. Mandibular Flat Plane Occlusal Splint

Patients generally prefer this splint over the maxillary because they are less visible to others, feels less obtrusive in the mouth and easier to speak with (unless patient forms the letter "s" with the sides of their tongue). Adjust the splint so the canine and lingual cusps of the posterior teeth evenly contact the splint and guidance is as shallow as possible.

c. Soft Flat Plane Occlusal Splint

Most practitioners use soft splints that are formed by vacuum suctioning or air pressurized to form a soft vinyl over the patient's cast. Prefabricated soft splints are also available, but they rarely fit well and may allow occlusal changes to occur. They can be used on the maxillary as well as the mandibular arch and have been found to have limited effectiveness unless the occlusal surface of the splint is properly adjusted. The best method I have found for adjusting the occlusion is to warm the occlusal surface of the splint with an alcohol torch, have the patient develop the desired occlusal pattern, remove the excess material and polish.⁷ The soft splint can be polished with pumice (leaves it slightly rough) or rubbing the splint with gauze dampened with halothane. A more detailed explanation of adjusting and polishing a soft splint is given in article 7 of the Reference Section. This splint may be especially beneficial when:

- a. the patient desires a quick and inexpensive splint.
- b. the patient would benefit from a temporary splint to be used during the resolution of his acute trauma.
- c. the patient is expected to have continued occlusal changes, i.e., patient is about to enter or is in the mixed dentition, patient has history of chronic episodic sinusitis, etc.
- d. the patient has a history of wearing through or fracturing their acrylic splints. A soft splint can be fabricated opposing the acrylic splint to soften the occlusal forces placed against the acrylic splint.
- e. the dentist needs to predict the success of the acrylic flat plane splint, i.e., dentist is unsure of the diagnosis or the portion of the pain complaint that will respond to splint therapy.

2. Anterior Bite Plane

The anterior bite plane covers the maxillary anterior teeth with a flat bite plane, parallel to the occlusal surface, and adjusted so that the guidance is as shallow as possible, without the posterior teeth contacting. It usually has wrought wire clasps in the posterior to help provide retention. The anterior bite plane may cause intrusion of anterior teeth or extrusion of the posterior teeth, but this is usually not a problem if the patient only wears it at night. The practitioner must closely follow these patients for occlusal changes. They are traditionally used for:

- a. Posterior occlusal plane problem precluding the use of flat plane splint.
- b. Deprogramming proprioception prior to dental treatment.
- c. Temporary gross rest closure discrepancy, i.e., patient with lateral pterygoid myospasm or severe muscle incoordination. Can use an anterior bite plane until rest closure stabilizes, then convert the splint to a flat plane splint.
- d. Secondly desire loading of the anterior teeth for another purpose, i.e. the patient needs a passive design splint at night and his mandibular anterior teeth occlude into the palate. Some practitioners have reduced the mandibular anterior teeth and had the patient wear this splint at night to prevent extrusion of the mandibular anterior teeth.
- e. Eliminating an early TMJ click, i.e., patients has a very early click, the click appears to contribute to their pain and can be eliminated with this splint. The vertical opening of the anterior bite plane is easily tolerated while obtaining the same vertical with a flat plane splint is not well tolerated because of the large amount of acrylic needed.

3. Mandibular Bilateral Posterior Splint

The mandibular bilateral posterior splint covers the posterior teeth and has a lingual bar that runs below the anterior teeth to connect the two segments of the splint. The splint is adjusted so the guidance is as far anterior as possible. Patients find it to be a very comfortable splint, but it may cause anterior tooth extrusion and posterior tooth intrusion. About the only times I would use this design would be for patients who have an extreme Angle III malocclusion or have a severe anterior open bite where anterior tooth extrusion/posterior tooth intrusion would be beneficial. Patients wearing these splints must be followed for possible anterior tooth extrusion and posterior tooth intrusion.

ACTIVE SPLINT DESIGNS

1. Anterior Repositioning Appliance

It appears the anterior repositioning appliance has superior short-term success in treating patients who have disc displacements with reduction. Practitioners have had their patients use this appliance full-time and tried permanently maintaining them in their forward position or “walking” them back. Neither technique had long-term success for the majority of the patients.

The anterior repositioning appliance can decreased joint pain and muscle tenderness when it is worn only at night by patients meeting specific criteria. This part-time wear allows the patient to be anteriorly positioned at night and return to their maximum intercuspation position during the day.

If the patient has a disc displacement with reduction and meets the following three criteria, a nighttime anterior repositioning appliance will probably provide better symptom relief than another appliance. The criteria are:

1. The TMJ mechanical disorder is related to the pain.
 2. The clicking is eliminated by anteriorly repositioning the jaw. Ask the patient to put anterior teeth end to end and open and close several times from this position to see if able to eliminate the click from the end to end position.
 3. The patient feels more comfortable with jaw anteriorly positioned. Ask the patient if the position
-

which eliminates the click is a more comfortable position for the jaw.

If the three criteria apply, we find that most of these patients will have significantly less joint and muscle soreness from using this appliance. It is speculated this decreases the mechanical irritation that occurs at night. A bite registration can easily be taken by having the patient protrude the jaw to this position, syringe bite registration material along the occlusal surfaces of the teeth and asking the lab to open the vertical approximately 1 mm.

If the patient has to protrude 4-5 mm to make their anterior teeth meet end to end, the criteria can be checked in a more retruded position than the end to end position.

The maxillary anterior repositioning appliance is constructed with a ramp behind the indentations for the mandibular anterior teeth. When most people sleep, their muscles relax and their mandible drifts posteriorly. This ramp catches the mandible as it drops posterior and maintains it in the desired location. A mandibular appliance can not be constructed with a similar ramp, so mandibular appliances are not found to be as effective.

The patient should place this appliance in their mouth 1 hour prior to going to bed. This will allow the patient to become adjusted to this forward position before going to sleep.

When the patient wakes up in the morning and takes out the splint, he should be able to close into maximum intercuspation within 1 hour. A small percentage of the patients will find that they have difficulty returning to their normal occlusion; this is usually observed within the first month of use. These patients should have their splints converted to a flat plane occlusal splint, otherwise this problem may progressively worsen and you may have trouble getting their teeth to fit back into maximum intercuspation.

After the patient has worn the splint for 1 year, have them stop wearing it and one of 3 things will happen. 1) Their pain does not reappear, so they no longer need a splint. 2) They only have morning pain without the appliance, so convert the splint to a flat plane occlusal splint. 3) Their mechanical symptoms and pain returns, so have them continue wearing their splint.

Even though a patient meets the anterior repositioning splint criteria, a flat plane splint generally also reduces the patient's symptoms, just not as significantly. Keep in mind that the anterior repositioning splint needs to be carefully followed for complications, while the flat plane splint has minimal complications associated with its use. Due to frequent patient and provider transfers in the service, I recommend providers use the flat plane splint as their primary line of treatment for these patients. Only after trying the flat plane splint and after appropriate counseling, use the anterior repositioning splint. I recommend typing a statement in the patient's record that they were advised, if they do not return for follow-up appointments, they should discontinue wearing this splint and have them sign it.

2. Mandibular Bilateral Posterior Splint

The mandibular bilateral posterior splint can be made with cuspal imprints to help the patient maintain their jaw posture. This may be helpful where the anterior teeth have caused posterior condylar displacement and the mandible continues to retrace even though the anterior teeth are no longer in the way. This splint can also be used in cases of severe degenerative joint disease where the patient has a posterior open-bite. Sometimes a mandibular bilateral posterior appliance is made with chrome cobalt and the occlusal portion is veneered with an esthetic crown and bridge resin.

GENERAL SPLINT RECOMMENDATIONS

Follow-Up Appointments

It appears the better the splint is adjusted, the more effective it will be. Follow each patient for several months after insertion to determine how much change occurs between appointments and how

sensitive the patient is to these changes. From these observations, you will be able to determine the appropriate follow-up for the patient.

In the beginning, the patient may need to wear the splint 24 hours a day except when eating (don't allow them to eat with it or they may lose their ability to return to MI). Alternative conservative therapies should be provided so they will only need to wear their splint at night and I do not have a problem with them wearing a splint at night for the rest of their life. Some patients only need to wear their splint at night when they are having stress in their life. If they tend not to wear the splint for long periods, they may find that it no longer fits. So I recommend they wear their splint at least once a week otherwise their teeth will probably shift and the splint will no longer fit.

Summary Of Manipulation Technique Uses

1. Centric relation should only be used on patients with healthy joints.
2. Rest closure is used on patients with a disc displacement, TMJ inflammation or osteoarthritis.
3. Anterior repositioning can be used on patients who have a disc displacement with reduction and meet the criteria:
 - a. The TMJ mechanical disorder is related to the pain.
 - b. The patient feels more comfortable with his jaw anteriorly positioned.
 - c. The clicking is eliminated by anteriorly repositioning his jaw.

Recommend using anterior repositioning splint only after flat plane splint and other therapies were unable to provide adequate symptom relief.

Splint therapy is the most common treatment dentists provide TMD patients. It can be combined with alternative conservative therapies (including psychological interventions) and medications to augment the patient's outcome relative to splint therapy alone.

ADDITIONAL CONSERVATIVE THERAPIES⁸

Patients with myofascial pain (MFP) generally have localized tender areas within their muscles, know as myofascial trigger points, that are believed to be the major source of the patient's muscle pain. Trigger points can be identified by palpating the muscle and detecting a tender area within a taut muscle band.

There is controversy over the relationship between trigger points and acupuncture points. They appear to be different and the mechanism of treating trigger points is presumed to be through a peripheral inactivation while treatment with acupuncture points is presumed to have a central mechanism.

TMD therapies that have a peripheral effect include heat/cold applications, masticatory muscle exercises, physical therapy modalities, massage, trigger point compression and trigger point injections. While therapies that have a central effect include acupuncture, relaxation therapy, biofeedback and stress management.

There are many anecdotal reports of their effectiveness, however only a few clinical trials have compared these therapies to determine their relative efficacy. For clarity and comparability, all splints referenced in this section were flat plane acrylic splints. For additional information on this subject, please read article 8 in Reference Section.

SELF MANAGEMENT THERAPY

Self management therapy is a standard treatment for patients with TMD. Studies have shown that 60 to 90% of the patients report improvement in their symptoms after being given only self management therapy. The Self Management Therapy handout I use is provided in the appendix.

Self management therapy routinely: 1) encourages the patient to rest the masticatory muscles by voluntarily limiting the activities for which the patient uses them, i.e., avoiding hard or chewy foods and restraining from activities that overuse the muscles of mastication (oral habits and overextending the jaw by yawning or prolonged dental appointments). 2) Encourages awareness and elimination of parafunctional habits, i.e., changing a clenching habit to lightly resting the tongue behind their maxillary anterior teeth and keeping their teeth apart and masticatory muscles relaxed. 3) Recommends instituting a home physiotherapeutic program, i.e., applying heat or cold to the most painful masticatory areas. 4) Recommends over-the-counter medications on an as needed basis.

STRETCHING EXERCISES

Stretching exercises are often given to patients with TMD. TMD patients who used stretching exercises have shown a statistically significant decrease in their symptoms, decrease in their masticatory muscle palpation tenderness and an increase in their range of motion.

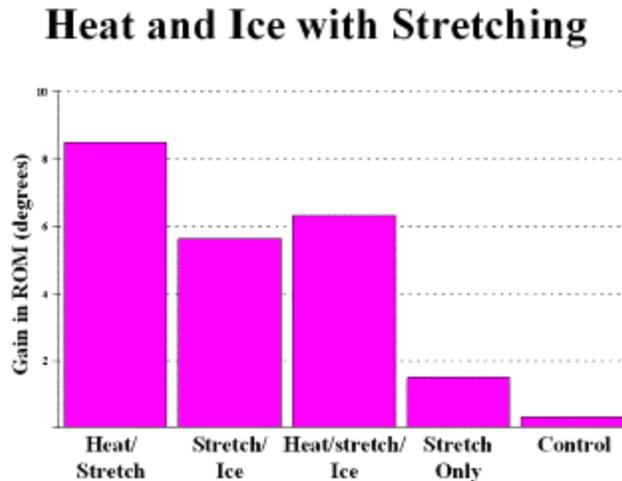
The benefits achieved from stretching exercises can be increased when the patient uses moist heat on the area before stretching.

Lentell et al.⁹ compared the increase in range of motion of the shoulder obtained when moist heat was applied to the area before stretching, stretching was followed by an ice pack, moist heat before stretching followed by an ice pack, stretching only, and no stretching (control), see Figure 1. They reported that using heat before stretching produced a statistically significant gain in the range of motion compared to the stretching only group ($p=0.003$).

The Stretching Exercise handout I use is provided in the appendix. Please keep in mind that this stretching exercise is for

closure muscles (temporalis, masseter and medial pterygoid muscles), if the patient's pain is primary in an opening muscle (lateral pterygoid, anterior digastric and posterior muscle) these exercises may tend to aggravate their disorder.

Figure 1



MASSAGE

There are many massage techniques. In general, they begin with light stroking of the skin with a gradual increase in pressure over time. As the stroking pressure increases, trigger points begin to stand out and are felt as nodular obstructions to the smooth flow of the stroke. With each pressure stroke, the trigger points are compressed and eventually inactivated. Some massage therapists will additionally apply trigger point compression to identified trigger points.

This variety of massage has been suggested to relieve pain, increase the blood flow to the muscles and elevate the plasma endorphin levels. The endorphin levels remain elevated for approximately 90 minutes following the massage and may be responsible for the feeling of pain relief, warmth, relaxation and well-being often reported after a massage.

A few massage techniques use cold (i.e. ice massage) and stretch the muscles. The presumed mechanism of action that inactivate the trigger points in these techniques are the same as with spray and stretch inhibition of pain and spinal stretch reflexes, enabling the muscle to be stretched.

The author's experiences suggest that patients instructed in muscle massage have an effective treatment at their disposal, while those who only passively receive a massage have a temporary relief

that requires them to continually return for additional massages to maintain this degree of comfort.

Massage of the symptomatic muscles is not part of the Self Management Therapy handout. It can easily be given to the patient when reviewing the handouts and patient can use it with one of the over-the-counter topical muscle creams, i.e., Icy Hot (should not be used in combination with capsaicin).

TRIGGER POINT COMPRESSION

Techniques for inactivating trigger points through pressure has been termed myotherapy and ischemic compression, and is sometimes erroneously referred to as acupressure. Trigger points that are only moderately active are usually able to be inactivated through one compressive treatment, while a chronic irritable trigger point may take several treatments. These trigger points will tend to reactivate if the contributing factors are not adequately reduced.

Muscles that can be compressed against bone or can be held between the fingers (as the anterior portion of the masseter muscle) are the best candidates for this therapy. The technique generally involves stretching the muscle, using a thumb or knuckle to press on the trigger point up to tolerance, and holding the pressure for approximately one minute. Over the minute, the discomfort should decrease and the pressure being applied should correspondingly be increased. Moist heat and active muscle stretching should follow trigger point compressions. Trigger point compression is not part of the Self Management Therapy handout, patients can be instructed in trigger point compression and it is an effective tool to help maintain trigger point inactivation.

PHYSICAL THERAPY

Physical therapy is the most common referral the dentist makes for TMD patients, the therapist often demonstrates additional exercises for the patient and utilizes modalities based on their clinical experience. Rocabado et al.¹⁰ is a good source for further information concerning these exercises and physical therapy modalities. The modalities range from: superficial heat, superficial cold, combination of heat and cold, ultrasound (deep heat), phonophoresis (deep heat with an anti-inflammatory medication), EGS, MENS, TENS, and iontophoresis (steroid or anesthesia driven into the joint).

It has also been shown that the efficacy of physical therapy is increased when performed in conjunction with splint therapy. At Lackland AFB, I usually consider referring the patient to physical therapy when a patient: rates their TMD pain as a constant 4-5 out of 10 or greater, desires treatment for concomitant neck/shoulder pain, has headaches referred from the neck, has moderate to severe forward head posture, has an increase in their TMD or neck pain from abnormal postural activities or desires help with sleep posture. An example of a physical therapist referral is provided in the appendix.

BREAKING DAYTIME PARAFUNCTIONAL HABITS

Typically, TMD patients who have their pain or an increase in their pain during the day or evening, have significant daytime parafunctional habits; while patients who mainly have their pain when they first awaken, have significant nighttime parafunctional habits. Theoretically, patients with significant daytime pain can become aware of their muscle tightening or fatiguing habits, break them and have a dramatic reduction or elimination of their daytime pain. Often these are subconscious habits and during the initial TMD evaluation many patients deny having them.

Psychology has a subspecialty called Behavioral Psychology in which they assist patients to change undesirable behaviors. In TMD, this will often involve the use of a pain diary so the patient can relate their pain to activities (i.e., driving a car, using the computer or in a stressful situation) which are associated with their harmful habits. The patients learn to identify their habits and are taught techniques for breaking them. Often TMD patients are also taught relaxation and stress management in conjunction with this education. If the psychologist to whom you refer is unfamiliar with this approach, he/she can call a staff member at Behavioral Health Psychology, Lackland AFB (DSN: 554-5968) for assistance.

RELAXATION

Progressive muscle relaxation, yoga and meditation have been shown to produce a similar response termed "relaxation response." This response is believed to significantly counter an over active sympathetic nervous system that may be due to over stimulation of the "flight or fight response."

Relaxation elicits a decrease in the muscle tone and has been shown to be beneficial in treating anxiety and stress related disorders including hypertension and cardiac arrhythmias. It is reported to be a powerful tool against the perceptions of low self-efficacy and helplessness and many subjects describe their relaxation experiences as providing them with peace of mind, a sense of well-being and control.

Unfortunately, the practitioner cannot simply hand the patient an audio-tape program and expect the patient to listen to the tape and receive the benefits of relaxation therapy.¹¹ But relaxation audio-tape programs have been shown to be effective when the patient was first instructed on its use and motivated. Carrington¹² reported that 86% of the total symptom benefits from relaxation were observed within the first 6 weeks. Among subjects who subjectively perceived themselves as having stress and desired to use relaxation therapy, 73% continued to practice relaxation 5 ½ months after they began.

Relaxation has been shown to be effective for TMD patients, especially if they also have potential psychophysiologic disorders, i.e., gastrointestinal disturbances, headaches, heart palpitations, malaise and sleep disorders.

BIOFEEDBACK

Biofeedback was developed in the 1960's, to provide the patient an appraisal for a chosen physiologic measure (e.g. muscle tension, blood pressure, skin temperature, etc.). Muscle activity (EMG) is routinely used for TMD patients and has been reported to be more effective for patients with chronic nonvascular headaches than skin temperature biofeedback.¹³ For clarity and comparability, all biofeedback references cited in this paper used EMG biofeedback.

Funch et al.¹⁴ compared biofeedback to relaxation therapy for chronic TMD patients. They reported that the biofeedback and relaxation groups had an average decrease in pain of 35% and 56%, respectively.

Traditionally, biofeedback is supplemented with relaxation to increase its effectiveness and studies¹⁵⁻

¹⁸ suggest that biofeedback with relaxation has a similar efficacy as splint therapy alone. Biofeedback with relaxation is more effective for patients with daytime parafunctional habits while the splint worn at night is more effective for patients with nighttime parafunctional habits. As mentioned earlier, patients with daytime parafunctional habits will have an increase in their pain during the day or evening, while patients with nighttime parafunctional habits usually have an increase in their pain when they first awaken. My experiences suggest that the patient instructed in biofeedback must be taught to incorporate it from the therapist's office into their everyday life. I believe biofeedback with relaxation training can be especially helpful for patients who do not appear to know how to relax their muscles and whose symptoms increase as the day progresses.

I believe patients with daytime parafunctional habits will show significant improvement from breaking daytime parafunctional habits, biofeedback with relaxation (relaxation being the more important component) and/or a splint worn during the day if their splint is used to increase their awareness of functional habits.

STRESS MANAGEMENT

Brantley et al.¹⁹ reported that 65% of muscle contracture headaches in their patient population appear to be due to minor stresses in their patients' lives. Empirically, it appears TMD is similar to the muscle contracture headache population, in which the disorder is often related to the minor stresses in their lives. I find many TMD patients say they do not have stress in their life, but will acknowledge they hold tension in their jaw, neck and/or shoulders, and are frustrated or irritated a considerable amount of the time. Stress management is a cognitive approach to deal with these minor stresses, irritations or frustrations in which the patients identifies these situations and are taught coping skills to better manage these situations and their thoughts about them.

Turk et al.²⁰ added stress management to biofeedback with relaxation therapy (SM/BF/RT) and randomly assigned TMD patients to this treatment, splint therapy and a waiting-list control. A non-randomized fourth group was later studied in which both treatments (splint therapy and SM/BF/RT) were combined. The SM/BF/RT group was given 6 weekly 1-hour sessions with instructions to practice on their own and the patients with splints were told to wear them 24 hours a day except when eating. At the 6 week follow-up, all three treatment groups had a significant reduction in their pain and depression scores compared to the control group ($p < 0.01$). Comparing the changes from the 6 week follow-up to the 6 month follow-up, the pain score for the splint group significantly increased ($p < 0.04$), SM/BF/RT group significantly decreased ($p < 0.03$) and combined group had no significant change. The depression scores for the splint group had a significant increase (< 0.01) while the SM/BF/RT and combined groups had no significant changes. Patients who were given the SM/BF/RT did not have the pain ($p < 0.03$) or depression ($p < 0.03$) relapse the splint group had over the 6 month follow-up.

This study suggests that SM/BF/RT is a slow but effective therapy if used alone. If SM/BF/RT is combined with splint therapy, improvement is as rapid as splint therapy and could prevent patients from having a relapse observed by splint therapy alone. However, SM/BF/RT is time consuming and the patient must be motivated to practice so maximum benefit can be obtained and maintained.

TRIGGER POINT INJECTIONS

Trigger point injections involve injecting into trigger points with a vasoconstrictor free anesthetic which is sometimes mixed with an anti-inflammatory agent. Generally, this is done when stretching exercises and other physical therapy modalities have failed to provide a lasting effect and should only be

performed by a credentialed provider.

In general, trigger point injections initially caused a substantial decrease in the patient's pain, but over the next week or month (solution dependent) this decrease lessens but does not return to the initial pain level. Successive trigger point injections cause the pain to continue to drop to a lower level each time. From my experiences, patients often relate that the trigger point injections allow them to relax their muscles and stretch it out.

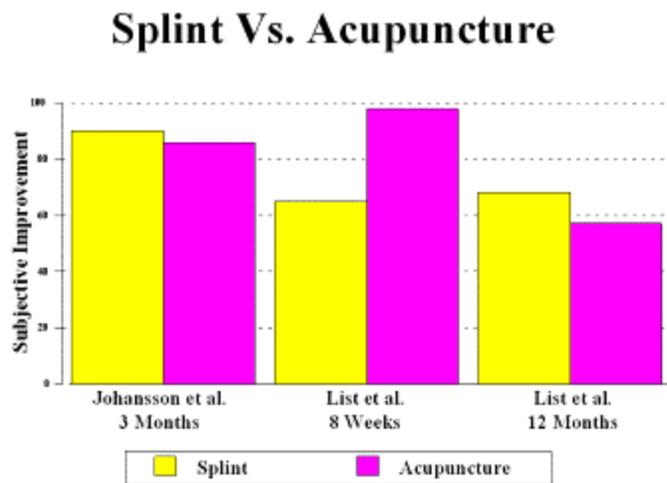
Following trigger point injections, the provider may use spray and stretch, hot packs and have the patient actively move the injected muscle through its full range of motion.

ACUPUNCTURE

The mechanism by which acupuncture relieves pain is believed to be through an increase in endorphins and other central non-opioid effects. Multiple acupuncture treatments are often required for patients with TMD to have an effective outcome.

Two randomized clinical trials compared the efficacy of acupuncture and splint therapy for TMD patients, see Figure 2. Johansson et al.²¹ provided the patients in their acupuncture group with six 30 minute sessions and at three months found there was no significant difference between the percentage of patients reporting subjective improvement from splint therapy and acupuncture treatments.

Figure 2



List et al.^{22,23} began their study by providing patients in the acupuncture group with six 30 minute sessions, but found that several patients only started to improve at the sixth treatment, so they allowed the late responders (28% of the group) to have 8 acupuncture sessions. Immediately after the acupuncture sessions

were completed (six to eight weeks), a significantly larger number of the acupuncture patients reported improvement compared to the splint group ($p < 0.01$); 98% and 65%, respectively. Over the next year, the percentage of patients in the acupuncture group reporting subjective improvement decreased while the percentage of patients in the splint group reporting subjective improvement increased. The success of the acupuncture group might have been maintained if the patients had received subsequent treatments.

List et al. also reported that at the 6 month follow-up, patients were able to cross-over and receive the treatment of the other group. Only 17% of the patients who received the splint and chose to receive acupuncture had further subjective improvement. These studies suggest that acupuncture is an effective therapy but its effectiveness tends to decrease over time and the patients who do not improve with a splint, tend not to improve with acupuncture.

SUMMARY AND CLINICAL IMPLICATIONS OF ALTERNATIVE CONSERVATIVE TREATMENTS

Currently, there is no scientifically determined protocol for treating TMD patients, but the following generalizations are made based on the literature presented and my clinical experiences.

Self management therapy has been reported to help 60 to 90% of the patients with TMD. These instructions are easy for the patient to implement and should be the first treatment the patient receives for TMD. The Self Management Therapy handout I use is provided in the appendix.

Stretching exercises have been shown to decrease the muscle's EMG activity and tenderness, in addition to increasing the patient's ROM. The benefits of these exercises can be improved if the patient warms the area before stretching the muscle. Stretching exercises are easy to accomplish, not time consuming and should be given to the TMD patient early in their treatment. The Stretching Exercise handout I use is provided in the appendix, please keep in mind this exercise is only for closure muscles (temporalis, masseter and medial pterygoid muscles).

Massage and trigger point compression are effective techniques for increasing the muscle's vasodilation, and temporarily inactivating trigger points. These techniques are not in the Self Management Therapy handout, but can easily be taught to patients who desire further self management therapy.

Physical therapy has empirically been shown to be effective adjunctive therapy. The provider may desire to refer the TMD patient to physical therapy for stretching exercises, physical therapy modalities, posture and biomechanics training, education on changing or correcting sleep posture and treatment of concomitant neck/shoulder pain. An example of a physical therapist referral is provided in the appendix.

Breaking daytime parafunctional, muscle tightening or fatiguing habits appears to be a very beneficial treatment for TMD patients with daytime pain, but not for patients who mainly have their pain upon awakening. The practitioner may desire to refer the patient to their psychologist this education. Psychologists will often include relaxation and stress management in conjunction with this instruction and if this does not adequately resolve the patient's daytime pain, they can escalate therapy by providing biofeedback with relaxation.

Studies suggest **biofeedback with relaxation** is an effective treatment for patients with primary daytime parafunctional habits but not for patients with primary nighttime parafunctional habits. Patients with nighttime parafunctional habits usually have an increase in their pain when they first awaken, while patients with daytime parafunctional habits will have an increase in their pain during the day or evening. Empirically I have observed that patients with daytime parafunctional habits also benefit from a splint worn during the day if their splint is used to increase their awareness of functional habits. Biofeedback with relaxation is time consuming, the patient must be taught to incorporate its effect from the therapist's office into the patient's everyday life and the patient must be motivated to practice it. I believe patients with daytime parafunctional habits will show significant improvement from biofeedback with relaxation (relaxation appears to be the more important component).

Stress management teaches coping skills to deal with stressful situations in the patient's life. Turk et al.²⁰ suggested that stress management combined with biofeedback, relaxation and splint therapy would increase the patient's rate of improvement and decrease relapse that may occur with splint therapy alone. This therapy is time consuming and the patient must be motivated to practice it.

Trigger point injections can be performed for persistent trigger points by a credentialed provider and may result in immediate lowering of the patient's symptoms. However, the symptoms usually gradually return over time, but not to the initial levels. It may be helpful to follow this procedure with spray and stretch, hot packs and having the patient actively move the injected muscle through its full range of motion. Trigger point injections are recommended only after traditional conservative management in addition to exercises and other physical therapy modalities have failed to have a lasting effect.

Acupuncture has been reported to be as effective as splint therapy in relieving TMD symptoms, but appears to lose its effectiveness over time. Treatment with acupuncture usually includes multiple treatments with periodic follow-up treatments to maintain its effectiveness. It is important to keep in mind that TMD patients who do not improve with splint therapy tended not to improve with acupuncture. Acupuncture may be desired as an adjunctive therapy after all other traditional therapies including physical therapy, psychological interventions and low dose antidepressants have not provided adequate symptom relief.

MEDICATIONS

Pharmacotherapy can be a helpful component to comprehensive TMD treatment. There is a tendency for providers to prefer a favorite medication, but no single agent has been shown to be the most effective. Long term use of medications is undesirable and the use of narcotics is discouraged.

ANTI-INFLAMMATORY

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

NSAID usually provides some relief for mild to moderate TMJ inflammation and mild muscle pain. The primary NSAIDs and dosages I use are ibuprofen (Motrin) 800 mg tid and naproxen (Naprosyn) 500 mg bid. Naproxen sodium (Anaprox) 550 mg bid is equivalent to 500 mg of Naprosyn and is sold over-the-counter as Aleve (220 mg naproxen sodium). Caldwell (1983) reported that osteoarthritis patients and their providers preferred naproxen to ibuprofen and I observe a similar tendency among my TMD patients. If I am treating an inflammatory condition with a NSAID, I will generally prescribe the NSAID for 3 weeks. I try not to maintain a patient on a NSAID long term, except on a nighttime basis.

Steroidal Anti-Inflammatory Drugs

For moderate to severe TMJ inflammation and/or pain, an initial dose of steroid can be prescribed prior to the NSAID. I prefer giving a high initial steroid dose, taper it off and begin the NSAID while the patient is still taking the steroid. If your pharmacy carries Medrol Dosepak, I would write the prescription: Medrol Dosepak; 1 package; m. dict. and start the NSAID on the 4th day of the Dosepak. If your pharmacy does not carry Medrol Dosepak, you can prescribe it in the same manner, but you have to write the dose schedule on a separate sheet of paper for the patient. Prescribe methylprednisolone (Medrol) 4 mg X 21, m. dict. and write the instructions:

Day 1: 2 tablets before breakfast, 1 after lunch, 1 after dinner & 2 at bedtime

Day 2: 2 tablets before breakfast, 1 after lunch, 1 after dinner & 1 at bedtime

Day 3: 1 tablet before breakfast, 1 after lunch, 1 after dinner & 1 at bedtime

Day 4: 1 tablet before breakfast, 1 after lunch & 1 at bedtime

Day 5: 1 tablet before breakfast & 1 at bedtime

Day 6: 1 tablet before breakfast

Write a similar prescription for NSAID and start it on the 4th day of the Medrol.

Anti-Inflammatory Food Supplements

Studies investigating other joints in the body find these beneficial with minimal side effects. It is assumed the TMJ would respond similarly, but only one small clinical trial has been published.²⁴ If a patient was interested, I would be willing to recommend either glucosamine, 500 mg tid or Chondroitin, 400 mg tid (more costly). It is unlikely your AF pharmacy will carry these and they are fairly costly food supplements. Based on my reading of the literature and experience, I believe these will have an effect similar to NSAIDs, but due to their cost, military beneficiaries under my care have been reluctant to try them.

MUSCLE RELAXANTS

Muscle relaxants can be used for acute muscle pain or to temporarily reduce the patient's muscle activity. The primary muscle relaxants and dosages used for TMD are diazepam (Valium) 2-10 mg h.s. and low doses can be given taken during the day, methocarbamol (Robaxin) 500 mg h.s. or tid, and cyclobenzaprine (Flexeril) 10 mg h.s. or tid. Robaxin and Flexeril are expensive and all are sedative, so you may only want to only have the patient use it at bedtime. If I prescribe these for daytime use, I add to the prescription "if does not cause drowsiness" and discuss with the patient trying the medication in a manner that it will not be dangerous if he/she is drowsy. I try not to have a patient on a muscle relaxant for more than 3 weeks.

ANTIDEPRESSANTS

Historically, tricyclic antidepressants had been prescribed for chronic pain patients who also had depression and sleep disturbances. More recently they have been found to be effective in low doses for patients with tension-type headaches or musculoskeletal pain. Among TMD patients, amitriptyline has been shown to decrease nocturnal EMG activity, increase stage IV sleep (the restful stage of sleep) and increase pain threshold. One author anecdotally reported that TMD patients given low dose amitriptyline (Elavil) received a comparable treatment effect to an occlusal splint.

I find three tricyclic antidepressants with varied sedation enable me to use them in a clinically effective manner. Amitriptyline has substantial sedation associated with it and clinically, I find it most effective for patients who have a significant sleep problem and it appears to be most effective on the awakening pain. I recommend 10-50 mg 1-6 hours prior to bed. I have the patient start with 10 mg 3-4 hours prior to bed and ask the patient to slowly increase the dose, balancing the benefits and side-effects of medications within the limits of the prescription.

Nortriptyline (Pamelor) has much less sedation associated with it and clinically, I find it most effective for patients who have no or mild sleep disturbance and it also appears to be most effective on the awakening pain. I recommend 10-50 mg 0-3 hours prior to bed. I have the patient start with 10 mg 1 hour prior to bed and ask the patient to slowly increase the dose, balancing the benefits and side-effects of medications within the limits of the prescription.

Desipramine (Norpramin) essentially has no sedation associated with it and clinically, I find use it for patients who I want to treat their daytime and if present their awakening pain. I recommend 10-25 mg tid, balancing the benefits and side-effects of medications within the limits of the prescription.

When prescribing a tricyclic antidepressant, I strongly recommend that the side effects be reviewed with the patient. There are many side effects associated with these medications and they can have a profound affect on the patient. Once I have established the desired level and decided to maintain the patient on the tricyclic antidepressant, I refer them to a physician for long-term maintenance.

TOPICAL ANALGESIC CREAM

Capsaicin (Zostrix) is an analgesic cream that can be applied on the skin, over the TMJ. It absorbs through the skin, depletes and prevents the reaccumulation of the pain neurotransmitter and inflammatory mediator, substance P. In patients with rheumatoid arthritis and osteoarthritis, it has been shown to reduce joint pain over 4 weeks by 57% and 33% respectively. It comes in two strengths 0.025% and 0.075%, and should be applied 3-4 times a day. Capsaicin is the active ingredient in chili peppers, so patients should be warned to wash their hands after applying the cream (they may later rub

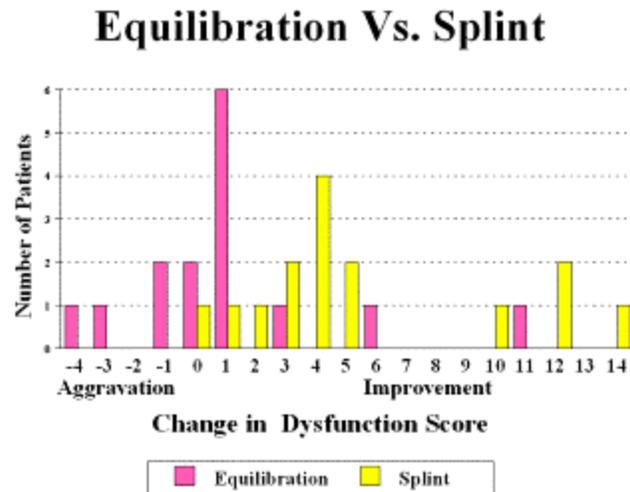
their eyes) and a common side effect is skin irritation for the first couple days. This cream is also available over-the-counter and recommend it not be used in conjunction with one of the over-the-counter topical muscle creams, i.e., Icy Hot.

OCCLUSAL THERAPY

Occlusal therapy is not often recommended in the treatment of TMD patients. It generally only provides a small reduction in TMD symptoms compared to less time consuming reversible treatments and it sometimes causes a patient's TMD symptoms to worsen.^{25,26} Wenneberg et al.²⁵ randomized TMD patients into two groups, one group received a median of four 1-hour occlusal equilibration sessions by an experienced dentist. The other group received a maxillary flat plane splint and some

subjects were also given other minor adjunctive TMD therapies (40% received stretching exercises and 26% received a minor occlusal adjustment taking less than 5 minutes). As illustrated in Figure 3, the splint group had significant ($p<0.01$) symptom reduction compared to the equilibration group. Forty percent of the subjects in the equilibration group complained of thermal sensitivity following this procedure. If an extensive amount of enamel is removed during an equilibration, the patient may require restorations to protect the exposed dentin.

Figure 3



I recommend occlusal therapy not be provided for symptomatic

TMD patients other than for the exceptions I describe below. One of my fears is that the patient may have a lateral pterygoid myospasm which is difficult to differentiate from other TMD presentations. A lateral pterygoid myospasm causes the lateral pterygoid muscle to hold the condyle anterior to its normal position. If the dentition is equilibrated, it would be done to an abnormal jaw posture. Once the myospasm resolves, the condyle will return to its normal position and the occlusal interdigitation will be significantly disrupted, or perhaps, mutilated.

There are few situations in which occlusal therapy provides a cost effective approach for treating TMD symptoms. Extremely few people have the textbook "perfect" occlusion, but individuals develop subconscious neuromuscular engrams which enable most to function without significant problems. If an occlusal interference is placed during a restorative procedure, there is no engram to avoid it and the patient may also tend to clench or grind on it. This may cause a patient to develop TMD symptoms. So if a patient returns to the clinic complaining of TMD symptoms following the placement of a restoration, the occlusion should be evaluated and improved if possible (there are other potential causes for a patient developing TMD following the placement of a restoration). It is important that practitioners place restorations that are harmonious with the rest of the dentition.

Occasionally a dentist may be able to identify an old restoration that increased the occlusal instability to such an extent that it appears to be the primary cause for the patient's TMD symptoms. A splint can be used to test this speculation and if correct, rectification of the restoration should thereby resolve the TMD symptoms.

The eruption of a third molar(s) can elicit TMD symptoms similar to how the placement of an improperly adjusted restoration. There are no good predictors for this scenario, but the third molar usually has a deep wear facet. In this situation, adjusting the third molar's occlusion or extracting it

should greatly reduce or resolve the TMD symptoms. Conversely, routine extraction of third molars often provides no TMD improvement and sometimes initiates or exacerbates TMD symptoms.

Once the patient's TMD symptoms have resolved to their satisfaction, an occlusal rehabilitation is not necessary to maintain these improvements. It is appropriate for the patient to continue to wear their splint at night as long as they find it beneficial. After the patient's TMD symptoms have resolved, some practitioners evaluate and if appropriate, provide the patient with a minor equilibration to aid with general occlusal stability.

Since a patient can wear a splint at night and should have been trained not to put their teeth together during the day, it is understandable that occlusal therapy only plays a very minor role in treating TMD or maintaining TMD improvements.

ORTHODONTICS

The American Association of Orthodontics position statement on orthodontics and TMD suggests that orthodontics does not cause or prevent TMD and its effectiveness as a definitive treatment has not been clearly demonstrated. Until orthodontic therapy is shown to have a predictable efficacious long term outcome, its indications for use in TMD patients should not differ from non-TMD patients.

TMJ SURGERY

TMJ surgery is indicated for the treatment of a wide range of pathologic conditions, including developmental and acquired deformities, disc displacements, arthritis, functional abnormalities, ankylosis and infection. In general, TMJ surgery is indicated only when the patient has moderate to severe pain and/or dysfunction from the TMJ and the disorder is refractory to nonsurgical therapy. Prior to a surgical intervention, parafunctional habits and other contributing factors should be controlled to the extent possible. Physical therapy prior to surgical intervention and continued postoperatively, may be beneficial.

TMJ IMPLANTS

Anyone who has received a TMJ implant should be followed by an oral surgeon. If it is not well documented in the patient's record when the patient is to return for follow-up, a referral should be made to an oral surgeon even if the patient is asymptomatic.

MULTIFACETED TREATMENT APPROACH

A multifaceted treatment approach is generally more effective than any single TMD therapy. The most common referrals I make are to the physical therapist for jaw exercises, posture exercises and physical therapy modalities (ultrasound, etc.), and to the psychologist for training to help patients break their daytime habits, relaxation, biofeedback, etc. Other referrals that I less frequently make are to a physician for shoulder and/or back pain (dentists can directly refer to physical therapy for head and/or neck pain), rheumatologist or internist for unexplained generalized muscle and/or joint pain, neurologist

or internist for migraines, and otolaryngologist or physician for ear and/or sinus pain. Occasionally the dentist may refer for trigger point injections, see Summary and Clinical Implications section for recommendations concerning when to refer. Other referrals should be made as the dentist feels are appropriate and I recommend the dentist not be reluctant to seek other providers' expertise.

It is not necessary to use a multifaceted treatment approach on every patient. Practitioners may prefer not to use this approach for patients with minimal symptoms or specific symptom characteristics which the dentist has found do well under his/her care, i.e., symptoms primarily occurring when the patient wakes up.

PROSTHODONTIC IMPLICATIONS

A patient whose primary complaint is TMD should be treated in the manner described by these general guidelines. Extensive prosthodontic therapy should not be used to treat a TMD patient, nor is it necessary for maintaining the TMD improvements that were obtained from the treatments described in this guide.

If a patient whose primary complaint is TMD has a dentition that requires extensive prosthodontic treatment, the prosthodontic therapy should be delayed until the patient's TMD pain has been resolved for at least 6 months.

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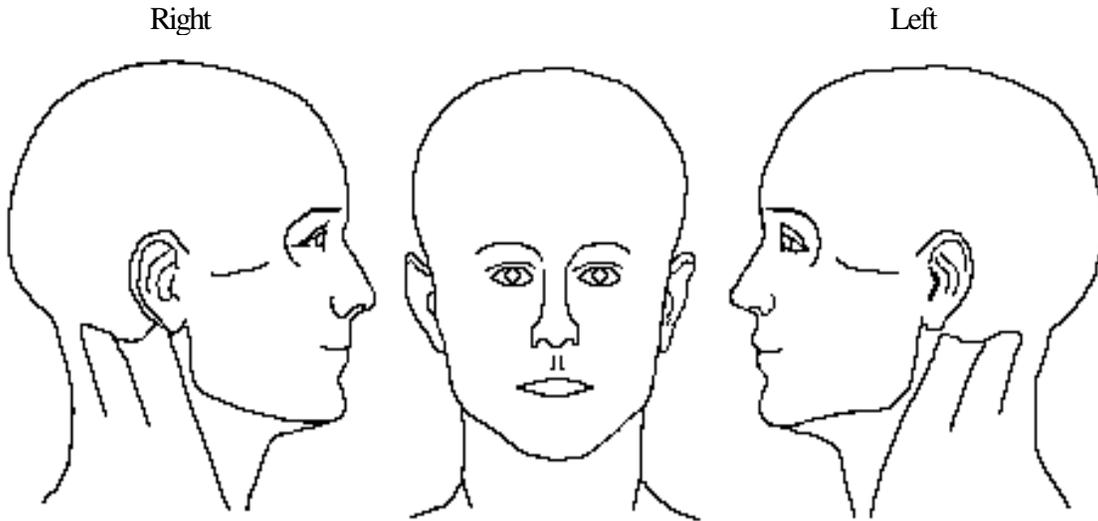
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INITIAL PATIENT QUESTIONNAIRE

Name: _____

Date: _____

1. On the diagram below, please shade the areas of your pain:



2. When did your pain/problem begin? _____

3. What seemed to cause it to start? _____

4. What treatments have you received? _____

5. When is your pain the worst?
When first wake up ___ Later in the day ___ No daily pattern ___ Other ___

6. What does the pain keep you from doing? _____

7. Is your pain (check as many as apply):
Dull ___ Pressure ___ Ache ___ Sharp ___ Throbbing ___ Burning ___ Other ___
Always present? Yes ___ No ___ How often do you have it? _____

Attachment 1

8. Does your pain:
Wake you up at night? Yes ___ No ___
Increase when you lay down? Yes ___ No ___
Increase when you bend forward? Yes ___ No ___
Increase when you drink hot or cold foods? Yes ___ No ___
9. Please circle the number below to indicate your present pain level.
(No pain) 0 1 2 3 4 5 6 7 8 9 10 (The worst pain imaginable)
10. Please circle your average pain level during the past 6 months.
(No pain) 0 1 2 3 4 5 6 7 8 9 10 (The worst pain imaginable)
11. Please describe any symptoms other than pain that you associate with your problem. _____

12. Have you had (please circle):
Yes No Head or neck surgery?
Yes No Whiplash or trauma to your head or neck?
Yes No Shingles on your head or neck?
13. Do you have (please circle):
Yes No A fever?
Yes No Nasal congestion or stuffiness?
Yes No Movement difficulties of your facial muscles, eyes, mouth or tongue?
Yes No Numbness or tingling?
Yes No Problems with your teeth?
Yes No Swelling over your jaw joint or in your mouth or throat?
Yes No A certain spot that triggers your pain?
Yes No Recurrent swelling or tenderness of joints other than in your jaw joint?
Yes No Morning stiffness in your body, other than with your jaw?
Yes No Muscle tenderness in your body (other than in your head or neck) for more than 50% of the time?
14. Is your (please circle):
Yes No Problem worse when swallowing or turning your head?
-

Yes No Problem worse after reading or straining your eyes?

Attachment 1

15. Do your jaw joints make noise? Yes ___ No ___ If yes, which: Left ___ Right ___
16. Have you ever been unable to open your mouth wide? Yes ___ No ___, if yes please explain: ___

17. Have you ever been unable to close your mouth? Yes ___ No ___, if yes please explain: _____

18. Do you sleep well at night? Yes ___ No ___, please explain: _____

19. How often are you tense during a usual day?
Always ___ Half the time ___ Seldom ___ Never ___
20. How often do you feel depressed during a usual day?
Always ___ Half the time ___ Seldom ___ Never ___
21. Do you play a musical instrument and/or sing more than 5 hours in a typical week?
Yes ___ No ___
22. Are you aware of clenching or grinding you teeth when sleeping? ___ while driving? ___
when using a computer? ___ other times? ___ not aware? ___
23. Are you aware of oral habits such as chewing your lips or cheeks? ___ chewing objects? ___
thrusting your jaw? ___ other habits? ___ not aware? ___
24. What treatment do you think is needed for your problem? _____

25. Is there anything else you think we should know about your problem? _____

26. If your age is 50 or older, please circle the correct response:
Yes No Is your pain only when you eat?
Yes No Are you pain free when you open wide?
Yes No Do you have scalp tenderness?
Yes No Do you have unexplained or unintentional weight loss?
Yes No Do you have significant morning stiffness lasting more than ½ hour?
Yes No Do you have visual symptoms or a visual loss?
-

TMD SELF MANAGEMENT THERAPIES

Your dentist determined you have a temporomandibular disorder which is often referred to as TMD. The “T” in TMD stands for the temple, “M” for the mandible or jaw and “D” for a disorder within this complex. This disorder is usually due to an overuse of this system.

We use this system for many activities (talking, eating, yawning, laughing) and when we are not engaged in these, we need to allow our jaw muscles and joints to relax. Many people have developed habits that do not permit their muscles or joints to relax for a sufficient amount of time. The following will help instruct you on how to reduce the TMD pain you are having:

1. Apply heat, ice or a combination of heat and ice to the painful areas. Most patients prefer heat but if that increases your pain, use the combination or just the ice.
 - a. Use heat for 20 minutes two or four times each day. Some patients prefer to use moist heat while others find dry heat just as effective and less of a hassle. Moist heat can be obtained by wetting a thin washcloth with very warm water. The washcloth can then be kept warm by wrapping it around a hot water bottle or placing it against a heating pad separated by a piece of plastic wrap.
 - b. Use the combination of heat and ice two to four times each day. Apply heat to the painful area for approximately 5 minutes (shorter if it aggravates your pain). Then apply an ice cube wrapped in a thin washcloth.
 - c. Apply ice wrapped in a thin washcloth until you first feel some numbness then remove it (this usually takes about 10 minutes).
 2. Eat soft foods like casseroles, canned fruits, soups, eggs and yogurt. Do not chew gum or eat hard (raw carrots) or chewy (caramels, steak, bagels) foods. Cut other foods into small pieces, evenly divide the food on both sides of your mouth, and chew on both sides.
 3. Avoid caffeine because it stimulates your muscles to contract and hold tension. Caffeine or caffeine-like drugs are found in coffee, tea, most sodas, and chocolate. Decaffeinated coffee also has some caffeine, while Sanka has none.
 4. Your teeth should never touch except lightly when you swallow. Closely monitor yourself for a clenching or grinding habit. People often clench their teeth when they are irritated, drive a car, use a computer, or concentrate. Learn to keep your jaw muscles relaxed, teeth separated, and tongue lightly resting on the roof of your mouth just behind your upper front teeth.
 5. Observe for and avoid additional habits that put unnecessary strain on your jaw muscles and joints. Some habits include but not limited to, resting your teeth together, resting your jaw on your hand, biting your cheeks, lips, finger nails, cuticles, or any other objects you may put in your mouth, pushing your tongue against your teeth, and holding your jaw in an uncomfortable or tense position.
-

Attachment 2

6. Posture appears to play a role in TMD symptoms. Try to maintain good head, neck and shoulder posture. You may find that a small pillow or rolled towel supporting your lower back may be helpful. Make sure you maintain good posture when using a computer and avoid poor postural habits such as cradling the telephone against your shoulder.
7. Your sleep posture is also important. Avoid positions that strain your neck or jaw, such as stomach sleeping. If you sleep on your side, keep your neck and jaw aligned.
8. Set aside time once or twice a day to relax and drain the tension from your jaw and neck. Patients often benefit from simple relaxation techniques such as sitting in a quiet room listening to soothing music, taking a warm shower or bath, and slow deep breathing.
9. Restrain from opening your mouth wide, such as yawning, yelling, or prolonged dental procedures.
10. Use anti-inflammatory and pain reducing medications, such as Aleve, ibuprofen, Motrin, Tylenol, aspirin and Percogesic to reduce joint and muscle pain. Avoid those with caffeine, i.e., Anacin, Excedrin or Vanquish.

There is no “cure” for TMD and you may need to follow these instructions for the rest of your life. Your dentist may suggest other therapies in addition to these instructions. No single therapy has been shown to be totally effective for TMD and a percentage of patients receiving TMD therapies report no symptom improvement (i.e., 10-20% of patients receiving occlusal splints report no improvement). Based on your symptoms and identified contributing factors, an individualized treatment approach will be recommended and it may be revised as your symptom response is observed.

USE OF YOUR SPLINT

The splint is designed to protect and stabilize your jaw muscles and joints, it should help you feel more comfortable and allow healing to occur. To obtain its maximum benefit, use it in the following manner:

1. Do not bite down on your splint. The splint is to help you realize when you are clenching and help you break this habit . **YOUR TEETH SHOULD NEVER TOUCH THE SPLINT!** Constantly monitor your jaw position and remember to keep your tongue up and your teeth off of the splint.
2. Most patients need to gradually increase the amount of time they wear their splint until they reach their recommended wear schedule. If your splint hurts your teeth, leave it out and come back to have it adjusted.
3. Do not wear your splint when you eat.
4. Clean the inside and outside of your splint at least daily with your toothbrush and toothpaste. It can be soaked with a denture cleaner solution to help clean it.
5. When you are not wearing your splint:
 - a) be careful where you place it, because it is very fragile
 - b) do not let it lay around, dogs and cats enjoy chewing on them
 - c) do not leave it in a warm place (i.e. inside your car on warm day), or it may warp.
 - d) if your splint will be out of your mouth for more than 8 hours, store it in a moist environment. You can place it with a few drops of water in a zip-lock bag or margarine tub.
6. Your splint may cause you to salivate more and may temporarily cause an increase in your jaw tension or joint noises.
7. When you take your splint out, your jaw may take a few seconds to adjust back to the way your teeth normally fit together.
8. Always take your splint with you when you have a dental appointment or an appointment in this clinic.

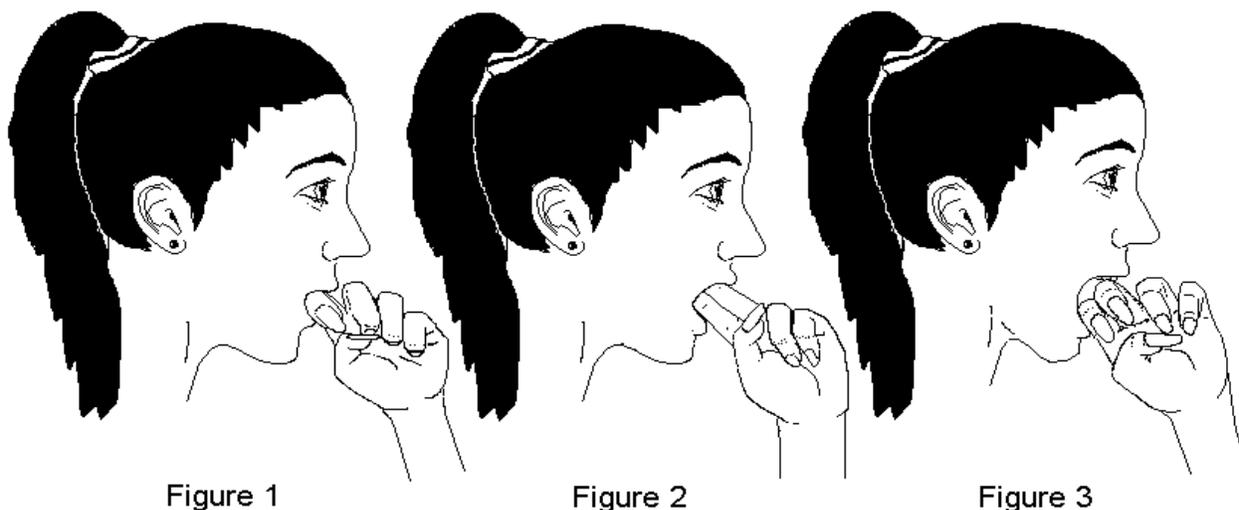
This advice should help you optimize the benefit you can obtain from your splint and maintain your oral health.

STRETCHING YOUR JAW MUSCLES

People unconsciously stretch many of their muscles throughout the day. Patients who have jaw muscle stiffness or pain often find a significant improvement in their symptoms with this jaw stretching exercise. Your dentist believes your symptoms will improve if you perform this simple jaw stretching exercise 6 times a day, between 30 and 60 seconds each time, at the opening and duration you determine best for you.

It is best to warm your jaw muscles before you stretch by slowly opening and closing about 10 times. You may also warm your muscles by applying moist heat to them (allow time for the heat to penetrate into your muscles). While stretching you need to concentrate on relaxing your lips, facial muscles and jaw. Do not bite on your fingers while stretching, they are only to give you a guide for the width you are stretching.

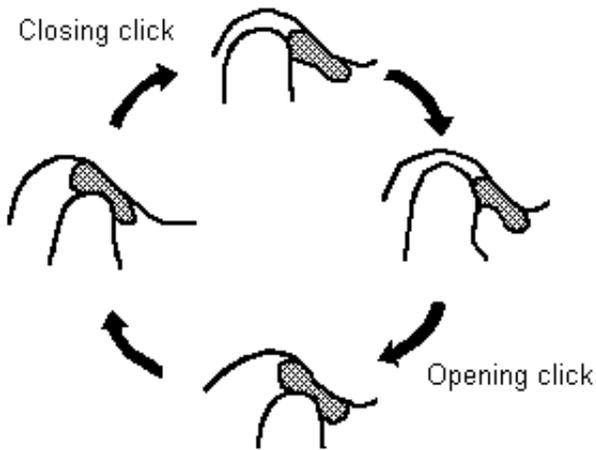
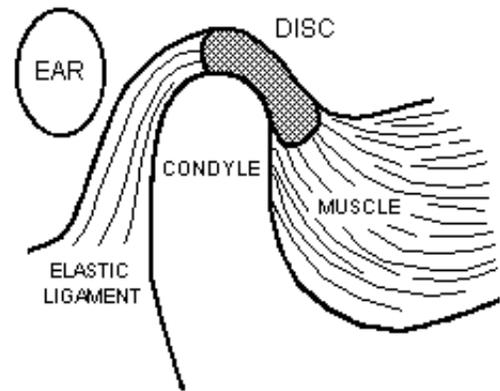
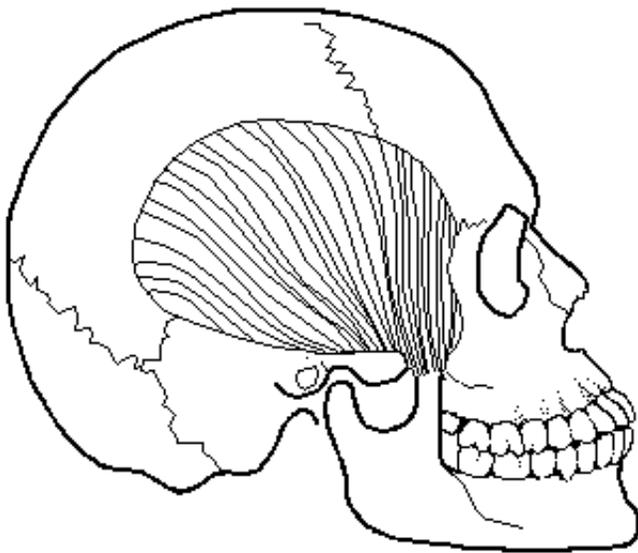
You will need to determine what opening and duration are best for you. To determine this, the first time you stretch, bend your index finger and place the middle knuckle between your upper and lower front teeth (see Figure 1). Hold this position for 30 seconds. If this does not aggravate your symptoms, the second time you stretch, increase the time to 45 seconds. If this does not aggravate your symptoms, the next time increase it to 60 seconds. If this does not aggravate your symptoms, increase your opening width to 2 fingertips (see Figure 2) and cut your time back to 30 seconds. Continue increasing your time and opening in this manner, but do not go beyond 3 finger tips. Find the largest opening and duration that does not cause even the slightest discomfort or aggravation of your symptoms and use this each time you stretch. If you experience any discomfort or aggravation, decrease your opening or time.



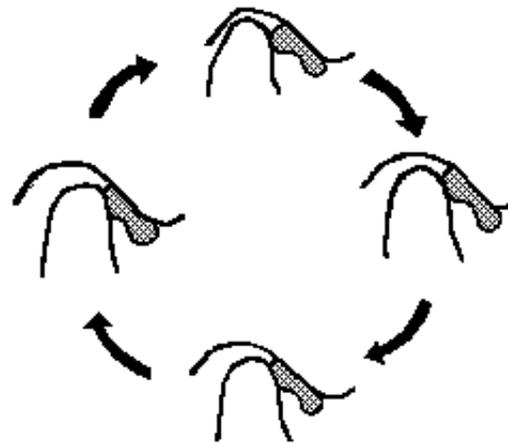
As your symptoms improve or if you have a flare-up, you will need to increase or decrease this opening and time. Be very careful not to cause yourself any aggravation with this exercise, because this may hurt your progress.

Patients report this exercise does not provide immediate symptom improvement, but takes about 1-2 weeks before benefits are noticed. Similarly, stopping does not cause immediate loss of these benefits, but also tends to take 1-2 weeks to be noticed. With the normal symptom fluctuation most TMD patients experience, it is often difficult for them to relate their symptom improvement or aggravation with the starting or stopping of this exercise.

ANATOMY OF DISC DISPLACEMENT



Clicking TMJ



Locking TMJ

EXAMPLE OF SF 603 ENTRIES

INITIAL EXAM:

S: Comprehensive TMD Exam, CC: daily Rt preauricular dull pain (3/10), worse when Pt wakes up in the morning. Approximately once a week she also wakes up with Rt temporal pain. The pain began approximately 3 months ago following an increase in stress at work. Initial Pt questionnaire reviewed with Pt.

O: Pano taken, soft tissue and teeth evaluated and all were WNL. Palpation of the masticatory muscles and TMJs revealed tenderness in her Rt and Lt masseter and Rt temporalis muscles. The Rt TMJ was tender to palpation and a reciprocal click noted. ROM: 38 mm opening, 6/6/5 lateral and protrusive movements.

A: Myofascial pain, Rt TMJ inflammation and Rt TMJ disc displacement with reduction.

P: Explained to Pt the mechanics of her Rt TMJ reciprocal click. Written and oral TMD HCI given. Max and man alginate imp and bite registration taken for fab of Man Acr flat plane splint. Rx: Motrin 800 mg X 60, tid. Pt reapt in 2 weeks for insertion of occlusal splint that Pt will be instr to wear at night and during the day for her most significant clenching activities.

INSERTION APPT:

Re: Myofascial pain, Rt TMJ inflammation and Rt TMJ disc displacement with reduction. Pt reports slt improvement which she believes is from implementing the TMD HCI, Rt preauricular morning pain is now 2/10. ROM: 40 mm opening. Ins Man Acr flat plane processed splint for Pt to wear at night and during the day for her most significant clenching activities, i.e., driving car. Reviewed TMD HCI and Pt reapt in 4 weeks for follow-up.

FOLLOW-UP:

Re: Myofascial pain, Rt TMJ inflammation and Rt TMJ disc displacement with reduction. Pt reports significant improvement with pain 1/10 approximately once a week. ROM: 44 mm opening, palpation of the masticatory muscles and TMJs revealed minimal tenderness, reciprocal click still present in Rt TMJ. Adj Man splint, Pt to continue wearing splint at night and during the day as she finds useful. Pt to RTC in 3 months for follow-up or sooner if improvement does not continue.

FOLLOW-UP:

Re: Myofascial pain, Rt TMJ inflammation and Rt TMJ disc displacement with reduction. Pt reports as long as she wears her splint at night she has no pain. ROM: 48 mm opening, palpation of the masticatory muscles and TMJs revealed no tenderness, reciprocal click still present in Rt TMJ. Adj Man splint, Pt to wear splint at night and RTC annually for follow-up or sooner if problems develop.

Attachment 8

EXAMPLE OF PSYCHOLOGY CONSULT

513-110 NSN 7540-00-634-4127

MEDICAL RECORD		CONSULTATION SHEET	
REQUEST			
TO: Psychologist	FROM: (Requesting physician or activity) Office symbol and name	DATE OF REQUEST	
REASON FOR REQUEST (Complaints and findings) Patient complains of bilateral jaw pain and my diagnosis is myofascial pain. I believe her primary contributing factor is stress related. Her pain started two weeks ago and she relates that her husband left for a remote tour in Korea three weeks ago. She also just started back to school and sleeps poorly because she feels she needs to stay alert at night to watch over her children. I have initiated the fabrication of an occlusal splint and referred her to physical therapy. Would you please evaluate and treat the patient as you feel is most appropriate. Thank you.			
PROVISIONAL DIAGNOSIS Stress major contributing factor of patient's myofascial pain			
DOCTOR'S SIGNATURE	APPROVED	PLACE OF CONSULTATION <input type="checkbox"/> BEDSIDE <input type="checkbox"/> ON CALL	<input checked="" type="checkbox"/> ROUTINE <input type="checkbox"/> TODAY <input type="checkbox"/> 72 HOURS <input type="checkbox"/> EMERGENCY
CONSULTATION REPORT			
RECORD REVIEWED <input type="checkbox"/> YES <input type="checkbox"/> NO		PATIENT EXAMINED <input type="checkbox"/> YES <input type="checkbox"/> NO	

When applicable, address:

1. Pertinent medical history
2. Emotional status
 - a. Stress
 - b. Depression
 - c. Anxiety
 - d. Difficulty relaxing
3. Sleep problems
4. Recommendations:
 - a. Stress management
 - b. Biofeedback
 - c. Counseling

(Continue on reverse side)

SIGNATURE AND TITLE			DATE
IDENTIFICATION NO.	ORGANIZATION	REGISTER NO.	WARD NO.

PATIENT'S IDENTIFICATION (For typed or written entries give: Name-last, first, middle; grade; rank; rate; hospital or medical facility)

CONSULTATION SHEET
Medical Record

STANDARD FORM 613 (REV. 8-92)
(EF-V1) (PerFORM PRD)
Prescribed by GSA/ICMR, FIRM (41 CFR) 201-9.202-1

ADA PROCEDURE CODES FOR TMD TREATMENTS

INITIAL VISIT

- 00150 Comprehensive oral evaluation (Dental Weight Value: 0.52)
- 00330 Panoramic film (0.63)
- 09310 Answering consult, written or oral (0.78)
- 09920 Behavioral management, for each 15 minute increment (0.53)

SPLINT INSERTION

- 07880 Occlusal orthotic device (6.59)
- 09920 Behavioral management, for each 15 minute increment (0.53)

FOLLOW-UP

- 09920 Behavioral management, for each 15 minute increment (0.53)
- 09430 Office visit, observation [no other services provided] (0.38)

OTHER CODES

- 00140 Unanticipated postoperative visit [do not take 94301] (0.33)
- 00460 Pulp vitality tests (0.28)
- 05510 Orthotic repair (1.57)
- 05730 (Max), 05731 (Man) Chairside orthotic reline (1.83)
- 09110 Emergency treatment of pain (0.63)
- 09210 Diagnostic local anesthesia or anesthetic injections of trigger points (0.31)
- 09610 Therapeutic drug injection (0.37)
- 09940 Occlusal guard for bruxism, by report [for TMD use 07880] (3.92)

CPT Codes:

- 20605 Local anesthesia injection, TMJ (0.38)
- 76101 Tomogram of TMJ, unilateral (0.47)
- 76102 Tomogram of TMJ, bilateral (0.53)

Note: Anticipated adjustments of the splint are included the splint's Dental Weight Value

CONSERVATIVE TMD THERAPY UNDER TRICARE

(For dental clinics which do not treat non-active duty TMD patients)

Conservative temporomandibular disorder (TMD) therapy is a TRICARE benefit. This entails the treatment of muscle and/or joint pain, soreness or stiffness. Splint therapy for dental disorders i.e., tooth attrition, dental stabilization for periodontics or prosthodontics is not a TRICARE benefit. The following information is for the vast majority of AF dental clinics that do not provide TMD therapy for non-active duty personnel.

1. Patients enrolled in TRICARE Prime :

Patients need to be instructed to see their Primary Care Manager (PCM) or a consult may be written to their PCM recommending TMD therapy. Physical therapy, psychological intervention and medications are not TRICARE benefits for TMD, but these services may be provided within the military facilities for TMD.

2. TRICARE eligible patients not enrolled in TRICARE Prime :

Patients can see a TRICARE approved civilian dentist for TMD therapy. The TRICARE Service Center at each MTF should have a list of approved civilian dentists.

Prior authorization is not needed for the relief of pain as long as treatment is limited to: four office visits, radiographs (not to include Tomograms or MRI), and an occlusal splint. Any additional care/visits within 6 months of treatment, must receive authorization.

Physical therapy, psychological intervention and medications are not TRICARE benefits for TMD, but these services may be provided within the military facilities for TMD.

For additional questions, providers can contact Foundation Health Federal Services at (800) 406-2833.

SOURCES FOR ADDITIONAL TMD INFORMATION

TMD COURSE:

An AF TMD Course is given every Spring, at Keesler AFB. Command and local funding has traditionally been available.

PATIENT BROCHURE:

Temporomandibular Disorders (TMD), brochure #OP-23

- The best patient brochure I've seen, it states that orthodontics, crowns, bridges and occlusal adjustments are of little value. The National Oral Health Information Clearinghouse, will send you a free brochure if you call or write:

1 NOHIC Way
Bethesda, MD 20892-3500
(301) 402-7364

TEXTBOOKS:

1. Okeson IP. *Management of Temporomandibular Disorders and Occlusion*. 4th Ed. St. Louis, CV Mosby Co, 1998. (800) 325-4177
 - Probably the best TMD book for the general dentist, I recommend every dental clinic have this book in their library
2. Pertes RA, Gross SG. *Clinical management of temporomandibular disorders and orofacial pain*. Quintessence: Chicago; 1995. (800) 621-0387
 - Also an excellent inexpensive book
3. American Academy of Orofacial Pain. Okeson JP. (ed) *Orofacial Pain: Guidelines for Assessment, Diagnosis and Management*. Chicago: Quintessence Publishing Co, 1996. (800) 621-0387
 - TMD guidelines and the source of the diagnostic categories

JOURNALS:

TMD articles can be found in most dental and medical journals. The following two journals are dedicated primarily to TMD, I preferred the first journal to the second.

1. Journal of Orofacial Pain. Quintessence Publishing Co, Inc. (800) 621-0387
2. Cranio. Chroma, Inc. (800) 624-4141

OTHER:

TMJ Update

- 16 page publication, printed 6 times a year, entailing recent TMD articles and their summaries. Anadem Publishing, Inc. (800) 633-0055