



Step-by-step

# Patient Screening Guide

- **Patient Questionnaire**
  - **Screening Exam Record**
  - **TMJ Findings Worksheet**
- (found in the back of this section)*
- **Clinical Exam Guidelines:**  
*(found in the back pocket of this guide)*
    - **Muscle Palpation**
    - **Evaluating Joint Sounds**
    - **Load Testing with the Lucia Jig**
  - **TMJ Screening Results Table**  
*(found in the back pocket of this guide)*

*Invest 45 minutes  
in reading this guide  
and you will be able  
to reliably and efficiently  
treat your patients  
with TMD issues.*

Dear Colleague,

We know that up to 40% of the patients currently in your practice today have occlusal pathology. Additionally, we know that 80% of these patients have muscle imbalances and can benefit from an occlusal splint.\*

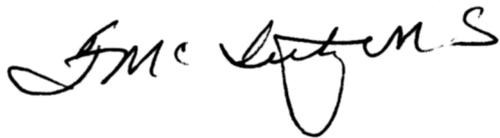
This guide is designed to **help you treat** this population efficiently and effectively.

The screening guide is part of a larger kit containing tools you will need to identify, diagnose, and treat your TMD patients. In addition to the screening guide, the kit includes a tool to help you select the right splint; instructions on impression-taking, bite registration, and splint adjustment; information on maximizing insurance benefits, accessing a splint specialist for technical support, as well as access to a Doctor Consult service.

Through Great Lakes Doctor Consult service, I can help you with TMD patient screening and diagnostic questions, effective appliance management, and TMD treatment troubleshooting. Take a look at the flier included in the kit for more information.

I know that you want to provide the very best care for your patients with TMD. I also realize that your patients want you to handle as much of their care as possible. So this is really a winning situation for both you and your patients.

With your expertise and Great Lakes technology and skills, you can confidently and successfully treat your TMD patients.

A handwritten signature in black ink that reads "Fred McIntyre, DDS, MS". The signature is written in a cursive, flowing style.

Fred McIntyre, DDS, MS  
Doctor Consult Service

\* Dr. Gordon J. Christensen, [Occlusal Splints-Predictable, Frequent Use Practical Clinical Course DVD](#)

## How to Use This Guide

The **step-by-step** patient screening guide will help you identify appropriate patients to treat as well as identify those patients who should be referred out of the practice. The key to making this critical decision is communication with the patient and your clinical exam.

We have included tools that will help you, a **patient questionnaire** and a **screening exam record**.

The questionnaire and the exam record are featured in this guide with an explanation of when and how to use them. They coordinate with two additional tools in the guide called, the **TMJ Findings Worksheet** and the **TMJ Screening Results Reference Table**.

Also included in this guide are instructions (found in the back pocket) that coordinate with the screening exam record on muscle palpation, evaluating joint sounds, and load testing with a Lucia Jig.

### Case Examples

The shaded boxes throughout the guide feature examples of two patients who have reported symptoms during a routine exam. For each step, the examples show the patient's responses to the questionnaire, screening exam results, and TMJ Findings Worksheet information. The last section discusses the findings and possible treatment plans for both patients.

*At any time during your review of this guide or throughout evaluation or treatment planning, feel free to contact our **Splint Support Specialist** at **1.800.828.7626** with any questions or to access the **Doctor Consult Service**.*

### Customize patient-specific tools (found in the back of this section)

- Patient Questionnaire
- Screening Exam Record
- TMJ Findings Worksheet

Customize with your practice name, address, and logo. Download the tools from our website at [www.greatlakesortho.com](http://www.greatlakesortho.com).

The general dental practitioner is recognized as having ultimate responsibility for patient evaluation, diagnostic, treatment and/or referral decisions. The information contained in this guide is compiled from textbooks, articles, and courses available to the profession and is provided in an advisory capacity only. Great Lakes Orthodontics, Ltd, is not responsible for patient outcomes.

## Patient Questionnaire

By incorporating a routine patient questionnaire and exam into patient visits, you will become increasingly more aware of potential TMD symptoms and signs. Either the patient will talk about symptoms such as headaches or muscle soreness or you may notice occlusal signs such as excessive wear or fractures.

The first step is the patient questionnaire which can be completed in just a few minutes by the patient. It's an ideal tool to use chair-side to discuss symptoms in more detail with the patient.

The questionnaire is designed for simple 'yes' or 'no' responses. This makes it easy for the patient to respond and allows you to immediately focus on any red flag responses such as 'injury to the jaw or face' or 'having been previously treated by a TMJ specialist'.

The responses from the questionnaire will be transferred to the TMJ Findings Worksheet for further evaluation along with the results of the screening exam.



# Screening Exam Record

Following a review of the patient questionnaire, the screening exam will provide you with the information you need to decide how to treat your patient. Record your results on the Screening Exam Record.

The exam will consist of:

- A. Occlusal assessment
- B. Jaw opening evaluation
- C. Muscle palpation
- D. Evaluating joint sounds
- E. Load testing with the Lucia Jig

**Note: Instructions for muscle palpation, evaluating joint sounds, and load testing can be found in the back pocket of this guide.**

- A. **Occlusal Assessment:** You are looking for any signs of occlusal instability which can cause occluso-muscle imbalance. These signs include worn, broken, or loose teeth, occlusal disease, hypermobility, excessive wear, tooth migration, or cusp fractures.
- B. **Jaw Opening:** You are trying to determine if the patient has full range of motion and if not, how much range of motion they do have. Disposable range of motion scales make this evaluation simple and quick.  
Normal range of motion: Wide: 40-50mm  
Lateral & Protrusive: 7-15mm  
You can also use the range of motion scales to determine if the patient deviates at full opening to the right or to the left as well as in protrusion.
- C. **Muscle Palpation:** Palpation of the masticatory muscles is part of a standard screening exam for temporomandibular disorders. Muscle tenderness is almost always present if a muscle is overworked in an uncoordinated manner. The instructions (located in the back pocket) include palpation of the medial (internal) pterygoid, the superficial masseter, the temporalis, and the lateral (external) pterygoid muscles. Any positive response is recorded as a single “yes” in Column 1 of the TMJ Findings Worksheet.
- D. **Joint Sounds:** A normal joint is quiet. You are listening for any sounds during joint movement that may indicate an intracapsular disorder. While the patient is opening, you are listening for crepitus which sounds like grating or scratching and you are also listening for popping and clicking; both when the patient is only open slightly and when the patient is only open wide. Any positive response is recorded as a single “yes” in Column 1 of the TMJ Findings Worksheet.
- E. **Load Testing:** Load testing with the Lucia Jig will help you determine whether an intracapsular structural disorder is or is not a source of pain. The Lucia Jig de-programs the muscle by separating the posterior teeth which allows the lateral pterygoid to release, seating the condyles in the most superior position.

(Your Letterhead)

**TMJ Screening Exam Record**

Patient Name: Mary

Date: 11/10

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

**A) Signs of Occlusal Instability (worn, broken, or loose teeth)**

**B) Jaw Opening**

<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Upon full opening, does the patient deviate to the right?
- Upon full opening, does the patient deviate to the left?
- Does the jaw deviate in protrusion?

**C) Masticatory Muscle Palpation**

Are any of the following muscles sore or tender when palpated?

<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Medial (internal) Pterygoid
- Masseter
- Temporalis
- Lateral (external) Pterygoid

**D) Evaluating Joint Sounds**

**Right Joint**

<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Is there crepitus when the patient opens slightly (on rotation)?
- Is there crepitus when the patient only opens wide (translation)?
- Is there a click when the patient opens slightly (on rotation)?
- Is there a click when the patient only opens wide (translation)?

**Left Joint**

<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Is there crepitus when the patient opens slightly (on rotation)?
- Is there crepitus when the patient only opens wide (translation)?
- Is there a click when the patient opens slightly (on rotation)?
- Is there a click when the patient only opens wide (translation)?

**E) Lucia Jig Load Test for Tenderness**

<input checked="" type="checkbox"/>	<input type="checkbox"/>
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- Did the Lucia Jig load test result in any tension or tenderness?

**The next step:** Transfer the information from the patient questionnaire and the exam record to the TMJ Findings Worksheet.

SMLP161Rev011508

Record results on the TMJ Findings Worksheet

(Your Letterhead)

**TMJ Screening Exam Record**

Patient Name: Bob

Date: 11/20

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

**A) Signs of Occlusal Instability (worn, broken, or loose teeth)**

**B) Jaw Opening**

<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Upon full opening, does the patient deviate to the right?
- Upon full opening, does the patient deviate to the left?
- Does the jaw deviate in protrusion?

**C) Masticatory Muscle Palpation**

Are any of the following muscles sore or tender when palpated?

<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Medial (internal) Pterygoid
- Masseter
- Temporalis
- Lateral (external) Pterygoid

**D) Evaluating Joint Sounds**

**Right Joint**

<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Is there crepitus when the patient opens slightly (on rotation)?
- Is there crepitus when the patient only opens wide (translation)?
- Is there a click when the patient opens slightly (on rotation)?
- Is there a click when the patient only opens wide (translation)?

**Left Joint**

<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Is there crepitus when the patient opens slightly (on rotation)?
- Is there crepitus when the patient only opens wide (translation)?
- Is there a click when the patient opens slightly (on rotation)?
- Is there a click when the patient only opens wide (translation)?

**E) Lucia Jig Load Test for Tenderness**

<input checked="" type="checkbox"/>	<input type="checkbox"/>
-------------------------------------	--------------------------

- Did the Lucia Jig load test result in any tension or tenderness?

**The next step:** Transfer the information from the patient questionnaire and the exam record to the TMJ Findings Worksheet.

SMLP161Rev01

Record results on the TMJ Findings Worksheet

# TMJ Findings Worksheet

Once completed, the TMJ Findings Worksheet will reveal a specific course of action and you can begin to treatment plan for your patient. The table is easy to use.

**Step 1:** Record all "YES" responses in COLUMN 1 from the patient questionnaire and the screening exam worksheet.

		COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
		Mark 'YES' Here	Refer	Full Contact with anterior guidance	Full Contact w/ant. guide or Flat Plane	Full Contact w/ant. guide, Flat Plane, or Deprogrammer
Patient Questionnaire Responses	1	Awakening Headache				
		Afternoon Headache				
	2	Jaw Muscle Soreness				
	3	Joint Soreness				
	4	Injury				
	5	Joint Click				
	6	Locking Joints				
	7	Sensitive/Sore Teeth		Potential indication of occlusal problem		
	8	Splint or Nightguard		Indication of severity		
	9	Medication(s)		Indication of severity		
	10	TMJ Specialist				
Screening Exam Findings	A	Occlusal Instability		Indication of severity		
	B	Jaw Opening-Right				
		Jaw Opening-Left				
		Jaw Opening-Protrusion				
	C	Muscle Palpation				
	D	Crepitus open slightly				
		Crepitus open wide				
		Click open slightly				
		Click open wide				
	E	Pain on Load Testing				

**Step 2:** For all "YES" responses, place a check mark in the associated shaded box to the right in Columns 2-5. There's only one shaded box per row.

### Interpreting the Table:

Columns 2 through 5 are organized from the least to the most treatment options. *Read left to right, the first check mark indicates the appropriate course of action.*

- Start with Column 2, if there is even one check mark in Column 2, consider referring the patient to a TMJ specialist.
- Provided there are no check marks in Column 2, one check mark in Column 3 indicates a Full Contact splint w/anterior guidance.
- If there are no check marks in Columns 2 or 3, but a check mark in Column 4, either a Full Contact or Flat Plane splint is indicated.
- If there are no check marks in Columns 2, 3, or 4, but a check mark in Column 5, either a Full Contact, Flat Plane, or deprogrammer is indicated.

After you have determined the appropriate course of action to take, you can use the TMJ Screening Results Reference Table to further evaluate possible causes and learn more about appliance and treatment options. *Refer to the Splint Appliance Selection Guide to choose the appropriate Full Contact splint with anterior guidance, Flat Plane splint, or deprogrammer.*

**TMJ Findings Worksheet**

Patient Name Mary

Date: \_\_\_\_\_

**Completing the Table**

Step 1: Record all "YES" responses in COLUMN 1 from the patient questionnaire and the screening exam worksheet

Step 2: For all "YES" responses, place a check mark in the associated shaded box to the right in columns 2-5. There's only one shaded box per row.

		COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	
		Question	Mark 'YES' Here	Refer	Full Contact with anterior guidance	Full Contact w/ant. guide or Flat Plane	Full Contact w/ant. guide, Flat Plane, or Deprogrammer
Patient Questionnaire Responses	1	Awakening Headache					
		Afternoon Headache	✓				
	2	Jaw Muscle Soreness	✓				
	3	Joint Soreness					
	4	Injury					
	5	Joint Click					
	6	Locking Joints					
	7	Sensitive/Sore Teeth				Potential indication of occlusal problem	
	8	Splint or Nightguard					
	9	Medication(s)				Indication of severity	
	10	TMJ Specialist					
Screening Exam Findings	A	Occlusal Instability				Indication of severity	
	B	Jaw Opening-Right					
		Jaw Opening-Left					
		Jaw Opening-Protrusion					
	C	Muscle Palpation	✓				
	D	Crepitus open slightly					
		Crepitus open wide					
		Click open slightly					
		Click open wide					
	E	Pain on Load Testing					

**Interpreting the results for Mary**

After transferring all the "YES" answers onto the worksheet and completing the table, you can now assess your results.

Reading left to right across the table, the first check mark to the left appears in Column 4 which indicates a Flat Plane splint or Full Contact splint with anterior guidance. See Page 8 for more discussion about Mary's case.

**TMJ Findings Worksheet**

Patient Name Bob

Date: \_\_\_\_\_

**Completing the Table**

Step 1: Record all "YES" responses in COLUMN 1 from the patient questionnaire and the screening exam worksheet

Step 2: For all "YES" responses, place a check mark in the associated shaded box to the right in columns 2-5. There's only one shaded box per row.

		COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	
		Question	Mark 'YES' Here	Refer	Full Contact with anterior guidance	Full Contact w/ant. guide or Flat Plane	Full Contact w/ant. guide, Flat Plane, or Deprogrammer
Patient Questionnaire Responses	1	Awakening Headache	×				
		Afternoon Headache					
	2	Jaw Muscle Soreness	×				
	3	Joint Soreness					
	4	Injury					
	5	Joint Click	×				
	6	Locking Joints					
	7	Sensitive/Sore Teeth				Potential indication of occlusal problem	
	8	Splint or Nightguard					
	9	Medication(s)				Indication of severity	
	10	TMJ Specialist					
Screening Exam Findings	A	Occlusal Instability				Indication of severity	
	B	Jaw Opening-Right					
		Jaw Opening-Left					
		Jaw Opening-Protrusion					
	C	Muscle Palpation	×				
	D	Crepitus open slightly	×	×			
		Crepitus open wide					
		Click open slightly	×	×			
		Click open wide					
	E	Pain on Load Testing	×	×			

**Interpreting the results for Bob**

After transferring all the "YES" answers onto the worksheet and completing the table, you can now assess your results.

Reading left to right across the table, the first check mark to the left appears in Column 2 which indicates that Bob should be referred to a specialist. See Page 8 for more discussion about Bob's case.

### Case Discussion & Possible Treatment Plans

From Mary's responses to the questionnaire and the exam findings, it appears that Mary has an occluso-muscle imbalance that's causing facial pain. However, she does have stable joints which makes her a treatable patient.

The fact that she suffers from afternoon headaches and the exam revealed occlusal instability indicates that Mary may be clenching and/or grinding during the day. A full coverage splint is indicated to be worn full time. (Since the patient would need full-time wear, a deprogrammer is contra-indicated).

A full contact splint with anterior guidance or a flat plane splint would best suit Mary's needs.

*Note: Often, when patients need to wear a splint full-time, many find it easier to function in a lower splint.*

	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
Question	Mark 'YES' Here	Refer	Full Contact with anterior guidance	Full Contact w/ant. guide or Flat Plane	Full Contact w/ant. guide, Flat Plane, or Deprogrammer
Awakening Headache					
Afternoon Headache	✓			⊙	
Jaw Muscle Soreness	✓				✓
Joint Soreness					
Injury					
Joint Click					
Locking Joints					
Sensitive/Sore Teeth			Potential indication of occlusal problem		
Splint or Nightguard					
Medication(s)			Indication of severity		
TMJ Specialist					
Occlusal Instability			Indication of severity		
Jaw Opening-Right					
Jaw Opening-Left					
Jaw Opening-Protrusion					
Muscle Palpation	✓				✓
Crepitus open slightly					
Crepitus open wide					
Click open slightly					
Click open wide					
Pain on Load Testing					

From Bob's responses to the questionnaire and the exam findings, it appears that Bob has an occluso-muscle imbalance that may be contributing to his pain. However, the exam also revealed certain signs of a possible internal derangement such as crepitus upon opening slightly and a click upon opening slightly which can also be contributing to the pain Bob is reporting.

The fact that Bob experienced tension upon load testing also indicates a potential problem in the joint including disc displacement or other intracapsular problem.

Bob's case is more complex and requires additional evaluation. Many general dentists choose to refer patients like Bob to a specialist.

	COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
Question	Mark 'YES' Here	Refer	Full Contact with anterior guidance	Full Contact w/ant. guide or Flat Plane	Full Contact w/ant. guide, Flat Plane, or Deprogrammer
Awakening Headache	×				×
Afternoon Headache					
Jaw Muscle Soreness	×				×
Joint Soreness					
Injury					
Joint Click	×		×		
Locking Joints					
Sensitive/Sore Teeth			Potential indication of occlusal problem		
Splint or Nightguard					
Medication(s)			Indication of severity		
TMJ Specialist					
Occlusal Instability			Indication of severity		
Jaw Opening-Right					
Jaw Opening-Left					
Jaw Opening-Protrusion					
Muscle Palpation	×				×
Crepitus open slightly	×	×			
Crepitus open wide					
Click open slightly	×	×			
Click open wide					
Pain on Load Testing	×	×			



### Clinical Exam Guidelines

- Muscle Palpation
- Evaluating Joint Sounds
- Load Testing with the Lucia Jig

### TMJ Screening Results Table

*Confirm your diagnosis or review treatment options with an experienced TMD practitioner...*

Great Lakes offers a new **Doctor Consult Service** with **Frederick M. McIntyre, DDS, MS.**

Access the service by calling Great Lakes splint support specialist at **1.800.828.7626** to set up a telephone consultation.

The Doctor Consult service is available by appointment only. \$35 for up to 1/2 hour.

### Want to Learn More?

Contact Great Lakes for information on nationally-accredited courses offering training in:

- Management of more advanced TMD issues
- Long-term resolution to occlusal problems
- Occlusion for aesthetics

**1.800.828.7626**

**716.871.1161**

[www.greatlakesortho.com](http://www.greatlakesortho.com)

For more information or to  
contact our Splint Specialist:

**1.800.828.7626**

**716.871.1161**

[www.greatlakesortho.com](http://www.greatlakesortho.com)



### TMJ Diagnostic Materials & Equipment

<i>For Jaw Opening Evaluation:</i> <b>Therabite Range of Motion Scales</b> (100/pkg)	<b>255-009</b>
<i>For Load Testing using the Lucia Jig:</i> <b>Lucia Jig Kit</b> (18 standard and 6 Class II) <b>Whale Tails</b> (3/pkg)	<b>255-025</b> <b>255-027</b>
<b>Acu-Flow™ Bite Registration Material</b> <b>Acu-Flow™ Dispensing Gun</b>	<b>100-005</b> <b>100-010</b>
<i>For Evaluating Joint Sounds:</i> <b>Great Lakes TMJ Doppler™</b> (Includes 5MHZ transducer, gel, carrying case, and manual)	<b>250-041</b>
<i>For Patient Education:</i> <b>Great Lakes TMJ Demonstrator</b> <b>Skull with Masticatory Musculature</b>	<b>255-012</b> <b>255-015</b>

# Palpation of the Masticatory Muscles

Palpation is the examination of the soft tissues using the sense of touch. Palpation of the masticatory muscles will reveal tension or tenderness which can be related to hyperactivity of the muscle as a result of overworking it in an uncoordinated manner. A muscle is overworked when it is required to constantly hold the jaw in an avoidance pattern during closure to maximum intercuspation.

When you begin palpation, explain to the patient that you will be applying a light pressure to the muscle just as you would apply light pressure to their forearm. Demonstrate the amount of pressure you will be using on the patient's forearm and establish a "no pain" point of reference. Tell the patient that he or she will need to let you know if there is any tenderness or pain greater than the "no pain" point of reference and if it is mild, moderate, or severe. Be alert to wincing and body language as some patients have a higher tolerance for discomfort than others.

To palpate means to press lightly on the muscle. In a continuous movement, slide your finger(s) along the length and width of the muscle while asking the patient if he or she feels any tension or tenderness as you apply pressure. You are also trying to feel for any abnormality, contraction, or enlargement of the muscle.

## Medial (internal) Pterygoid Muscle

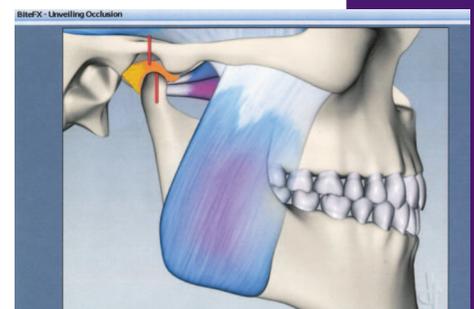
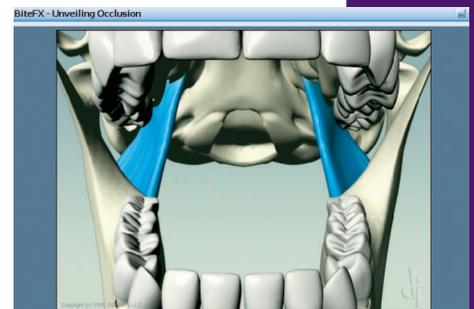
The medial pterygoid muscle is a thick quadrilateral muscle which can be accessed from inside the mouth behind the third molars. Ask the patient to open about 10-15mm from intercuspal contact. Slide your forefinger posteriorly along the buccal surface. Palpate the muscle by pressing medially as well as posteriorly-superiorly. Ask if the patient feels any tension or tenderness.

Palpation of the medial pterygoid muscle has the greatest clinical significance for occluso-muscle imbalance. It is easy to palpate, and it has a direct correlation with the direction of displacement of the same side condyle. The medial pterygoid is a dependable diagnostic landmark in that it is almost always tender to palpation if the same side condyle must displace to achieve maximum intercuspation of the teeth.

## Superficial Masseter Muscle

The superficial masseter muscle extends from below the cheekbone down to the jaw directly over the molar region. If you ask the patient to clench and hold, you will be able to locate this muscle easily. The muscle can be palpated with the patient clenching or relaxed. Palpate along the entire muscle length and width while asking the patient if there is any tension or tenderness. The muscle will feel swollen or enlarged in a heavy clencher/grinder.

Tenderness to palpation almost always indicates some degree of occlusal interference that requires displacement of the same side condyle to achieve maximum intercuspation. Tenderness and restricted opening in the morning are almost certain indications of nighttime bruxing. Occlusal correction may or may not reduce the bruxing, but it almost always relieves the soreness in the muscle, and it most certainly reduces the damage strong bruxers inflict on the dentition.



## Temporalis Muscle

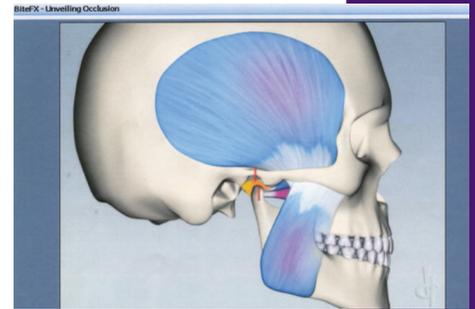
The temporalis is a broad, fan-shaped muscle situated at the side of the head. By asking the patient to clench/hold and repeat, you will be able to locate the temporalis and follow its shape or form up the side to the top of the head. Palpate along the entire length and width of the muscle while asking the patient if there is any tension or tenderness.

The temporalis muscle is the focus of many headaches that respond favorably to occlusal correction. This muscle is also in direct opposition to the lateral pterygoid. It also has some origination behind the lateral wall of the orbit of the eye, and can be a source of sharp pain behind the eye. Its aponeurosis extends as an innervated sheath to the top of the head, and when inflamed can make the scalp sore to touch. Temporal headaches and pain are some of the most common symptoms related to occluso-muscle imbalance.

## Lateral (external) Pterygoid Muscle

The lateral pterygoid muscle originates from the lateral pterygoid plate. It is divided into two sections: the inferior lateral pterygoid and superior lateral pterygoid. The lateral pterygoid is a short thick muscle which functions to translate the mandible and is active on mouth opening and near final mouth closure.

While palpation of the lateral pterygoid muscle is not practical, it can be tested effectively to determine if it is a source of pain. Ask the patient to protrude the mandible slightly and at the same time, apply pressure on the jaw distally to provoke a muscle response. A sore muscle will respond to this test.



### References:

Dawson, P. *Functional Occlusion, From TMJ to Smile Design*, Mosby Elsevier 2007

Daskalogiannakis, J. *Glossary of Orthodontic Terms*, Quintessence Publishing Inc. 2000

Illustrations courtesy of BiteFX, animations and photos that greatly enhance your ability to explain the importance of correct occlusion. Contact BiteFX at 1.877.224.8339 or at [www.bitefx.com](http://www.bitefx.com).

## Evaluating Joint Sounds

Patients may report audible clicking during an exam. Less audible sounds from the temporomandibular joints may be detected by using a stethoscope, electronic stethoscope, or Doppler ultra sound instrument.

Audible clicking is sound that can be heard without the use of an instrument. Patients will often make you aware of audible clicking or popping sounds and you may notice it during a routine exam.

During the evaluation, you will be listening for crepitus during slight opening and at full opening and clicking during slight opening and at full opening. Crepitus sounds like scratching or grating and will occur only during jaw movements. A normal joint is quiet.

With the stethoscope or Doppler device over one of the TM joints (front and center of ear), ask the patient to open and close slowly (for a total duration of approximately 1 second) and...

- 1) listen for crepitus when the patient is opening slightly (on rotation) and**
- 2) listen for crepitus when the patient is opening wide (translation). Record your findings on the exam worksheet.**

Again, with the stethoscope or Doppler device over the same joint (front and center of ear), ask the patient to open slowly (for a total duration of approximately 1 second), and while the patient is opening...

- 3) listen for clicking, note if the click occurs only when the patient is opening slightly (on rotation) or**
- 4) listen for clicking that occurs only when the patient opens wide (translation). Record your findings on the exam worksheet.**

Repeat procedure for the other joint and record your findings on the exam worksheet.

## Load Testing Using a Lucia Jig

One of the most practical uses for load testing is that it is a fast, simple, and safe procedure for determining whether an intracapsular structural disorder is or is not a source of orofacial pain.\*

The Lucia Jig is ideal to load test because it de-programs the muscles which allows the condyles to seat in the most superior position. The Lucia Jig separates the posterior teeth which allows the lateral pterygoid to release, and when the lateral pterygoid releases, the condyle seats.

For this procedure, ACU-Flow™ is used. It is a syringeable poly vinyl siloxane material with a 15 second working time, 45 second intra-oral setting time, and a maximum total cure time of 1 minute.

Selecting the right Lucia Jig is based on the vertical opening of the posterior teeth. The vast majority of patients will use the Class I jig.

Use the standard (Class I) jig to determine the vertical opening. The Class II jig is used if there are several millimeters (more than 2.5 mm) between the posterior teeth to reduce the vertical opening.

For patients with very irregular mandibular incisors, use the Lucia Jig on the lower incisors. It will function in the same way against the maxillary incisors.

**Step 1:** Paint the curved surface of the jig with a small amount of silicone tray adhesive.



**Step 2:** Dispense Acu-Flow material into the curved portion of the jig.



**Step 3:** Place the jig on the upper centrals and place the Whale Tail directly beneath the jig. Ask the patient to bite down and hold. The Whale Tail levels and orients the jig to the occlusal plane. It parallels the jig with the occlusal plane anteriorly and posteriorly and in a right and left direction as well. Allow to set - approximately 45 seconds.



**Step 4:** Once hard, remove the jig and the Whale Tail and trim off the excess material with a lab knife. Remove any material extending over the edges of the jig.

Place it back on the patient's upper centrals. Ask the patient to bite down onto the jig, slide forward, slide back, and squeeze. Repeat. Ask the patient if he or she feels any tenderness or tension. If the answer is no, the pterygoid is relaxed and the joint can support load comfortably.

If the answer is yes, the patient may require an additional period of time (possibly up to 20 minutes while maintaining light pressure on the jig) to allow the pterygoid to relax and the condyles to seat. If after that period of time, the discomfort persists, a joint problem may be indicated.



**Note:** You can take a centric relation bite record at this point (see the Lucia Jig Bite Registration instructions in the binder) or you can save the jig to take the CR bite record at another appointment.

An accurate centric relation bite record is essential for the Laboratory to correctly fabricate an appliance requiring occlusal coverage. It will reduce initial trimming and fitting adjustments and save considerable chair-time when seating the appliance.

## TMJ Screening Results Reference Table

**NOTE: No single finding alone should be used to select a splint. See the TMJ Findings Worksheet**

Patient Questionnaire Findings		Could be suggestive of...	Possible treatment options
1	Headaches –upon awakening	Horizontal bruxism and/or clenching during sleep	<p>Short-term use: (<i>no more than 8-12 hours</i>) Nighttime wear of a deprogrammer or Anterior occlusal plane splint</p> <p>Long-term use: Full Contact splint w/ant guide Full-arch deprogrammer Flat plane splint</p>
	Headaches – late afternoon	Vertical bruxism and/or Clenching	<p>Daytime wear: Full Contact splint w/ant guide Flat plane splint</p>
2	Sore/tender muscles	<p>Bruxism and/or Clenching</p> <p>Occluso-muscle imbalance</p>	<p>Short-term use: (<i>no more than 8-12 hours</i>) Deprogrammer</p> <p>Long-term use: Flat plane splint Full Contact splint w/ant guide</p>
3	<p>Joint Pain</p> <p>Some “joint” pain may actually be muscle pain</p>	<p>Analysis of type, location, and severity of pain is needed.</p> <p><i>Load test to determine type of pain</i></p>	<p>Muscle pain: Full Contact splint w/ant guide</p> <p>Short-term use: (<i>no more than 8-12 hours</i>) Anterior occlusal plane splint</p> <p>Joint pain: Refer to TMJ specialist</p>
4	<p>Injury to the face</p> <p>Trauma may cause derangement and/or torn ligaments or swelling of retrodiskal tissues</p>	Fractures should be considered	<p>For short term relief of pain, an Aqualizer™ is recommended</p> <p>Refer to TMJ specialist</p>
5	Snapping, clicking or popping noises in the joint	<p>Displacement of disc</p> <p>Early click or click on translation: displaced disk off lateral pole of the condyle</p> <p>Late click or click on rotation: displaced disk off medial pole of condyle</p>	<p>Early click or click on translation: Full Contact splint w/ant guide</p> <p>Late click or click on rotation: Refer to TMJ specialist</p>
6	<p>Joints get locked on opening/closing</p> <p>Normal ROM: Wide: 40-50 mm Lateral: 7-15 mm Protrusive: 7-15 mm</p>	Disk deformation or displacement	Refer to TMJ specialist

Patient Questionnaire Findings		Could be suggestive of...	Possible treatment options
7	Sensitive, sore, aching, or uncomfortable teeth	Hyper muscle activity may be related to occlusal instability	
8	Previously worn a splint/nightguard	Patients who have been unsuccessfully treated for TMD are best referred out. A full diagnostic of their joints should be documented by a specialist.	Refer to a TMJ specialist
9	Medications used for these symptoms in the past	Could be an indication of the severity or duration of pain	
10	TMJ Specialists seen by patient	Patients who have been unsuccessfully treated for TMD are best referred out. A full diagnostic of their joints should be documented by a specialist.	Refer to a TMJ specialist
Patient Exam Findings		Could be suggestive of...	Possible treatment options
A	<u>Occlusal Instability</u> Occlusal disease Hypermobility Excessive wear Tooth migration Abfractions Cusp fracture	Any of these occlusal signs can indicate either muscle and/or joint issues due to occlusal instability	
B	Jaw Opening Evaluation  Deviates to right  Deviates to left  Deviates in protrusion	Limited translation of the right condyle  Limited translation of the left condyle  Wiggling movements on initial opening are usually related to disk displacements	Full Contact splint w/ant guide  Refer to a TMJ specialist
C	Muscle Palpation – tension/tenderness present  Medial Pterygoid Masseter Temporalis Lateral Pterygoid	Occluso-muscle imbalance	Deprogrammer - short-term use: ( <i>no more than 8-12 hours</i> )  Full Contact splint w/ant guide Flat Plane splint

**NOTE: No single finding alone should be used to select a splint. See the TMJ Findings Worksheet**

Patient Exam Findings		Could be suggestive of...	Possible treatment options
D	Evaluating Joint Sounds  <i>Right Joint</i> Crepitus present on opening  Crepitus present on opening wide  Click present in rotation  Click present in translation  <i>Left Joint</i> Crepitus present on opening  Crepitus present on opening wide  Click present in rotation  Click present in translation	During rotation – no crepitus is normal  Translation – no crepitus is normal  Medial pole click or lock – degenerative joint disease  Mild crepitus can be treated Intermittent click Lateral pole click Lateral pole lock  During rotation – no crepitus is normal  Translation – no crepitus is normal  Medial pole click or lock – degenerative joint disease  Mild crepitus can be treated Intermittent click Lateral pole click Lateral pole lock	Refer to TMJ specialist  Full Contact splint w/ant guide  Refer to TMJ specialist  Full Contact splint w/ant guide
E	Lucia Jig Load Test – tension/tenderness present  Short duration pain which is relieved with deprogrammer  Pain which increases with time and becomes more intense	Occluso-muscle imbalance  Intracapsular problem	Deprogrammer - short-term use: ( <i>no more than 8-12 hours</i> )  Full Contact splint w/ant guide Flat Plane splint  Refer to TMJ specialist

**NOTE: No single finding alone should be used to select a splint. See the TMJ Findings Worksheet**