Quality Resource Guide

Assessing Orofacial Pain

Author Acknowledgements

MAUREEN LANG, DDS, MS

Private Practice
San Antonio, Texas

Dr. Lang is a member and former officer of the American Academy of Orofacial Pain.

Educational Objectives

Following this unit of instruction, the learner should be able to:

1. Describe the primary categories for orofacial pain.
2. Understand how local anesthetic challenges may be used to identify a patient's true source of pain.
3. Discuss how to evaluate whether sinus congestion is contributing to a patient's orofacial pain.
4. Understand how referred pain patterns may be used to help determine whether a patient's perceived pain is coming from a different location.
5. Realize masticatory and/or cervical pain may contribute to a patient's headache.

MetLife designates this activity for **1.0 continuing education credits** for the review of this Quality Resource Guide and successful completion of the post test.

The following commentary highlights fundamental and commonly accepted practices on the subject matter. The information is intended as a general overview and is for educational purposes only. This information does not constitute legal advice, which can only be provided by an attorney.

© 2024 MetLife Services and Solutions, LLC. All materials subject to this copyright may be photocopied for the noncommercial purpose of scientific or educational advancement.

Originally published May 2009. Updated and revised May 2012, May 2015, May 2018, May 2021 and December 2024. Expiration date: December 2027.

The content of this Guide is subject to change as new scientific information becomes available.

ADA C·E·R·P® | Continuing Education Recognition Program

MetLife is an ADA CERP Recognized Provider.

Accepted Program Provider FAGD/MAGD Credit **05/01/21 - 06/30/25.**

ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

Address comments or questions to:

DentalQuality@metlife.com

MetLife Dental Continuing Education
501 US Hwy 22
Bridgewater, NJ 08807

Cancellation/Refund Policy:
Any participant who is not 100% satisfied with this course can request a full refund by contacting us.

Concerns or complaints about a CE provider may be directed to the provider or to ADA CERP at www.ada.org/goto/cerp.

Introduction

Orofacial pain encompasses a wide range of potential disorders. In addition to dental and periodontal pain, orofacial pain may be classified into three primary categories: musculoskeletal (temporomandibular disorders, or TMD), neurovascular pain (*e.g.*,migraine headache), and neuropathic pain (such as neuroma, lesions of the peripheral or central nervous systems, post traumatic trigeminal neuropathic pain, and trigeminal neuralgia) pain (**Table 1**).[1]

The best manner to categorize a patient's pain is by identifying the quality of the pain, obtaining a thorough history, and performing a clinical exam. Occasionally, the quality of the pain and its history will present in such a classical manner (*e.g.*, excruciating electrical facial pain lasting for a few seconds, suggestive of trigeminal neuralgia) that these alone will enable the dentist to know how to proceed. Other symptoms may be more difficult to diagnose.

The most common orofacial pain category is musculoskeletal pain and patients with this category of pain generally receive a TMD related diagnosis. TMD is an umbrella term, and there are numerous different joint and muscle diagnoses within the category. The pain qualities for this category are typically an ache, feeling of pressure, and/or dull pain, although the patient may occasionally note throbbing or sharp pain or may describe burning pain in the background with the other pain qualities. Musculoskeletal pain is usually aggravated by function (*e.g.*, eating) and parafunctional activities (*e.g.*, clenching and/or holding tension in muscles). The pain generally increases with stress and decreases with relaxation or application of heat. Despite a potential emotional overlay seen in chronic orofacial pain and TMD patients, symptoms should not be viewed primarily as a psychological problem.[1]

The pain qualities typically described for neurovascular pain are throbbing or pounding pain, but may present as sharp pain as well. Some individuals will have sensitivity to light and/or sound, nausea, and vomiting. Individuals with this type of pain may also notice that it increases as they bend over or engage in physical activity.[1]

The primary pain qualities described for neuropathic pain are burning, shooting, electrical, cutting, itching, or a loss of sensation (paresthesia).[1] If burning is only a minor component of an ache, pressure, and/or dull pain, the etiology is typically musculoskeletal and when the musculoskeletal disorder is successfully treated, the burning generally resolves with the other pain complaints.

The term "atypical facial pain" occasionally appears in the literature and over the years it has had various descriptions. Most orofacial pain practitioners currently use the term "persistent idiopathic dentoalveolar pain disorder" (PIDAP) when this pain is limited to the dentoalveolar region.[1]

The history obtained from a patient with orofacial pain should include: the onset of pain or the chronology of complaints; trauma and surgical history; location of pain (have the patient point to it, not just tell you where it is); frequency and duration; intensity (on a 0 to 10 scale, where 0 is no pain and 10 is the worst imaginable); aggravating and relieving factors; and efficacy of previous treatments. This information is best obtained by a one-on-one dialog with the patient rather than relying solely on commercially available psychometric testing instruments. An orofacial pain patient questionnaire[2,3] may expedite this phase of the initial patient evaluation and prevent the clinician from forgetting to ask potentially important questions. Answers must be carefully reviewed with the patients to assure accuracy.

Table 1 - Pain qualities and additional symptoms for various orofacial pain categories

Pain Category	Pain Quality	Additional Symptoms
Musculoskeletal (*e.g.*, TMD)	Ache Pressure Dull Jaw stiffness Occasionally throbbing Occasionally sharp	May have burning in background Worsens with functional and/or parafunctional activity Worsens with stress Improves with relaxation or application of heat
Neurovascular (*e.g.*, migraine headache)	Throbbing Pounding Sometimes sharp	May have sensitivity to light and/or sound Nausea Vomiting
Neuropathic (*e.g.,* neuroma, CNS or PNS lesions and trigeminal neuralgia)	Burning Electrical/shooting Cutting Itching	Hyperalgesia Paresthesia Allodynia

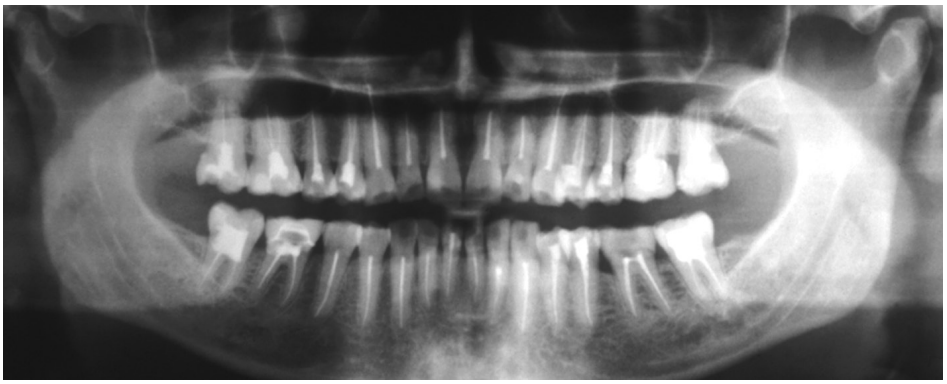
Clinical Examination

Practitioners may identify the primary source (and other sources) of the pain by aggravating or reproducing the pain during the clinical examination. This may be achieved by palpating the pain location(s), percussing the teeth, placing heat or cold on a tooth, palpating the tooth's apical region, or probing the tooth's periodontal pockets. The patient should not be asked whether this activity is painful, but whether it aggravates or reproduces their pain complaint because many individuals may experience discomfort or pain when tissues are stimulated. During the clinical examination the clinician is trying to identify the structure that is causing the patient's pain complaint. For example, a dentist may find probing the periodontal pockets around a tooth produces pain but placing a cold moistened cotton pellet on the tooth reproduces the patient's pain complaint. We would want to treat the cause for the abnormal cold response, and not the inflamed periodontal tissues, to resolve the pain complaint.

Sometimes the site of pain reported by the patient is not the same as the actual source of the pain. Referred pain within the head and neck region is very common. Most dentists have experienced patients stating one tooth (that does not have pathology) is the source of their pain, while another tooth (with pathology) is found to be the true source. These teeth may or may not be adjacent to each other and may even be in opposing dental arches. If the practitioner has difficulty identifying the location of the source, or if the patient requires proof that the painful tooth is not the pain's source, injections of local anesthetic are often used.

When a patient complains of tooth pain, a host of diagnostic approaches may be indicated, including radiographs, percussing teeth, evaluating teeth for an incomplete tooth fracture, placing heat or cold on teeth, and probing periodontal pockets. If no tooth or periodontal pathology is identified, but multiple teeth are tender to percussion, especially if bilaterally or in opposing dental arches, the clinician should consider that the tooth pain may be referred pain secondary to excessive parafunctional habits.

Figure 1 - Panoramic radiograph of patient with TMD whose primary complaint was painful teeth



Source: Wright EF. Manual of Temporomandibular Disorders. 4th ed. Ames, IA, Wiley-Blackwell Publishing Co, 2020, pg 89.

Practitioners must also be cognizant that tooth pain may arise from sources other than dental structures. This was not considered when a patient, whose panoramic radiograph is shown in **Figure 1**, complained of painful teeth. Her pain was referred from masticatory musculoskeletal structures, but the patient most predominately felt the pain in her teeth and had been treated for that pain with endodontic therapy, which did not alleviate the pain. Further assessment demonstrated that her tooth pain could be aggravated or reproduced by palpating various musculoskeletal structures. If a practitioner is preparing to perform root canal therapy to alleviate tooth pain that does not have an obvious dental cause and the pain is still present after the tooth is anesthetized, it is recommended that he/she reevaluate the patient for an alternate source of the pain.

Fortunately, referred pain patterns are fairly consistent between individuals. One study involved palpating the masticatory and cervical musculoskeletal structures of 230 TMD patients, confirmed the consistency of referred pain, and provided maps of the locations responsible for producing referred pain to the different regions of the head (**Figure 2**).[4] Referred pain patterns to the maxillary and mandibular dentition, and their sources are shown in the bottom drawings of **Figure 2**. The red areas represent the source of the pain and the blue regions represent the pain referral sites. The superficial locations that cause tooth pain are highlighted on the drawing and the intraoral palpation locations are listed below the drawing.

Please see the maxillary and mandibular dentition drawings of **Figure 2**. When a patient has pain in one or more maxillary teeth, and no identifiable pathology for the pain is found in the area, palpating the superior portion of the masseter muscle has the greatest probability of reproducing the patient's tooth pain. Similarly, if the patient has mandibular tooth pain and no local pathology is found, then palpating the inferior portion of the masseter muscle has the greatest chance of reproducing the patient's tooth pain. If the palpation reproduces the patient's pain, it suggests the masseter muscle could potentially cause or contribute to this pain. If other potential causes for this pain have been ruled out then treating the masseter muscle through TMD therapies has a high probability of being beneficial for the tooth pain.

Similar to how pain from musculoskeletal structures can be perceived as tooth pain, pain from a tooth may be perceived as TMD pain. If the patient presents with TMD symptoms, but also has symptoms that could be associated with a pulpitis (pain that occurs or intensifies upon drinking hot or cold beverages, throbbing pain occurring spontaneously), the practitioner should

evaluate whether the TMD symptoms could be from a pulpitis. Percussion and thermal testing is initially indicated. If the thermal test aggravates the patient's TMD pain or causes lingering tooth pain, a ligamentary injection of the tooth is recommended. If the injection dramatically reduces or eliminates the patient's pain, the pulp is likely causing or contributing to the TMD symptoms.[5]

Local Anesthetic Challenges (Diagnostic Somatic Blocks)

It may be difficult to identify the source of pain for some individuals, making local anesthetic challenges necessary to identify or rule out locations of the pain. These challenges begin by anesthetizing the smallest region possible that has the greatest suspicion of being the source of pain. If anesthesia fails to provide significant reduction in the patient's pain, then the challenges progress to the region that has the next greatest suspicion. Larger regions are sequentially anesthetized.[6] For example, if a single tooth is suspected as the source for the pain, a ligamentary injection of that tooth is generally performed (a buccal infiltration of a tooth may allow anesthesia to diffuse to other teeth and perhaps muscles, negating the ability to identify them as the source of pain). When using a ligamentary injection, the practitioner must be cognizant that it may also anesthetize adjacent teeth. If the practitioner desires to rule out all mandibular posterior teeth as the contributing source for the patient's pain, he/she may perform an inferior alveolar block.

Step-by-step diagnostic anesthetic injections can identify whether the pain is from a dental structure, and if so, its location. Occasionally the true source of pain is anesthetized along with other structures, so the patient may be required to return after the anesthesia wears off in order to more accurately identify its location.

If the pain cannot be aggravated or reproduced during the clinical examination and cannot be significantly reduced through anesthetic blockade of suspected regions, the practitioner should suspect the pain may not be due to a local problem. It may be due to a more centrally mediated disorder. In this situation, the patient is often referred to a neurologist.[7]

A similar thought process is commonly used when evaluating intraoral neuropathic pain. The local intraoral area that feels painful is anesthetized and if a significant reduction in the pain is not obtained, a more central disorder must be considered as the primary contributor. Local therapies will probably not provide satisfactory results.

Table 2 - Medications to Temporarily Reduce Sinus Pain

Medication Type	Medication Name	Medication Instructions
Oral Decongestant	60 mg pseudoephedrine HCl	1 tab q 4-6 hours
Nasal Spray Decongestant	0.05% oxymetazoline HCl	2 sprays in each nostril q 12 hours
Antibiotic	875/125 mg amoxicillin/ clavulanate	1 tab b.i.d. for 10 days

Evaluating the contribution of sinus congestion to orofacial pain

The practitioner should attempt to identify whether sinus congestion is related to the patient's pain complaint when obtaining the history. If the pain has a recent onset, identify whether the patient recently had a cold or sinusitis. If sinus pain is present, there may be a relationship with sinus congestion. The practitioner may desire to palpate over the sinuses and/or provide the patient with medications to temporarily reduce the sinus congestion to determine its contribution to the patient's complaint.

Applying finger pressure over the frontal and/or maxillary sinuses may increase the patient's sinus pain and may cause an aggravation or reproduction of the patient's pain complaint, suggesting a relationship between them. If palpating over the sinuses does not cause discomfort, this does not rule out a sinus contribution, because congestion of the sinuses in the posterior nasal cavity (*e.g.,* sphenoid sinus) could be the source of orofacial pain.

If the practitioner desires to temporarily reduce the sinus pain, medications may be prescribed such as an oral decongestant (pseudoephedrine HCl 60 mg, 1 tab q 4-6 hours), a nasal spray decongestant (oxymetazoline HCl 0.05%, 2 sprays in each nostril q 12 hours), and/or an antibiotic (such as amoxicillin/clavulanate 875/125 mg, 1 tab b.i.d. for 10 days) (**Table 2**). If sinus congestion is found to be contributing to the patient's pain complaint and the patient requires long-term management, a referral to a physician is recommended.

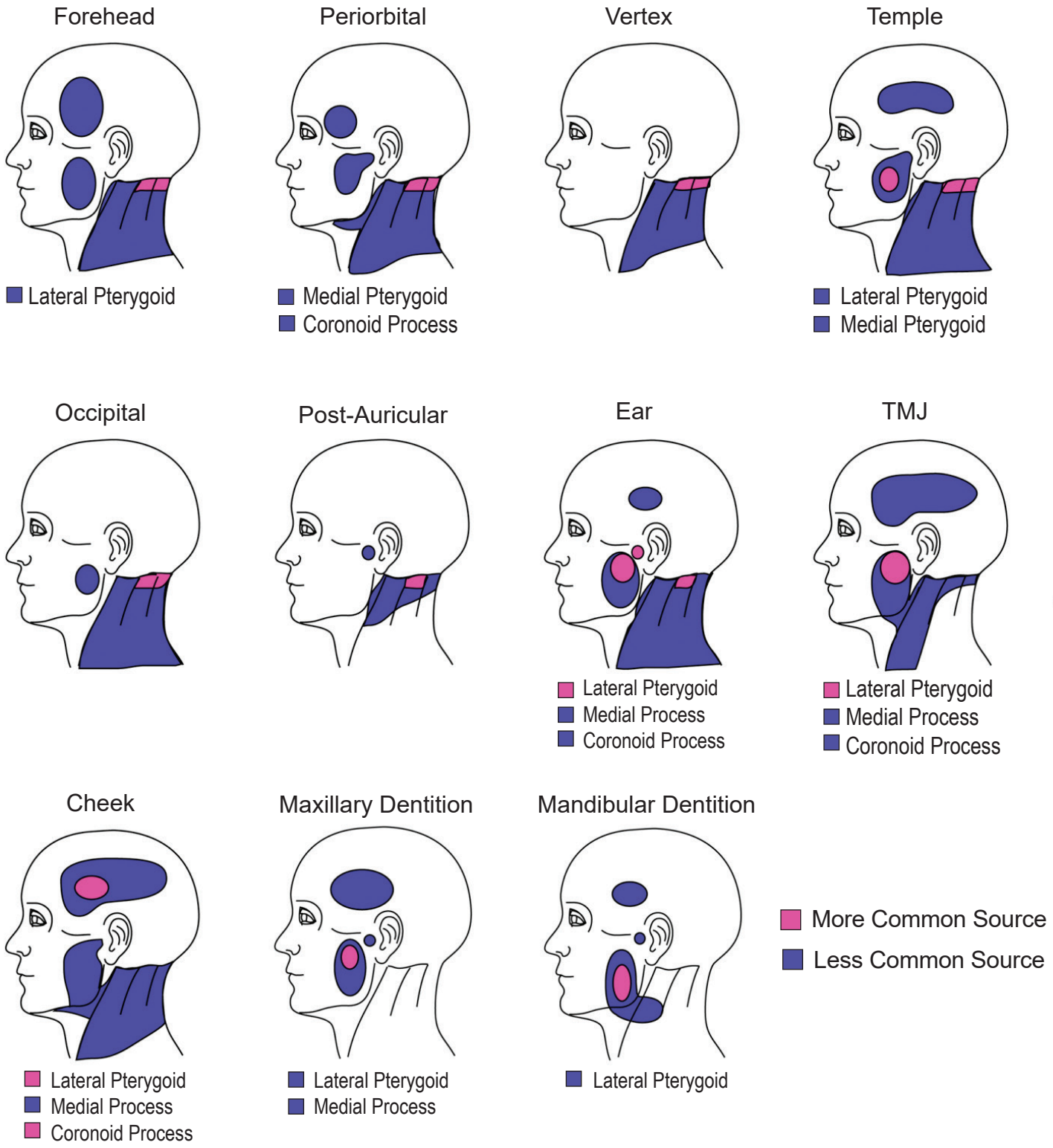
Evaluating headaches and treatment considerations

Headaches can be caused by the central nervous system, by masticatory musculoskeletal structures, by cervical musculoskeletal structures, as well as other structures and factors. Many headaches appear to be influenced by masticatory and/ or cervical pain and treating that condition may provide a significant reduction in some patients' headaches.

Some headaches appear to be primarily caused by referred masticatory and/or cervical pain and palpating these structures may reproduce the patient's headache pain. Knowing the location of the patient's headache (**Figure 2**) should help practitioners identify which structures to provoke (through palpation) in an attempt to reproduce the patient's headache pain.

As depicted in the upper left drawing of **Figure 2**, if the headache is in the patient's forehead, palpating the suboccipital structures has the greatest chance of producing referred pain to the

Figure 2 - Locations responsible for producing referred pain to the different regions of the head*



* The superficial sites that caused referred pain to the labeled regions of the head are highlighted on the drawing and the intraoral palpation locations are listed below the drawing.

patient's forehead. If palpating the suboccipital structures can reproduce the headache and the patient chooses to treat the cervical structures in a nonpharmaceutical manner, referring the patient to a physical therapist experienced in treating cervical disorders is an appropriate referral.

TMD therapy (entailing the use of a stabilization appliance and TMD self-management instructions) has been shown to be equally beneficial for tension-type, migraine with aura, and migraine without aura headaches.[8-9] Headaches in the anterior temporalis region that are aggravated by functional or parafunctional activities, and worsened by palpating this region, appear to have TMD contributing to them. Therefore, TMD therapy is usually beneficial for them.[10]

Predictors for which other headache patients may obtain improvement from TMD therapy has not yet been determined. It is recommended that headache patients, who have sufficiently severe TMD symptoms, be first treated for TMD. Some will also obtain improvement in their headache symptoms.

It is similarly recommended that headache patients, who have sufficiently severe cervical complaints, be first treated for their neck pain. Some should also obtain improvement in their headache symptoms. Additionally, if a patient is not able to obtain adequate headache relief from pharmaceutical management and has tenderness in the masticatory or cervical musculoskeletal structures, it is recommended the patient receive therapy for these tender structures in hopes that it may provide some headache improvement as well.

Orofacial pain encompasses a wide range of potential disorders that generally fall into one of the three categories listed in **Table 1**. A clinical examination must be performed to identify the disorder's primary source (or other sources) by provoking or reproducing the patient's pain complaint.

Referred pain within the head and neck region is very common, making it very difficult to identify the source of pain for some patients. Local anesthetic challenges are sometimes necessary to determine or rule out sources for the pain. Sinus pain can also contribute to a patient's pain complaint. The degree of contribution can be determined by temporarily reducing sinus congestion through medications (**Table 2**).

Headache pain may be caused or aggravated by the masticatory and/ or cervical musculoskeletal structures. Recommendations are provided regarding treatment of these masticatory and/or cervical structures.

Author Acknowledgement

Dr. Maureen Lang reviewed and updated the current sixth edition of this guide. We acknowledge and appreciate the prior contributions from Dr. Edward Wright who authored the original guide and provided the updates for the first five editions.

References

1. American Academy of Orofacial Pain. Klasser GD, Romero Reyes M. (eds). Orofacial Pain: Guidelines for Assessment, Diagnosis and Management. 7th ed. Chicago: Quintessence Publishing Co, 2023.
2. Wright EF, Klasser GD. Manual of Temporomandibular Disorders. 4th ed. John Wiley & Sons, Inc., Hoboken, NJ, 2020.
3. Okeson JP. Management of Temporomandibular Disorders and Occlusion. 8th Ed. St. Louis, CV Mosby Co, 2019.
4. Wright EF. Referred craniofacial pain patterns in patients with temporomandibular disorders. J Am Dent Assoc 2000;131(9):1307-15.
5. Wright EF, Gullickson DC. Identifying acute pulpalgia as a factor in TMD pain. J Am Dent Assoc 1996;127(6):773-80.
6. Wright EF. Pulpalgia contributing to temporomandibular disorder-like pain: A literature review and case report. J Am Dent Assoc 2008;139(4):436-40.
7. Wright EF. Nonodontogenic Toothaches. J Am Dent Assoc 2015;146(6):406-8.
8. Ekberg E, Vallon D, Nilner M. Treatment outcome of headache after occlusal appliance therapy in a randomised controlled trial among patients with temporomandibular disorders of mainly arthrogenous origin. Swed Dent J 2002;26(3):115-24.
9. Wright EF, Clark EG, Paunovich ED, Hart RG. Headache improvement through TMD stabilization appliance and self-management therapies. Cranio 2006;24(2):104-11.
10. Peck CC, Goulet JP, Lobbezoo F, Schiffman EL, Alstergren P, Anderson GC, de Leeuw R, Jensen R, Michelotti A, Ohrbach R, Petersson A, List T. Expanding the taxonomy of the diagnostic criteria for temporomandibular disorders. J Oral Rehabil 2014;41(1):2-23.

POST-TEST

Internet Users: This page is intended to assist you in fast and accurate testing when completing the "Online Exam." We suggest reviewing the questions and then circling your answers on this page prior to completing the online exam.

(1.0 CE Credit Contact Hour) Please circle the correct answer. 70% equals passing grade.

1. **Which of the following is TRUE?**
   a. Jaw stiffness is not a TMD symptom
   b. Neuropathic pain does not present with an electric quality
   c. Neurovascular pain typically presents with a throbbing quality
   d. TMDs do not exhibit pain referrals to other structures

2. **Which is (are) the characteristics for headaches where TMD appears to be a contributor?**
   a. Are located in the anterior temporalis region
   b. Are aggravated by functional or parafunctional activities
   c. Are worsened by palpating the anterior temporalis muscle
   d. All of the above

3. **Referred pain patterns**
   a. are fairly consistent from individual to individual.
   b. are used to help identify the musculoskeletal structures that may be causing referred pain to the perceived pain locations.
   c. entail both intraoral as well as extraoral structures.
   d. All of the above

4. **Which is (are) an orofacial pain category?**
   a. Musculoskeletal pain
   b. Neurovascular pain
   c. Neuropathic pain
   d. All of the above

5. **When palpating a patient's maxillary sinuses, he relates this increases his sinus and orofacial pain complaint. This suggests:**
   a. TMD therapy should be beneficial.
   b. his sinus pain is referred from his masticatory muscles.
   c. his sinus pain may be contributing to his orofacial pain.
   d. he has a low pain threshold a physical therapy referral should be beneficial.

6. **During an orofacial pain clinical exam, the practitioner attempts to:**
   a. determine if the pain is psychological in nature.
   b. provoke or reproduce the patient's pain complaint.
   c. identify the pain's source only through radiographs.
   d. find pathology only where the patient feels the pain.

7. **While preparing to perform a root canal to alleviate tooth pain, the patient relates she continues to experience the same level of pain even after the tooth was anesthetized. This suggests**
   a. the patient has a low pain tolerance.
   b. the patient has a psychological problem.
   c. the source of the pain is probably not the anesthetized tooth.
   d. None of the above

8. **Patients with TMD generally have a history of their pain worsening with**
   a. applying heat.
   b. relaxing.
   c. functioning.
   d. drinking cold beverages.

9. **The most common masticatory musculoskeletal structure to cause referred tooth pain is the:**
   a. masseter muscle.
   b. trapezius muscle.
   c. temporalis muscle.
   d. lateral pterygoid muscle.

10. **Local anesthesia challenges generally begin with**
    a. anesthetizing the smallest region possible.
    b. an inferior alveolar nerve block.
    c. a posterior superior alveolar nerve block.
    d. an infiltration to all of the anterior teeth.

Registration/Certification Information (Necessary for proper certification)

Name (Last, First, Middle Initial): _____

PLEASE PRINT CLEARLY

Street Address: _____ Suite/Apt. Number _____

City: _____ State: _____ Zip: _____

Telephone: _____ Email: _____

State(s) of Licensure: _____ License Number(s): _____

Preferred Dentist Program ID Number: _____ ☐ Check Box If Not A PDP Member

AGD Mastership: ☐ Yes ☐ No

AGD Fellowship: ☐ Yes ☐ No Date: _____

Please Check One: ☐ General Practitioner ☐ Specialist ☐ Dental Hygienist ☐ Other

FOR OFFICE USE ONLY

Evaluation - Assessing Orofacial Pain 6th Edition

Providing dentists with the opportunity for continuing dental education is an essential part of MetLife's commitment to helping dentists improve the oral health of their patients through education. You can help in this effort by providing feedback regarding the continuing education offering you have just completed.

Please respond to the statements below by checking the appropriate box, using the scale on the right.

	1 = POOR				5 = EXCELLENT	
	1	2	3	4	5	
1. How well did this course meet its stated educational objectives?	☐	☐	☐	☐	☐	
2. How would you rate the quality of the content?	☐	☐	☐	☐	☐	
3. Please rate the effectiveness of the author.	☐	☐	☐	☐	☐	
4. Please rate the written materials and visual aids used.	☐	☐	☐	☐	☐	
5. The use of evidence-based dentistry on the topic when applicable.	☐	☐	☐	☐	☐	☐ N/A
6. How relevant was the course material to your practice?	☐	☐	☐	☐	☐	
7. The extent to which the course enhanced your current knowledge or skill?	☐	☐	☐	☐	☐	
8. The level to which your personal objectives were satisfied.	☐	☐	☐	☐	☐	
9. Please rate the administrative arrangements for this course.	☐	☐	☐	☐	☐	

10. How likely are you to recommend MetLife's CE program to a friend or colleague? *(please circle one number below:)*

10 **9** **8** **7** **6** **5** **4** **3** **2** **1** **0**

extremely likely — neutral — not likely at all

What is the primary reason for your 0-10 recommendation rating above?

11. Please identify future topics that you would like to see:

Thank you for your time and feedback.

MetLife

To complete the program traditionally, please mail your post test and registration/evaluation form to:
MetLife Dental Quality Initiatives Program | 501 US Highway 22 | Bridgewater, NJ 08807