



GLOBAL YEAR AGAINST  
**OROFACIAL PAIN**  
OCTOBER 2013 – OCTOBER 2014

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## Neurovascular Orofacial Pain

### Introduction

Orofacial pain of potential neurovascular origin may mimic odontogenic pain to the extent that a large population of patients with migraine and trigeminal autonomic cephalgia seek dental remedies. Owing to the large variety of NOP entities, and in the absence of a singular or distinct pathophysiological rubric, this fact sheet discusses the more common NOP entities, namely odontogenic or dental pain, migraine, tension type headache, trigeminal autonomic cephalgias, and other ominous headaches that mimic odontogenic pain and temporomandibular disorders.<sup>1</sup>

This fact sheet does not attempt to rewrite already accepted headache classifications, but it does reference the most recent and accepted classifications of headache<sup>i,ii</sup> for the purpose of gaining insight into the diagnostic difficulties when orofacial pain occurs in the same location as dental pain.

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<sup>1</sup> Temporomandibular disorders are discussed in more detail in the temporomandibular fact sheet. The term “temporomandibular disorder” includes musculoskeletal disorders and functional disturbances of the masticatory system. (American Academy of Orofacial Pain, *Guidelines for Assessment, Diagnosis and Management*, Ed, de Leeuw R, Klasser GD, Quintessence Books, Chicago, 2013)



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### **Clinical Features, Pathophysiology, Diagnostic Criteria**

The following sections summarize those headache or neurovascular conditions with the potential to mimic dental and orofacial pain. This section is adapted from the IASP Fact Sheet for the Global Year Against Headache.<sup>iii</sup>

### **Epidemiology of Headache-Mimicking Odontogenic Pain**

Headaches are the most prevalent neurological disorders and among the most frequent symptoms seen in general practice. One-half of the general population has headaches during any given year, and more than 90% report a lifetime history of headache.

### **Migraine**

Migraineurs have recurrent, severe, and disabling attacks of headache, often unilateral and pulsating, along with symptoms of sensory disturbance, such as photophobia, phonophobia, and hyperosmia. Nausea and neck stiffness are other common symptoms. Migraine symptoms can be aggravated by movement.

### *Differential Diagnosis: Odontalgia*

According to available data, nearly 50% of patients with NOP are misdiagnosed with primary dental disorders, and a significant number receive misdirected dental treatment or



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medications. The preponderance of complaints associated with migraine are exceedingly similar to that of dental pain. In fact, migraine without aura affecting the second division of the trigeminal nerve (unilateral, throbbing mid-facial pain) mimics odontalgia to the extent that patients may undergo endodontic therapy or extraction.

*Differential Diagnosis: Temporomandibular disorder*

Pericranial tenderness and allodynia, common features of migraine with or without aura, may be misinterpreted as masticatory musculature pain secondary to a temporomandibular disorder resulting in orthopedic remedies that have no physiological basis. Central sensitization that results in cervical pain may spread in a cephalad direction and may be perceived as myofascial pain with referral.

**Tension-Type Headache**

Tension-type headache (TTH) is the most common form of headache. The lifetime prevalence of episodic TTH is nearly 80%, and that of chronic TTH is 3%. Women are slightly more affected than men. The age of onset peaks between 35 and 40 years, and prevalence declines with age in both sexes.



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*Differential Diagnosis: Temporomandibular disorder*

Tenderness or pain of the masticatory musculature is a common feature of temporomandibular disorders. Pain, or a sense of muscle tightness, especially of the pericranial musculature, can be misinterpreted as a musculoskeletal temporomandibular disorder.<sup>iv, v, vi</sup>

**Trigemino-Autonomic Headaches**

Cluster headache, paroxysmal hemicranias, and hemicrania continua belong to a group of idiopathic headaches that involve activation of trigeminovascular nociceptive pathways along with reflex cranial autonomic activation referred to as trigemino-autonomic headaches (TAC). All these headache syndromes have two features in common: short-lasting, unilateral, severe headache attacks and typical autonomic accompanying symptoms.

*Differential Diagnosis: Odontalgia*

The localized and intense pain associated with the various trigeminal autonomic cephalgias, particularly periorbital or maxillary pain, frequently leads to dental interventions and ultimate loss of teeth. Recently, the IHS has classified hemicrania continua as a TAC. This chronic, unilateral pain disorder also poses the risk of presenting as both odontalgia or a temporomandibular disorder.



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*Differential Diagnosis: Trigeminal Neuralgia*

See following section: Trigeminal Neuralgia and Persistent Idiopathic Facial Pain

**Medication Overuse Headache**

Medication overuse headache is chronic and may occur in patients suffering from primary headache (especially migraine). Medication overuse is a strong risk factor for increasing headache frequency; it may worsen from an episodic to a chronic headache.

*Differential Diagnosis: Temporomandibular disorder*

Tenderness or pain of the masticatory musculature is a common feature of temporomandibular disorders. Similar to other TTH, there may be a sense of muscle tightness, especially of the pericranial musculature that can be misinterpreted as a musculoskeletal orofacial pain.

**Trigeminal Neuralgia and Persistent Idiopathic Facial Pain**

Trigeminal neuralgia (TN) is a unilateral painful disorder that is characterized by brief, electric-shock-like pains, is abrupt in onset and termination, and is limited to the distribution of one or more divisions of the trigeminal nerve.<sup>vii</sup> TN may be provoked by non-noxious stimulation of the mucosa such as tooth brushing or the introduction of food or liquids into the oral cavity.



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*Differential Diagnosis: Odontalgia and temporomandibular disorders<sup>viii</sup>*

*Differential Diagnosis: Chronic Persistent Alveolar Pain*

Persistent idiopathic facial pain (PIFP), previously termed atypical facial pain, is a persistent facial pain that does not have the characteristics of cranial neuralgias and cannot be attributed to a different disorder. PIFP, a form of painful neuropathy, may occur secondary to injury or pathology of the trigeminal system. As dentistry routinely performs procedures with the potential to injure the trigeminal innervation, post-dental-treatment painful neuropathies may occur. Statistically, the incidence is small; however, the tendency to perform additional dental interventions in cases of PIFP should be resisted without a clear diagnosis.

Chronic persistent alveolar pain,<sup>ix</sup> previously referred to as atypical odontalgia (AO) is considered a PIFP and is difficult to diagnose and treat. It arises in teeth or dental extraction sites of typically painful teeth that have undergone several treatments or procedures. Pain may range from dull and mild to continuous and severe. It is typically resistant to analgesic medications and anesthetic blockade.



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### **Short Stabbing Headaches**

"Stabbing headaches lasting for a few seconds are of three different types: (1) primary and symptomatic stabbing headache, (2) primary and symptomatic cough headache, and (3) short unilateral neuralgiform headaches with conjunctival injection and tearing."

*Differential Diagnosis: Odontalgia*

Because of the location and intensity, as well as the potential to increase discomfort with increased intracranial pressure (cough), TACs and TN are easily misdiagnosed as odontalgia, much like migraine.

### **Temporal (Giant Cell) Arteritis**

Temporal or giant cell arteritis is not a neurovascular headache disorder but is mentioned in this fact sheet as headache of vascular origin with ominous complications if not accurately diagnosed and appropriately treated.

*Differential Diagnosis: Masticatory muscle myalgia, myofascial pain, temporomandibular disorder*

This condition is commonly associated with the onset of a new headache in one or both temporal regions.



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The patient is typically 50 years of age or older, with a complaint of dull temporal pain, fatigue of the masticatory muscles, joint pain, and headache of recent onset that is chronic and possibly progressive.

Moderate-to-severe headache, polymyalgia, and claudication of the masticatory muscles may be present. There may be a swollen and tender scalp artery, usually the superficial temporal artery, an elevated erythrocyte sedimentation rate, and C-reactive protein. A temporal artery biopsy may be positive for giant cell arteritis.<sup>x</sup>

This form of headache must not be overlooked, as it has a potential for significant consequences. Untreated, temporal arteritis may result in loss of vision, stroke, or death.

Headache resolves or greatly improves within three days of high-dose steroid therapy.

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<sup>i</sup> Olesen J, et al; *The International Classification of Headache Disorders, 3<sup>rd</sup> edition*, Headache Classification Committee of the International Headache Society, *Cephalalgia*, 33(9) 629-808 2013.

<sup>ii</sup> IASP Global Year Against Headache Fact Sheet 2011-2012: [www.iasp-pain.org/Content/NavigationMenu/GlobalYearAgainstPain/GlobalYearAgainstHeadache/FactSheets/default.htm](http://www.iasp-pain.org/Content/NavigationMenu/GlobalYearAgainstPain/GlobalYearAgainstHeadache/FactSheets/default.htm)

<sup>iii</sup> [www.iasp-pain.org/Content/NavigationMenu/GlobalYearAgainstPain/GlobalYearAgainstHeadache/default.htm](http://www.iasp-pain.org/Content/NavigationMenu/GlobalYearAgainstPain/GlobalYearAgainstHeadache/default.htm)





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- <sup>iv</sup> Nilsson IM, List T, Drangsholt M. Headache and Co-morbid Pains Associated with TMD Pain in Adolescents. *J Dent Res*. 2013 Sep;92(9):802-7. doi: 10.1177/0022034513496255. Epub 2013 Jun 27.
- <sup>v</sup> da Silva Junior AA, Krymchantowski AV, Gomes JB, Leite FM, Alves BM, Lara RP, Gómez RS, Teixeira AL. Temporomandibular disorders and chronic daily headaches in the community and in specialty care. *Headache*. 2013 Sep;53(8):1350-5. doi: 10.1111/head.12130. Epub 2013 May 15.
- <sup>vi</sup> Schiffman E, Ohrbach R, List T, et al. Diagnostic criteria for headache attributed to temporomandibular disorders. *Cephalalgia* 2012;32:683-92.
- <sup>vii</sup> Zakrzewska JM. Differential diagnosis of facial pain and guidelines for management. *Br J Anaesth* 2013;111:95-104.
- <sup>viii</sup> Drangsholt M, Truelove E. Trigeminal neuralgia mistaken as temporomandibular disorder. *J Evid Base Dent Pract* 2001;1:41-50.
- <sup>ix</sup> Durham J, Exley C, John MT, Nixdorf DR. Persistent dentoalveolar pain: the patient's experience. *J Orofac Pain*. 2013 Winter;27(1):6-13. doi: 10.11607/jop.1022.
- <sup>x</sup> Olesen J, et al; *The International Classification of Headache Disorders, 3<sup>rd</sup> edition*, Headache Classification Committee of the International Headache Society, *Cephalalgia*, 33(9) 629-808 2013.

