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 cephalgias seek dental remedies. Owing to the large variety of neurovascular orofacial pain (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 cephalalgias, and other ominous headaches that mimic odontogenic pain and temporomandibular disorders.1 ii iii

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

Clinical Features, Pathophysiology, Diagnostic Criteria

The following sections summarize those headaches 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.vii

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 and physical activity.

**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 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.

**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.

Headache attributed to TMD

Headache in the temple area secondary to pain-related TMD that is affected by jaw movement, function, or parafunction, and replication of this headache occurs...
with provocation testing of the masticatory system. xi “Headache attributed to TMD has been incorporated into the beta version of the ICHD-3. xii

Medication Overuse with Chronic Headache

Medication overuse may be associated with chronic headache and may be seen in patients suffering from primary headache (especially migraine). While medication overuse may be observed, this is not synonymous with medications overuse headache. xiii However, medication overuse is a strong risk factor for increasing headache frequency. Headache may transition from an episodic to a chronic headache. Medication overuse, including NSAIDs, opioids, triptans and ergots may occur with, but may not necessarily be the cause of 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.

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.

Differential Diagnosis: Trigeminal Neuralgia

See sections on: Trigeminal Neuralgia and Persistent Idiopathic Facial Pain

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.

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.\(^{xiv}\)

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.

---

\(^1\) Temporomandibular disorders are discussed in more detail in the temporomandibular fact sheet.


**IASP**

*IASP brings together scientists, clinicians, health-care providers, and policymakers to stimulate and support the study of pain and translate that knowledge into improved pain relief worldwide.*
About the International Association for the Study of Pain®

IASP is the leading professional forum for science, practice, and education in the field of pain. Membership is open to all professionals involved in research, diagnosis, or treatment of pain. IASP has more than 7,000 members in 133 countries, 90 national chapters, and 20 Special Interest Groups.

Plan to join your colleagues at the 16th World Congress on Pain, September 26-30, 2016, in Yokohama, Japan.

IASP brings together scientists, clinicians, health-care providers, and policymakers to stimulate and support the study of pain and translate that knowledge into improved pain relief worldwide.