

# Pulpalgia contributing to temporomandibular disorder–like pain

## A literature review and case report

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**A**lthough for most patients a dental pulpalgia is localized to the responsible tooth, some patients can report pain that refers more broadly to the jaw and mimics the location and quality of pain due to a temporomandibular disorder (TMD).<sup>1-3</sup> TMD pain generally is located in the masseter muscle or the preauricular and/or anterior temporalis muscle regions. The quality of TMD pain generally is an ache, pressure, dull pain or all of these, and it may include a background burning sensation. There also may be episodes of sharp pain and, when the pain worsens, its primary quality may become one of throbbing.<sup>4-6</sup>

Palpating the location of the most intense TMD pain generally reproduces or intensifies the pain, suggesting that the structure at this location is the primary source of the pain. Patients who are suspected of having TMD should be asked to identify things that intensify the pain and those that relieve the

## ABSTRACT



**Background.** Dentists need to be cognizant that temporomandibular disorder (TMD)–like pain can be caused by a tooth pulpalgia. The author provides suggestive symptom characteristics and definitive diagnostic techniques.

**Case Description.** A patient had severe bilateral TMD-like pain, which increased when something cold touched a premolar and when the patient lay down, and which awakened her several times every night. The author identified the offending tooth and administered a ligamentary injection along the tooth, which eliminated her bilateral TMD-like pain. Occlusal adjustment of her tooth reduced her pain, and subsequent endodontic therapy eliminated her pain. To the author's knowledge, this is the first report of a pulpalgia in a posterior tooth causing bilateral TMD-like pain.

**Clinical Implications.** Pulpalgia may cause symptoms that mimic TMD or may contribute to TMD signs and symptoms. When patients with TMD-like pain report feeling increased pain due to a cold stimulus coming into contact with a tooth, practitioners should ensure that a pulpalgia is not contributing to their pain.

**Key Words.** Dental pulp; diagnostic challenge; masticatory muscles; pain; orofacial; root canal; temporomandibular disorder.

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pain.<sup>4,7</sup> Patients with TMD tend to answer that the pain is intensified by things such as stress, clenching and eating, whereas it is relieved by relaxing, applying heat to the painful area, taking over-the-counter analgesics or all of these.<sup>4,7</sup>

Although most pain resulting from pulpalgia is localized to the responsible tooth, referred pulpal pain often is hard to localize to a specific tooth; often also causes pain in the masseter muscle or the preauricular and/or anterior temporalis muscle regions; and can cause tightness in the masticatory muscles.<sup>8-10</sup> Patients with pulpal pain usually are able to identify the source of their pain as a tooth. In the same way in which someone with pain originating from the heart may complain of left arm pain and not chest pain, some patients with pain of pulpal origin may not perceive that the source of the pain is a tooth, but rather that it is the masseter, preauricular or anterior temporalis muscle regions. When these muscles are palpated, patients tend to say that the palpation increased their pain and that the palpated area is the source of their pain.<sup>1</sup>

Two TMD clinics have reported that the primary source of pain for 2 and 3 percent of their patients referred for TMD actually was pulpalgia.<sup>1,11</sup> Practitioners easily can misdiagnose these cases as TMD. Investigators in one clinic reported that the primary complaint among its patients suspected of having TMD was that pain was associated with structures commonly responsible for TMD, palpation of these structures reproduced or intensified the patient's pain complaint and periapical radiographs of the offending teeth did not provide evidence of apical disease.<sup>1</sup> These authors observed characteristics that should alert practitioners to the possibility that a patient's TMD-like pain may be caused primarily by pulpalgia. They are as follows:

- the TMD-like pain increases when the patient drinks hot or cold liquids;
- the pain increases when the patient lies down;
- the pain wakes the patient from sleep;
- the pain has a throbbing quality.

## CASE REPORT

**History of illness.** A 62-year-old woman visited me at the Faculty Practice Clinic at the University of Texas Health Science Center at San Antonio for a TMD evaluation. She complained of constant pain at a level of 9 of a possible 10 (intensity being rated on a scale of 0 to 10, on which 0 = no pain and 10 = the worst pain imag-

inable) bilaterally in the preauricular and masseter muscle areas. She indicated that the pain was a throbbing, dull ache, greater on the right than on the left. The pain increased when a cold stimulus came into contact with teeth in the mandibular right premolar region. Her pain increased when she lay down, and it awakened her several times each night. When the patient awoke, she was able to open her mouth to only a limited degree, but this gradually improved throughout the day.

This pain complaint had begun 20 years earlier after a motor vehicle accident. At that time, the patient was treated with daytime and nighttime stabilization appliances, which provided her minimal benefit. Six months before the evaluation described here, the patient's general dentist had evaluated her and ruled out any dental disease.

**Clinical examination.** The patient's mandibular range of motion was as follows: 22-millimeter opening (including a 2-mm vertical overlap), 5 mm right lateral, 5 mm left lateral and 2 mm protrusive. Palpation of the patient's masticatory and cervical muscles and her temporomandibular joints (TMJs) revealed that all of her masticatory structures were extremely tender, with the masseter muscles being the most tender. I detected a left TMJ click digitally when the patient opened her mouth. Because the patient related that her TMD symptoms worsened when cold liquids came into contact with teeth in the mandibular right premolar region, worsened when she lay down and awakened her several times during the night, pulpalgia needed to be assessed as a possible causative or contributing factor.

The findings of the visual oral examination were within normal limits. All other teeth were mildly tender to percussion, but tooth no. 28 (the mandibular right first premolar) was extremely tender to percussion. I obtained and evaluated a panoramic radiograph, bitewing radiographs of the patient's right posterior teeth and a periapical radiograph of tooth no. 28. All radiographic results were within normal limits, and the periapical radiograph of tooth no. 28 did not show evidence of apical pathosis.

I applied a cold stimulus to tooth no. 28, and this significantly increased her complaint of bilat-

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**ABBREVIATION KEY.** CNS: Central nervous system. TMD: Temporomandibular disorder. TMJ: Temporomandibular joint.

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