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Pain and persistent occlusal awareness:

What should dentists do?

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CLINICAL PROBLEM

A 24-year-old man sought treatment at the Temporomandibular Disorder, Orofacial Pain, Oral Medicine and Dental Sleep Medicine Clinic at the University of Minnesota, Minneapolis. He requested an occlusal adjustment to treat his longtime occlusal complaints and his more recent jaw pain. Since the age of 14 years, he had undergone orthodontic treatment twice and multiple occlusal equilibration procedures, including coronoplasties that he performed himself by using tools found at home. He believed that his tooth contacts were “lighter” on his posterior teeth than they were on his incisors, and this difference was causing jaw pain, which started after his last orthodontic treatment when he was 22 years old. He described the jaw pain as a constant, dull aching that at its worst had an intensity of 8 on a scale of 0 (no pain) to 10 (worst pain imaginable). The pain was worse when he woke up and when he used his jaws. He took ibuprofen (400 milligrams five times per week) to mitigate this pain. In the past, to alleviate his symptoms, he had been prescribed alprazolam and cyclobenzaprine and used several stabilization appliances. These interventions provided only short-term relief. His medical history indicated headaches in the region of both temples in the morning, as well as neck and back pain. The patient had graduated from college recently, but the high degree of distress he perceived from his “uneven bite” had prevented him from beginning a career.

During our clinical examination, pain on palpation was present in all masticatory muscles and both temporomandibular joints. The results of the examination revealed severe

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generalized dental abrasion. The patient's intercuspal contacts were bilateral and stable in the maximum intercuspal position. When we asked the patient to demonstrate his normal occlusion, he protruded the mandible, attempting to achieve more contact on the central incisors. We diagnosed myofascial pain and temporomandibular joint arthralgia secondary to mandibular thrusting habits and bruxism, severe dental abrasion and phantom bite syndrome (PBS).

EXPLANATION OF PHANTOM BITE SYNDROME

Patients who have a persistent hyperawareness of their occlusion with few or no objective findings to support their beliefs have been described in the dental literature.¹⁻⁹ The terms “phantom bite syndrome,” “occlusal hyperawareness” and “occlusal dysesthesia” have been used to describe these complex cases, and researchers have suggested that this condition is due to a central nervous system– (CNS-) mediated mechanism. This change in the CNS produces symptoms in the orofacial region similar to those observed in phantom limb phenomena.^{4,5,8,10-12} When minor or clinically nonverifiable occlusal discrepancies are the patient's primary concern—especially when the patient has a history of undergoing unsuccessful dental treatment—clinicians should consider the potential of a psychological overlay or comorbid psychiatric conditions.^{9,13-16}

According to somatosensory theory, bite-changing dental treatments may cause noxious peripheral input and result in a deafferentation effect in the thalamus and cerebral cortex of a susceptible patient.^{4,7,12} Phantom sensations may result owing to neuronal reorganization of adjacent regions of the thalamus into the deafferented regions, which can lead the patient to report sensations of tooth awareness and pain. Thus, even after a change in or a loss of occlusal input, the central brain regions representing occlusal proprioception remain functional and unchanged.^{4,8,10-12} Across time, this type of central sensitization can predominate over peripheral inputs so that treating the sensory inputs from teeth by means of bite adjustment no longer is helpful.

Mood, anxiety, and somatoform and delusional disorders also have been associated with the perception of unexplained occlusal proprioceptive abnormalities.^{7,9,13-18} Although the relationship among somatic preoccupation, chronic pain and occlusal disharmony rarely has been addressed, the results of a 2007 study showed that 35 (66 percent) of 53 patients with subjective occlusal-related problems also had a comorbid mental disorder.⁹

Clinical dentists may encounter patients who ask for occlusal adjustments or other bite-changing procedures to treat symptoms that they believe are caused by previous dental treatment. These patients can be grouped into two categories: patients whose occlusal concerns are consistent with clinically evident discrepancies and patients whose reported occlusal problems have no compelling anatomical or physiological explanation and, therefore, are biologically improbable based on an objective clinical assessment. Patients in the latter category typically unsuccessfully undergo multiple attempts to correct the reported malocclusions, and their detailed symptom reports are characterized by focus on minutia with evident psychological distress.

CLINICAL IMPLICATIONS

It appears that a central somatosensory mechanism, rather than a peripheral structural discrepancy, is involved in PBS.^{4,7,8,10-12} Instead of addressing the patient's complaints by performing irreversible dental procedures, dentists should identify the need for interdisciplinary management of the case and make referrals for appropriate treatment and evaluation, including psychological or psychiatric evaluations.^{9,13-16} Performing the requested dental treatment without first addressing the complex multifactorial nature of PBS will only confirm the patient's erroneous perception of occlusal problems and could exacerbate the underlying psychological problem. Repeated dental treatment will reinforce the patient's belief that the problem is primarily occlusal, thereby increasing his or her incentive for seeking additional dental treatment.

A thorough evaluation of the patient, including comprehensive medical, psychological and dental assessments, is needed to identify PBS. In cases of PBS in which orofacial pain is reported, the pain generally is of musculoskeletal origin and often is associated with parafunctional habits, including obsessive bite checking coupled with psychological distress. Other comorbid pain-related conditions should be ruled in or out because pain involving multiple systems also indicates poor prognosis.¹⁹ Warning signs of a patient's having this disorder include the patient's having a history of failed treatment and providing an excessively detailed explanation of a perceived malocclusion that cannot be verified clinically by means of examination. Normal minor or questionable occlusal findings that are associated with disproportionate patient distress can indicate a need to refer the patient for psychological or psychiatric evaluation.^{3,5,8,20,21}

CONCLUSIONS

When minor or clinically nonverifiable occlusal discrepancies are a patient's primary concern, especially if the patient has a history of unsuccessful dental treatment, dentists should consider the potential for psychological overlay or comorbid psychiatric conditions. Therefore, owing to the high risk of failure and iatrogenesis, dentists should avoid further dental intervention until contributing psychological factors are ruled out or addressed. Because it appears that persistently perceived occlusal problems may be caused by many mechanisms, including central sensitization, clinicians should treat patients who seek treatment for intractable perceived malocclusion conservatively with multi-disciplinary support.

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