



Temporomandibular Disorders: Associations and Features Related to Diagnosis and Management

In addition to articles by Durham et al and Heaton et al, respectively, providing new insights into persistent dentoalveolar pain (also known as atypical odontalgia and phantom tooth pain, amongst other terms) and dentin hypersensitivity, this issue of the *Journal of Orofacial Pain* contains a collection of articles bearing on a variety of diagnostic and therapeutic matters related to temporomandibular disorders (TMD). The paper by Fernandes et al provides new information on associations between painful TMD, sleep bruxism, and certain types of primary headaches, indicating that sleep bruxism and painful TMD may be associated with a significantly increased risk for episodic migraine, tension-type headache, and especially chronic migraine. While the study was cross-sectional, making it difficult to differentiate cause and effect, the findings nonetheless emphasize the close relationship between these conditions and the need for close interaction between dentists and medical specialists (eg, neurologists) in their diagnosis and management. The article by de Leeuw et al reveals another interesting association, in finding and reinforcing earlier reports that smoking is associated with pain severity and other features often seen in TMD patients (eg, sleep disturbance, anxiety, depression). The findings are also consistent with several other reports of the negative impacts of smoking on patients with other types of chronic pain. The authors comment on how smoking can lead to difficulties in providing effective management of these patients, and the article as a whole also points to the need for further mechanistically directed investigations into how nicotine and other concomitant factors associated with smoking can lead to these effects of smoking on orofacial pain, psychosocial functioning, and sleep.

The study by Schmid-Schwab et al has explored potential differences in the features of TMD patients that might relate to the well-documented higher prevalence of TMD in women. The article reports that female TMD patients show significantly higher pain levels and palpation-induced muscle tenderness and a lower amount of mouth opening than male TMD patients. Age may also be an important factor; the female patients revealed two peaks of TMD across the age spectrum, whereas the age pattern for males was more evenly distributed. The authors suggest that their data and earlier reports point to the need for early multimodal therapeutic approaches in female TMD patients.

Two other articles in this issue refer to specific approaches advocated for assisting the evaluation and

management of TMD patients. Sharma et al carried out a systematic review of papers addressing the reliability and diagnostic validity of an approach proposed for assisting the diagnosis of TMD conditions. This approach is based on an analysis of vibration patterns in the temporomandibular joint (TMJ). The review revealed several methodological limitations in the published papers, and it concluded that there is presently no convincing evidence to support the reliability and diagnostic validity of jaw vibration analysis in the diagnosis of TMD conditions. Better-designed studies are called for to test if it has sufficient reliability and diagnostic validity for its clinical application to TMD diagnosis. The study by Raphael et al has shown that contingent electrical stimulation of the skin overlying the temporalis muscle can result in reduced masticatory muscle electromyographic (EMG) activity during sleep in myofascial TMD patients who also manifest sleep bruxism; this approach, however, did not significantly influence the patients' reports of pain severity. The findings suggest that this therapeutic procedure may be of value for reducing masticatory muscle activity in sleep bruxism (and thus possibly decrease tooth wear) but is unlikely to be very useful in managing TMD pain. The findings also add to the accumulating evidence that does not support the view of a causal relationship between changes in masticatory muscle EMG activity and masticatory muscle pain.

The article by Giannakopoulos et al also has relevance to this question of a possible relationship between EMG activity and TMD pain. For example, it has been suggested that masticatory muscle EMG activity during bruxing might be associated with co-contraction of neck muscles, with myofascial pain resulting from muscle overload. While not addressing this specifically in TMD patients, this study nonetheless does show that submaximal jaw clenching is associated with a weak but significant co-contraction of several neck muscles in healthy subjects. Further investigations are warranted to determine the role, if any, of this co-contraction in disorders manifesting muscle pain, such as myofascial TMD.

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