

# TMD/Orofacial Pain and OSA, Correlation or Causation?

## Introduction

By now the majority of us have read the article on JADA about the prevalence of orofacial pain among our patients between the ages of 18-93,<sup>1</sup> specifically how one in 15 have musculoligamentous pain, but one in 6 have dent alveolar pain (which includes referred pain to dent alveolar areas not associated with an infectious process). In the 6-17y.o. subgroup the numbers are even bleaker at one in 3<sup>2</sup> or one in 4<sup>3</sup> children and adolescents respectively are suffering, largely in silence. If the prevalence is that high in children, why aren't they being treated or referred for treatment? How did this happen seemingly 'all of a sudden'? The answer to that, in truth, comes as the answer to all such questions in medicine: we never looked! We have heard that expression called the new meaning of the acronym WNL, and I have to say I would agree with it given my anecdotal observations of dentists and how they view their existing patient population at new and recall appointments.

The challenge is in education as well treatment. Many of us received minimal to no education on Orofacial pain in our pre-doctoral training, but much of what we were given or what we believed to be efficacious is now outdated, outmoded or more directly entirely inaccurate, such as the use of occlusal equilibration as a methodology to treat chronic facial pain or TMD (TemporoMandibular Disorders) or Sleep Bruxism (SB).<sup>4-6</sup> In fact, new research has demonstrated that raising the occlusion iatrogenically with gold foil to mimic the supposed 'high bite' did little to nothing increase masseter EMG activity nor pain in patients already suffering from myofascial pain.<sup>7</sup> To have comprehensive knowledge which leads to diagnosis and treatment (or referral) takes a worldly view on the subject, whereby orofacial pain, TMD and musculoskeletal disorders associated with the stomatognathic system are demonstrating correlation and/or causation with a myriad of other disorders such as tension headache, migraine and CN neuralgias.<sup>8</sup> Further studies have seen the correlation with ear pain<sup>9,10</sup> and somatic tinnitus<sup>11,12</sup> and fibromyalgia.<sup>13,14</sup>

Thankfully, we are seeing a new trend in predoctoral training in Orofacial Pain from University of Minnesota, University of Tennessee, Memphis as well as Tufts and others, and I am hopeful that with great leaders such as Drs. Mehta, Olmos and Lavigne leading the pre-doctoral and post doctoral training, who take on this more worldly view of the immense complexity of these patients, the mind of the current and future dentist will go far beyond the enamel.

And the segway at the heart of the controversy lies in Sleep Bruxism and its role in both TMD and OSA (Obstructive Sleep Apnea). Many speculations have been made about SB as it relates to all aspects of dentistry, and definitions and boundaries need to be understood. Ultimately SB is a centrally mediated movement disorder characterized by Rhythmic Masticatory Muscle Activity (RMMA) associated with tooth grinding and occasional tooth clenching<sup>15,16</sup> and has a worldwide prevalence of 5.5%.<sup>17</sup> Its classification is more along the lines of RLS (Restless Leg Syndrome) and PLMD

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(Periodic Limb Movement Disorder), unlike awake bruxism which has been associated with nervous tics and reactions to stress.<sup>18</sup> It has been observed with causality to UARS (Upper Airway Resistance Syndrome), which is not to be confused with OSA. UARS is a pre-OSA condition characterized by negative esophageal pressure changes that happen concomitantly with decreased oronasal flow in the absence of apneas or oxygen desaturation and also with brain wave arousals that disturb brain wave activity from a deeper stage of sleep to a lighter one, or REM to non-REM sleep.<sup>19</sup> It's interesting to note that SB is also exasperated by sleeping in the supine position,<sup>20</sup> and though casually observed with OSA<sup>21</sup> with resolution of SB when using CPAP therapy to treat OSA, its when we narrow our focus to patients with UARS and SB, 86% show resolution in SB with the use of CPAP.<sup>22</sup> This is significant when we observe that SB does not typically resolve on its own over time, regardless of the number of years between observances.<sup>23</sup>

Given this data, observance of the effects of SB on teeth and associated structures should prompt the dental clinician to at least educate and refer the patient for a sleep evaluation in an overnight sleep study to evaluate for UARS with a physician.

The dental clinician may even inquire about the presence of nasal obstruction with the patient. What is not recommended is to mask the symptom of SB with an occlusal/night guard as a standalone treatment, not the least of which is due to the possible worsening of their Sleep Breathing Disorder that can be caused by one,<sup>24</sup> regardless of how small the worsening may be,<sup>25,26</sup> this can be attributed due to the relatively mild nature of UARS when compared to OSA.

Patients with SB have also been shown to overlap with TMD and Orofacial pain, with at least one of the following symptoms present: arthralgia, osteoarthritis and osteoarthrosis of the condyle(s),<sup>27</sup> jaw pain (capsular) and myofascial pain,<sup>28</sup> chronic migraine, episodic migraine and tension type headache.<sup>29,30</sup> Simultaneously and

serendipitously we see questionable improvement of these symptoms with the use of the said occlusal/night guard or flat plane splints.<sup>31–34</sup> However we do see improvements in these pain symptoms when the mandible is advanced with anteriorly advancing orthotic therapy,<sup>35–37</sup> and improvements again with mandibular advancements in patients with UARS<sup>38</sup> and OSA,<sup>39–41</sup> along with the well observed significant reduction in SB with mandibular advancement.<sup>42–46</sup>

The overlap of TMD/orofacial pain and sleep disordered breathing has been repeatedly observed and correlated<sup>45,46</sup> and is no longer a question of ‘if’ or ‘maybe’ but a question of evaluation and diagnosis by the dental and medical teams, and it is up to the dental clinician who will often be the first in line to evaluate, refer and possibly manage these issues that impact such a large percentage of the population. When this happens, and I believe in my heart that it will be happen sooner rather than later, we can change again the meaning of the acronym WNL to We’re Never-endingly Looking!

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## Conflict of interest

The author declares no conflict of interest.

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