

A close-up photograph of a young man and woman smiling broadly, showing their teeth. They are outdoors with a blurred green background. The woman is on the left, and the man is on the right. The man is wearing a blue and purple plaid shirt.

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**General**  
DENTISTRY

# Dentistry's New Direction "The Starting Point"

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I am so excited to be a dentist in the year 2014. I started out way back in 1977 as a freshman at the University of Southern California dental school wanting to help people by relieving their pain and preventing them from having it. As my practice evolved from giving relief from dental, bony and soft tissue infections, inflammation and injuries to the relief of Craniofacial Pain and Sleep Breathing Disorders, I am impressed. I am impressed and proud that we have a profession that is so expansive in its' ability to help people that we can limit our services to addressing medical conditions as a Dentist.

Orthopedic dysfunction of joints (TMD), chronic facial, mouth, and head pain as well as obstructive sleep breathing disorders, are all medical conditions. Sleep bruxism is identified as a medical movement disorder like PLMD (Periodic Limb Movement Disorder) in the category of a "Sleep Related Movement Disorders" by the International Classification of Sleep Disorders.

Bruxism is well described in

the book "Principles and Practice of Sleep Medicine" 5th Edition, (Elsivier) editors MH Kryger, T Roth, and WC Dement. Dr. Gilles Lavigne (Dean of Dentistry, Université de Montréal, QC) et al. authors of Chapter 99 (Sleep Bruxism). This chapter explains that there are two forms of sleep bruxism; primary or idiopathic and secondary or iatrogenic. Primary sleep bruxism is defined as an absence of a medical condition. That means that there are no known medical or dental causes. It could be associated with exacerbating psychosocial factors in some patients. It has been dentistry's assumption that most fit into this category.

The University of Pittsburgh, School of Dental Medicine, Department of Behavioral Sciences published a study in the Journal of Orofacial Pain, 1995 Winter; 9(1):51-6 of 100 subjects on the relationship of electromyographic (EMG) measured nocturnal bruxism and self-reported stress. The adult subjects were given a battery of personality questionnaires asking them if they believed in a stress-bruxism rela-

tionship. EMG measurements of bruxing frequency and duration were recorded for fifteen consecutive nights. They found; "No overall relationship was established between electromyographic measures and the personality variables nor between electromyographic measures and self-reported stress."

Sleep Breathing Disorders (SBD) of which Obstructive Sleep Apnea (OSA) is included are certainly medical conditions. Literature relating sleep bruxism to sleep breathing disorders is copious. That is all sleep breathing conditions such as: snoring, upper airway resistance syndrome (UARS), as well as obstructive and central apnea. Overall, snoring is reported to affect 19 percent to 37 percent of the general population and more than 50 percent of middle-aged men. UARS is characterized by repeated arousals due to resistance to airflow in the upper airway, that lead to excessive daytime sleepiness and fatigue. In an epidemiologic study of sleep disorders in more than 1000 volunteers in Brazil, the prevalence of UARS in the general adult population

was 15.5 percent. UARS occurs in less-obese, younger individuals and more commonly in women versus men than does Obstructive Sleep Apnea Hypopnea Syndrome (OSAHS). In the United States, prevalence of OSAHS is 3 percent to 7 percent in adult men and 2 percent to 5 percent in adult women. These statistics are for adults so the percentage of people would increase significantly if children were included in this research. What we do know is that 90 percent of patients with sleep-disordered breathing have yet to be diagnosed.

Secondary sleep bruxism as defined in Chapter 99 “Principles and Practice of Sleep Medicine”, 5th Edition, is associated with medication or a psychiatric condition, which is often the result of medications or their withdrawal (iatrogenic). “The following medical conditions and drug chemicals have been associated with or reported in literature with teeth grinding or bruxism-like orofacial motor activities. Movement Disorders: oral tardive dyskinesia, oromandibular dystonia (Meige’s syndrome), Parkinson’s disease, Huntingdon’s disease. Sleep-Related Disorders: sleep-disordered breathing (apnea, snoring, UARS), periodic limb movement, REM sleep behavior disorder, epilepsy, night terrors, sleep myoclonus. Neurologic or Psychiatric Disorders: cerebellar hemorrhage or infarct, Olivopontocerebellar atrophy and Shy-Drager syndrome, dementia, depression. Chemical Substances: alcohol, nicotine, cocaine, MDMA, Ecstasy (3,4-methylenedioxymethamphetamine). Prescribed Medications: amphetamine, Antidopaminergic (Haloperidol), Antipsychotics: (Haldol, Lithium, Cholorpromazine), Anti-depressants (Selective Serotonin Reuptake Inhibitors): Prozac,

Zoloft, Celexa, Cardioactives: calcium blocker: Flunarizine (Sibelium, Cinnarizine) and Anti-arrhythmic: Flecainide (Tambocor).”

Research done at the Universite de Montréal, QC and published in the European Journal of Oral Science, October 2011, evaluated sleep-related bruxism (SB) with wake-time tooth clenching (T.C) in 17-year-old populations. The patient population was 604 of which the SB group was composed of children less than or equal to 12 years of age (67.3 percent). They found an odds ratio of 10.5 for jaw muscle fatigue, 4.3 for headache, and 3.14 for loud breathing during sleep. Recommendations are that children with bruxism be evaluated prior to orthodontic treatment. The American Academy of Pediatrics recommends that all children/adolescents be screened for snoring and that all children/adolescents who snore and have symptoms of OSA require a sleep study.

The American College of Chest Physicians published a paper in their journal “Chest” 2001: Risk Factors for Sleep Bruxism in the General Population. Their conclusions were that; “Sleep bruxism is common in the general population and represents the third most frequent parasomnia. It has numerous consequences, which are not limited to dental or muscular problems. Among the associated risk factors, patients with anxiety and sleep disordered breathing have a higher number of risk factors for sleep bruxism, and this must raise concerns about the future of these individuals. An educational effort to raise the awareness of dentists and physicians about this pathology is necessary.”

Traditionally producing a nighttime splint or night guard

is the treatment of choice for patients with facial pain complaints the result of the movement disorder, sleep bruxism. The Journal of Orofacial Pain (vol. 27, #3, 2013) published the most recent literature on the: Effects of Occlusal Stabilization Splints on Obstructive Sleep Apnea: A Randomized Controlled Trial. The conclusion of this study: “The use of an occlusal stabilization splint is associated with a risk of aggravation of OSA”.

The “Starting Point” for patients with nocturnal bruxism is to discern if the patient has primary or secondary bruxism. That means screening them for medical problems like sleep-disordered breathing and medications taken for poor sleep.

This brings to light a number of questions:

What type of appliance should we produce for bruxism? Can one appliance treat both craniofacial pain (TMD) and OSA simultaneously? What position do we start from? What are the differences in bite registration techniques and what devices are helpful for determining optimal position?

The answer to these questions will be discussed in a series of articles to be published later this year. Keep your eye out for them.

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*Dr. Steven R. Olmos is founder of TMJ & Sleep Therapy Centre's International with 24 Centres spanning 5 Countries. He is an adjunct professor at the University of Tennessee College of Dentistry, where his system of diagnosis and treatment are utilized at the school's Craniofacial Pain Center. Oral Health welcomes this original article.*